

**SAYING NO TO CHILDHOOD IMMUNIZATION: PERCEPTIONS OF
MOTHERS AND HEALTH CARE PROFESSIONALS IN SOUTHERN
ALBERTA**

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DEDICATION

“For, you see, each day I love you more, today more
than yesterday and less than tomorrow.”

(Rosemonde Gérard, n.d.)

This thesis is dedicated to those in my life who mean so much to me; those who
never let me down and love me for who I am.

To my husband Brad, for your endless love, patience, and encouragement. I could
not have completed this research project without your support.

To the precious little one inside me, who has kept me company as I finished this
research project, letting me know you were there during the long hours and late nights I
spent working on this thesis. I cannot wait to meet you.

ABSTRACT

The purpose of this grounded theory study was two-fold; first, to explore how mothers develop an understanding of childhood immunization which contributes to the decision-making process resulting in a decision not to participate in immunization. Second, the perceptions of childhood immunization of health care professionals were also examined. The understanding and decision-making process of eight mothers was compared with the perceptions of twelve health care professionals. A number of themes were constructed from the research and a grounded theory was developed which emphasizes the importance of collaboration between non-immunizing mothers and health care professionals to promote positive health outcomes in children. The findings will assist health care professionals in understanding the factors contributing to the immunization decision-making process, which will subsequently support in delivering immunization programs. Recommendations to promote support and respect for parents' decision not to immunize their children, and assist in educating parents on immunization are also included.

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CHAPTER ONE: INTRODUCTION

Significance of Childhood Immunization

Immunization is considered one of the greatest public health achievements of all time. According to the World Health Organization [WHO] (2011), immunization rates have increased at a rapid pace in recent years, and more children are immunized than in previous years. Immunizations are estimated to save two to three million lives annually worldwide (WHO, 2013). Diseases which at one point affected millions of children worldwide have now been eradicated, as evidenced by the elimination of smallpox in 1977 (Public Health Agency of Canada [PHAC], 2005).

According to PHAC (2011), prior to the introduction of the diphtheria vaccine in Canada, over 9000 children developed diphtheria over a 5-year period, compared to only one case from 2000-2004. Similarly, measles affected 61, 370 children prior to the measles vaccine, and from 2000-2004, only 199 children developed measles in Canada. The reported incidence of measles in Canada is depicted in Figure 1.1 below (PHAC, 2007), which demonstrates the success of the measles vaccine in reducing disease. In addition, Appendix A provides a table of the incidence of vaccine preventable diseases in Canada prior to immunization and following implementation of immunization programs. Despite global achievements of vaccines, there are 23 million infants worldwide who are not routinely immunized, which is cause for concern that virtually-eradicated diseases, such as polio and measles, may re-emerge (WHO, 2011).

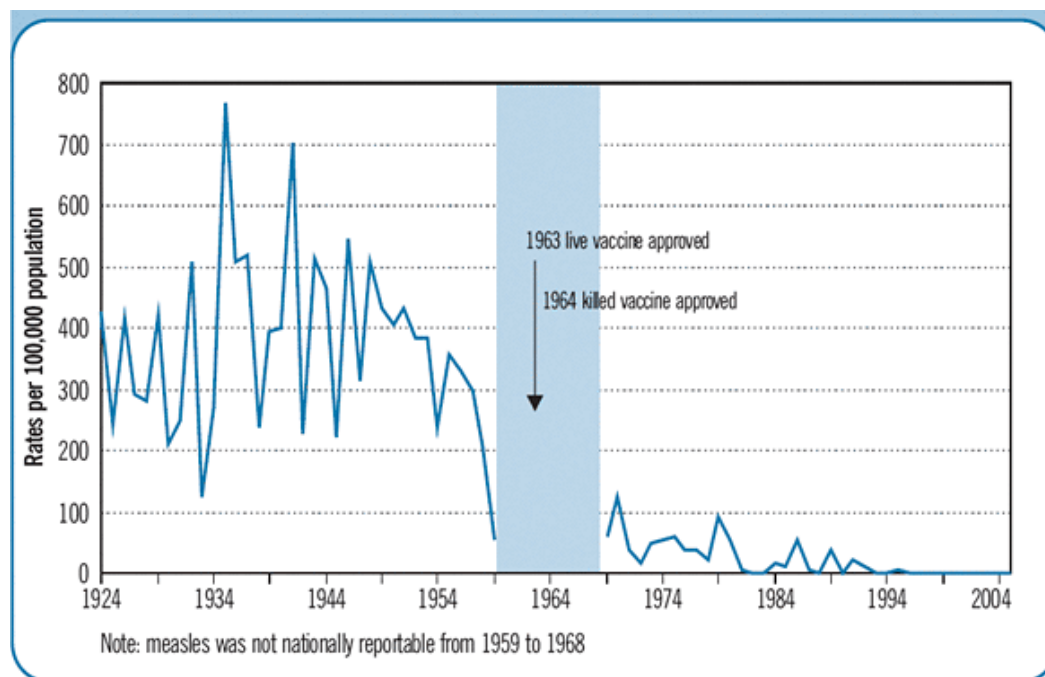


Figure 1.1. Reported Incidence of Measles in Canada from 1924-2005

Despite the success of immunization, vaccine-preventable diseases continue to exist, and the primary reason for this persistence is poor immunization rates (Alberta Health and Wellness [AHW], 2007). The province of Alberta alone has faced numerous vaccine-preventable disease outbreaks over the past decade, including measles, mumps, and pertussis; with the vast majority of cases occurring in unimmunized individuals (AHW, 2007). Alberta provides childhood immunization through a publicly-funded immunization program and in 2007 Alberta Health and Wellness reported that Alberta had the most comprehensive immunization program in Canada, according to program measures outlined by the Canadian Pediatric Society. However, contrary to the success of Alberta’s immunization program, “the proportion of Albertans who are adequately immunized continues to fall below provincial targets” (AHW, 2007, p. 3).

The World Health Organization [WHO], Public Health Agency of Canada [PHAC], and Alberta Health and Wellness [AHW] have responded to the challenge of ensuring children are adequately immunized by creating immunization strategies to address immunization issues, promote immunization, and increase immunization rates (AHW, 2007; PHAC, 2005; WHO, 2010), which are outlined in greater detail in Chapter Two. These strategies are, for the most part, welcomed by health care professionals who support immunization, as emphasis on health promotion and disease prevention are necessary to reverse the rising health care costs across the world (Khorsan, Smith, Hawk, & Haas, 2009). Immunization is primarily a disease prevention strategy that focuses on interventions for those who are at risk of disease or illness (Manitoba Health, 1998), including vaccine-preventable diseases, such as mumps, measles, pertussis, meningitis, and varicella.

Research has demonstrated that immunization is a safe and effective method to protect people from disease, by stimulating the body's immune system to build up resistance to a disease (Health Canada, 2009). However, many people continue to worry about the safety of vaccines and the potential side effects they may cause (Callreus, 2010). Callreus (2010) suggests that this concern may be the result of the decrease in incidence of vaccine-preventable diseases, and thus people are not as aware of the serious consequences of these diseases, and instead focus their attention on the perceived risks and safety of vaccines.

Immunization in Southern Alberta

Southern Alberta faces a particular challenge pertaining to immunization uptake. This geographical area is home to a number of large, predominately non-immunizing cultural groups, including Hutterites, Mennonites, Dutch Reformed, and people who adhere to alternative health practices (Kulig et al., 2002). Consequently, Southern Alberta experiences a large number of vaccine-preventable diseases and outbreaks, which I have observed in my role as a Public Health Nurse [PHN].

According to the Government of Alberta (2012), childhood immunization coverage rates in Alberta Health Services South Zone are lower than immunization coverage rates in Alberta, as summarized in the four graphs below. However, AHW (2007) reports that the number of children immunized in Alberta does not meet provincial targets. The graphs below depict the percentage of children immunized in Alberta and in the former Chinook Health Region in 2007 and 2008 and in Alberta and Alberta Health Services South Zone in 2009 and 2010. Coverage rates were obtained for the DTap-IPV-Hib [diphtheria, tetanus, acellular pertussis, inactivated polio, *hemophilus influenza* type b] vaccine and the MMR [measles, mumps, rubella] vaccine for children by the ages of one and two years. Although children receive additional vaccines in Alberta, coverage rates were only obtained on the two vaccines depicted in the graphs below.

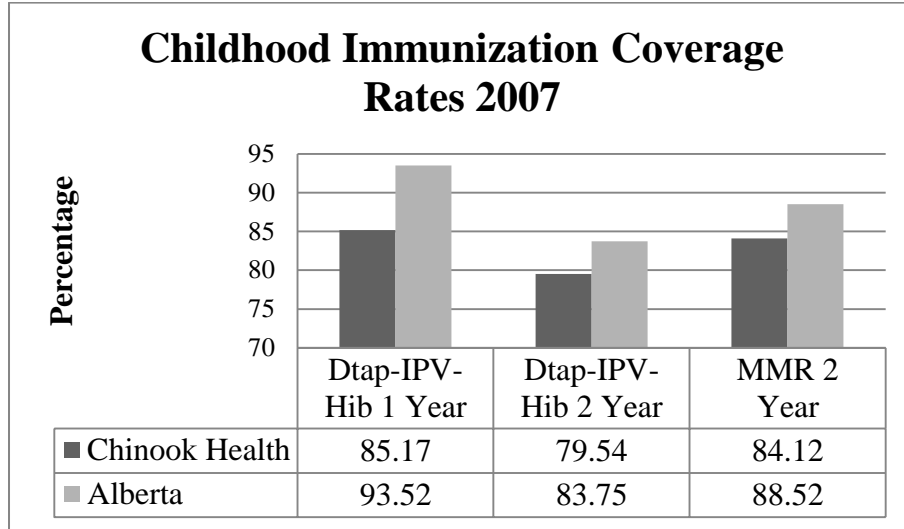


Figure 1.2. Childhood Immunization Coverage Rates 2007

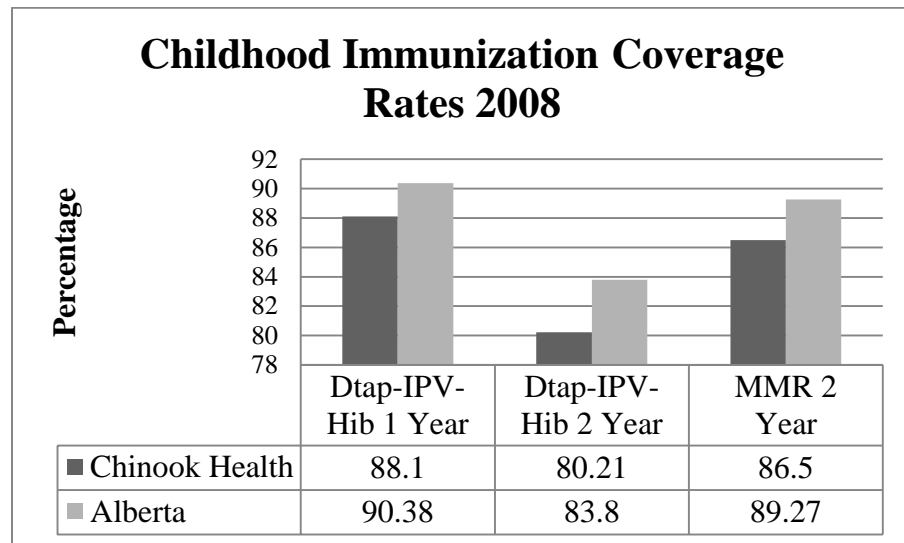


Figure 1.3. Childhood Immunization Coverage Rates 2008

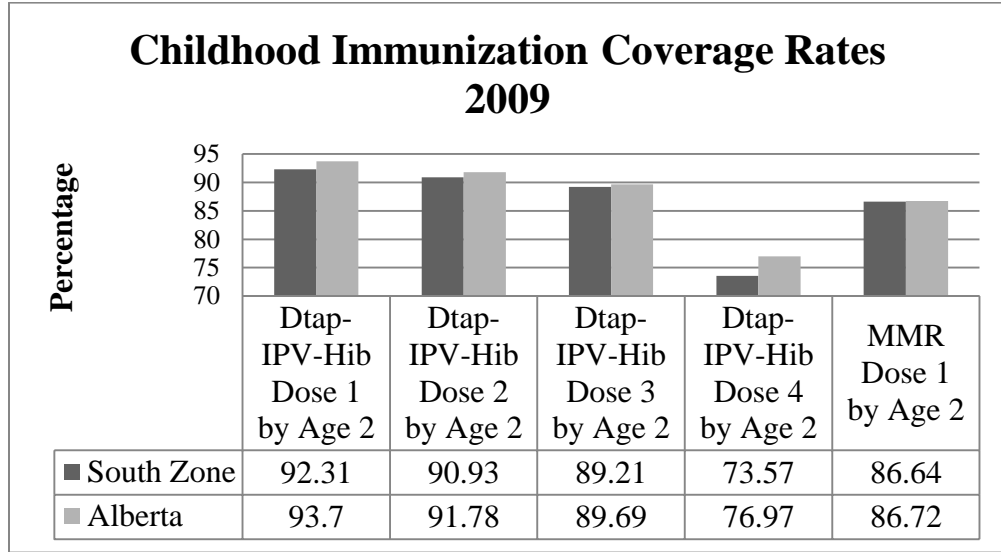


Figure 1.4. Childhood Immunization Coverage Rates 2009

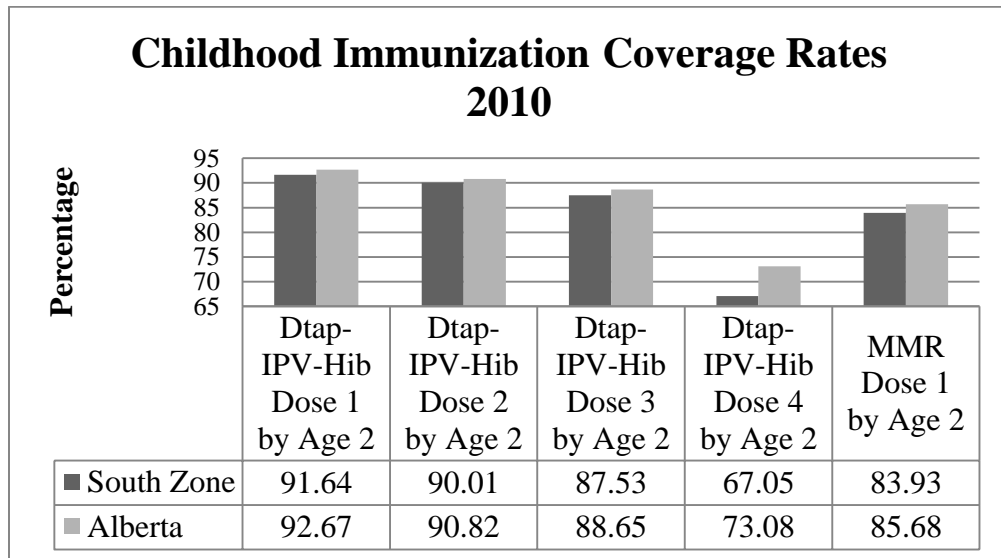


Figure 1.5. Childhood Immunization Coverage Rates 2010

The unique immunization situation in Southern Alberta has an impact on health care professionals in the region as well. Health care professionals, such as family physicians, pediatricians, gynecologists, public health nurses, nurses, and chiropractors, play an important role in childhood immunization, as they may be sought for support and advice on the topic of immunization by their patients. Research has also shown that health care professionals provide different messages to clients on the topic of immunization (Page, Russell, Verhoef, & Injeyan, 2006; Pielak et al., 2010). Health care professionals are also faced with the consequences of vaccine-preventable disease and outbreaks, such as caring for and treating ill children and adults, outbreak investigation, and outbreak control strategies.

Health care professionals have a responsibility to encourage childhood immunization and ensure the information provided to the public is evidence-based and accurate, as this is an essential aspect of professional conduct for practice (Plastow, 2006). The situation is made tenuous by the duty of health care professionals to ensure that they are respecting the autonomy and freedom of choice of individuals, as outlined in the Canadian Charter of Rights and Freedoms (2011), where the following rights are enshrined: “freedom of thought, belief, opinion, and expression” (page 1). PHNs delivering the immunization program in Southern Alberta require specialized knowledge about vaccines, safety of immunization, risk and benefits of immunization, and outbreak investigation and control.

Purpose of Research Study

There is a limited body of literature on factors influencing childhood immunization in Canada and perceptions of immunization risks and benefits. There is also scarce Canadian literature on health care professionals' beliefs on childhood immunization and their perceptions on this issue. The limited body of literature on this topic demonstrated the need for this research study to be conducted. Thus, the purpose of this research study was two-fold; first, to explore how non-immunizing mothers living in Southern Alberta develop an understanding of childhood immunization and how their understanding contributes to the decision-making process that results in a decision not to participate in childhood immunization. Second, the perceptions of health professionals in Southern Alberta, including pediatricians, a specialist physician, public health nurses, and chiropractors, on childhood immunization were examined.

In a study by Bedford and Lansley (2006) in the United Kingdom, 59% of participants obtained immunization advice from a health care professional. A trusting relationship with a health care professional is crucial in determining whether or not parents decide to have their children immunized (Bedford and Lansley, 2006). Health care professionals, such as public health nurses, family physicians, pediatricians, and chiropractors, have a significant professional relationship with non-immunizing mothers, and can be a source of information and support during the decision-making process.

Background on Research Study

This research evolved primarily from personal and professional experiences with immunization. I have numerous personal connections to members of a large non-immunizing religious community in Southern Alberta, namely, the Dutch Reformed.

Contrary to what is believed by various health care professionals and other community members, many of the members of the Dutch Reformed community are immunized, however, there is also a significant portion of this community that do not participate in immunization. My connections with this community and the topic of immunization have prompted personal questions regarding mothers' understanding of immunization and the decision-making process, not only among non-immunizing members of this community group, but among all non-immunizing mothers in Southern Alberta.

My interest in this research study also stems from my role as a Public Health Nurse in Southern Alberta. The scope of practice of a public health nurse involves communicable disease prevention, which includes immunization program planning, coordinating, delivering, and monitoring (Manitoba Health, 1998). In my practice I care for, educate, and support families who choose not to immunize, and I have always sought to learn more about the decision-making process of families, and specifically mothers, who do not participate in childhood immunization. My personal and professional situatedness promoted the progress of this research study and aided in completing the study in a timely manner.

Goals of Research Study

This study expanded on the current literature to include a distinctive understanding of how mothers develop decisions not to participate in childhood immunization and how health care professionals' perceptions on this issue are formed, which is well-suited to the theoretical framework of symbolic interactionism and Grounded Theory research methodology, used to guide this research study.

A further goal of this study was to examine how the understanding and decision-making process of mothers compared with the perceptions of health care professionals on mothers' understanding and decision-making regarding childhood immunization.

Conducting an exploration of perceptions helped to understand this issue at a more meaningful level, to examine whether non-immunizing mothers and health care professionals have a similar awareness of the immunization decision-making process.

Furthermore, this study can inform the education and practice of health care professionals. The findings from this study were used to develop recommendations for health care professionals to support, respect, and educate parents on immunization.

Research Questions

The following research questions guided the study:

- 1) How do mothers develop an understanding of immunization?
- 2) How does mothers' understanding of immunization influence the decision-making process not to participate in childhood immunization?
- 3) How do health professionals perceive non-immunizing mothers' understanding of immunization and their decision not to participate in childhood immunization?
- 4) How does the understanding and decision-making process of mothers compare with the perceptions of health care professionals regarding childhood immunization?

Definitions of Terms

To assist in clarifying a number of commonly-used terms in the research questions, the following terms have been defined:

- **Understanding:** knowledge, experiences, meaning, attitudes, beliefs, and social interaction.
- **Decision-making:** comprises the processes engaged in which results in a course of action.
- **Health Care Professional:** a health care professional is a qualified person who delivers health care in a professional manner to individuals; in this thesis health care professionals include: pediatricians, physicians, chiropractors, and public health nurses.

Format of Thesis

Chapter Two of this thesis focuses on a literature review on immunization understanding and decision-making. Chapter Three describes the research design used in this study, which includes the research questions, theoretical framework, methodology, sampling, data collection method, data analysis, and ethical considerations. The findings are presented in Chapter Four. Chapter Five offers a discussion of the research findings related to the research questions and current literature, as well as recommendations, research dissemination, and a conclusion to the research study. A timeline for this research study is located in Appendix B.

Summary

The purpose of this research study was to explore how non-immunizing mothers living in Southern Alberta develop an understanding of childhood immunization and how they engage in the immunization decision-making process. The perceptions of health care professionals in Southern Alberta, including pediatricians, a specialist physician, PHNs, and chiropractors, on this issue were also explored in the study. This research study offers a perspective on how mothers formulate their decision pertaining to whether or not to immunize their child(ren) and how health professionals view this issue.

CHAPTER TWO: REVIEW OF THE LITERATURE

Rationale for Topic

Despite advances in medical technology and improved safety of vaccines, vaccine-preventable diseases still exist, and immunization rates continue to fall below target levels in Alberta (AHW, 2007). Furthermore, immunization rates in Southern Alberta are lower than the provincial average. Numerous studies outline potential health care interventions to increase immunization rates (Baker, Wilson, Nordstrom, & Legwand, 2007; Gust et al., 2003; Johnson, 2004; Kumar, Aggarwal, & Gomber, 2010; Levi, 2007; Lieber, Colden, & Colón, 2003); however, health care providers need to understand how parents formulate the decision whether or not to immunize their child(ren) in order to achieve positive health outcomes (Benin, Wisler-Scher, Colson, Shapiro, & Holmboe, 2006; Wroe, Turner, & Owens, 2005; Wroe, Turner, & Salkovskis, 2004). This qualitative study focuses on the views, perceptions, and attitudes of both non-immunizing mothers and health care professionals.

Overview of Literature Review Topics

A literature review was conducted to determine what is known about this research subject. Topics focused on include:

- Immunization Perspectives
- Understanding of immunization among parents and mothers
- Attitudes, beliefs, and perceptions of immunization among parents and mothers
- Education and health literacy and immunization
- Barriers to immunization

- Factors influencing immunization
- Immunization risks and benefits
- Risk assessment, perception, and analysis and health
- Immunization decision-making
- Resources sought for immunization advice and information
- Role of the Internet in immunization decision-making
- Health care professionals and immunization
- Health care professionals' perceptions of immunization
- Health care professionals' role in immunization

A variety of sources and databases were used for literature collection, including CINAHL, MEDLINE, ProQuest Nursing & Allied Health Source, Google Scholar, Academic OneFile, Cochrane Reviews, and Credo Reference.

The following paragraphs include a summary of the findings from this literature review. I begin by addressing topics specific to immunization, and then discuss literature which addresses the research questions that guided this study, using the conceptual model of immunization decision-making, created by Sturm, Mays, and Zimet (2005). In addition, the meanings of the words *understanding* and *decision-making* are explored to promote greater knowledge of the topic.

Immunization

Immunization can be defined as “the process by which a person or animal becomes protected against a disease” (Centers for Disease Control and Prevention [CDC], 2012, para 2). According to the CDC (2012), the term *immunization* is often used interchangeably with the terms *vaccination* or *inoculation*. Vaccination can be defined as “injection of a killed or weakened infectious organism in order to prevent the disease” (CDC, 2012, para 3). Immunization or vaccination is achieved by means of a vaccine, which is a product that generates immunity, consequently protecting the body from disease (CDC, 2012). According to PHAC (2007), “vaccines are highly regulated, complex biologic products designed to induce a protective immune response both effectively and safely” (p. 3). Vaccines can be administered through injection, aerosol, or orally.

Global Perspective on Immunization

The introduction of vaccines is considered one of the most influential and successful public health interventions, due to the ability of vaccines to reduce serious illness and mortality (PHAC, 2009). The World Health Organization [WHO] (2010) indicates that immunization is one of the most cost-effective health achievements and is an effective method for controlling and eliminating infectious diseases around the world. Immunization is estimated to prevent approximately two to three million deaths each year (WHO, 2010). Research has shown that, with the exception of safe drinking water, “no other human intervention surpasses the impact immunizations have had on reducing infectious disease and mortality rates – not even antibiotics” (Plotkin & Plotkin as cited in AHW, 2007, p. 3).

Immunization is essential to prevent vaccine-preventable diseases, such as polio and smallpox, which have been eradicated in many countries, including Canada (CDC, 2009). Immunization has also contributed to the declining rates of many diseases, such as measles, mumps, rubella, pertussis, and diphtheria over the years (AHW, 2007). Despite the fact that immunization has been so successful, many vaccine-preventable diseases still exist. As a result, vaccine-preventable diseases can create unnecessary stress on the health-care system and economy (AHW, 2007).

As outlined in Chapter One, the WHO and UNICEF introduced the first Global Immunization Vision and Strategy [GIVS] in 2006 as a response to global immunization challenges (WHO, 2010). In 2005, WHO and UNICEF estimated that the GIVS could save 10 million more lives in the next decade in the 72 poorest countries of the world (WHO, 2011).

The GIVS consists of four main goals, which include: 1) immunize more people against more infectious diseases, 2) introduce new vaccines and technologies, 3) integrate health-related interventions with immunization, and 4) manage immunization programs in a global context more effectively (WHO, 2010). This framework is beneficial for addressing immunization interests in the global arena. By 2010, the GIVS had been adopted in many countries as the principal framework for immunization and has been used as a framework for national immunization strategies across the globe since 2006 (WHO, 2011).

Canadian Perspective on Immunization

Canada faces a variety of immunization challenges due to technology, more vaccines, and higher demand for immunization (PHAC, 2005). In 2003, the Canadian government introduced the National Immunization Strategy [NIS], which is a comprehensive report addressing immunization challenges and the immunization needs of all Canadians (PHAC, 2005). The goals identified by the NIS include: 1) providing timely access to recommended vaccines, 2) enhancing program effectiveness and safety, 3) improving cost-effectiveness of immunization programs, 4) securing sufficient vaccine supply, 5) providing immediate national intervention in immunization emergencies, such as an outbreak, and promoting professional and 6) public acceptance of vaccines and immunization programs (PHAC, 2005). These immunization goals are essential in promoting the health of all Canadians.

Since its introduction in 2003, the NIS has facilitated increased collaboration between federal, provincial, and territorial governments and stakeholders to increase effectiveness and efficiency of immunization programs in Canada (PHAC, 2010). The NIS was evaluated in 2007 to determine its effectiveness, and it was determined that the NIS remained relevant at the federal, provincial, and territorial levels (PHAC, 2009). Progress was made toward equal access to vaccines, including pneumococcal conjugate, meningococcal conjugate, varicella, and pertussis vaccines, for all Canadian children. In addition, disease incidence for the above-mentioned diseases decreased significantly across Canada from 2004 to 2006 (PHAC, 2009). For instance, invasive pneumococcal disease decreased from 42.1 cases per 100,000 in 2004 to 19.2 cases per 100,000 in 2006. Refer to Appendix C for additional disease incidence information.

Alberta's Perspective on Immunization

In Canada, all provinces and territories are responsible for publicly-funded immunization programs. In 2007, Alberta Health and Wellness reported that Alberta had the most comprehensive immunization program in Canada, according to Canadian Pediatric Society program measures. In 2005, 2007, and 2009, the Canadian Pediatric Society rated Alberta's publicly-funded immunization program as "excellent", and Alberta was the only province to receive this rating (Canadian Pediatric Society [CPS], 2005, 2007, 2009). However, in 2011, Alberta's rating fell to "fair", as the province had not initiated a rotavirus immunization program nor was offering a second dose of varicella vaccine in the routine childhood immunization schedule (CPS, 2012). Since this report was published, Alberta has implemented a second dose of varicella vaccine for preschool children (AHW, 2012).

Unfortunately, the number of Albertans who are immunized continues to fall below provincial guidelines. In 2007 AHW reported that immunization rates in Alberta are between five to 20 percent below target measures, however, I was unable to locate provincial target guidelines. As a response to the below-target levels of immunization and various immunization barriers, Alberta Health and Wellness introduced the Alberta Immunization Strategy in 2007. This 10-year proposal outlined the following seven evidence-based immunization goals, which include: 1) enhanced accessibility, 2) improving technology, 3) strengthening parental education and counseling, 4) strengthening partnerships, 5) strengthening provider training, 6) strengthening public education and awareness, and 7) strengthening research (AHW, 2007). The Alberta Immunization Strategy promotes evidence-based approaches to improve immunization

rates in Alberta. I was not able to locate information on advancement or current benefits of this provincial strategy since it was introduced in 2007.

Immunization in Southern Alberta

Childhood immunization statistics on the DTap-IPV-Hib and MMR vaccines for Alberta and Southern Alberta [Chinook Health and Alberta Health Services South Zone] have been obtained and summarized in graphs in Chapter One. These graphs depict that immunization rates in Southern Alberta remain below provincial figures. Southern Alberta has experienced numerous vaccine-preventable disease outbreaks in the last decade, including measles, mumps, pertussis, varicella, and meningitis, as a result of decreased immunization rates. In 2012, Southern Alberta faced a pertussis outbreak, during which infants were hospitalized and one infant died from the disease (“Family Makes Whooping Cough Vaccine Appeal,” 2012).

Southern Alberta faces unique challenges relating to immunization uptake as the geographical region is home to a number of large, predominately non-immunizing cultural groups, including Hutterites, Mennonites, Dutch Reformed, and people who adhere to alternative health practices (Kulig et al., 2002). According to Kulig et al. (2002), barriers such as religious beliefs, experiences with adverse reactions, and concerns with safety of vaccines influence immunization rates in Southern Alberta.

Herd Immunity

According to Kim, Johnstone, and Loeb (2011), herd immunity or the herd effect is an effective means to extend vaccine benefits outside the targeted population, and “refers to the indirect protection of unvaccinated persons, whereby an increase in the prevalence of immunity by the vaccine prevents circulation of infectious agents in

susceptible populations” (Kim, Johnstone, & Loeb, 2011, p. 683). Herd immunity implies that if enough people in a population are immunized against particular diseases; it becomes very difficult for those diseases to spread (Pommerville, 2004; Stanhope, Lancaster, Jessup-Falcioni, & Viverais-Dresler, 2008). Vaccine-preventable diseases occur when immunization rates are not sufficient to achieve herd immunity (Brisson & Edmunds, 2003).

According to Pommerville (2004), when approximately 90% of the population is immunized, the spread of disease is effectively prevented. Although the remaining 10% of the “herd” or population are susceptible to disease, it becomes more difficult for the pathogen to locate an individual who is not immunized. Smith (2009) identifies different herd immunity thresholds, depending on the specific vaccine-preventable disease. For instance, the threshold for pertussis is 92-94%, whereas the threshold for measles is 83-94%. Refer to Appendix D for a chart on approximate herd immunity thresholds for infection elimination.

The herd effect implies that susceptible individuals are protected from contracting disease and if they would develop disease, it would be unlikely that the disease would spread (Pommerville, 2004). For instance, in 2010, the percentage of two-year old children in Southern Alberta who were immunized with the MMR vaccine was 83.93% (Government of Alberta, 2012), which is not high enough to achieve herd immunity, according to the statistic provided by Pommerville (2004). This threshold explains why Southern Alberta encounters recurrent vaccine-preventable disease outbreaks.

Herd immunity is affected by several factors, including the environment and the individual’s immune system (Pommerville, 2004). Diseases are more likely to spread in

urban settings or crowded locations compared to rural communities. Individuals with a compromised immune system are also at greater risk of contracting disease. Thus, target immunization rates to achieve herd immunity differ among populations and herd immunity targets are also dependent on vaccine-preventable diseases, due to differences in the spread of disease.

Immunization and Nursing

Childhood immunization falls under the purview of public health in Canada (Health Canada, 2009). In many provinces in Canada, including Alberta, delivery of publicly-funded immunization programs is the responsibility of public health nurses. Public health nurses are accountable for current knowledge on immunization, skills in administering vaccines, and appropriate communication techniques on the topic of immunization. According to PHAC (2008), immunizers must be able to communicate effectively, utilize evidence-based information and resources, understand ethical and legal aspects of immunization, and “respond appropriately following an assessment of client knowledge, attitudes, and beliefs regarding immunization” (p. 17). In all Canadian provinces and territories, public health nurses, in collaboration with the provincial or territorial governments and health care organizations, are responsible for planning, coordinating, delivering, monitoring, and evaluating immunization programs as well as engaging in client education regarding immunization (Manitoba Health, 1998).

Immunization Understanding and Decision-Making

The following research questions addressed in this study provide a basis for the discussion of the literature below on the topic of immunization understanding and decision-making:

- How do mothers develop an understanding of immunization?
- How does mothers' understanding of immunization influence the decision-making process not to participate in childhood immunization?

Literature will be summarized according to the factors identified in Sturm et al.'s (2005) conceptual model of immunization decision-making. To begin, the terms *understanding* and *decision-making* are highlighted to enhance discussion of the topic.

Understanding

Definition of Understanding

The term *understanding* is derived from the Latin word *intelligere*, which means “the ability to understand something; comprehension” (Oxford Dictionaries, 2012, para. 1). Understanding “denotes the faculty, power, or disposition to know, by contrast with other faculties, powers or dispositions such as feeling and will” (Dictionary of World Philosophy, 2001, para. 1). The American Heritage Dictionary of the English Language (2011) defines understanding as comprehension, intelligence, judgment, or opinion.

Meaning of Understanding

The term understanding or intellect originated in Aristotelian times, where it was divided into a passive part (receiving information through senses) and an active part (creating ideas) (Dictionary of World Philosophy, 2001). The German philosopher,

Wilhelm Dilthey, used the concept of understanding to describe one's mental powers (Dictionary of World Philosophy, 2001).

Hans-Georg Gadamer believed that all the meanings of understanding point to one central phenomenon, namely, "the original form of the realization of our existence" (Grondin, 2002, p. 36). Gadamer purported three different types of understanding. The first is intellectual understanding, which is associated with the cognitive process and intelligence (Grondin, 2002). The second is practical understanding, which is connected with ability, capacity, and application (Grondin, 2002). The third type is understanding by agreement, which is associated with concurrence and linguistics (Grondin, 2002). According to the author, understanding linguistics requires translation into interpretation or meaning, which is associated with hermeneutics. Grondin (2002) writes that Gadamer believed that understanding requires self-understanding and self-implication. Understanding also revolves around meaning and experiences (Gendlin as cited in Todres, 2004).

For the purpose of this thesis, I will adopt Gadamer's three types of understanding, which include intellectual, practical, and agreement understanding (Grondin, 2002). Factors, such as participants' knowledge, perceptions, experiences, meaning, attitudes, beliefs, and social interaction are explored, which comprise the concept of understanding.

Decision-Making

Definition of Decision-Making

The definition of *decision* is “a conclusion or resolution reached after consideration; the action or process of deciding something” (Oxford Dictionaries, 2012, para. 1). According to Collins Dictionary of Sociology (2000), the definition of *decision-making* is the process by which people, groups, or organizations determine which action to take or what they consider to be the best thing to do in a particular situation.

Immunization Decision-Making

The decision whether or not to immunize may be considered one of the most important decisions parents make regarding their child’s health (Austin, Campion-Smith, Thomas, & Ward, 2008; Marfe, 2007). Austin, Campion-Smith, Thomas, and Ward (2008) also found that the decision whether or not to immunize is a difficult decision, and the emotional dimensions or components must be considered.

Sturm et al. (2005) conducted a review of research on attitudes and beliefs in immunization decision-making. In this process, the authors developed a conceptual model of potential determinants of parental willingness to immunize their children, based on their research review on this topic.

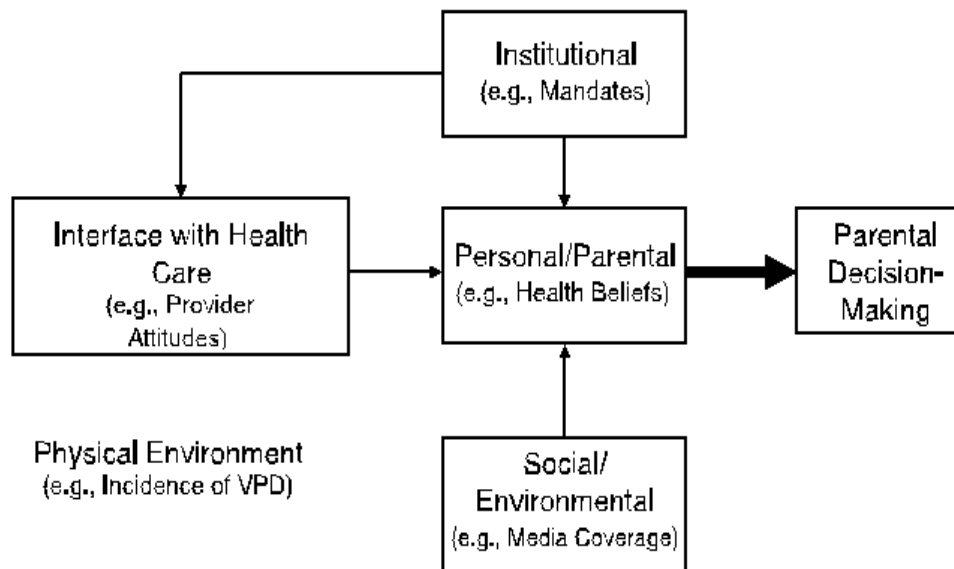


Figure 2.1. Factors Influencing Parental Decision-making about Childhood Immunization

(Sturm, Mays, & Zimet, 2005, p. 442)

Their model consists of five domains which are all interconnected, and influence the decision-making process. *Personal factors* play an important role in decision-making, and represent parent’s health beliefs and attitudes toward immunization, as well as cognitive characteristics of decision-making (Sturm, Mays, & Zimet, 2005). The *socio-environmental* factor contains aspects such as social group norms, culture, media and religion, and the *institutional* factor includes government agency policies and legal mandates for immunization (Sturm et al., 2005). The factor *interface with health care* deals with health care provider attitudes and recommendations, as well as accessibility to quality health care; and finally, *physical environment* concerns the incidence of vaccine-preventable diseases (Sturm et al., 2005). This model is thought to accurately depict the

factors which are involved in parental immunization decision-making, and is a valuable tool for health care professionals to consider when dealing with this issue.

The conceptual model of parental decision-making is also instrumental for researchers interested in exploring immunization decision-making, because it encompasses multiple factors. According to Sturm et al. (2005), researchers to date have focused their attention on personal factors, socio-environmental factors, and interface with the health care system. This model includes additional factors, such as institutional influences and physical environment, which may be helpful in adopting an integrative approach (Sturm et al., 2005).

The above-described model relates to the current research study, as non-immunizing mothers' decision-making process was also explored and similar factors in the five domains, namely: 1) institutional, 2) personal, 3) social/environmental, 4) interface with the health care system, and 5) physical environment were examined with the study participants. Current, relevant literature is discussed in greater detail below using the five factors listed above to provide a contextual understanding of the topic.

Personal Factors

Personal factors, such as beliefs, knowledge, attitudes, perceptions, and cognitive characteristics of decision-making influence parents' understanding of childhood immunization. A detailed discussion of relevant personal factors is presented below.

Barriers to Immunization

Many researchers have identified specific barriers to immunization, which may include socio-economic limitations, single parenthood, lack of time and/or energy, lack of knowledge and information, availability of vaccines, limited access to immunization,

child sickness, fear of side effects, lack of transportation, limited clinic hours, long waiting times, unpleasant past experiences, and parental emotions and/or concerns (AHW, 2007; Dombkowski, Lantz, & Freed, 2004; Downs, Bruine de Bruin, & Fischhoff, 2008; Kim, Frimpong, Rivers, & Kronenfeld, 2007; Lieber et al., 2003; Niederhauser & Markowitz, 2007; Thomas, Kohli, & King, 2004; Zimmerman et al., 1996). A number of these barriers, including lack of knowledge and information, fear of side effects, and emotions, are explained in greater detail below.

Knowledge

Knowledge is an important factor influencing immunization. A number of studies indicate that parents who have inadequate knowledge about immunization and immunization schedules are more likely to have children who are not immunized or partially immunized (Borràs et al., 2009; Kumar et al., 2010; Niederhauser & Markowitz, 2007; Thomas et al., 2004).

Borràs et al. (2009) carried out a retrospective, cross-sectional study with 630 children under the age of three years in all health regions of Catalonia, Spain. The authors discovered that greater immunization coverage is associated with maternal age over 30 years and increased knowledge of vaccines (Borràs et al., 2009). Kumar, Aggarwal, and Gomber (2010) interviewed 325 parents of children admitted to a hospital in North India using a semi-structured questionnaire to determine their reasons for partial immunization or non-immunization. One hundred and forty parents or 52.4% of the participants stated that inadequate knowledge about immunization was a reason that their child was not immunized or partially immunized (Kumar et al., 2010).

A qualitative, focus group design study with 64 parents in Hawaii was conducted to determine why their children, aged two to four years, were not fully immunized (Niederhauser and Markowitz, 2007). One of the themes which emerged from this research was parental knowledge deficits about vaccine schedules and misunderstanding about the importance of immunizations (Niederhauser & Markowitz, 2007). These findings are consistent with a review of qualitative studies completed by Mills, Jadad, Ross, and Wilson (2005) that lack of awareness of the immunization schedule is a barrier to immunization.

Thomas, Kohli, and King (2004) conducted a mixed-method study, using focus groups and door-to-door surveys in Bakersfield, California to examine the current immunization status of children aged zero to three and identify barriers to childhood immunization. A number of knowledge barriers were identified, such as confusion regarding what immunizations are, how they work, why vaccines are important, and lack of information provided by health care providers (Thomas et al., 2004).

In a study which included 30 mental modes interviews with parents discussing childhood immunization in three United States cities, namely Kansas City, Philadelphia, and Eugene, the authors discovered that in general parents have limited understanding of how vaccines work, which makes them vulnerable to misinformation, including easily-accessible information on the Internet (Downs et al., 2008).

Another group of investigators (Hilton, Hunt, & Petticrew, 2006) completed a qualitative study with 66 parents of children aged six years and below, using focus group discussions, to determine parents' understanding of the diseases included in the United Kingdom childhood immunization program. The results indicated that there were many

gaps in parents' knowledge about vaccine-preventable diseases, including diphtheria, tetanus, and *hemophilus influenza* type b (Hilton et al., 2006).

In an article on immunization, Marfe (2007) explains that parents' knowledge and understanding of immunization is important so health care providers can provide support. Parents must receive information on vaccine benefits and risks, so they can make an informed decision about immunization (Marfe, 2007).

In another study that was located, the investigators examined parents' understanding of immunizations (Gellin, Maibach, & Marcuse, 2000). Through an American-based telephone survey with a sample of 1600 parents that included expectant parents and those with children under the age of six years, a number of findings related to immunization were generated. Eighty-seven percent of respondents indicated that immunization was an important action to ensure their child's wellbeing; however, there were also parents who held important misconceptions, including the belief that their child's immune system could be weakened by multiple vaccines (25%) and children receive more immunizations than are beneficial (23%) (Gellin et al., 2000). The authors hypothesized that these misconceptions could reduce parental confidence in immunizations (Gellin et al., 2000).

Current literature also confirms that mothers' knowledge is an important factor which influences immunization decision-making. Wilson, Baker, Nordstrom, and Legwand (2008) conducted a mixed-methods research study with 15 mothers with one child and 15 mothers with more than one child, who brought their children to a childhood immunization clinic in the Midwest, United States. They discovered that mothers lacked knowledge and comprehension regarding vaccine safety. Low literacy was found to be a

factor in the ability to understand concepts relating to immunization (Wilson, Baker, Nordstrom, & Legwand, 2008).

In their quantitative study conducted in the United States, using the National Immunization Survey (NIS), Racine and Joyce (2007) report that mothers' level of education obtained has a significant impact on childhood immunization rates. Angelillo et al. (1999) studied the knowledge, attitudes, and behaviour of mothers on immunization of 841 children in kindergartens in Italy. The authors found that only 57.8% of mothers were aware of the four mandatory vaccines for children, namely polio, tetanus, diphtheria, and hepatitis B (Angelillo et al., 1999). According to Angelillo et al. (1999), this statistic suggests that Italian mothers may have an ineffective role in the eradication of vaccine-preventable diseases due to lack of knowledge about vaccines.

Parashar (2005) conducted a quantitative study in India and also discovered that maternal education has an influence on child health outcomes, such as immunization and adherence to immunization schedules. In a mixed method study by Baker, Wilson, Nordstrom, and Legwand (2007), results indicated that out of their sample of 30 mothers in Detroit, Michigan, only four mothers knew the names and purposes of the vaccines their child was receiving. Baker et al. (2007) also found that there appeared to be some misunderstanding about vaccines, related to the comments made by the mothers.

As outlined above, parents' and mothers' knowledge about immunization is an important factor to consider in the childhood immunization process. Inadequate knowledge, limited understanding of vaccines, misconceptions, and lack of appropriate information can contribute to whether or not children are immunized.

Health Literacy

Health literacy has been defined as “the ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course” (Rootman & Gordon-El-Bihbety, 2008, p. 11).

According to Betz, Ruccione, Meeske, and Chang (2008), low health literacy is a significant public health issue. Inadequate health literacy can have problematic effects on health, including difficulties understanding health information and performing health-related tasks. This can lead to illness complications, emergence of secondary conditions, higher rates of hospitalizations, and increased health care costs (Betz, Ruccione, Meeske, & Chang, 2008).

Recent studies have indicated that inadequate parental health literacy is associated with negative child health outcomes (Betz et al., 2008). In this particular study, lower Rapid Assessment of Adult Literacy in Medicine [REALM] scores were associated with lower parental education, lower parental age, and African-American race (Betz et al., 2008). Moon, Cheng, Patel, Baumhaft, and Scheidt (1998) conducted a cross-sectional study in Washington, DC with 633 parents whose children were treated in an acute care setting. Interestingly, 36% of parents did not know when their children’s next vaccines were due.

A pilot study was completed by Wilson, Brown, and Stephens-Ferris (2006) with 37 mothers in four urban public health centers in the Midwest, United States, who were placed in a control or experimental group and given two different immunization pamphlets, one which was easier to read than the other. The authors concluded that easy-to-read patient information is important to meet the needs of parents with low levels of

health literacy, so parents can make decisions about the health of their children.

Similarly, Davis, Meldrum, Tippy, Weiss, and Williams (1996) and Davis et al. (1998) mention that there is a negative association between low maternal literacy and poor outcomes in childhood immunizations.

According to Ferguson (2008), low maternal health literacy is a risk factor for poor health outcomes for the mother and her child(ren). Puchner (1995) also reports that women have been recognized as a target population for promoting or increasing health literacy, as their knowledge and education is of importance for promoting the health of their children.

The information summarized above outlines the association of health literacy and child health outcomes, including immunization.

Attitudes and Perceptions

Several articles were located which discuss parents' and mothers' attitudes regarding childhood immunization. According to a qualitative study conducted in Scotland by Hilton, Hunt, and Petticrew (2006), parental attitudes are an important predictor of childhood immunization. Parents often weigh the risks and benefits of immunization versus disease (Hilton et al., 2006). The study findings indicate that parents have different attitudes toward different vaccines based on the severity of the illness, as indicated by responses to the seriousness of certain vaccine-preventable diseases, such as meningococcal disease (Hilton et al., 2006).

Hilton et al. (2006) acknowledge that there are significant challenges communicating with parents about the complications of vaccine-preventable diseases rather than only addressing the risk of immunization. This finding echoes what Hobson-

West (2003) and Wroe, Turner, and Owens (2005) outline in their articles about vaccine resistance and risk perceptions, which will be discussed under the *Decision-Making and Risk* section of this chapter.

The decision whether or not to immunize a child can be a significant challenge faced by parents (Marfe, 2007). Parents will weigh the risk of disease versus receiving benefit from immunized individuals, through herd immunity (Marfe, 2007). The author also notes that for parents the decision to immunize is more difficult to make than the decision not to immunize, as parents feel more responsibility when making active decisions that directly affect their children's health status.

A qualitative study with fifteen parents in Hong Kong on perceptions of childhood immunizations was conducted by Tarrant and Thomson (2008), who discovered three prominent categories of influence pertaining to immunization in their study, which included individual factors, family and social factors, and system factors. Individual factors consisted of knowledge deficits, perceived benefits of immunization, and risks of immunization. Family and social factors included parental responsibility, advice regarding immunizations, population density as a risk for communicable diseases, and social responsibility. System factors included public health immunization programs available, trust in government and health professionals, mandatory vaccines, and barriers to immunization (Tarrant & Thomson, 2008). They also found that in an area with high immunization coverage, parents reported that protection from vaccine-preventable disease was a primary benefit of immunization (Tarrant & Thomson, 2008).

Luthy, Beckstrand, and Peterson (2009) conducted a quantitative study in Utah using a hesitancy questionnaire, which they developed, to assess parental attitudes about

childhood immunization. The primary reasons for delay in childhood immunizations, as identified by Luthy et al. (2009) included confusion about immunization schedules, vaccine safety, difficulty finding time to immunize their child, wanting their child to be older, and loss of the immunization record. The most common parental concerns included child's pain, short-term adverse effects, safety of vaccines, possibility of overloading child's immune system, and combination vaccines (Luthy, Beckstrand, & Peterson, 2009).

A cross-sectional study examining postpartum mothers' attitudes, knowledge, and trust regarding immunization was completed by Wu et al. (2008). The study results indicated that of the 296 mothers surveyed in a large hospital in Connecticut, 96% of mothers planned to immunize their baby, 1% indicated they would not immunize, 0.5% of the mothers were not sure, and 2% reported that they planned to immunize their child against some diseases (Wu et al., 2008). Overall, many of the mothers scored very poorly in terms of knowledge regarding immunization; however, trust in health care providers had a positive effect on immunization rates (Wu et al., 2008). The authors also found that a large number of study participants had concerns about vaccines, even among those who immunized their children, and mothers with a lower income were less trustful of immunization.

In a quantitative study in New Zealand, Wroe, Turner, and Salkovskis (2004) included 195 women in their third trimester of pregnancy to investigate factors that influence immunization. They discovered that the majority of women stated that they planned to immunize their child. The researchers found that there are differences in immunizers' and non-immunizers' beliefs in terms of emotional factors, such as

responsibility and/or regret, personal benefits, and risks of immunization (Wroe et al., 2004).

Wilson (2000) conducted a qualitative study in rural Missouri, United States, which examined twelve mothers' perceptions of decision-making related to childhood immunizations. The researcher developed four key themes for the analysis: knowledge, past experiences, competing tasks, and transportation. A number of study participants declined to immunize their children due to knowledge learned about vaccines and other participants had misperceptions about immunizations (Wilson, 2000). Unpleasant past experiences with immunization, which included adverse reactions, fever, irritability, and emotional harm was another theme which arose among the study participants (Wilson, 2000). According to the author, all the mothers indicated they were often too busy at home or work to ensure their children were immunized, and 67% of mothers indicated that lack of access to transportation was a factor in delayed immunizations.

Benin, Wisler-Scher, Colson, Shapiro, and Holmboe (2006) conducted a qualitative study in Connecticut, USA that investigated mothers' decision-making about childhood immunization. Interviews were held with 33 mothers who were one to three days postpartum, and they were interviewed again at three to six months postpartum. Twenty-five of the mothers intended to immunize, and eight mothers did not intend to immunize (Benin et al., 2006).

In this study, the researchers explored attitudes toward immunization, knowledge about immunization, and decision-making (Benin et al., 2006). The researchers discovered that in terms of attitudes, mothers were either vaccinators or non-vaccinators, and further, the vaccinators were either acceptors or vaccine-hesitant, and the non-

vaccinators were either late vaccinators or rejecters (Benin et al., 2006). Results also indicated that a number of the mothers, both of the immunizing and non-immunizing groups, outlined erroneous information related to immunization (Benin et al., 2006).

The above-summarized studies suggest that attitudes toward vaccines can influence parents' and mothers' decision whether or not to immunize their child(ren). Attitudes are closely related to risk perceptions or risk versus benefit evaluation, which will be discussed in greater detail later in this chapter.

Vaccine Safety

In a quantitative study conducted by Gust et al. (2003) in the United States, parental concerns regarding immunization were examined using the HealthStyles survey. The authors outline several concerns parents have about immunization, namely, that as immunization rates increase, adverse events also occur more frequently, which causes parents to speculate and have concerns about vaccine safety. Parents also questioned vaccine side effects, the protective value of vaccines, and the risk versus benefit of vaccines (Gust et al., 2003). Gust et al. (2003) and Gust, Darling, Kennedy, and Schwartz (2008) discovered that parents with lower income and education levels had more concerns regarding immunization than parents with higher income and education levels.

According to Gust et al. (2008), in their quantitative study using the National Immunization Survey in the United States, of those parents who had concerns about vaccine safety, most of the parents had greatest doubts about the varicella vaccine and the measles-mumps-rubella [MMR] vaccine. These concerns were related to fear of side effects and the belief that these diseases are not serious.

In another quantitative study by Gust et al. (2004), vaccine safety was a primary concern for parents in the United States, based on the results generated by the National Immunization Survey. The authors found concerns over vaccine safety contributed significantly to under-immunization of children in the United States; however, these concerns were also addressed by parents of fully immunized children, which implies that the current immunization levels may be at risk of decreasing (Gust et al., 2004).

Vaccine Refusal

Numerous articles addressed reasons why parents refuse to immunize their children. In his clinical report Diekema (2005) outlined that parents may refuse vaccines because of concerns about the safety of vaccines and administering multiple vaccines at a single visit. According to a survey conducted by the American Academy of Pediatrics [AAP], the measles-mumps-rubella [MMR] vaccine is refused most frequently, followed by the varicella vaccine, which may be the result of anti-vaccine information sources (Diekema, 2005).

In a quantitative study in Delhi, India, Kumar et al. (2010) found that parents did not immunize for fear of side effects and lacked faith in vaccine effectiveness. Concerns, such as vaccine safety, long-term negative health effects, and omission bias, meaning the guilt of parents if their child was injured over their action (getting a vaccine) versus their inaction (not receiving a vaccine), are similarly mentioned by Downs, Bruine de Bruin, and Fischhoff (2008). The MMR-autism correlation and thimerosal-neurological association, as well as concerns over adverse effects also contribute to these concerns (Downs et al., 2008).

Vaccine safety and personal or philosophical exemptions are reasons why parents refuse vaccines, as explored by Gust et al. (2008) in the United States. The authors also found that children in the United States who receive no vaccines tend to be white, compared to non-Hispanic black and Hispanic parents.

Interestingly, in another study by Gust et al. (2008), the authors found that when conducting a survey with parents whose children were delayed in immunization, the primary reason for the delay was child illness, and not necessarily vaccine refusal. This finding demonstrates the need for appropriate and effective communication with parents to determine why their children are delayed in immunization, and whether or not they are essentially refusing vaccines.

According to Niederhauser and Markowitz (2007), parental beliefs, such as anti-vaccine beliefs, mistrust of information, low risk of vaccine-preventable disease, belief in alternative health care, and a high risk-benefit ratio were factors which hindered childhood immunization. Fear of side effects, the number of vaccines, and the long-term effects on health were also outlined (Niederhauser & Markowitz, 2007).

Fifteen qualitative studies on barriers to childhood immunization were reviewed by Mills et al. (2005) who discovered a number of themes relating to personal factors, including issues of harm, risk of adverse effects, concern about pain caused by immunization, and the belief that immunization should not occur when the child is ill. This review demonstrates that there are a variety of personal reasons why parents decline childhood immunization.

Parental vaccine refusal has been explored both qualitatively and quantitatively by a number of researchers, as summarized above. Parents' reasons for refusing childhood

immunizations are numerous, and include: vaccine safety, vaccine side effects and long-term effects, guilt, mistrust, and lack of vaccine effectiveness. Refusals may be dependent on personal beliefs, attitudes, relationships, knowledge, risk perception, and barriers.

Immunization Decision-Making Process

According to Austin et al. (2008), who conducted a study in the United Kingdom using focus groups with fifteen parents of fully-immunized children and ten parents of partially immunized children, there are numerous factors that influence parents' decision-making process. Some of the factors include: safety concerns, risk versus benefit of vaccines, fear of disease, side effects, long term health effects, worry and guilt, confusion over conflicting information, feeling alienated and judged, and conflict and distress in decision-making.

Although physicians and nurse practitioners can influence immunization decision-making, parental personal and philosophical beliefs are the most significant factor regarding immunization decision-making (Stevenson, 2009). Other factors, which include: 1) concerns and fears about vaccines, especially related to autism or other neurologic disorders, 2) perceptions of risks and benefits of vaccines, 3) threat of vaccine-preventable diseases, and 4) information obtained from sources, such as the media, also influence parents' immunization decision-making process (Stevenson, 2009).

Marshall and Swerissen (1999) conducted semi-structured interviews with 20 mothers in Melbourne, Victoria, and found that the decision whether or not to immunize was not a static decision, but a process which involved three steps: considering, implementing, and maintaining the decision. This process was taken by mothers who immunized and those who do not immunize, as benefits and barriers to immunization

were contemplated by both groups (Marshall & Swerissen, 1999). During the process, some mothers sought additional information, and many reflected on immunization and life experiences in their decision whether or not to immunize (Marshall & Swerissen, 1999). According to Marshall and Swerissen (1999), once a decision was implemented, the decision was often revisited; either by mothers' defending or consolidating their decision.

According to Downs et al. (2008), the decision not to immunize is a conscious one, and various topics are considered in this process. Some of the topics which parents consider include: benefits of vaccines, identification of reactions, impact of vaccines on disease prevention and health, how screening decisions are implemented, risks, and vaccine understanding (Downs et al., 2008).

In a dated study by Rogers and Pilgrim (1996), nineteen mothers who declined to immunize their children in the United Kingdom were interviewed. The mothers indicated their non-compliance toward childhood immunization developed over time and was influenced by a number of factors and processes (Rogers & Pilgrim, 1996). The factors identified were "derived from a mixture of world views held about the environment, healing, holism and the roles and responsibilities of parenting, and a critical reading of the scientific and alternative literature" (Rogers & Pilgrim, 1996, p. 82). Factors, such as lack of knowledge of physicians on immunization, infectious diseases, and vaccine side effects, and fate were also mentioned by the mothers. Interestingly, mothers mentioned that their maternal instinct or intuition introduced doubt about immunization, which was solidified by a variety of factors, mentioned above, ultimately leading to their decision to refuse childhood immunization (Rogers & Pilgrim, 1996).

There are many personal factors which influence the immunization decision-making process. As outlined above, the factors most frequently mentioned by the researchers include: barriers to immunization, knowledge and health literacy, safety concerns about vaccines, fear of side effects and undesired effects, vaccine refusal, and the perception of risk.

Socio-Environmental Factors

Socio-environmental factors, such as social group norms, culture, religion, and media also influence immunization understanding and decision-making, as summarized by the literature below.

According to AHW (2007), the environment has an impact on immunization rates, primarily by policy/regulatory changes, socio-demographic changes, economic changes, and technological changes. In their qualitative study in Missouri, Pennsylvania, and Oregon, Downs et al. (2008) discussed various reasons why parents object to immunizations, such as socioeconomic barriers associated with low income and multiple children, religious reasons, personal grounds, or medical contraindications.

A qualitative, mixed-methods approach, using twelve interviews and a focus group, was conducted by Kennedy and Gust (2008) with members of a church organization in the United States to explore immunization attitudes. They discovered that safety concerns, including serious side effects or learning disabilities, media influences on vaccine safety beliefs, and risk perspectives, such as personal experiences and religious beliefs, were factors in non-acceptance of vaccines (Kennedy & Gust, 2008).

In a qualitative study conducted in Southwest Alberta by Kulig et al. (2002), 47 participants of Dutch ethnic background, Hutterites, and individuals engaging in

alternative health practices outlined reasons for delay and refusal of immunization. Those with Dutch ethnicity refused immunization based on religious beliefs, the Hutterites refused based on adverse event experiences and use of alternative health practices, and those who were included in the alternative health group were concerned with vaccine safety and side effects of vaccines (Kulig et al., 2002).

AHW (2007) outlined that attitudes and beliefs regarding immunization have demonstrated to have a powerful effect on immunization decision-making, particularly among individuals of higher socio-economic status and members of certain religious and community groups (AHW, 2007). According to AHW (2007), misinformation about immunization is easily accessible, thus parents should have access to best available evidence and research regarding immunization. Parents require the ability to access and understand the information they are given to facilitate effective decision-making (Austvoll-Dahlgren & Helseth, 2010).

According to Downs et al. (2008), Kennedy and Gust (2008), and Marfe (2007), parents' decision whether or not to immunize is related to the sources of vaccine information accessed. Friends, family and colleagues, television, books, newspapers, magazines, and the Internet are mentioned in the literature as sources utilized (Bedford & Lansley, 2006; Gellin et al., 2000; Gust et al., 2005).

Socio-environmental factors influencing immunization decision-making were also explored by Austin et al. (2008), including anger toward government and media and feeling pressure from friends, media, professionals, and government. A small-scale study in the United Kingdom discovered that homeopathy and religion were the two primary reasons for vaccine refusal (Simpson et al. as cited in Hobson-West, 2003).

A study by Leask, Chapman, Hawe, and Burgess (2006) explored how mothers responded to anti-vaccination messages. Thirty-seven mothers, whose children were fully immunized based on their age, participated in six focus groups in Sydney, Australia. The researchers discovered that mothers who supported immunization discussed benefit versus risk of vaccines, benefit of vaccines to the whole community, trust in physicians, personal experiences with vaccine-preventable diseases, and the reinforcement of vaccines through their social networks (Leask, Chapman, Hawe, & Burgess, 2006). These mothers were also shocked when they were instructed to view anti-vaccination messages, and voiced their skepticism of the media for its influence on disseminating negative accounts about immunization (Leask et al., 2006).

Media Influences

The media is a well-used and powerful source of vaccine information, and contributes to parents' beliefs about immunization as "it is the fastest growing source of consumer health information" (Zimmerman et al., 2005, para 4).

Modern media, such as the Internet, has the ability to portray inaccurate immunization information (Betsch, Renkewitz, Betsch, & Ulshofer, 2010; Diekema, 2005; Levi, 2007; Marfe, 2007). According to Walther (2011), misleading and frightening information on immunization is readily accessible on the Internet for parents who are looking for answers. Gust et al. (2003) note that media stories frequently share minority views regarding vaccine safety, which can give parents the false impression that the mainstream population shares this opinion.

According to Smith (2010), "74% (170 million) of US adults report using the Internet on a daily basis, and 64% go online for health information" (p. 39). Smith

(2010) notes that there are many excellent immunization websites and resources available on the Internet, however, antivaccination websites seem to be increasing.

An online experiment was conducted by Betsch, Renkewitz, Betsch, and Ulshofer (2010) with 325 participants who followed instructions, to determine whether vaccine-critical websites influenced perceptions of risk of vaccines and immunizations. The authors found that if participants accessed vaccine-critical websites for five to ten minutes, they were more likely to question the risk of immunization and their intentions to immunize decreased significantly (Betsch et al., 2010).

In 2002, Davies, Chapman, and Leask sought to determine the likelihood of finding antivaccination websites on Google using search terms, such as *vaccination* and *immunization*. They found that antivaccination websites often include rhetorical appeals, which consists of “scientific” evidence, using references from alternative medicine organizations and newspapers and television interviews (Davies, Chapman, & Leask, 2002). These websites also contained emotional appeals, such as personal testimonies, “evidence of conspiracy”, and claims that physicians are too “foolish” to “acknowledge the truth” about vaccines (Davies et al., 2002, p. 23). Explicit claims about the trivialness of vaccine-preventable diseases, the poisonous and harmful nature of vaccines, in addition to the perception that vaccines have been eradicated due to nature rather than successful immunization programs, are easily obtainable (Davies et al., 2002; Walther, 2011).

According to Walther (2011), antivaccination websites warn parents “against trusting the available scientific information, because it is distributed by medical researchers, pharmaceutical companies, and health care providers” (p. s6). Similarly,

Marfe (2007) discussed how the power of the media over public opinion and anti-vaccination activists has contributed to parental vaccine refusal and Stevenson (2009) suggests that information obtained from sources, such as the media, also influences parents' immunization decision-making process.

More recent sources of interactive modern media that are contributing to parental concerns regarding vaccines include blogs, social networking sites, and YouTube (Smith, 2010). According to Davies et al. (2002) nearly half (43%) of the websites on immunization contained antivaccination information at that time. Downs et al. (2008) state that many parents reported they would seek information on the Internet, using a general search engine, rather than seeking advice from a health professional, which speaks to the need for parental education on the issue.

To determine the influence of modern media, I conducted a minor investigation. When the term *immunization* was entered into the Google.ca search engine, the top ten websites which appeared were reputable sources, such as Public Health Agency of Canada [PHAC], Caring for Kids, Health Canada, and the Centers for Disease Control and Prevention [CDC]. When the term *vaccination* was entered, the top two websites which appeared were unreliable, including Wikipedia and the Vaccine Risk Awareness Network [VRAN]. The Public Health Agency of Canada [PHAC] and ImmunizeBC were also found in the list of websites.

However, when the phrase, *why not immunize* was used, eight out of the ten top search results were from disreputable sources, including Yahoo Voices, www.naturodoc.com, and www.vaccineriskawareness.com. This investigation demonstrates that parents who are unfamiliar with modern media, especially the Internet,

may locate inaccurate information which may cause them to question childhood immunization and create unwarranted concern. This finding is similar to studies conducted by Davies et al. (2002) and Wolfe and Sharp (2005), who found that the keyword *vaccination* resulted in more antivaccination websites, compared to the keyword *immunization*. According to Davies et al. (2002), “there is a high probability that parents will encounter elaborate antivaccination material on the World Wide Web” (p. 22).

The literature suggests that modern media, such as the Internet, is instrumental for parents in accessing health information, such as information on immunization. However, the World Wide Web also has the potential to portray inaccurate information on vaccines, which may contribute to parent’s concerns and/or refusal of vaccines.

Physical Environment

The physical environment factor identified by Sturm et al. (2005) relates to the incidence of vaccine-preventable diseases. Hilton et al. (2006) found that parents have fewer experiences with the severity of vaccine-preventable diseases, as these diseases are no longer a threat to their children, and as a result are not reminded of the importance of immunization. Similarly, Stevenson (2009) suggests that the threat [or lack of threat] of vaccine-preventable diseases influences parents’ decision-making process regarding childhood immunization.

Another researcher (Marfe, 2007) proposes that the question whether or not to immunize a child is a dilemma for parents. Parents make their decision based on risks of the disease versus the vaccine. In addition, the success of immunization is affecting the decisions made by parents, because many parents today are not aware of the

complications of vaccine-preventable diseases, and consequently it is difficult to realize the benefits of immunization (Marfe, 2007).

According to Callreus (2010), immunization decision-making is a component of the global connectedness that is currently in effect. In addition to trust, factors such as new pandemics, new infectious diseases, bioterrorism, vaccine technology, and global warming all contribute to parental decision-making regarding immunization.

As summarized above, the lack of exposure to vaccine-preventable diseases may influence parents' decision-making process.

Interface with Health Care

Current literature addresses the influence of the health care system and health care professionals' role in parents' understanding of childhood immunization and their decision-making process. According to Wu et al. (2008), trust in health care providers has a positive effect on immunization rates.

In their review of barriers to immunization, Mills et al. (2005) found a number of themes relating to interface with health care, including: issues of distrust, access issues, and unpleasant staff experiences or poor communication. According to Downs et al. (2008), sources of vaccine information, namely the Internet and alternative medicine practitioners, such as homeopaths, may influence parental refusal of vaccines.

Quantitative studies by Bedford and Lansley (2006), Gellin, Maibach, and Marcuse (2000), and Gust et al. (2005), indicated that parents receive information from a variety of sources, including health visitors, immunization handouts, physicians, nurses, and alternative health practitioners. According to Oxford Dictionaries (2013), a *health visitor* is a British term for a registered nurse who visits people in their home to assist

with chronically ill patients or parents with infants and young children. The term health visitor is often interchanged with the role of a community health nurse.

In a mixed-method study conducted in Detroit, Michigan by Baker et al. (2007) with 30 mothers, when asked about sources of vaccine information, 76% of mothers said they obtained information from physicians, 66.6% from clinic nurses, and 30% obtained information from the Internet.

Bigham et al. (2006) conducted a cross-sectional survey of Hepatitis B immunization with 487 parents of infants in British Columbia, Canada. The authors found that parents perceive physicians and public health nurses to be the primary sources of immunization information. Parents' attitudes toward Hepatitis B immunization was strongly influenced by a positive recommendation from a physician or a nurse (Bigham et al., 2006).

In their quantitative study using the hesitancy questionnaire with 86 participants in Utah, Luthy et al. (2009) found that the most common sources of vaccine information included: health care providers (70.9%), family members (12.8%), local health department (11.6%), and the Internet (9.3%). In contrast, Downs et al. (2008) reported that of the 30 parents in their study, 33% said they would consult their physician or a government source for information on vaccines and 70% of parents indicated they would look on the Internet because it was convenient.

A qualitative study in Texas was conducted that included interviewing 25 parents who did not immunize their children (Gullion, Henry, & Gullion, 2008). According to these authors, the participants in their study placed high value on scientific knowledge and evidence-based information found in peer-reviewed journal articles, but they also

expressed high levels of distrust in the medical community. Most of the participants (88%) identified their lifestyle as “alternative”, which included organic gardening, natural healing practices, and chiropractics as a source of health care (Gullion et al., 2008).

In a quantitative study by Bedford and Lansley (2006), 859 parents in the United Kingdom completed questionnaires about the role of health care professionals in making an informed choice about immunization. The researchers found that 76% of participants obtained advice from a health visitor, 31% of participants obtained advice from a general practitioner, 34% from their practice nurse, and 15% sought information from a midwife. 39% of parents pursued advice from their friends, and 28% turned to their family. Twenty-nine percent of participants used the Internet, and only two percent received information from an alternative health practitioner (Bedford & Lansley, 2006). Notably, immunization rates were higher for children whose parents obtained information from health care professionals and immunization handouts versus an alternative health practitioner (Bedford & Lansley, 2006). The authors also discovered that “trusting the healthcare professional who is communicating information on immunization has been described as pivotal in determining whether or not parents will decide to have their child immunized” (p. 255).

These results are supported by Gust et al. (2008), who suggest that parents who changed their mind about delaying or refusing childhood immunizations did so following the receipt of information or assurances from a health care professional. In his article, Smith (2010) also mentions that sometimes parents are skeptical of vaccine clinical trials which may be associated with pharmaceutical companies, federal agencies, such as the Centers for Disease Control [CDC], and the medical profession. However, Smith (2010)

notes that “physicians are the most influential source of immunization information for parents, including those parents who believe that vaccines are unsafe” (p. 39). Smith (2010) suggests that a trusting relationship between a physician and parents is essential in overcoming vaccine concerns.

Tarrant and Thomson (2008) revealed that the parents involved in their qualitative study, conducted in Hong Kong, indicated that they trusted physicians and public health nurses working in public immunization clinics more than private physicians. Study participants stated that the public physicians and public health nurses were reliable and trustworthy (Tarrant & Thomson, 2008). This research study relates to countries who offer public and private healthcare, which is currently not the situation in Alberta, where all routine childhood immunizations are provided free of charge by the provincial government.

According to Walther (2011), parents sometimes assume that health care professionals earn money based on the number of vaccines given in a specific time period which, based on my professional role as a public health nurse administering vaccines in Alberta, is certainly false information.

Interface with health care also influences parents’ immunization decision-making process, as discussed by Austin et al. (2008), and includes factors such as trust and/or mistrust of health care professionals and feeling pressure from professionals to immunize. Interestingly, according to Austin et al. (2008), parents who choose to not fully immunize their children trust health care professionals less, and conclude that relationships with health care professionals are very important throughout the immunization decision-making process.

Austvoll-Dahlgren and Helseth (2010) noted a similar point in that “parents’ decision-making about childhood immunization was found to be based on trust, common-sense, and experiences” (p. 2426). Similarly, Callreus (2010) reports that trust of health care professionals and public health interventions is essential for parents and the general public when considering the importance of immunization.

A qualitative study exploring 33 mothers’ decision-making about childhood immunization was conducted by Benin et al. (2006) in Connecticut, USA. Three main domains or themes related to decision-making were developed. These themes were devised based on the interviews with the mothers, where the focus seemed to be the central concept of trust and who they could trust on the topic of immunization (Benin et al., 2006). The first domain, namely, *key sources of information*, summarized that those who immunized received information from a pediatrician while mothers who did not immunize obtained information from a homeopath or naturopath (Benin et al., 2006). The second domain was *promoters of accepting immunization*, and those who immunized largely trusted their physician. The third domain outlined was *inhibitors of accepting immunization*, and factors in this domain included: fear of error, belief that the vaccine would not protect against disease, mistrust of medical professionals, and vaccine fears and safety concerns (Benin et al., 2006). The authors conclude that a trusting relationship between parents and caregivers is essential relating to the issue of immunization.

As discussed above, parents seek information from a variety of health care professionals when deciding whether or not to immunize their child(ren), and the information obtained can either positively or negatively affect their decision to participate in childhood immunization.

Institutional Factors

Institutional factors include government agency policies and legal mandates for immunization. This concept was not explored thoroughly in the review of the literature, as childhood immunization is not mandatory in Canada.

According to a quantitative study by Kennedy, Brown, and Gust (2005), parents' opposition to compulsory immunization for school entry in the United States is associated with negative parental attitudes regarding vaccine safety and importance to a child's health (Kennedy, Brown, & Gust, 2005). However, Kennedy et al. (2005) also note that communicating effectively with parents and providing information about vaccines, risks, and vaccine-preventable diseases may reduce opposition to compulsory immunization for school entry. In Alberta, immunization is not mandatory for school entry and immunization programs are not compulsory, as this would violate autonomy of persons and freedom of choice, as outlined in the Canadian Charter of Rights and Freedoms (2011). Cost may also be an issue for some parents (Diekema, 2005), although this is not an issue in Canada where all routine childhood vaccines are provincially-funded.

The literature discussed above has been summarized according to the five factors identified by Sturm et al. (2005) in their conceptual model of immunization decision-making, and include: personal factors, socio-environmental factors, institutional factors, interface with health care, and the physical environment. The following section of this chapter focuses on the concept of risk.

Risk

As outlined previously in several sections of this chapter, the perception of risk is a significant factor which influences immunization beliefs and perceptions, as well as the decision whether or not to immunize. In this section, the significance of risk, pertaining to the topic of childhood immunization, is discussed.

Risk Perception

The definition of the term *risk perception* is “the evaluation or judgment of the likelihood of harm” (Hilliar, 2006, p. 38). Harm has varying levels of severity, ranging from mild illness, injury, or disease, to severe injury, or even death (Hilliar, 2006). Individuals evaluate risks, using probability measurements and relative risks, however, there is more involved in risk perceptions (Hilliar, 2006). The author also notes that individuals’ risk perceptions are based on their worldview, their beliefs, experiences, and their social values. When one considers risk perceptions, one must realize that people are different, risks are different, probabilities may be difficult to interpret, and debates about risk are made in a social and political context (Bennett, Calman, Curtis, & Fischbacher-Smith, 2010). According to Hilliar (2006, p. 27), “there is a growing awareness that risk is a social and cultural concept and that risk perceptions depend less on the nature of the hazard than on the political, social, and cultural contexts in which they take place.”

Hilliar (2006) suggests that risk perception is influenced by two primary factors, namely gender and worldview. Interestingly, men tend to evaluate risk as smaller and less concerning than women, however, this explanation is mainly focused on social and biological factors (Hilliar, 2006). Worldview involves social, cultural, psychological,

and political factors that impact people's judgments about issues, such as risk perception (Hilliar, 2006), which applies to the current research study.

Risk Assessment and Decision-Making

Risk assessment is a complex process, which is composed of risk analysis and risk acceptability (Fischbacher-Smith, Irwin, & Fischbacher-Smith, 2010). Risk analysis includes identification of the risk, estimating the risk, and analyzing the consequences of the risk (Fischbacher-Smith et al., 2010). Risk acceptability involves risk communication, public versus expert perceptions of risk, understanding science, the burden of proof, and the cost-benefit analysis (Fischbacher-Smith et al., 2010). According to Slovic, Fischhoff, and Lichtenstein (2000), "any risk-benefit analysis must ultimately answer the question: how safe is safe enough" (p. 45).

According to Hilliar (2006), risk decision-making is often conducted within a context of beliefs and values. There are numerous factors that influence individual health risk decision-making, which include: 1) perception, 2) social influences, 3) experience, 4) knowledge, 5) significant others, 6) power, 7) desire, 8) religion, 9) sub-culture, and 10) dominant culture (Hilliar, 2006). These factors form a foundation from which individuals make a decision.

Risk Communication

Communicating risks effectively is very important, which involves a high level of understanding. Risk perceptions may depend largely on how the relevant information is presented (Slovic, Fischhoff, & Lichtenstein, 2000). According to Hilliar (2006), risk communicators cannot attempt to change or influence others beliefs without recognizing the basis of those beliefs. Understanding one's belief system allows for appropriate risk

communication to take place. Risk communication is effective when individuals are able to put the described risks into perspective, and gain insight into their particular attitudes or point of view. However, risk communicators can also fail by creating inappropriate responses in individuals, such as worry and stress (Fischhoff, 2010).

Fischbacher-Smith et al. (2010) and Slovic (2000) note that professionals with experience in risk communication and the lay public may have different perspectives on risk, and respecting and understanding these differences is vital in creating strategies for effective risk communication. Trusting relationships with risk communicators and health care providers is essential when discussing health risks (Fishbacher-Smith et al., 2010; Hilliar, 2010; Slovic, 2000). The authors found that trust was characterized by confidence in the risk communicator and open, honest dialogue. In contrast, Rogers and Pilgrim (1996) suggest that public risk experts focus on population level risk of infection, and may ignore the views of individuals when assessing and communicating risks.

According to Slovic (2000), there are a number of limitations of the public's understanding of risk. These include the fact that people's perceptions of risks are often inaccurate, due to past experiences, and risk information may frighten and frustrate the public, which speaks to the need for appropriate risk education and communication (Slovic, 2000). In addition, strong beliefs are difficult to modify, and naïve views are often manipulated by the manner in which information is presented (Slovic, 2000).

Risk Perceptions and Immunization

A study with college students was conducted by Slovic, Fischhoff, and Lichtenstein (2000) to understand risk perception with 90 hazards and 18 risk characteristics. Vaccination was included in this study, and the researchers found that overall, the mean perceived risk score was 24 or relatively low, and the mean perceived benefit score was 77, or relatively high (Slovic et al., 2000).

Slovic (2000) conducted another survey on risk perceptions of prescription drugs, including vaccines, which was administered to the Swedish adult population. The author found that vaccines were on the lower end of the risk scale, with the degree of risk at approximately 2.5, on a scale of one to seven. Cigarette smoking was the highest perceived risk, and vitamin pills were the lowest perceived risk (Slovic, 2000). On the degree of benefit scale, vaccines were on the higher end of the scale, with the degree of benefit score at approximately six, on a scale of one to seven (Slovic, 2000). These results indicate that the study participants perceived the benefit of vaccines to be greater than the risk of vaccines.

In an article addressing vaccine resistance and risk, Hobson-West (2003) discusses how parents make decisions based on risk calculations. Risk calculations can either encourage parents to make negative decisions or positive decisions regarding childhood immunization, and that “any public resistance” to vaccines “can be explained as a miscalculation of risk” (Hobson-West, 2003, p. 276). In this article, Hobson-West (2003) also makes three assumptions about risk:

First, that individuals make decisions through a comparison of individual risk; second, that public concern about vaccine is due to a miscalculation of risk; third, that a policy of providing more risk statistics is the best response to the controversy. (p. 273)

Hobson-West (2003) mentions that perhaps another way of thinking about vaccine resistance is through the concept of uncertainty, rather than risk perception. In conclusion, the author outlines that immunization is more of a process than one particular action, and the decision to immunize or not may be influenced by other factors than risk; however, risk perception remains an important indicator of immunization decision-making.

Rogers and Pilgrim (1996) expressed a different view on immunization risk perceptions. They mention that public health professionals focus on the risks of childhood infectious diseases, such as vaccine-preventable diseases, which does not accurately reflect their degree of risk. According to Rogers and Pilgrim (1996), compared to environmental pollution, violence, accidents, and AIDS, the dangers associated with vaccine-preventable diseases are minimal. The authors conclude that despite this fact, mass childhood immunization programs continue to exist.

As outlined previously in this chapter, Tarrant and Thomson (2008) conducted a qualitative study in Hong Kong and found that parents based their decision to immunize their children on risk/benefit perceptions, and overall, parents felt that the benefits of immunization outweighed the risks. A number of participants were concerned about adverse effects of immunization, however, did not feel that there was a high possibility that their child would encounter any of these effects (Tarrant & Thomson, 2008).

As summarized above, the perception of risk is an important factor influencing immunization beliefs and perceptions. In this section, risk perceptions, risk assessments and decision-making, risk communication, and the perception of risk regarding immunization were discussed. Risk calculation is different for each individual, each risk,

and each situation, and as such, it should be considered an important personal factor in the immunization decision-making process.

Health Care Professionals

The third and fourth research questions, used to guide this study, provide the context for a discussion of the literature on health care professionals and immunization.

The research questions are as follows:

- How do health professionals perceive non-immunizing mothers' understanding of immunization and their decision not to participate in childhood immunization?
- How does the understanding and decision-making process of mothers compare with the perceptions of health care professionals regarding childhood immunization?

Literature was located on health care professionals' role in childhood immunization as well as their perceptions on the issue, which is summarized below.

Role of Health Care Professionals in Immunization Decision-Making

Several articles were located which outline the role of health care professionals in immunization decision-making. The thrust of the findings is that parents will often seek advice from health care professionals regarding their decision whether or not to immunize their child(ren), as discussed below.

In their quantitative study using the National Immunization Survey in the United States of America, Gust et al. (2008) discovered that parents who had doubts about vaccines indicated that advice or information from a health care provider was the primary reason why they changed their mind about delaying or refusing a vaccine. This indicates

that health care providers must provide appropriate information and recommendations to parents about their child(ren)'s health (Gust et al., 2008).

In his clinical report, Diekema (2005) found that when pediatricians were confronted by parents who refused to immunize their children, they attempted to educate the parents on the importance of vaccines. Interestingly, "a small number of pediatricians reported that they always (4.8%) or sometimes (18.1%) tell parents that they will no longer serve as the child's pediatrician if, after educational efforts, the parents continued to refuse permission for an immunization" (Diekema, 2005, p. 1428). Diekema (2005) outlined that the role of physicians in immunization decision-making is to respectfully provide parents with risk and benefit information and correct any misinformation.

According to Austin et al. (2008), "health care professionals' behaviour has been shown to influence immunization uptake strongly" (p. 34). In their quantitative study, conducted in the United States, Smith, Kennedy, Wooten, Gust, and Pickering (2006) similarly found that health care providers have a positive influence on parents regarding childhood immunization, including parents who have concerns about vaccines. Consequently, health care professionals should make an effort to build honest and respectful relationships with patients, especially when parents express concerns or misperceptions about vaccines.

These findings are echoed by Kuehn (2010), who affirms that recommendations for immunization by physicians can have positive effects on immunization rates and information about vaccines is most effective when given by a physician. This fact was re-affirmed by Smith (2010) who acknowledged that physicians are the most significant

source of vaccine information. Smith (2010) also makes mention of the importance of a trusting relationship between a physician and parents to overcome vaccine concerns.

Interestingly, Rogers and Pilgrim (1996) had very different views of the role of health care professionals or health promoters with mass childhood immunization programs. They suggest that health promoters, such as physicians, persuade parents to immunize their children, rather than allow the parents to make the decision. In addition, Rogers and Pilgrim (1996) proposed that mass childhood immunization programs are concerned with uptake, rather than consent, and consequently the risks of immunization versus natural infection are not clearly portrayed.

According to Leask et al. (2008), who conducted a quantitative study and investigated the immunization knowledge, attitudes, and practices of health care professionals in New South Wales also found that health care professionals are often the primary source of advice regarding immunization.

Smailbegovic, Laing, and Bedford (2003) conducted a quantitative study with parents of children in London, England, to explore the knowledge, attitudes, and concerns of 76 parents of non-immunized children regarding immunization. According to Smailbegovic et al. (2003), the immunization decision-making process is complex, and advice from health professionals during the decision-making process can be helpful to parents. However, some parents feel the information obtained by health professionals is biased and information on the safety of vaccines is withheld (Smailbegovic, Laing, & Bedford, 2003). The authors also discovered that in a small number of cases, health care professionals advised their clients not to immunize their children, and in other situations,

were told to separate the MMR [measles, mumps, and rubella] vaccine into separate injections.

In a qualitative study conducted in Norway, Austvoll-Dahlgren and Helseth (2010) conducted interviews and focus groups with 10 parents and 16 public health nurses. The authors found that public health nurses are important sources of vaccine information, but they “tended to inform to facilitate vaccinations” (p. 2421). Some parents perceived the information as biased towards the positive effects of immunization and the information was too general, with little differences identified between vaccines (Austvoll-Dahlgren & Helseth, 2010). Austvoll-Dahlgren and Helseth (2010) conclude that inadequate information can lead parents to feel uncertain about the decision they made.

The study by Austvoll-Dahlgren and Helseth (2010) also found that public health nurses felt that they were important sources of information and support, and a trusting relationship is crucial when advising parents about childhood immunization. Overall, the three factors which influenced parental decision-making regarding immunization were trust in the recommendations by health care professionals, a common-sense perception that vaccines should be administered, and experiences with family and friends (Austvoll-Dahlgren & Helseth, 2010). The results of this study indicate the importance of a trusting relationship between public health nurses and their clients who are involved in a decision-making process regarding childhood immunization.

Health care professionals, such as pediatricians, physicians, and public health nurses, play an important role in the immunization decision-making process. The above-mentioned research studies highlight a need for health care professionals to provide

appropriate, timely, and accurate information about immunization to their clients. The importance of a trusting relationship between health care professionals and patients is also demonstrated.

Perceptions of Health Care Professionals Regarding Immunization

Several researchers discussed the perceptions and attitudes of health care professionals, including immunization providers, as well as physicians and chiropractors. Perceptions of health care professionals toward vaccines range from positive to negative, as summarized below.

In a quantitative study conducted in Australia, Leask et al. (2008) aimed to discover attitudes and knowledge of health care professionals, including general practitioners, practice nurses [i.e. nurses working in primary health care or general practice], early childhood nurses, community nurses, midwives, and hospital nurses. Leask et al. (2008) found that 97% of respondents considered vaccines to be safe, 98% thought vaccines were effective, and 96% considered vaccines to be necessary. Several health care professionals outlined a number of concerns regarding vaccines, including the notion that children receive too many vaccines in their first years of life, harmful additives to vaccines, overloading the immune system with concurrent vaccines, and that complimentary health practices reduce the need for childhood immunization (Leask et al., 2008).

Health care professionals also had varying degrees of support for individual vaccines, with highest support of polio vaccine at 95% and lowest support of varicella vaccine at 79% (Leask et al., 2008). Leask et al. (2008) found that community nurses reported more confidence in answering questions about immunization compared to

hospital nurses and midwives, and nurses who had also received immunization accreditation training also felt more confident in their abilities to answer parents' questions. The findings from this study suggest that immunization education is important for health care professionals to provide accurate information to parents. This study also proposes that immunization is widely supported by this particular nursing community.

Immunization Providers

A quantitative study was conducted by Pielak et al. (2010) to examine the attitudes, beliefs, and practices of 344 nurses and 349 physicians who provided immunizations in British Columbia, Canada. The results indicated that more nurses than physicians felt that administering all recommended vaccines at one clinic appointment was important. More nurses also experienced pressure from parents to administer all the recommended vaccines, and most nurses and physicians agreed that administering multiple injections at one visit would not increase the incidence of adverse reactions, make the vaccine less effective, or overwhelm the child's immune system (Pielak et al., 2010).

According to Pielak et al. (2010), 80% of nurses felt that offering all recommended vaccines was important at each visit, compared to 65% of physicians. Interestingly, most physicians felt that offering vaccines at each visit was time-consuming. Finally, over 85% of nurses and physicians believed that personal immunization with influenza vaccine was important, and over half of all respondents thought that influenza immunization should be mandatory for health care professionals (Pielak et al., 2010). This study is very beneficial because it provides statistical information on the attitudes and beliefs of immunization providers in British Columbia,

Canada; however, of importance to note is that in Alberta, childhood vaccines are not administered by physicians.

Physicians

Overall, limited literature was located regarding physician and pediatrician perceptions, attitudes, and beliefs regarding immunization in general. Numerous articles were located dealing with physician perceptions of certain vaccines, including H1N1, varicella, rotavirus, influenza, human papillomavirus, and pertussis. There were also numerous articles addressing specific population groups to whom immunization is targeted, such as adolescents, health care providers, the elderly, and adults.

In a quantitative study conducted in Italy, 156 pediatricians were sampled regarding their immunization knowledge, attitudes, and behaviours (Anastasi, Di Giuseppe, Marinelli, & Angelillo, 2009). The researchers found that the pediatricians' knowledge about vaccines for children was quite low with 42.3% of respondents aware of the recommended vaccines. Only 10.3% reported a positive attitude toward recommended immunizations for infants, which is very low (Anastasi et al., 2009). This study suggests that pediatricians may lack information on immunization, which can affect uptake of vaccines among parents.

A quantitative research study in the United States to examine the proportion of physicians who recommend childhood vaccines, as well as the characteristics and attitudes of physicians who do not recommend childhood vaccines (Gust et al., 2008). The study was limited to pediatricians ($n = 250$) and family physicians ($n = 484$) who met at least five pediatric clients a week. Eleven percent of physicians did not recommend all appropriate childhood vaccines to parents, and family physicians were more likely not

to recommend all available vaccines compared to pediatricians (Gust et al., 2008). The physicians who reported not recommending all vaccines stated that they were either neutral or had concerns about childhood immunization. Another interesting finding from this study is that the physicians who did recommend immunization reported the Internet and magazines as their most trusted sources of information. The researchers concluded that personal characteristics are associated with not recommending all childhood vaccines (Gust et al., 2008).

Chiropractors

The Canadian Chiropractic Association [CCA] created a position statement on Vaccination and Immunization in 1991 which states that immunization is a well-established policy and the CCA supports immunization as an effective and efficient procedure (CCA, 2012). The CCA also outlines that immunization is not within the chiropractic scope of practice and it is not a chiropractic issue, however, chiropractors may be consulted on the topic of immunization by their clients, as summarized in greater detail below.

In addition, the Alberta College and Association of Chiropractors [ACAC] (n.d.) has a position statement on vaccination, which states the following:

While immunization falls outside the scope of practice for the profession of chiropractic in Alberta, we recognize that vaccination is most commonly used to orchestrate the immune response to protect individuals against infectious disease. The ACAC supports each individual's right to freedom of choice in health care and full disclosure of information related to such a choice. When discussing health promotion and wellness, the ACAC urges members to encourage patients to responsibly evaluate and consider all information including benefits and potential risks related to any proposed intervention including vaccination (p. 4).

According to Khorsan, Smith, Hawk, and Haas (2009), although chiropractors do not administer vaccines, they are often perceived by their clients to be knowledgeable on

the topic of immunization, and clients may seek information from chiropractors regarding immunization. Chiropractors have differing opinions and beliefs regarding immunization; some fully support and accept immunization; however, there is also a portion of the profession that opposes the practice (Khorsan et al., 2009).

A survey of 643 chiropractors in Alberta in 2002 found that 60% of respondents expressed some interest in immunization awareness and promotion (Khorsan et al., 2009). According to Khorsan et al. (2009), chiropractors “have a professional responsibility to provide accurate, unbiased (both positive and negative) information based on sound scientific evidence. This information is necessary in supporting the patients’ ability to make a truly informed choice” (p. 501). This study demonstrates the need for health care professionals to provide impartial information to clients, so parents can make a decision that they are satisfied with.

In 2006, a qualitative study was conducted in Calgary, Alberta, employing semi-structured interviews as the method of data collection with fourteen chiropractors (Page et al., 2006). The authors found that conversations about immunization may be initiated by clients or chiropractors, and only one chiropractor indicated he would advise his clients to immunize. Most chiropractors stated they would provide information to their clients, so they could make an informed decision, and a proportion of the chiropractors indicated they would provide information that was anti-immunization to their clients (Page et al., 2006).

A secondary analysis of cross-sectional survey data of Alberta chiropractors in 2009 examined the link between chiropractors’ personal immunization perceptions and decisions, the immunization status of their children, and their practice on referring clients

for immunization (Medd & Russell, 2009). The study results indicated that of the 325 chiropractors who were involved, 92.6% had never been immunized, and only 35.7% stated they would accept future immunizations. In addition, 66.8% had at least one child who was immunized, and only 21.8% of respondents indicated they would refer their clients for immunizations (Medd & Russell, 2009). Medd and Russell (2009) concluded that there is consistency among chiropractors in Alberta in their personal beliefs toward immunization and professional actions. They also discovered that chiropractors whose children are immunized are more likely to recommend immunization to their clients.

The current research study expands on the literature, summarized above, to determine the perceptions of chiropractors toward immunization and non-immunizing mothers' understanding and decision-making regarding childhood immunization specifically in Southern Alberta.

Summary of Literature Review

Overall, it was discovered that there is a significant amount of published literature on immunization. Current literature addresses barriers to immunization and immunization attitudes and beliefs. Several researchers studied parental beliefs in relation to immunization and discussed the benefit/risk analysis on the immunization decision-making process.

It became apparent that various studies which relate to this topic are conducted quantitatively, through surveys or questionnaires, while the goal of the current research study is to understand this issue from a qualitative viewpoint. A qualitative research study on the topic of immunization is beneficial for exploring this topic through spoken language and understanding the perceptions, experiences, beliefs, and social processes of

the participants I plan to interview, which may inform future quantitative research studies.

Although considerable literature has been located on this topic, few studies examined immunization practices in Canada. Canadian studies were found; however, these studies were investigating specific vaccines, such as the Human Papillomavirus, H1N1, and Influenza vaccines, rather than childhood immunization in general.

No literature was located which examined the perceptions of health care professionals on mothers' understanding and decision-making regarding immunization and no literature was encountered which compares non-immunizing mothers' understanding of immunization and the perceptions of health care professionals regarding mothers' understanding of childhood immunization.

In conclusion, the current research study expands on the present literature to include a deeper understanding of how mothers formulate decisions not to participate in childhood immunization, explores the perceptions of health care professionals, as well as compares the understanding of non-immunizing mothers to health care professionals' perceptions of mothers' understanding of childhood immunization.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

This chapter focuses specifically on the research design which guided the current study, and includes the research questions, theoretical framework, research design, research method, sampling, data collection method, data analysis, and ethical considerations.

Research Questions Reexamined

This study addressed the following research questions:

- 1) How do mothers develop an understanding of immunization?
- 2) How does mothers' understanding of immunization influence the decision-making process not to participate in childhood immunization?
- 3) How do health professionals perceive non-immunizing mothers' understanding of immunization and their decision not to participate in childhood immunization?
- 4) How does the understanding and decision-making process of mothers compare with the perceptions of health care professionals regarding childhood immunization?

This study was informed by the theory of symbolic interactionism, through a qualitative grounded theory method, which guided an understanding of mother's perceptions, attitudes, knowledge, and behaviours toward childhood immunization, and perceptions of health care professionals on the topic.

Theoretical Framework - Symbolic Interactionism

Definition of Symbolic Interactionism

This research study was guided by the theory of symbolic interactionism, which is a useful perspective for understanding humans and their actions and behaviours in the world they occupy (Burbank & Martins, 2009; Chenitz & Swanson, 1986; Mead, 1934). It also provides a theoretical framework for studying how individuals interpret others and how the process of interpretation leads to behaviour (Benzies & Allen, 2001; Moore, 2009). Mead believed that the social process of behaviour is guided by self, mind, and society (Chenitz & Swanson, 1986; Mead, 1934; Mead, 1964).

Origin of Symbolic Interactionism

The concept of symbolic interactionism was founded in 1934 by George Herbert Mead, who was a social psychologist (Mead, 1934). One of his students at the University of Chicago, Herbert Blumer, carried on with his work and ideas and established the theory of symbolic interactionism in 1937 (Benzies & Allen, 2001; Blumer, 1969; Burbank & Martins, 2009). At the University of Iowa, Manfred Kuhn (1911-1963), another prominent proponent of the theory, differed slightly in his approach in addressing the concept of symbolic interactionism (Benzies & Allen, 2001; Burbank & Martins, 2009).

As a result, two unique perspectives of symbolic interactionism were developed. The Chicago school viewed behaviour as driven by impulse and emphasized the interpretative process, which included understanding the world of the participant. As such, their focus was on qualitative theory, whereas the Iowa school understood behavior to be more structured and stable across individuals, and defined symbolic interactionism

using empirical methods, which is conducive to quantitative theory. However, both perspectives share methodological boundaries and view reality as having a social basis that is developed through interaction with others (Benzies & Allen, 2001; Burbank & Martins, 2009).

Common Components of Symbolic Interactionism

Burbank and Martins (2009) explain that behaviour or action is founded through interaction with self, by the thought process, and other individuals. Blumer identified three key notions that provide the basis of symbolic interactionism. They include:

- Human beings act towards things on the basis of the meanings the things have for them.
- The meaning of things is derived from, or arises out of social interaction that one has with others.
- These meanings are handled in and modified through an interpretative process used by the person in dealing with the things he or she encounters. (Blumer, 1969; Burbank & Martins, 2009, p. 27)

Symbols and words are of utmost importance to the symbolic interactionist theoretical framework (Burbank & Martins, 2009; Mead, 1934), which allows for close association with qualitative research, as qualitative research is based on language rather than statistics. Emphasis is placed on the symbolic interactionism process, and research is centered not only on an individual's knowledge, but also includes an understanding of the process of how one's point of view developed. Researchers focus on understanding the connection between shared meanings and human behaviour (Benzies & Allen, 2001; Jeon, 2004; Walls, Parahoo, & Fleming, 2010). Individuals experience themselves

through indirect contact with other individuals in the same social group by means of communication (Mead, 1934)

Symbolic Interactionism and Nursing Research

According to Burbank and Martins (2009), the theory of symbolic interactionism has been applied to numerous issues in health care, such as studying individual behaviour and nurse-patient interactions. Burbank and Martins (2009) also report that several qualitative research studies in nursing have used symbolic interactionism as a guiding theoretical framework. “Symbolic interactionism has been used as a framework for nursing research and knowledge development, focusing on language, symbols, and meaning at an individual level” (Burbank & Martins, 2009, p. 26). The nursing research that uses the symbolic interactionist perspective focuses on an individual’s understanding and beliefs, and orients research questions towards how individuals interpret meaning and take action (Benzies & Allen, 2001). Such research questions explore how participants attribute meaning to events and processes (Benzies & Allen, 2001).

Symbolic Interactionism and Research with Women

Crooks (2001) identifies how symbolic interactionism can guide research on women’s experiences.

We need to understand what women know; see what they see; understand what they understand; learn what they think is important; learn how they define their situation; learn how they act in the present, applying both past experiences and future plans; and learn how they solve problems. (p. 16)

As mentioned later in this chapter, this study focused specifically on non-immunizing mothers, rather than parents, because research demonstrates that mothers are closely involved in making decisions about health care for their children (Gross & Howard, 2001). This finding is echoed by Luman, McCauley, Shefer, and Chu (2003),

who report that “it is most often the mother who assumes direct responsibility for ensuring that her children receive proper preventative health services, including vaccination” (p. 1215). As a result, mothers possess unique knowledge, beliefs, and emotions on complex health issues, such as childhood immunization; as a researcher there was interest in learning more about this decision-making process.

Symbolic interactionism supports exploration of experiences and actions (Crooks, 2001). Crooks (2001) also identifies the benefit for female researchers in using symbolic interactionism when conducting research with women, as the “process of exploration is not passive, but reciprocal in that both researcher and the participant are transformed” (p. 17). This transformative process is expanded upon later in this chapter, as I discuss the personal impact of this research study.

The theoretical framework of symbolic interactionism is well suited to the research topic of non-immunizing mothers’ understanding of childhood immunization and their decision-making process because the guiding theory informs a comprehensive understanding of a mother’s perspective on immunization, which included perceptions, knowledge, meaning, beliefs, past experiences, and social interaction. The principles of symbolic interactionism assisted in exploring understanding and behaviours in an attempt to understand actions, which included whether or not a mother decides to pursue childhood immunization. Symbolic interactionism also informed the examination of health care professionals’ perceptions on immunization, which comprise their knowledge, personal beliefs, experiences, and interactions with clients and other professionals.

Qualitative Research Design

A qualitative research approach was utilized to explore the research questions listed previously in this chapter. Qualitative research “involves understanding the social world by seeking out other people’s interpretations of it” (Bryman, Teevan, & Bell, 2009, p. 128). Qualitative research is centered on the nature, explanation, and understanding of phenomena and is based on constructivist perspectives, which includes multiple meanings of individual experiences (Creswell, 2003; Ryan, Coughlan, & Cronin, 2009). The intent of this research study was to gain a deeper awareness of the development of immunization understanding and decision-making among mothers. Further, this research approach allowed for exploration of the perceptions of health care professionals regarding mothers’ understanding of immunization and the decision not to participate in childhood immunization.

One of the goals of qualitative research is contextual understanding, which was gained by an increased comprehension and awareness on this research topic. As outlined in Chapter Two, limited Canadian literature exists on mothers’ understanding of immunization and how they arrive at the decision not to immunize their child(ren), as well as the perceptions of health care professionals on this topic, which demonstrated the need for this qualitative research study to be conducted.

Grounded Theory

Bryman, Teevan, and Bell (2009) affirm that qualitative research methods utilize an inductive approach, from which theory is generated. The generation of a theory that is systemic, inductive, comparative, and grounded in and derived from data is called *grounded theory* (Bryant & Charmaz, 2007; Bryman et al., 2009; Glaser & Strauss,

1967). Grounded theory was developed in 1967 by two sociologists, Dr. Barney Glaser and Dr. Anselm Strauss, who asserted that theory development should be grounded in participants' experiences (Carpenter, 2011). Grounded theory methodology directs the researcher to conceptualize dimensions of the social processes that affect people's lives and the data generated reflects participants' views, feelings, intentions, and actions (Carpenter, 2011; Glaser & Strauss, 1967).

Grounded theory has expanded and changed since its development in 1967 by Glaser and Strauss (Carpenter, 2011). A split occurred between Glaser and Strauss in 1990, when Strauss published a book with Juliet Corbin, resulting in two differing approaches to the grounded theory research design, namely, Classic or Glaserian Grounded Theory and Straussian Grounded Theory (Carpenter, 2011; Glaser, 1998).

The aim of grounded theory is to construct a theory that explains and interprets the phenomenon of interest (Bryant & Charmaz, 2007; Ghezjeljeh & Emami, 2009; Jeon, 2004). Jackson, Gillis, and Verberg (2007) indicate that grounded theory researchers are interested in understanding how individuals interact, take action, or engage in a response process to a phenomenon of interest. Bryman et al. (2009) and Carpenter (2011) believe that a disadvantage to grounded theory is that often it is difficult to determine if the process results in a true theory, however, it can be considered an excellent approach to investigate a phenomenon of interest and has the ability to generate theories from data.

Grounded Theory and Symbolic Interactionism

Grounded theory has emerged from the theoretical framework, symbolic interactionism, which affirms that people construct meanings of phenomena based on interactions with one another in a social context (Bartlett & Payne as cited in Walls,

Parahoo, & Fleming, 2010). According to Chenitz and Swanson (1986), the symbolic interactionist perspective and grounded theory research method provide a means to study human behaviour and interaction. Symbolic interactionism provides an ontology, epistemology, and methodology for grounded theory research (Annells, 1996; Ghezjeljeh & Emami, 2009).

Symbolic interactionism and grounded theory are compatible in research, as the theoretical framework and the research method “assume an agentic actor, the significance of studying processes, the emphasis on building useful theory from empirical observations, and the development of conditional theories that address specific realities” (Bryant & Charmaz, 2007, p. 21). Symbolic interactionism and grounded theory allow for greater insight into the concept of *meaning*, specifically within the context of immunization understanding and decision-making in this study.

Grounded theory methodology was applied to this study as the purpose of the research was to generate a theoretical understanding of study participants’ development of immunization understanding and the immunization decision-making process, as described in the research questions. It also intended to generate theoretical concepts from the perceptions of health care professionals on this topic.

Straussian Grounded Theory Approach

I chose to follow the Straussian Grounded Theory approach to grounded theory because the Straussian approach allows researchers to conduct a literature review on the phenomena, utilizes research questions to guide the study, and recommends the use of an interview guide with open-ended questions. In addition, the purpose of data analysis is to

develop themes and concepts (Carpenter, 2011). A comparison chart of Classic and Straussian Grounded Theory can be found in Appendix E.

Glaserian or Classic Grounded Theory assumes a positivist approach, where the researcher assumes an objective reality, whereas Straussian Grounded Theory assumes a post-positivist approach (Ghezeljeh & Emami, 2009). Glaser, Strauss, and Corbin believe that the researcher should assume an objective, unbiased external reality, while giving voice to their participants and acknowledging their view of reality (Corbin & Strauss, 2008; Ghezeljeh & Emami, 2009).

A key attribute of this research study was allowing study participants to voice their perceptions, thoughts, experiences, and views on immunization, and in return their view of reality was acknowledged. It is important to note, however, that complete objectivity cannot be achieved in qualitative research, due to the involvement of the researcher in the study. To ensure this research was trustworthy, the strategies outlined by Lincoln and Guba (1985) and Strauss and Corbin (1998) were adhered to, which are also discussed in this chapter.

Grounded Theory and Nursing Research

Since the origin of grounded theory, researchers in the nursing profession have recognized its significance as a valuable method and have used it extensively, as it allows nurses to understand how individuals and families progress through major life events (Carpenter, 2011). Grounded theory also permits nurses to understand client behaviour in a particular area and provides insight into clients' experiences (Hernandez, 2010). Grounded theory can help explain gaps between theory, research, and nursing practice (Carpenter, 2011). Hernandez (2010) also outlines that grounded theory can be used to

enhance client-nurse relationships, improve client quality of care and quality of life, as well as serve to expand nursing knowledge. Allowing mothers and health care professionals to openly share their insights enhanced theory development in this research study.

Features of Grounded Theory

Grounded theory is comprised of several main features or strategies (Ghezeljeh & Emami, 2009; Jeon, 2004), which include:

- Theoretical sampling
- Simultaneous data collection and analysis
- Comparative methods
- Data coding
- Memo writing
- Theory generation

Theoretical Sampling

Theoretical sampling is the process of data collection where the researcher engages in simultaneous data collection and analysis to determine what data to collect next (Carpenter, 2011; Chen & Boore, 2009). According to Draucker, Martsof, Ross, and Rusk (2007) and Holton (2007), the process of data collection is directed by the developing theory. The goal of theoretical sampling is to ensure the sampling methods impact the rigor of the research study (Jeon, 2004).

Although I engaged in simultaneous data collection and analysis, which is a feature of theoretical sampling, purposeful and snowball sampling strategies were employed in this study, rather than theoretical sampling, because I had specific inclusion

criteria for both non-immunizing mothers and health care professionals, which guided data collection.

Constant Comparative Methods

According to Jeon (2004), comparative method refers to theoretical sensitivity, which must be maintained in every step of the research process. Theoretical sensitivity refers to the researcher's ability to abstain from forcing preconceived concepts and to generate concepts from data and relate them to similar theoretical models (Bryant & Charmaz, 2007; Chen & Boore, 2009; Holton, 2007). Theoretical sensitivity requires the researcher to engage in analytic temperament, as well as enter the research setting with as few predetermined ideas as possible (Chen & Boore, 2009; Holton, 2007). As I had personal and professional experience with this topic, I assured my predetermined ideas were outlined as explicitly as possible prior beginning this research project. I ensured sensitivity to the evolving concepts and theories by maintaining reflexivity, by way of journaling, throughout the research process.

Coding

Coding is the process of categorizing data during the analysis phase of the research study (Ghezeljeh & Emami, 2009; Jeon, 2004; Walker & Myrick, 2006). According to Holton (2007), "it is through coding that the conceptual abstraction of data and its reintegration as theory takes place" (p. 265). Codes provide an explanation to what is occurring in the data. The coding process also allows the researcher to determine when theoretical saturation has been achieved in the research study (Chen & Boore, 2009; Holton, 2007).

According to Strauss and Corbin (1998) there are three stages of coding in grounded theory. The first stage is called open coding, which is the process of examining, comparing, conceptualizing, and categorizing data into themes (Dey, 2004; Strauss & Corbin, 1998; Walker & Myrick, 2006). Axial coding is the second stage, which involves reassembling data into categories based on relationships within categories, and making connections between categories and sub-categories (Dey, 2004; Strauss & Corbin, 1998; Walker & Myrick, 2006). The third stage is selective coding, where the central phenomenon or core category is identified and described to generate a theory (Dey, 2004; Strauss & Corbin, 1998; Walker & Myrick, 2006).

Memo Writing

Memo writing is a means of ongoing, reflective dialogue for the researcher to assist in the development of theoretical codes (Ghezeljeh & Emami, 2009; Jeon, 2004; Strauss & Corbin, 1998). Memos are “written records of analysis”, which “grow in complexity, density, clarity, and accuracy as the research progresses”, and often depict the researchers’ analytic thought process (Corbin & Strauss, 2008, p. 117, 118).

According to Lempert (2007), memo writing is the most important process that results in the grounded theory. It is a process which assists the researcher in transforming data into theory, and enables the researcher to analytically interpret data (Chen & Boore, 2009; Jeon, 2004; Lempert, 2007). Social patterns in the data can be identified through the process of memo writing, which allows the researcher to explore, explicate, and theorize the social patterns (Lempert, 2007).

Theory Generation

Last, a theory is generated through the use of comparative analytic methods (Jeon, 2004). Comparative analysis enables the researcher to determine data saturation, which means no new conceptual dimensions or categories emerge from the data (Glaser & Strauss, 1967; Holton, 2007).

Research Setting

This research study took place in the geographical region of Southern Alberta. The geographical boundaries are as follows: west to the Alberta-British Columbia boundary; east to the Alberta-Saskatchewan boundary; north to Claresholm/Vulcan area; and south to the United States border. Study participants were recruited from a variety of urban and rural areas in Southern Alberta.

Sample

Qualitative sampling is based on quality rather than quantity, as researchers seek out study participants who offer rich descriptions of the chosen phenomenon (Nicholls, 2009). Purposive sampling is one of the most common sampling strategies in qualitative research and was applied to this research study. Purposive sampling “groups participants according to preselected criteria relevant to a particular research question” (Mack, Woodsong, MacQueen, Guest, & Namey, 2005, p. 5). Purposive sampling is most beneficial when review and analysis of the data occurs concurrently with data collection, thus, utilizing a constant comparative method (Chen & Boore, 2009; Mack et al., 2005; Morse, 2007). This is supported by the grounded theory research method, as grounded theory involves the constant comparison method in order for theory generation to occur.

According to Morse (2007) a key participant for a grounded theory study is one who has been through, or observed, the experience under investigation.

The purposeful sample in this study consisted of two groups:

- Mothers living in Southern Alberta who purposefully do not immunize their children. A sample size of eight mothers was achieved.
- Health care professionals in Southern Alberta, including pediatricians, a specialist physician, chiropractors, and public health nurses, who have a professional relationship with mothers and who can relate to childhood immunization. A sample size of 12 professionals was attained.

Recruitment of Mothers

Prior to data collection, I anticipated a sample size of approximately eight to ten mothers who chose not to immunize their children, because of the geographical area and small-scale nature of this qualitative research study. Data saturation occurred with a sample size of eight non-immunizing mothers. I was cognizant that data saturation occurred following eight interviews because new themes did not emerge and theoretical concepts identified by the mothers were well-defined and explained by the existing data (Corbin & Strauss, 2008).

I recruited non-immunizing mothers using posters (see Appendix F) at various locations in Southern Alberta where mothers and children gather. These locations included: Alberta Health Services Public Health Units across Southern Alberta, Alberta Health Services Children's Care Center, Lethbridge Family Center, local physician offices, local naturopathic and chiropractic offices, and the University of Lethbridge campus. However, there was limited response using this method of recruitment. I also

placed a small poster in a bulletin of a large faith community in Southern Alberta, which was a successful method of recruitment, however, not all the mothers who were interviewed belonged to this faith community, as I was interested in interviewing mothers from a variety of diverse cultural and religious backgrounds.

The snowball method of sampling was used to achieve a sufficient sample of non-immunizing mothers. Snowball sampling is an approach where a researcher makes contact with a small group of people who are relevant to the research phenomenon, and they are then used to establish contact with others within their social networks (Bryman et al., 2009; Mack et al., 2005). In this study, I initiated contact with a small group of mothers who do not immunize through the recruitment methods listed above, and in turn, they assisted in seeking out other mothers with similar beliefs about immunization. Study participants provided these mothers with my contact information and a number of mothers contacted me in this way. In addition, as interest in this study was minimal initially, a number of friends and colleagues of mine indicated they knew of mothers in their social networks who do not immunize their children, and offered to provide information on this research study and my contact information to these mothers, which was an effective method of snowball sampling, promoting an adequate sample for this study.

Recruitment of Health Care Professionals

A sample of eight to ten health care professionals in Southern Alberta who have a close relationship with non-immunizing mothers, including public health nurses, pediatricians, and chiropractors, was anticipated for this research study. However, due to the variety of health care professionals interviewed and their various beliefs and

perceptions on immunization, twelve health care professionals were interviewed to achieve data saturation – five of which were chiropractors, four were public health nurses, two were pediatricians, and one was a specialist physician. The specialist physician had expert knowledge on immunization, which I felt would be beneficial in this research study.

All health care professionals were recruited by means of a formal invitation letter to participate in this study, addressed to each professional individually (see Appendix G). Letters were mailed to a wide variety of chiropractors in both rural and urban settings in Southern Alberta using random sampling, and to all practicing pediatricians in Southern Alberta. Public health nurses were recruited from both urban and rural settings in Southern Alberta. Letters were sent to a number of public health nurses based on knowledge of these individuals and their employment locations.

A sufficient sample size was achieved with chiropractors by means of a letter; however, an additional chiropractor was sought following interviews with chiropractors as a result of one chiropractor expressing different beliefs than the other chiropractors. In consultation with my supervisor, I felt it would be appropriate to attempt to interview another chiropractor with similar perceptions on immunization. The chiropractor who initially interviewed was contacted for information on chiropractors with similar beliefs in Southern Alberta. This participant provided this information, and an additional chiropractor was recruited and interviewed to promote anonymity of participants and enhance research findings.

An appropriate sample of public health nurses was also attained by means of letters; however, letters to the pediatricians were followed up by a telephone call as no

response was initially received. Following phone contact, a sufficient sample size of pediatricians was reached.

Inclusion Criteria for Mothers

Sample inclusion data was unique for each group of participants in the study. Inclusion data for mothers who do not immunize their children included mothers living in Southern Alberta who have a child or children under the age of six years who purposefully have never been immunized with routine childhood immunizations. Routine childhood immunizations include the vaccines given in the first six years of life, namely: tetanus, diphtheria, polio, acellular pertussis, *Hemophilus influenza* type b (Hib), mumps, measles, rubella, varicella, pneumococcal conjugate, and meningococcal conjugate (refer to the routine immunization schedule for Alberta in Appendix H).

I specifically chose non-immunizing mothers, rather than non-immunizing parents, because of the intimate, emotional relationship mothers have with their children and the fact that mothers are often very closely engaged in making health care decisions for their children (Gross & Howard, 2001).

Inclusion Criteria for Health Care Professionals

I chose to include health care professionals according to the following criteria: health care professionals in Southern Alberta, namely public health nurses, pediatricians, and chiropractors, who have a professional relationship with non-immunizing mothers, and who may be sought for advice and information regarding childhood immunization. I was interested in interviewing public health nurses because they are directly involved with childhood immunization. Pediatricians were selected based on their expert knowledge of pediatric health and wellness. Chiropractors were chosen as literature

suggests that chiropractors are sought for information on the topic of immunization by parents (Medd & Russell, 2009; Page et al., 2006). In addition, media reports and anecdotal information suggest that chiropractors do not promote childhood immunization, and I was interested in exploring this perception further.

I located study participants in a variety of rural and urban communities in Southern Alberta to ensure a well-rounded sample. A specialist physician with expert knowledge on immunization was also recruited by means of a formal letter, as I felt this data would enhance the richness of this research study.

Data Collection

Semi-Structured Interviews

This qualitative research study employed interviewing as the means of data collection. DiCicco-Bloom and Crabtree (2006) and Ryan et al. (2009) specify that interviews are one of the most familiar and widely used means of data collection in qualitative research. Interviews are used to collect information on interviewees' beliefs, values, and experiences relating to the phenomenon of interest (Lambert & Loiselle as cited in Ryan et al., 2009). DiCicco-Bloom and Crabtree (2006) state that qualitative interviewing allows the participant to share meaningful explanations and enables the interviewer to reflect on, and interpret, the information provided. The purpose of qualitative interviewing "is to contribute to a body of knowledge that is conceptual and theoretical and is based on the meanings that life experiences hold for the interviewees" (DiCicco-Bloom & Crabtree, 2006, p. 314).

Specifically, I conducted semi-structured interviews, using an interview guide, as the means of data collection in this research study. This type of interview involves

guided open-ended questions that are intended to obtain views, beliefs, and perspectives of the interviewee (Bryman et al., 2009; Creswell, 2003; DiCicco-Bloom & Crabtree, 2006; Ryan et al., 2009). During the semi-structured interview, the researcher has a list of interview questions or topics; however, they can be asked in any particular order and the interviewee has the ability to respond to the questions openly. Bryman et al. (2009) and Ryan et al. (2009) state that qualitative interviews are flexible, which allows the interviewee to guide the direction of the interview.

While I had specific topics relating to perceptions, beliefs, and understanding of immunization and the decision-making process that I covered in the interview, I was also interested in allowing interviewees to freely express their ideas, opinions, and beliefs regarding this research topic, which added to the richness and depth of the data. I used an interview guide to ensure all questions I was interested in were addressed; however, these questions were not always explored in the order of the interview guide. I allowed participants to explore other thoughts and relate personal stories throughout the interview, which was beneficial. Often study participants would address a topic prior to the question being raised however, I often sought clarification or expansion of the topic following to ensure I had a clear interpretation of the topic. Probing or interpreting questions were used when a concept or idea was not completely well-defined to promote understanding of the research phenomenon. This method of data collection is consistent with grounded theory principles, where semi-structured interviews are recognized as a valid means of data collection and open-ended questions that allow the participants to discuss their feelings, concerns, and ideas are encouraged (Carpenter, 2011).

Interview Process

The interviews involved face-to-face contact in a natural, quiet setting in a location convenient to the study participants. Interviews were pre-arranged, and study participants were asked when the interview was arranged if they wished to be contacted the day prior to the interview to confirm the meeting. All interviews with mothers were held in their homes. Four interviews were conducted during evening hours when the children were asleep, three were held during the day while their children were napping or away, and one interview took place with the children present.

The interviews with health care professionals took place in their professional office environment at a time convenient for the participants. One interview was conducted by telephone. This interview was conducted in this manner because the health care professional was not able to commit to a specific interview time, due to the demands of professional practice. The consent document and demographic profile were faxed to this participant prior to the interview and a signed consent document and completed demographic profile were returned through confidential fax before the interview commenced.

At the beginning of each interview, I introduced myself, the study, and interview format to the participants and then obtained informed, written consent (see Appendices I and J). Participants were invited to ask questions or raise concerns prior to commencement of the interview. Informed consent implies that study participants “are given sufficient, understandable information to enable independent decision-making. Informed consent is a process that protects research participants from harm, while

protecting their autonomy, and assists researchers to avoid being deceptive and/or coercive” (Fry as cited in Länsimies-Antikainen et al., 2007, p. 147).

Länsimies-Antikainen et al. (2007) suggest that study participants should be given an explanation of the research purpose, risks, costs, potential benefits, and their right to withdraw from the study at any time without consequences, which was completed in this study. This statement aligns to the Tri-Council Policy Agreement (2010) which outlines that consent shall be documented, voluntary, and informed and can be withdrawn at any time. I ensured these explanations were outlined both verbally to all participants and clearly stated on the consent document. As a token of appreciation for the study participants’ time, a Safeway gift card in the amount of \$20.00 was given to each participant.

I referred to two separate interview guides; one for non-immunizing mothers (Appendix K) and another guide for health care professionals (Appendix L). The initial interview for each group was considered a pilot discussion, to ensure no topics or themes were omitted. Following the pilot interviews, no changes were made to the interview guide.

The interviews with mothers began with questions regarding their general understanding and beliefs of the concept of immunization, and then progressed to more specific questions on the topic of immunization and their decision-making process. The interviews with health care professionals began with questions regarding their personal beliefs and opinions of immunization and their relationship to non-immunizing mothers, followed by questions on their perceptions of non-immunizing mothers and their decision-making process. Bryman et al. (2009) and Ryan et al. (2009) outline that

sensitive and/or difficult questions should occur later on in the interview, which correlates to Swanson's (1986) view that demographic information should be obtained at the end of an interview when a relationship has been formed. As a result, factual demographic information, specific to each group, was gathered at the close of the interview, except for one individual who returned the demographic form by confidential fax.

The interview process allowed me to become familiar with mothers' development of immunization understanding, which consisted of knowledge, experiences, meaning, attitudes, beliefs, and social interactions pertaining to childhood immunization, as well as the decision-making process regarding childhood immunization. I also attempted to understand more fully the perceptions of health care professionals regarding non-immunizing mothers' understanding of immunization and their decision-making process.

I developed rapport with study participants by demonstrating respect and creating a safe and comfortable environment, which is consistent with recommendations by DiCicco-Bloom and Crabtree (2006). Another important aspect of developing rapport is active listening. Active listening is communicated both verbally and non-verbally, which includes non-judgmental behaviour, posture, facial expressions, and eye contact (Ryan et al., 2009). According to Ritchie and Lewis as cited in Bulpitt and Martin (2010), the qualitative interviewer requires the ability to establish rapport and empathy, a good memory, curiosity, active listening skills, and a clear, logical mind. I followed the recommendations outlined above and ensured my participants felt comfortable sharing personal information and feelings. Participants were able to share ideas and thoughts in an honest and open manner, and all participants completed the interview.

Data Management

The interviews, including the telephone interview, were recorded with a digital recorder, and I transcribed them verbatim. Brief notes were made during the interviews on important issues and key thoughts discussed. Directly following each interview, field notes were recorded that comprised of observations, including body language and reflections on the information collected, which is consistent with Bryman et al.'s (2009) thoughts that field notes should include key dimensions of what is observed and heard during the interview. I also engaged in memo-writing following each interview and throughout data analysis, which contributes to grounded theory development.

Interview transcripts, digital recordings, demographic information, consent documents, interview notes, field notes, and memos were stored in a locked cabinet in my work office at the University of Lethbridge, and all information remained confidential, which is in accordance with the Tri-Council Policy Statement (2010). Participants' names were removed from the transcripts and replaced with a pseudonym and an identifying code. All other identifying information, such as children's names, home location, and health care provider information was also removed from the transcripts and either replaced with a pseudonym or left blank. My thesis supervisor, Dr. Judith Kulig, accessed a number of my interview transcripts to assist with data coding; however, no identifying participant information was obtainable from these documents. I do not plan to destroy the information gained from this research study, as it may be used for future research. A clause was included in the consent form so study participants were aware of this fact. However, any hard or digital copies of the transcripts that Dr. Kulig accessed have not been retained by her.

Data Analysis

A feature of qualitative research is concurrent data collection and analysis (Green et al., 2007; Jacelon & O'Dell, 2005; Liamputtong, 2009; Ziebland & MacPherson, 2006), which is also in accordance with one of the strategies of grounded theory, namely simultaneous data collection and analysis (Bryant & Charmaz, 2007; Carpenter, 2011; Ghezaljah & Emami, 2009). According to Green et al. (2007) and Liamputtong (2009), researchers immerse themselves in the data in an attempt to understand the data obtained. I utilized the principles of grounded theory data analysis for this research study, which include the three stages of coding identified previously in this chapter.

Data Immersion

The initial responsibility of the researcher is data immersion, which, for this research study, included transcribing the interviews, reading the interview transcripts multiple times, listening to the interview recordings, reading the field notes, and creating notes and memos on the transcripts. According to Green et al. (2007), "data immersion brings about clarity of the part played by both the interviewer and the research participant, and lays the foundation for connecting disjointed elements into a clearer picture of the issue being investigated" (p. 547). Data immersion allows researchers to gain insight into the research phenomenon. Interviews were conducted from January 2012 to May 2012, and I assumed engagement in the obtained data over a lengthy period of time, namely from January 2012 to December 2012, to enhance the clarity of the research phenomenon. The length of time I was immersed in the data assisted with understanding and interpreting the research findings.

Use of NVivo

I utilized the electronic software program, NVivo, to assist in storing, managing, and analyzing data. According to Auld et al. (2007) and Bergin (2011), computer programs, such as NVivo, guide the development of theory, promote efficient data sorting and retrieval, and are capable of producing complicated comparisons.

Alternatively, there are advantages to completing data analysis manually [i.e. completing analysis on paper using the interview transcripts] which include the ability of the researcher to be fully immersed in the data. According to Auld et al. (2007), manual data analysis may allow for enhanced contextual understanding of the concepts or patterns which emerge from the data. Researchers are able to appreciate the data holistically, rather than in small sections (Auld et al., 2007). As such, I recognized the advantages to completing manual data analysis as well as using an electronic software program. I initially analyzed all data manually, using note paper, colored highlighters, and hard-copy interview transcripts. Once I had a clearer understanding of the emerging concepts and themes, I used NVivo to assist with organizing and further analysis of the data. This ensured accuracy of the coding process and allowed for deeper analysis and understanding of the data.

Coding

According to Bryman et al. (2009), coding is the most important procedure in grounded theory research. Coding is a process where the researcher examines the data, defines what it is about, and organizes it by common ideas (Bryman et al., 2009; Green et al., 2007; Jacelon & O'Dell, 2005; Liamputtong, 2009). According to Holton (2007), "it is through coding that the conceptual abstraction of data and its reintegration as theory

takes place” (p. 265). The aim of the coding process is to ensure the data that represents the same or similar phenomena are positioned under the same heading (Ziebland & MacPherson, 2006).

As mentioned previously in this chapter, there are three stages of coding in grounded theory, namely open, axial, and selective coding (Strauss & Corbin, 1998). During the open coding phase, I examined and “openly” coded the data to identify topics and concepts which were relevant to my research topic and questions. For instance, I began by openly coding data into a variety of topics, including beliefs, experiences, and sources of information. Open coding was completed manually by means of a note book and hard-copy interview transcripts using colored highlighters and codes in the margins.

During the axial coding phase, I reexamined the topics and concepts which were originally derived from the data during the open coding phase. Axial coding was completed both manually and using NVivo for both participant groups, and involved grouping the original concepts into various categories, sub-categories, and themes. For instance, I grouped the concept “sources of information” into a theme and added sub-themes under this concept, including media influences, health care professional involvement, journal articles, books, and anecdotal information.

During the selective coding phase, the categories that I considered salient and that aided in the development of theory, were selected and refined. This phase was also completed manually and using NVivo. I created numerous versions of diagrams of themes and processes to assist in understanding the developing theory and research data holistically.

The goal in the theory generation phase of data analysis is to ensure the research questions are answerable and the study concepts understood. I obtained insight into the development of mothers' understanding of immunization, the immunization decision-making process, as well as health care professionals' perceptions on non-immunizing mothers' understanding and decision-making. It was beneficial to compare the views of non-immunizing mothers and the perceptions of health care professionals regarding immunization understanding and the decision-making process to determine similarities and differences. My objective was to confirm that the themes identified in the research study were clear, and used to generate theoretical ideas, which is the purpose of grounded theory research. These themes and theoretical ideas are discussed in Chapter Five.

Ethical Issues Relating to the Interview Process

Four ethical issues regarding the interview process were considered, namely: reducing the risk of harm, ensuring participant confidentiality, informing participants about the intent of the study, and reducing the risk of exploitation (DiCicco-Bloom & Crabtree, 2006). These ethical issues follow the standards specified in the Tri-Council Policy Statement (2010).

First, I encouraged participants to share their experiences, knowledge, beliefs, perceptions, meanings, and values. I engaged in the art of active listening during the interviews, and ensured my personal values and beliefs regarding this research topic were not communicated to reduce the risk of harm and discomfort to the interviewee. I did not express my opinions on topics, regardless of whether I was asked by research participants. I did, however, feel that it was important for me to disclose the fact that I am a Public Health Nurse, and explained my intent for this research study to both non-

immunizing mothers and health care professionals prior to commencement of the interview. I did not sense any discomfort from study participants following disclosure of this fact and found all study participants to be open and honest and very willing to share information.

Second, I ensured participant confidentiality and anonymity during the research study, as discussed previously in this chapter. All identifying information was removed from interview transcripts and replaced with pseudonyms and an identifying code. Furthermore, to avoid the risk of identification and protect participant identities, a description of the mothers and health care professionals and their voices are not explicitly revealed in Chapter Four.

Third, I clearly communicated the intent of the research study to the study participants, which involved the exploration of the development of immunization understanding and decision-making, as well as perceptions of health care professionals. I outlined that my intent is to store the data indefinitely in a secure location, namely in my work office, as I may wish to re-visit the data for potential future research projects.

Fourth, I assured study participants were not exploited, and mention of the contribution of the interviewees has been made in this thesis. I also ensured that the participants were asked whether they would like an executive summary of the research findings, and all participants voiced their interest. This summary will be provided to all research participants through e-mail communication.

Ethical Considerations

The Human Subject Research Committee at the University of Lethbridge as well as the Ethics Committee of Alberta Health Services South Zone reviewed and approved this research study. Ethical approval was obtained by Alberta Health Services as public health nurses were included as study participants and are employed by Alberta Health Services. These application forms included information about the research project, including: research location, purpose of the study, subject description, recruitment, research procedures, privacy protection, potential risks and benefits, and consent (University of Lethbridge, 2010). The approval documentation from the University of Lethbridge and Alberta Health Services are included as appendices in this thesis (Appendices M and N). This research study also adhered to guidelines outlined in the Tri-Council Policy Statement (2010), regarding ethical conduct for research involving human subjects.

The research location, study description, recruitment, research procedures, privacy protection, and consent have been discussed in detail in the current chapter. In relation to potential risks and benefits of this study, as outlined on the *Application for the Ethical Review of Human Subject Research* form, I acknowledged that the research topic of interest, namely immunization understanding and decision-making, may be a sensitive issue for certain individuals. According to the Tri-Council Policy Statement (2010), research should involve “no more than minimal risk to the participants” (p. 37), and I believe this research study adhered to these guidelines. I also addressed this potential risk through non-judgmental behaviour toward study participants, utilized empathy and active listening in all participant interactions, and created a safe and supportive

environment where mothers and health care professionals could communicate openly. Prior to the commencement of the each interview, I informed the participant that I could provide information to counseling services if required following the interviews due to the sensitivity of the research topic, however, this was not necessary.

Evaluation Criteria

Trustworthiness of qualitative research is verified by establishing rigor (Lincoln & Guba, 1985). According to Lincoln and Guba (1985), trustworthiness of qualitative research studies includes credibility, transferability, dependability, and confirmability. Furthermore, Glaser and Strauss (1967) identify the criteria for evaluating the rigor of grounded theory research as credibility, plausibility, and trustworthiness. Strauss and Corbin (1998) also offer additional guidelines for evaluating grounded theory research. This research study includes the criteria identified by Lincoln and Guba as well as Glaser and Strauss and Strauss and Corbin to establish trustworthiness.

Trustworthiness

Trustworthiness of grounded theory research includes the four criteria by Lincoln and Guba, summarized below, as well as theoretical sensitivity and reflexivity. According to Hall and Callery (2001), theoretical sensitivity and reflectivity enhance the rigor of grounded theory research. In this research study, I remained open and reflexive during data collection, analysis, and write-up to ensure the research findings were grounded in the participants' experiences and data collected.

According to Chen and Boore (2009), in-depth knowledge of the topic under study can assist in theoretical sensitivity and reflectivity. My experience as a public health nurse and knowledge of the literature contributed to my awareness of the focus of

this study. To ensure I remained reflexive during data collection, I engaged in journal-writing on my thoughts, feelings, and emotions prior to data collection and following each interview. This is consistent with Hubbs and Brand's (2005) view that reflective journaling "provides a vehicle for inner dialogue that connects thoughts, feelings, and actions" (p. 62). A description of this reflective journaling experience and personal transformation is discussed later in this chapter.

Credibility. Credibility refers to the idea that each individual interprets the social world in a unique manner, and thus the researcher must ensure that the data interpretations are consistent with other individuals' views and understanding (Bryman et al., 2009). Glaser and Strauss (1967) indicate that researchers should present a characteristic illustration of the data and convey the credibility of the generated theory by outlining the procedures used for coding and analyzing data, as this allows readers to understand how the theory was derived from the data. According to Strauss and Corbin (1998), the researcher should include certain aspects of the research process, such as generation of major categories and concepts, relation of concepts, how the core category was selected, and significance of theoretical findings in the research report to demonstrate that the research process was credible and transparent. To align with this, I have included aspects of the research process, including the process used for coding data, how categories and concepts emerged, how the theory was generated, and the significance of the theoretical findings in this chapter.

Lincoln and Guba (1985) outline a number of techniques for ensuring credibility in qualitative research. Peer debriefing, one of the techniques mentioned, was utilized in this study. Peer debriefing involves meeting with someone who asks the researcher

searching questions, probes biases, explores meanings, clarifies interpretations, and assists with potential emotional conflict (Lincoln & Guba, 1985). I engaged in peer debriefing throughout this research study with my thesis supervisor, Dr. Judith Kulig, to ensure the credibility of my research.

Another technique mentioned by Lincoln and Guba (1985) is member checking, which involves the examination of data, categories, themes, interpretations, and conclusions by study participants. According to Lincoln and Guba (1985), member checking is the most important credibility technique. I allowed all study participants the opportunity to review their interview transcript following the interview for accuracy on facts and interpretations of ideas discussed (Bryman et al., 2009; Lincoln & Guba, 1985). Changes were made to the transcript as requested by the research participants. This technique was completed via e-mail correspondence.

I also chose two participants from each participant group to review the preliminary study findings prior to generation of this thesis, to ensure the findings were accurate and credible. These participants were chosen based on the depth and richness of their interview data. The participants responded to my request and indicated no concerns with the preliminary findings and ensured my research interpretations were acceptable.

Transferability. The second criterion for establishing trustworthiness is transferability, which refers to the researchers' "responsibility to provide the data base that makes transferability judgments possible on the part of potential appliers" (Lincoln & Guba, 1985, p. 316). Transferability is achieved through "*thick transcription*", which includes "rich, detailed accounts of a group's culture or people's experiences" (Geertz as cited in Bryman et al., 2009, p. 133). I assured transferability by ensuring the ideas,

beliefs, experiences, values, and perceptions of the mothers and health care professionals are outlined in considerable detail in Chapter Four of this thesis.

Dependability. Dependability is the fourth aspect of trustworthiness, and implies that researchers should establish an audit approach during the research study (Bryman et al., 2009; Lincoln & Guba, 1985). The audit approach involves keeping complete records of all the phases of the research study, including relevant literature, field notes, interview guides, interview transcripts and audiotapes, data analysis documentation, and consent documents, and ensuring that the records are accessible if needed (Bryman et al., 2009; Lincoln & Guba, 1985). I allowed my thesis supervisor to act as an auditor to ensure dependability of this study. I have described in detail the process of data collection, analysis, and interpretation in this chapter, as a means to indicate how the data was managed (Lincoln & Guba, 1985), which also provides a means to evaluate grounded theory research.

Confirmability. The fourth criterion for establishing trustworthiness is confirmability, which is closely associated with dependability, by means of the audit approach (Lincoln & Guba, 1985). Lincoln and Guba (1985) indicate that the audit approach is a major process for establishing confirmability and includes records of raw data, analysis documentation, study categories, themes, findings, conclusions, process notes, personal notes, and the interview schedule. I retained all the above records in a secure location, namely my work office, for the duration of the research study and this information will be securely stored for an indefinite period of time. I also ensured that research findings are found in the data, which establishes confirmability in the audit process (Lincoln & Guba, 1985). Glaser and Strauss (1967) and Jeon (2004) stress that

the generation of the theory in grounded theory research must be grounded in the data, which further enhances the rigor of the research.

Plausibility

Glaser and Strauss (1967) and Strauss and Corbin (1998) include plausibility as a criterion for evaluating rigor in grounded theory research. Plausibility can be defined “as the degree to which the research process and theoretical formulations fit reality, provide understanding, and are useful” (Hall & Callery, 2001, p. 259-260). My goal in this research study was to ensure the theoretical findings reflect the views, experiences, and perceptions of the participants and allow for greater understanding of this issue. I believe this goal has been accomplished as the theoretical findings of this study, outlined in chapters four and five, reflect the perceptions of the participants and promote an understanding of this issue at a deeper level.

Personal Transformation

As discussed in Chapter One of this thesis, my personal situation, namely, having close relationships with members of a large, predominantly non-immunizing population in Southern Alberta, and my professional situation, specifically working as a public health nurse in Southern Alberta, prompted my interest in this research area. However, as mentioned earlier in this chapter, I felt it was necessary to disclose the fact that I am a Public Health Nurse when I conducted interviews with study participants. This allowed for greater authenticity of this research and ensured trustworthiness. O’Connor (2011) states that it is important for researchers to provide an account of the research context and their background, and it is especially important when the prior knowledge and expertise of those engaged in the research study may impact the outcomes.

To ensure sensitivity to the evolving concepts and theories and to maintain reflexivity throughout the research process, as a result of my personal and professional situation, I engaged in journal-writing prior to data collection and following each interview. This closely aligns to what Bishop and Shepherd (2011) discuss in their research article on ethical reflection, where they suggest that “researchers are encouraged to identify, be sensitive to, and document how their social background, assumptions, positioning, and behaviour affect all stages of the research process” (p. 1283). Engaging in journal writing allowed me to explore my thoughts, feelings, and reflections on the interviews, the research participants’ perceptions of the issue, and my own personal and professional situation.

Prior to beginning this research study, I possessed very strong views of immunization and those who choose not to immunize their children. I was a passionate public health nurse and attentive to the health and well-being of infants and children. I had difficulty understanding this decision and was, to a degree, angry with parents whose children suffered from vaccine-preventable diseases, because I felt the children were dealing with the consequences of the parents’ decision.

I felt it beneficial to include an excerpt outlining my feelings from my personal journal prior to beginning data collection, found below:

As a public health nurse, I resented non-immunizing community members for allowing their children to suffer from vaccine-preventable diseases. As I gained knowledge on the topic, I could not understand why people choose not to immunize. I was also very angry at these community members for their lack of education and awareness of the issue. It bothered me that they were making uneducated decisions which affected their children for the rest of their lives. For successful completion of my graduate program, I knew I had much to deal with on a personal level for this topic to be an option for my thesis. I needed to work through my anger, resentment, and frustration toward my religious community and non-immunizing families in order to understand them. I needed

to come to terms with the fact that I cannot change people's beliefs and values. I cannot *change* their worldview – I can only seek to *understand* their worldview. I cannot be angry with them for the decisions they make because that is their philosophical orientation. To think that my perspective was superior to others is very narcissistic and damaging. Uncovering myself has led me to a place of understanding and empathy. It created a desire within me to explore this topic, not with the intent to change entire beliefs systems, but to appreciate the worldview of others. I realized that, in the past, I focused all my energy and attention on trying to *change* others, rather than seeking to *understand* them. As a public health nurse, I concentrated on promoting health, improving immunization rates, and changing people, rather than exploring and understanding their perspective on the issue. My self-awareness of this fact helped me understand what my goal is as a researcher, and how involved and “in-tune” I must be with myself throughout the research process. I realized that my responsibility as a researcher is to be true to my participants, their experiences, and worldview, and as such, it would be ethically and morally wrong of me to think I can change others, rather than understand them. I now recognize that I was clinging to my own anger and frustration toward non-immunizers, rather than exploring these feelings and working through them.

However, I was interested in learning more about the choices made by parents regarding immunization and what mothers specifically understood about immunization. I was keenly aware of my feelings and emotions on the issue of immunization, and realized that as a researcher, I needed to develop a method to maintain reflexivity throughout this research project. Engaging in reflective journaling was a very effective method of assuring reflexivity throughout the process, as I was able to accept and move beyond my previous feelings and emotions.

This research study transformed me as a person and as a researcher, primarily through the reflective journaling process I engaged in. As mentioned previously in this chapter by Crooks (2001), exploration is a process where the researcher and participant are transformed. My feelings and emotions toward non-immunizing mothers evolved through this research study, because I developed an *understanding* of why they choose not to immunize. I realized how difficult this decision was for them to make and how

their goal is the welfare of their children. Throughout data collection and analysis, I began to realize the complexity of this issue and the decision-making process, as there are numerous factors which influence the decision not to immunize. My preconceived beliefs about non-immunizing mothers and their reasons for refusing childhood immunization mellowed throughout the process. My feelings of resentment toward those who decline to participate in childhood immunization softened because I understood the difficulty of this decision.

I also developed a greater realization of the various beliefs of health care professionals on the topic of immunization and gained further insight into the perceptions of health care professionals on their role in childhood immunization and their perceptions of non-immunizing mothers' understanding and decision-making. I understood the influential and complex role that health care professionals play in the immunization decision-making process.

This research study broadened my views on the topic of immunization and allowed me to explore this complex issue at a deeper level than I understood previously, as described in a personal journal excerpt following my last interview:

I have concluded my interviews with non-immunizing mothers and health care professionals, as I feel I have obtained data saturation at this point. I am feeling very comfortable with my interview questions and how to ask the questions, and also feel very comfortable with the responses I receive. I feel that I have been able to be reflexive to their ideas and perceptions, which was remarkable for me to experience. My eyes have been opened, and I see the world of non-immunizing mothers so much clearer. As I sat listening to this participant, it struck me how much these interviews have opened my eyes to the reality of this issue. I know when I have children I will have to take a closer look at this, and do my own research, rather than rely on my experience as a public health nurse to guide me in the decision. I really felt myself enter her shoes and see the issue from her perspective, and it made sense to me. I actually found myself asking myself "Why"? I left the interview with more questions than answers in my mind, but so much of what she said has been said by mothers before. This was a remarkable

discovery for me, and I feel that as a result, I have a much clearer understanding of the underpinnings of my research topic.

This process has softened my perceptions of people who decline to participate in immunization, and has left me with a certain feeling of uncertainty on the topic, which allowed for personal transformation to occur. My understanding, knowledge, and comprehension on childhood immunization has expanded, which will be of significant benefit in my role as a public health nurse and novice researcher.

Conclusion

This chapter provides a detailed overview of the methodology of this research study. This study utilized a qualitative research approach, with grounded theory as the research design and symbolic interactionism as the theoretical framework. Data collection involved semi-structured interviews by means of a purposive sampling strategy directed towards mothers who do not immunize their child(ren) and health care professionals who have a professional relationship with mothers. The research study promoted exploration of the development of mothers' immunization understanding and the immunization decision-making process, as well as the perceptions of health care professionals on the decision-making process of non-immunizing mothers. A grounded theory analysis approach was incorporated, which involved data immersion, memo writing, and coding. Ethical guidelines, in accordance with the Tri-Council Policy Statement (2010), were adhered to. Research study rigor was determined by the evaluation criteria by Glaser and Strauss (1967), Strauss and Corbin (1998), as well as Lincoln and Guba's (1985) four techniques to enhance trustworthiness. The principal goal was to ensure the study methodology provided a rich description of the research phenomenon and theoretical findings were generated based on the data obtained.

CHAPTER FOUR: RESEARCH FINDINGS

This chapter focuses on the research findings of both groups who participated in this study, namely mothers who choose not to immunize their children and health care professionals who have a professional relationship with mothers. Demographic information of participants is presented followed by research findings for each group.

Demographic Information of Non-Immunizing Mothers

Demographic information was collected on study participants following each interview as a means to compare study participants and to ensure a holistic view of the research phenomenon. I interviewed a total of eight non-immunizing mothers in Southern Alberta, as determined by the inclusion criteria outlined in Chapter Three. Table 4.1 provides demographic details about this study group. As noted in the table, the age range among the mothers was 25 years to 37 years, with a mean of 30 years of age. All but one study participant indicated they were married. Mothers' education varied from partially completing high school to undergraduate degree education. Most of the mothers indicated they were homemakers. Four of the mothers noted they lived in a rural community, while the remaining four resided in an urban community in Southern Alberta.

The study participants' number of children ranged from two children to six children. All of the mothers indicated their ethnicity was Caucasian. All of the mothers practiced their religious faith which was declared as Christian for six and Latter Day Saints (i.e. Mormon) for the remaining two. Although two of the mothers did not disclose their income level, the other six mothers declared their income level ranged from \$25,000 - \$50,000 to \$75,000 - \$100,000.

Table 4.1. Demographic Characteristics of Non-Immunizing Mothers

Demographics	<i>n</i> = 8	%
Age		
Range	25 years to 37 years	
Mean Age	30 years	
Marital Status		
Married	7	87.5
Divorced	1	12.5
Education		
Partial High School	1	12.5
High School Diploma	4	50
College/Technical Diploma	1	12.5
Undergraduate Degree	2	25
Occupation		
Homemaker	7	87.5
Other	1	12.5
Employment Status		
Part-time/Homemaker	2	25
Homemaker	6	75
Residence		
Rural Community	4	50
Urban Community	4	50
Number of Children		
Range	2 children – 6 children	
Mean Number of Children	3.25 children	
Ethnicity		
Caucasian	8	100
Religion		
Christian	6	75
Latter Day Saints	2	25
Practices Religion		
		100
Income		
Under \$ 25 000	0	0
\$25 000 - \$50 000	3	37.5
\$50 000 - \$75 000	2	25
\$75 000 - \$100 000	1	12.5
\$100 000 - \$150 000	0	0
Greater than \$150 000	0	0
Not Answered	2	25

The Perspectives of Non-Immunizing Mothers

In this section, I discuss the perspectives of the non-immunizing mothers who participated in this research study. The mothers who were interviewed represented a homogenous sample, in that associations between varying demographic characteristics and study findings were not found. To protect the identity of the mothers who were interviewed, the voices of the mothers are not clearly portrayed in this chapter. Consequently, I do not refer to the mothers by their pseudonym names, but rather refer to them using general terms. This study took place in a relatively small geographical area, and I felt this was necessary to avoid the risk of identification of the mothers who participated in this study.

I developed the following diagram as a means to portray the research findings and decision-making process of non-immunizing mothers holistically. Each aspect of the diagram will now be described through detailed discussion of the findings that were generated from the mothers.

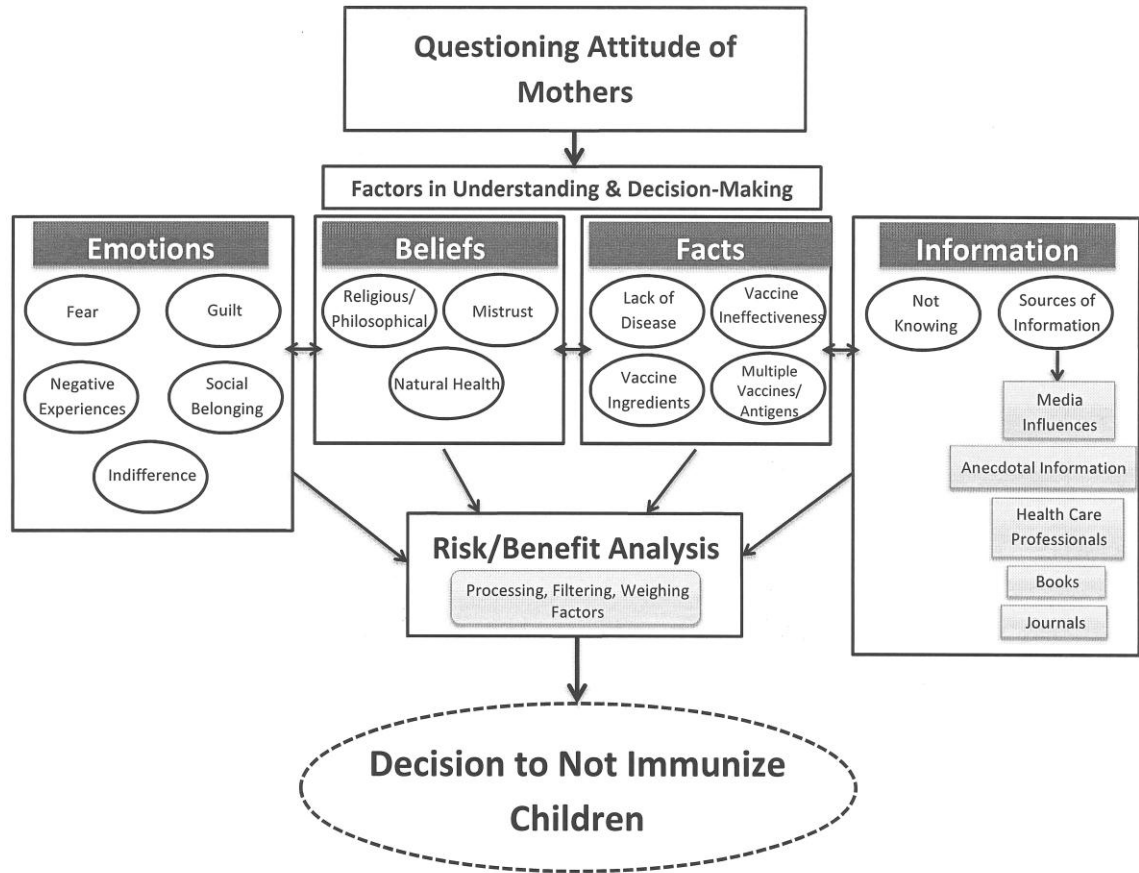


Figure 4.1. Theoretical Model of Understanding and Decision-making Process of Non-Immunizing Mothers Regarding Childhood Immunization

Questioning Attitude

The findings revealed that the mothers have a questioning attitude. This questioning attitude influences their understanding of childhood immunization and their decision-making process not to participate in childhood immunization. Mothers spoke of not doing something or making a decision because they were told to do so by a physician, family members, friends, other health care professionals, or because it was a prevailing behaviour among mainstream society. The mothers revealed that they were interested in findings answers to their questions. “I just wonder why?” One mother stated, “I am not

that type, that like...well you should because the doctor said so, like that just doesn't..."

This thought was similarly expressed by a mother: "I don't relate quite to that method of thinking."

Part of this questioning process included the importance of making a conscious choice. "You should know what you are doing" and "I think a lot of people aren't informed enough about it" was expressed. They also spoke of people making a choice without thinking about it. "A lot of people do it, you know, some people do it without thinking..."

One mother immunized her first child; however, she did not immunize her second child. When reflecting on this change, she stated, "I started out just doing what everybody told me to do, and that was the right thing to do...I didn't ask too many questions in the beginning. It was just something that we do." She indicated she started asking questions about immunization which led her to the decision not to immunize her second child. This was similar to another mother, who also immunized an older child but not her younger child. "I got her 12 month shots, and then after that point, I...just didn't feel like I should continue, or at the very least, I should look into it."

Study participants indicated they were different than other people because they do question things. One mother said, "They [referring to others] never thought about it. It was just normal...they've been raised that way. There was never any thought about it." Another added, "The mothers I know that do it, basically haven't thought it [immunization] through, they just do it. The doctor said it is good, so that is what you do."

As outlined above, all of the mothers spoke about a variety of factors which contribute to their questioning attitude, and also related how this critical-thinking attitude influenced their decision-making process regarding childhood immunization. The data revealed that this questioning attitude significantly influences the mothers' understanding and decision-making process regarding childhood immunization because it leads them to, and guides, their decision-making process. This is the basis for the theories that emerged from the data obtained by interviewing the mothers.

Factors Influencing Mothers' Understanding and Decision-Making Process

This questioning attitude prompts the mothers to consider a variety of inter-related factors which influence their understanding and decision-making process regarding childhood immunization. I discovered that the factors discussed by the mothers in the interviews were similar across all eight participants. During the coding phases of data analysis, the key factors and their inter-relationships were identified. Subsequently, during the axial coding phase, these factors were re-organized into four large themes, which include: emotions, beliefs, facts, and information. These four themes and their subsequent sub-themes are discussed in detail below.

Emotions

All of the study participants outlined a variety of emotional factors influencing their understanding and decision-making, including fear, negative experiences, guilt, indifference, and social belonging. These emotional sub-themes are described below.

Fear

Fear is a powerful phenomenon which influences understanding and decision-making, and was outlined very clearly by the mothers in the interviews. Mothers spoke of their fears and concerns regarding immunizing their children. When discussing her child, one mother said: “She seemed so fragile, I didn’t dare immunize her” while another said, “I didn’t feel secure doing it. To me it was kind of a scary thing.”

Fear of the unknown was specifically outlined by a number of mothers. “You would rather not, because you are not 100% sure...because everybody is scared of the unsure.” One mother spoke of the risks and benefits of immunization and stated, “There were so many pros and cons, but the cons...like, there was just so much unknown, that it was just pretty scary.”

Mothers also spoke of fear of risks associated with vaccines as well as fear of vaccine ingredients, as exemplified in the following quotes: “I looked at all the pros and cons and it was a scary thought to be putting all those things into my baby.” “Until I know for a fact they are safe to give, I can’t do it.” In support of these ideas, one mother confessed that she became more afraid the more she read up on immunization.

Fear of vaccine effects, including vaccine side effects and long-term consequences was openly noted by all study participants. Mothers’ questioned the long-term effects of vaccines and whether vaccines have been administered to children for a sufficient length of time to ensure their safety or if in the future, vaccines will be linked to certain risk factors or long-term consequences. One mother stated, “You can do as much research on it now as you want, but there is going to be things later that are going to be linked. So, it’s like how do you know right now?” Another mother followed up by

saying, “I do not believe that they [referring to pharmaceutical companies] would give it the proper amount of research, and like, long-term study, that I would feel safe giving it to my child.”

All study participants also talked about specific concerns with vaccines and the risk of linkages to numerous adverse health effects and conditions including: Alzheimer’s disease, autism, Sudden Infant Death Syndrome [SIDS], asthma, auto-immune diseases, multiple sclerosis, cancer, Asperger’s Syndrome, Attention Deficit Disorder [ADD] and Attention Deficit Hyperactivity Disorder [ADHD], miscarriages in pregnant women, Guillain-Barré Syndrome, and death.

The fear of autism in particular was a common theme among all study participants. Mothers spoke of the increasing rates of autism in children, studies and Internet sources linking vaccines to autism, and anecdotal information from parents who have a child with autism and have linked its cause to immunizations. This concern is revealed in the following quote: “But when you talk to a parent who had a perfectly normal child, and they had their shots, and then it changed overnight. We can’t ignore that, even though maybe we can’t prove it.”

Fear of side effects from vaccines were also explored, namely fainting, fevers, crying, lethargy, vision loss, hearing loss, or non-responsiveness. One mother wondered, “Is it [referring to reactions] going to come back, or is something going to develop when they [children] are older from this?”

As described above, fear was an influential factor in non-immunizing mothers’ understanding and decision-making process regarding childhood immunization. Fear is a

powerful emotion which can significantly impact thought processes, and the various fears outlined above speak to this fact.

Negative Experiences

Mothers expressed genuine fear and concern related to negative experiences with immunizations. One participant spoke of personal experiences with vaccines:

I remember as a kid, getting these shots and I was sicker than a dog. I was in bed with a fever...my arm hurt so bad, and I will never forget that...I don't think I would want to do that to my child.

One mother spoke of a similar negative experience with vaccines, "I remember being very sick after for a couple days, feeling very, very nauseous, and there was a lot of pain at the injection site for those few days."

Negative experiences with close relatives were also discussed by a number of study participants. One participant relayed a story about a close relative that died – "I had a relative that died, and I remember...but all that I know is that my aunt said they were...they linked it to the immunization, because he had his shots that week, and then he had crib death."

One mother also talked about a negative experience with a close family member, but in this instance the individual became severely disabled following immunization.

It started with my sister, she was six months old, and my mother took her in for her shot, and a day or two later, she developed a grand mal seizure and it took them two hours to get it under control and that's when she became blind and severely handicapped. The doctors would never say, but in my mother's mind, she knew.

Negative experiences following immunization with older, immunized children were also provided.

I just remember the crying, and the agony...for days...like crying all night long, and I was like, what is going on? He was never like that...all of a sudden we get him vaccinated and he is having fevers, he is up all night, just screaming and screaming...

As portrayed above, negative experiences were an emotional consideration for the mothers interviewed.

Guilt

In addition to fear, guilt was evidently expressed by the mothers that if their child was immunized and if something occurred following the immunization. "If I get her immunized, and something does result, can I live with that when I sort of feel like I shouldn't [immunize]?" One mother referred to the guilt she would experience if her child was negatively impacted by an immunization with the following quote: "But I can never take it back if something were to happen." One mother indicated she would blame herself if something happened by saying: "I would just beat myself up about it." Another participant referred to the risk involved with immunization and the guilt she would experience if her child developed a problem afterwards. "I mean, really I could probably vaccinate this whole entire town and nobody's going to have any problems, but the one that you do, do you want to be that one?"

One mother further clarified that the desire to avoid guilt was a primary reason for choosing not to immunize.

She seemed so fragile, I didn't dare immunize her. I thought what if something goes wrong? Because that is the bad thing...that is the biggest thing that holds me back. If something goes wrong with it, then you have done it yourself. And that is a thing that holds me back.

Guilt, as an emotion, contributed to the feeling that mothers would never forgive themselves if something happened. One mother mentioned, "I think that if I went along

with it, and something happened, that was my responsibility and I did that, just the guilt would be huge.” One mother compared the guilt of natural infection versus immunization in her children:

Would I let them get the measles, mumps...for me if something...let's say they got a complication from the measles, it wouldn't...it would be terrible, but I could live with that. I couldn't live with it if I had vaccinated them and now there was something.

Indifference

All of the mothers spoke of their experiences with vaccine-preventable diseases with either themselves or their children. The mothers' expressed somewhat of an indifferent attitude toward vaccine-preventable diseases, as their experiences with these diseases were tolerable and endurable, and did not result in adverse events. Mothers also expressed feelings of indifference toward the potential risks related to vaccine-preventable diseases. Furthermore, experiencing the disease heightened individual immunity among the population which was seen as desirable and acceptable.

One mother spoke of her experience with mumps:

It was like shoot, why didn't we vaccinate our kids? Well, first of all, none of them got it. And we [referring to self and partner] got it, but we got through it fine. Like, it was no big deal. It does suck when your kid gets whooping cough, but it is a weekend of your life...it doesn't break you.

She also made reference to the chickenpox disease.

I mean you go through a couple of days, but it's no big deal really. It can be, but we've been really fortunate that way...I couldn't say to you, oh, it was terrible...for the most part, it hasn't affected us badly.

One mother spoke of her personal experiences with measles as a child, “We always used to get measles, which was just the thing. Our parents would write it down, that's when you got measles, and you are done.” Another mother indicated: “Chickenpox

is a disease I just as soon my kids had to develop their own immunity to it. They did all have it, and none of them were sick a day from it.” There were other comments from the mothers that supported these sentiments. For example, one mother stated, “I am like, I don’t want my kids to get these illnesses, but if they do, it’s not going to be the end of the world.” One mother spoke of the avian flu scare a few years ago and stated, “I wasn’t worried at all, and maybe that’s ignorant, but I felt like I followed my instinct” while one more mother mentioned:

I think it is good to get these baby diseases...children diseases. And nowadays, if they get measles, it’s not really such a threat as it was in the olden days anyways. When they [referring to health care professionals] say, okay, many people died from measles, so it’s good [referring to the effectiveness of immunization programs], but nowadays if everybody would get measles, there wouldn’t be that many deaths, or barely any.

This indifference was revealed by one mother when she mentioned that her partner had never been immunized: “He had never been any unhealthier than anyone else; as far as he could tell...he didn’t think he was any sicker than anyone else.” One mother indicated that she felt our immune systems are designed to handle vaccine-preventable diseases by the following quote: “And if your child gets whooping cough, no, it’s not a pleasant thing for a child to have, but your immune system is designed to fight it the same way it fights flu, the same way it fights colds...” This thought was similarly expressed by another mother, “If it does [referring to disease] come here and if they do get it, I go back to the natural ways to fight it off.”

Social Belonging

Social belonging or social inclusion is also an emotional factor which was revealed by the study participants. Mothers spoke about pressures from friends, family, or cultural groups for inclusion and acceptance. However, study participants also spoke of

the challenges with their decision not to immunize their children, as they were negatively targeted for their decision, leading to feelings of social exclusion.

A small number of mothers spoke of their inclusion in a predominantly non-immunizing, religious community as one contributing factor to their decision. The following quotes exemplify these beliefs: “I have to be honest, like, it should be, because as Dutch we are known for, you don’t immunize for faith reasons” and “They [referring to “outsiders”] don’t realize it’s a part of us.” One final comment from one of the mothers was: “Lots of people don’t in our circles, so, then you say, okay, I am not even going to think about it.”

Influence of friends was also clearly identified by mothers. “You go by what friends have...their experience is important.” One mother expressed that she listened to other mothers and other parents, to determine what was happening in their families, which influenced her decision. One mother stated, “We asked quite a few different people when we were trying to decide whether to immunize or not, like our friends...probably how the people around me think about immunizations that led to being okay with the decision not to immunize.” Another mother confessed: “I just based my opinions on everybody else’s input and then created my own opinion for myself.”

Family pressures were mentioned by a number of participants. “We don’t tell our family [that they do not immunize their children]. We have a few people in the health care industry in our family and it is not going over well, so we just keep to ourselves.”

One mother said:

It is a very touchy subject, especially when I am trying to give my opinion with my family and I am the only one in my family that doesn’t, and it’s hard to stand up for something like this, but that’s what I believe in and I just have to stand my ground.

Social belonging was also experienced through online communities. For instance, a number of participants expressed comments similar to these views: “I’ve discussed it online with friends who do agree with my stance on it” and “There’s a group on Facebook that all these mothers put questions, and it’s actually the truth about vaccines. And so it’s just a group where mothers just put their questions and opinions and we can talk back and forth.”

Challenges with social belonging, and specifically the pressures to immunize by health care professionals, were identified by mothers. “They [referring to physicians] definitely make you feel stupid though, like you are not getting the vaccine – why, because of your faith? That’s when it sucks...” One mother commented: “It’s been tried here and there, right, especially when you go to the doctor’s office and they say, you are not up to date...” Another mother mentioned her physician would decline her as his patient if he knew she did not immunize her children, so out of fear, she indicated: “I just tell him we are delaying it, and I say that to a lot of people just to get them to leave me alone.” “It’s very hard when it is not respected among the health care system because I just got you know, glared at and looked down upon..” was reported by a mother.

Other mothers spoke of challenges with those around them.

It was hard because I knew it went against the main stream and it went against what most people who knew me would do, and I knew that I would get backlash from my family, but I had to do what was right for me.

Another mother mentioned, “And the people who don’t [immunize] do it get brutally attacked by the people who do, and that makes it hard to stand out in the crowd and say, I don’t.” This thought was similarly expressed by a mother: “It was hard going against

society and going against everything and knowing that there is going to be roadblocks and all these other things, so that was hard.”

Beliefs

The second primary theme which influences non-immunizing mothers’ understanding and decision-making regarding childhood immunization is beliefs. Study participants revealed a number of beliefs, including religious/philosophical beliefs, natural health beliefs, and mistrust, which are described in greater detail below.

Religious/Philosophical Beliefs

As outlined in the demographic information presented previously in this chapter, all study participants specified a religious affiliation and stated that they practice their religion, although actual religious affiliation varied among the mothers. While a number of mothers indicated that although they consider themselves to be religious, their religion did not influence their decision not to immunize their children. A number of mothers indicated that religious beliefs did contribute to their decision not to immunize their children, however, it was one only factor, among many others, that they considered in the decision-making process. In addition, their religious beliefs did not supersede or influence the other factors.

One mother spoke of her religious beliefs by saying:

It becomes a faith issue. If your child is going to pass away from something, you can’t say, well I didn’t inject them with the thing in the first place, right because then you have to look Higher...then it was meant to be.

This was similarly expressed by a mother: “If my children would get sick, I would consider that out of [from] God’s hand.”

Some participants spoke of dependency on God and providence. “We are raised to believe that everything is through providence. God has a hand in all of it.” The definition of *providence* according to Oxford Dictionaries (2012) is “the protective care of God or of nature as a spiritual power” (para 1). Another mother said, “When mumps went around, it put you on your knees [prayer] a little faster than had you said, well I am vaccinated...and I believe that makes you...we need that, that’s a good thing to be dependent on God.”

Two mothers referred to a quote from the Bible where Jesus says, “They that be whole [healthy] need not a physician, but those that are sick” (*The Holy Bible, King James Version*, Matthew 9:12). In reference to this quote, these mothers felt that immunization is a preventative means that is administered to healthy people, rather than as a treatment for illness, which would be more acceptable. One mother clarified this belief further by saying: “We shouldn’t start doing that ahead of time...it is to protect them, but it is not that they are sick. Maybe they will never need it.” One study participant revealed that the religious concerns, described above, were raised by her partner, and as a result, their children are not immunized. She said, “He feels strongly...but that immunizations...you don’t know whether you are going to get sick, so you are using something [immunization] which may not even happen to you [disease].”

One mother revealed her religious belief that God has created the human body in a certain way by the following quote.

We don’t need manmade things to supposedly keep us healthy. We were made for a certain purpose, and that our bodies are a temple and that we can take care of them...I don’t think there is anything that big out there that we can’t overcome with natural things and with God’s help.

This belief closely relates to the following health belief identified by the mothers, namely natural health beliefs.

Natural Health Beliefs

Study participants expressed strong beliefs in natural health, which include beliefs that the body was created to sustain itself and deal with diseases through its complex immune system, and vaccines and other unnatural substances interfere with the immune system. Preferences for natural healing remedies and therapies were also mentioned.

Belief in a natural body was expressed by a number of mothers. “My belief is that our bodies should be as natural as possible....our bodies are designed to be healthy...our immune system is there for a reason.” One mother said:

I believe your body, for a lot of childhood diseases that we have around here, a healthy child should be able to fight it off, and that is the best way to do it, build up your own immune response to it.

These beliefs were also mentioned by a participant with this quote:

Our bodies were made to get rid of this bad...these diseases or sicknesses that we may have. I think God gave us bodies that we can create our own immunities to, and I don't think any manmade substances are going to prevent something...I believe that we were made for a certain purpose and that our bodies are a temple...I don't think there is anything that big out there that we can't overcome with natural things.

Mothers spoke of concerns with introducing foreign substances into the body which were inter-related with the indifferences they felt toward immunization. “You are injecting something into your body...either way then you may as well go with something natural.” Another mother said, “I feel like the less junk we can put in our bodies the better...I am a fan of naturopathic type things. I think sometimes illnesses need to take their course.” This idea was further supported by a mother who indicated:

I don't want to mess with my kids' immune systems, because I believe they are doing exactly what they are meant to do, and as soon as you start putting things in there, that mess with it, I don't know if it will work as well.

Preference for natural diseases versus artificial immunity was also expressed by mothers. "It's good for your immune system, to get these diseases while you are young. You never get it again." Another mother said, "I understand that it is good to be exposed to it once you've had it, because that is like a natural immunity booster." This was similarly expressed by one mother:

It's more important for me to build up the immune system rather than bombard it with something to prevent, something that could be prevented just by having a stronger immune system...I feel like it bombards the immune system...it is artificial immunity. I don't feel like it gives lasting immunity.

A number of participants spoke of preference for natural healing remedies and therapies, which is expressed in the following quotes: "I am a fan of naturopathic type things" and "If anything comes up, I just research natural remedies for everything." One mother indicated she visited an iridologist for natural therapy and mentioned, "He takes pictures of the eye...he's very natural, he tells exactly what is going on with your body...he prescribes natural things." She also revealed she has an interest in massage and BodyTalk because "our bodies can tell us exactly what is wrong and what it needs...you can find out anything by just talking to your body and finding people that know and have knowledge of natural things." According to the International BodyTalk Association [IBA] (2012), *BodyTalk* is described as follows:

BodyTalk is an astonishingly simple and effective holistic therapy that allows the body's energy systems to be re-synchronized so they can operate as nature intended. Each system, cell, and atom is in constant communication with each other at all times. Through exposure to the stresses of day-to-day life, however, these lines of communication can become compromised or disconnected, which then leads to a decline in physical, emotional and/or mental well-being. Reconnecting these lines of communication enables the body's internal

mechanisms to function at optimal levels, thus repairing and preventing disease while rapidly accelerating the healing process. In this way, BodyTalk stimulates the body's innate ability to balance and heal itself on all levels. (para 1)

Mistrust

Non-immunizing mothers' discussed various forms of mistrust, including mistrust of health care professionals, pharmaceutical companies, and government, which contributed to their decision not to immunize their children.

Mistrust of Health Care Professionals. Mothers spoke of mistrust of health care professionals, which resulted from anecdotal information and personal experience. Mothers also expressed mistrust in health care professionals' information on immunization as they felt it was biased and one-sided.

One study participant relayed a story about a relative that died from SIDS following immunization, and indicated:

She [referring to relative] went to the doctors and professionals about it, and basically what she [referring to relative] said to my mom is that they [referring to health care professionals] don't want to open the can of worms. What can of worms? So there is a can of worms out there that they don't want to open? There's a death, so...but apparently there is some dirt on it because when doctors don't want to open the can of worms that tells me that there is something deeper that I need to think about...if there is something wrong or there was a can of worms, the doctors probably would know about that, and then to me sometimes I think, they don't have a clue...part of me thinks they do know...if they realize that there is a can of worms to be opened, but that at the same time, they are going to be overwhelmed with the amount of sick people if they are not getting it [immunization].

These beliefs were expressed by other participants. For example one mother said: "The health world, or whatever you call it, they don't like to talk about it, but if something happens, they don't really talk about it, because they don't want to scare people." Another mother spoke about a friend who was a public health nurse and was fired from her job because she provided a vaccine ingredient insert to a parent. Her

friend sued her employer for wrongful dismissal, and on the day of the hearing, “Nobody came from health care to defend their side...so I was kind of like, okay, what does that say about health care? I guess I just don’t trust health care enough because I just believe they’ve added to many things into it [referring to vaccines].”

This mother also revealed that she received information from this public health nurse about immunization providers:

They [referring to nurses and doctors] told her [referring to public health nurse] behind closed doors that we do not vaccinate our kids, but we are told to tell the public that this is the right thing to do. Why are they lying to us, why are they you know, hiding this information from us when all the doctors and all the nurses I’ve talked to, outside of that, have always been very pushy with it?

Mothers expressed a lack of trust in information provided by health care professionals. “Who says what they are saying is true? They would probably have a one-sided opinion.” This belief was echoed by a participant, “How do you know they are telling to you the truth? And doctors likely won’t even know...” Another mother said, “I think health care professionals are seen as, well of course, they are for that [immunization] because that is what health care professionals are taught to think, so maybe you discredit it a little bit...” This thought was similarly expressed by a mother: “When it comes to vaccinations, I think doctors are very clueless in a way, because they follow the book. Everything is to the book. If it is not in the book, then it’s foreign, and they don’t believe it.”

One mother indicated that after receiving the rubella immunization, blood tests revealed she was not immune, and as a result, she started doing research on the topic, and discovered, “It was scary all the stuff that was coming up that my doctor didn’t seem to know, so it really puts some red flags up there for me.”

Frustration with health care professionals and their methods of educating the public about immunization was revealed by one participant, who said:

I just felt kind of angry because it was so one-sided, and it was so fear-based, so if there were parents in there that didn't know anything else, they would think, 'Oh no, let's go out and get our child immunized tomorrow because I don't want my child dying of chickenpox'.

The different opinions held by health care professionals on the topic of immunization also created confusion and mistrust for study participants. "When I talk to a doctor and a chiropractor, and they each have different standings, then you don't even really sometimes trust that...it comes actually kind of confusing."

Mothers expressed concerns over the close association of health care with money by saying: "It can be about money, or it can be about this or that, especially with chiropractors, it's like you need to come back every day for the next month..." Another mother mentioned, "This is why people get on the whole money-hungry argument because they [referring to health care professionals] are doing ridiculous things."

Mistrust of Pharmaceutical Companies. Another factor in the process of understanding and decision-making regarding immunization was mistrust of pharmaceutical companies.

You know the medical system; I don't think that is the problem. I think it is the drug companies, you know, they make this stuff...there is thousands of cases out there of a trial that wasn't tested long enough or tested at all, like this H1N1 – those shots came out pretty fast.

This was similarly expressed by a mother:

There is a lot of literature out there how the pharmaceutical companies really push the doctors into pushing vaccines, and they get their perks and their trips...I have never talked to a doctor who said, yes that is happening...of course they are not going to tell you, but it bothers me that it could be true.

One mother discovered through anecdotal information that pharmaceutical company employees do not immunize their children.

Some people that have worked in the drug companies, how they would just never, ever give any of this stuff...they have seen what goes into drugs, vaccines, and then the money trail, how that is literally the biggest thing behind it all.

Although not a common finding, there was expression of conspiracy theories and their place in the debate about vaccines. One mother who supported these theories believed the following about vaccines:

It's [referring to immunization] a deliberate attempt to control the population...that's all scary stuff...I am not into it that far, but adding other viruses, other things to a vaccine that you don't know about, which apparently has been done...especially in third-world countries, where they...sterilization...that is all scary.

Another mother confessed a similar belief:

I guess I just don't trust health care enough because I just believe they've added so many things into it that it is just become this multi-billion dollar pharmaceutical conspiracy, to just try and get the most money out of it...and the pharmaceutical companies just become billionaires, and nobody even has the knowledge behind it...

Mistrust of Government. The government connections to health care professionals and pharmaceutical companies were voiced by study participants. The same mother who confessed her belief in conspiracy theories above also expressed the following:

And the government, I believe, is trying to control the population and you know, it could be this great big thing, where they are just slowly adding things into these vaccinations that could just start killing off the public because how else are they going to control the public? I believe that we've become like a bunch of sheep, where it just says, get this and you are going to be safe...

One mother spoke of her fear of the government controlling lives when she said:

If we don't have the accessibility, especially if the government starts taking all these natural things away, because they are finding out, you know, people are curing their own sicknesses, they are not coming to the pharmaceutical companies anymore, and we are going to get rid of natural stuff so they keep paying us. That scares me, but I know that's what the world is coming to...nobody is given their freedom of rights to choose...

Facts

The third main theme identified by non-immunizing mothers, which contributes to their understanding and decision-making regarding childhood immunization, is facts. Lack of exposure to vaccine-preventable diseases, vaccine ingredients, multiple vaccines and/or antigens, and vaccine ineffectiveness were outlined as sub-themes under this theme, and are discussed in detail below.

Lack of Exposure to Vaccine-Preventable Diseases

Vaccine-preventable diseases, such as polio, measles, mumps, pertussis, and diphtheria were once the cause of numerous childhood deaths, however, since the introduction of vaccines, these diseases have decreased, which makes it difficult for people to realize the importance of immunization. Lack of exposure to vaccine-preventable diseases was another factor identified by study participants.

Mothers spoke of the decreased frequency of vaccine-preventable diseases, and consequently the reduced risk with natural infection. One mother said:

It is so easy to forget about it, not think about it because most of these diseases aren't really a threat immediately...it's so easy to put it off, because there is no threat, really. If there is, you don't see it. I don't think there really is a threat...if the threat is right in front of you, then it's hard to put it off.

Another mother confessed: “I shouldn’t have to worry too much...there wasn’t really that much going around.”

Mothers expressed their perceptions of the lack of specific vaccine-preventable diseases. “How common is polio?” One participant stated, “I’ve never really heard of these diseases. They are like, what if your child develops polio, or what if your child develops this, and it is like, honestly, I’ve never seen it around here...” One mother mentioned, “I think I saw the film [referring to video received from public health nurses] about the child who died from chickenpox...I think that is very rare.” This thought was echoed by another mother, “I don’t know a single person that died from chickenpox.”

Mothers also spoke of their perception of risk for a number of vaccine-preventable diseases, which has been outlined under the theme *Indifference* previously discussed in this chapter. One mother said, “It’s not that bad to have the ‘flu’, it really isn’t right?” This mother was confusing seasonal influenza with gastro-intestinal illness, which is commonly referred to as the ‘stomach flu’. Another mother indicated: “It seems more that people get reactions and there are problems with vaccines as opposed to people getting polio and things like that.”

Vaccine Ingredients

Vaccine ingredients were an important factor in decision-making for all study participants. Mothers revealed their perceptions of various vaccine ingredients, as well as their fears with vaccine ingredients and long-term vaccine effects. One mother noted that a major factor in the decision not to immunize her children was the ingredient list of vaccines.

The other study participants also compared vaccine ingredients to chemicals and toxins. “What are you putting into my body? Just chemicals, making me sick?” and “We are not going to put something in their bodies, chemicals that you sometimes don’t even know what’s in them.” One mother mentioned her thoughts about vaccine ingredients.

I think that babies and kids are far too young and little, they are...their bodies are too small for the amount of toxins and things in the vaccine that I don’t know that every baby can handle it...I wouldn’t eat them and I wouldn’t let my kid touch it, and I am not going to put that into their body, and hope that their immune system can fight it off.

One mother indicated she was not against the concept of immunization, however, “over time all the chemicals and things that have been added, that’s what kept us from doing it.”

There were a number of concerns with specific vaccine ingredients. During an interview one mother read me information she obtained from a local chiropractor: “All viral vaccines contain, not only the particular strains of the virus, but also contain traces of leukemia virus and other cancers.” Another mother said, “Other junk from animals...it’s quite a foreign substance that you put in a baby’s body.” This concern was echoed by a participant when she said:

Another thing that concerns me is they used to grow the vaccines in eggs, and then it went into some...they used monkey kidney cells, they used dog kidney cells...we don’t know what kind of DNA or anything they pick up and inject into people.

In reference to vaccine ingredients, one mother mentioned her concerns: “Monkey blood and all these like horse blood, and like kidneys, all these things...it just sounds so foreign and so ridiculous...why wouldn’t they give these [referring to ingredient information] out to parents before they vaccinate?”

Concerns with human diploid tissue in vaccine were raised by three mothers, with these quotes: “They use fetuses from aborted babies, and stuff like that...” and “We have the whole aborted fetal cell thing too that...you just can’t go there.” The third mother mentioned that “human protein from fetal cell lines from the aborted fetus, like that really concerned me.”

Mercury and other preservatives as vaccine ingredients was also a common theme among study participants. “The fact that there is mercury in lots of the vaccines and that even if there isn’t now, that it used to be in, is scary.” One mother revealed her concerns in the following quote.

The whole chemical thing...there is mercury, there is formaldehyde...in the last few years they [referring to pharmaceutical companies] say they are cutting back on the mercury, and they’ve added more aluminum, those are all neurotoxins...because in one shot, and these are statistics again, and I can’t always remember, but they will give more [referring to the dose] of the kids or anyone...the dose of some of this stuff is far beyond even what the FDA [US Food and Drug Administration] considers safe.

This mother indicated she obtains much of her information on immunization from websites and natural health newsletters, such as *Natural Health*. Another mother revealed her concerns by saying: “They are just putting more chemicals, more preservatives, like mercury, stuff like that in that is going to cause long-term effects...it scares me.”

Multiple Vaccines/Antigens

The number of vaccines given at one time, as well as the multiple antigens in a vaccine were concerns raised by all the mothers. Mothers spoke of the multiple vaccines given to infants. “It’s a lot. That’s what comes to my mind. I think they are so little, and you jab them...and then they get multiple...” This perception was echoed among other participants, “I remember thinking there were an awful lot in the first two years...it

seems like an awful lot to bombard...and especially because their immune system isn't fully mature yet..." One mother expressed her concerns by saying: "I don't think it is right for every child to get immunized...that much and that many in such a short time, like to get three or four vaccinations in one day seems really extreme to me." This sentiment was further noted by a mother who said, "I remember thinking, wow, that's a lot of vaccinations."

The acceptance of vaccine-preventable diseases and concerns with multiple vaccines was revealed by a mother in the following quote.

I believe we need to go through certain sicknesses as children, instead of just shoving something [referring to vaccines] into your system and shocking it, especially as babies, as like they are very tiny and their immune system hasn't even developed yet, and then you shove like three different shots into them...I think it is kind of raping the body because they don't expect it.

Another mother expressed a similar concern: "When I was a kid there weren't so many either [referring to vaccines], so maybe now it is just too many, it is too hard for their immune systems to cope with now, that there are so many reactions."

A number of participants spoke of limited freedom of choice related to multiple vaccines.

One thing I don't like about immunization is they [referring to health care professionals administering vaccines] right away give the whole bunch. You can't choose. You can't choose to immunize for only three or only one or two of the major risks. There is no room to choose.

One mother discussed a similar thought: "That was another big factor in me deciding not to, in that they couldn't separate them [referring to antigens]...when the nurse told me I couldn't break up the vaccinations."

Mothers also spoke of the need for multiple booster vaccines to ensure long-lasting immunity, as expressed in the following quotes: “You immunize, and the booster shots, and then they are still not totally protected.”

It was like two months, four months, or something like that, and all the different ones, which almost scared me off more...I would have to take him in every time, so if I agree, if we decide to immunize, then that’s a lot. It’s not just a thing you do once, and even if you’re kind of ambivalent about it, that you think it’s done, it keeps coming back.

Vaccine Ineffectiveness

Lack of vaccine effectiveness is a sub-theme identified under the theme of facts. Mothers believed that vaccines do not provide ultimate protection and those who have been immunized are still at risk for disease, which contributed to their decision not to immunize. One mother said, “People that have been immunized have got it, in a milder form, but still have come [referring to infection with natural disease] with it.” Another mother mentioned, “I had baby measles...and I am like, I thought I got immunized. It doesn’t always seem to even work.” This thought was similarly expressed by a mother when she said: “Even with the shots, I had all three measles – baby, German, and red...so they didn’t work.” One mother revealed a similar story with a friend: “My friend got the rubella shot right after she had her child, and when they tested her when she was pregnant again, and she was negative.” This concern was equally echoed by a participant: “I was just shocked that I wasn’t immune to rubella knowing that I had gotten it [referring to the vaccine].”

One mother spoke of her experience with the influenza vaccine in a work setting, where she declined to receive the vaccine because of her beliefs.

And I didn't get sick, and everyone else who got the flu vaccine had a day here and a day there that they were sick, and they got the flu, and probably it was just...I don't get the flu that often, I don't think I've had it in two years, but they were sick, and I was like, 'Huh! You got the flu vaccine. I didn't.'

This quote demonstrates misunderstanding by this mother about the differences between seasonal influenza and gastrointestinal illness, commonly known as the 'stomach flu'.

Although this mother was referring to a personal experience, this thought reveals her opinion that vaccines are not effective.

Another mother spoke of a similar experience with her relative:

My one cousin who was not immunized, she lived with a group of girls when she was in college, who had all been immunized, and they all got measles. All just as bad, so just because you are immunized doesn't mean you are immune. I think there is kind of a misconception in the world that it's this ultimate protection.

The perception that vaccines are ineffective was similarly expressed by two other mothers, who said, "I feel like it is a false sense of security" and "I don't think any manmade substances are going to prevent something."

Mothers also revealed their perceptions about vaccine boosters.

You immunize, and you get booster shots, and booster shots again, and ten years later again, and then in the end they are still not fully immunized. They are still not protected...it doesn't really work, so why take the risk?

This thought was echoed by a mother who said, "What about the whooping cough...in my reading...basically it said, unvaccinated or anybody can get it from people who have been vaccinated...especially if they haven't had their booster shots."

A number of participants noted that vaccine-preventable diseases were on the decline prior to the introduction of vaccines. One example of this belief was the following quote from one of the mothers:

I read that these diseases, they were very common 100 years ago and they started to decrease in numbers, before vaccination came in. They started to decrease as people started having better nutrition and cleaner water and doctors were using cleaner tools...there was just better hygiene in general.

This was further supported by another mother who said: “The polio vaccine...there are studies that say that because of the vaccine polio was pretty much eradicated. There are other studies that say, personal hygiene helped a lot before the vaccine even came out.”

Information

The fourth main theme identified as a factor in understanding and decision-making among non-immunizing mothers is information, which consists of two sub-themes: not knowing and sources of information used to make a decision about childhood immunization.

Not Knowing

The sub-theme of not knowing involves the lack of knowledge identified by mothers on the topic of immunization as well as their feelings of not completely understanding risks and benefits of immunization due to conflicting information on the topic of immunization, specifically referring to benefits and risks.

A number of mothers outlined a lack of knowledge on the topic due in part to not pursuing information or having made their decision through other means. For example, one mother revealed: “I really have not looked into this at all. It’s simply through just through discussions...little things here and there” while another mother said: “I haven’t really read a ton of immunization books, but maybe I just didn’t feel like I needed to.” When asked about knowledge of immunization, one mother confessed: “I’ve never really thought about that. I don’t know...I honestly don’t know.” Finally, one other mother

stated, “I don’t really know because we...we are flat out like we aren’t immunizing, so I’ve always kind of just pushed it out as fast as they try to give it to me.”

Lack of knowledge of the immunization schedule and various vaccines was also identified by mothers. One mother said, “I looked into immunization, and it [referring to information provided by public health nurses] had a chart that you could print out or whatever, it’s like your boosters and stuff.” When asked, another mother was able to identify a number of common vaccines, such as DPTP [tetanus, diphtheria, polio, and pertussis] and MMR [measles, mumps, rubella], and also expressed her knowledge of vaccine schedules by saying: “They [referring to public health nurses] recommend to start three months, and there is other places where they recommend to start at one, and other places that they start even earlier.” This mother was unable to identify that childhood immunization in Alberta routinely begins at two months of age.

In discussion about immunization schedules, two mothers revealed their lack of knowledge of schedules by saying the following: “I am vaguely aware of it” and “Not really. I think I used to be, but no.” Lack of knowledge was evident by the response of one mother, who acknowledged:

I don’t even know. Like I know there is a chickenpox vaccination...I don’t know the timelines or anything like that...I know most of them are before they are one I think, and yeah, I don’t know anything other than that. I don’t even know when the first one is.

This response was similarly expressed by a mother who said: “For kids I guess, very young they start, you get your series of shots until I guess I don’t even know how old and booster shots...”

Mothers also spoke of not knowing what to do.

It's not like you do or you don't. It's like you have to try and kind of figure it out...because for myself I don't know, but I guess when you go by hearsay [i.e. gossip], it's kind of hard because you don't know what's right, what's wrong...

One mother acknowledged her uncertainty by saying: "I don't know. I really don't 100% know...it always hits a brick wall, and there's no answer that we know of." This ambiguity was reiterated by another mother who said:

I don't know. You hear different opinions, you go on the Internet and read these people that are against immunization for scientific reasons, and you just get these questions and you don't know how to handle it...it's just easy to put it off and not think about it. And you would rather not, because you are not 100% sure.

Feelings of uncertainty were further expressed by a mother.

Personally, I am not even exactly sure what side I am on, or I think there is probably truth to both, and in the end our decision ended up being not, but I've always wanted to do more research about it, to actually get a better opinion, a more informed opinion, but I just never really got around to it.

One mother summed it up by saying: "You never really know if you are making the right decision, even if you know you want the best for your child."

A lack of understanding of vaccines was also expressed with some mothers confessing that they were not aware of the different diseases that are being vaccinated against. One mother had a binder of information on immunization obtained from the Internet that she received from a relative ten years ago, which she referred to during the interview, by saying: "If you read that [referring to information obtained from the Internet], then it's like okay. I don't know. And then still if you look at history, you can see that immunization has done good." This thought exemplifies her uncertainty about immunization.

One mother outlined difficulty with understanding sources of information, such as medical journals, which decreased the overall understanding of the topic being discussed. This mother said: “They are not usually in regular language, so I really would have to read and re-read them, and sometimes still not fully understand what they were getting at.”

Sources of Information

Mothers revealed a variety of sources of information that they used to assist in understanding immunization and in making a decision about it. These sources include media, books, journals, anecdotal information, and information received from health care professionals.

Media Influences. Media is a powerful source of information, and as such, was outlined as an important source of information by all study participants. Mothers spoke of obtaining information on immunization through a variety of online sources; similar to many people, the mothers “Googled” and looked online for information. One mother mentioned, “There are some specific doctor websites that you can go on...I can’t honestly say I tried to verify my information.” Concerns about the risks of vaccines obtained through online sources was expressed by one mother who said:, “They [referring to author of source] say that in the papers that you read from the Internet...you go on the Internet and you read this...” When asked about searching for information on immunization, one mother revealed: “I just Google, you know, mothers against vaccinations, um, household remedies for sicknesses...I just type it in, and it comes up, you know...I’ll find something eventually.”

One mother mentioned she obtained her information online from websites including Alberta Health Services and the Mayo Clinic, “which are obviously two very different sources, just to see what one would say about it, and then what the other one would say about it”, and the National Vaccine Information Center [NVIC], which “calls itself the vaccine watchdog” and through online articles.

I think I generally have more faith in information if it is from somewhere like Alberta Health Services or Mayo Clinic, just because they are professional sources...I would assume the information is checked and reviewed...obviously I wouldn't think that Wikipedia is a very good source, so looking where the information comes from, whose read it, it can be found other places online, looking if it is peer-reviewed...

Although this mother checked reputable websites, she still decided not to immunize her children.

During a discussion about sources of information, one mother mentioned that her primary source of information is websites by saying the following:

I know certain ones that have been put up about where actual health nurses and stuff have posted on there...there's a group on Facebook that all these mothers put questions, and it's actually the truth about vaccines...so it's a group where mothers just put their questions and opinions and we can talk back and forth.

One mother expressed a similar thought when she said: “I've discussed online with friends who agree with my stance on it.”

Study participants mentioned a number of specific websites they used in their search for information, including: www.ourworld.com, www.compuserve.com, www.vaccines.net, www.risksand909shot.com, and www.naturalnews.com. When referring to the natural news website, one mother confessed: “That one is a little more radical, but if I see an article that looks like it might you know...you can always check their sources...and usually they have been fairly accurate...” One mother spoke of using

www.thinktwice.com as her source for vaccine information and mentioned “that was a big one [referring to factor in decision-making].” Mothers also identified specific documents or articles they obtained online, including: *Vaccines Kept Secret: Adverse Effects and Alternatives*, and *Risks of Immunization*, which do not promote childhood immunization.

One mother mentioned that she subscribes to a number of online newsletters, such as *Natural Health*, which is an online newsletter “with updated information coming...and these are medical doctors...it’s not like a quack think or anything, it’s from the Center of Disease Control and stuff where they get their information from.” She also said she receives a free e-newsletter from Dr. Mercola, who “was a medical doctor at one time, I believe...and every once in a while there is a good article in there...he puts a lot of effort into research and he will make sure that he has good sources.” According to Wikipedia (2012), Dr. Mercola is a Doctor of Osteopathic Medicine or alternative physician who is the founder and editor of an alternative-medicine website and criticizes aspects of standard medical practice, including immunization. Although Wikipedia is not viewed as an evidence-informed website, it was used as a result of challenges in locating accurate information on Dr. Mercola.

However, mothers also spoke of the challenges with searching for information online related to the authenticity and accuracy of the information that is posted. The mothers questioned the information by stating the following: “Who put the information there, where did it come from, so you don’t always know with that either” and “You just Google something, well anybody can put it right, so I usually trust the health links...you can’t really go to any flip-floppy...any person’s opinion.” Furthermore, one mother

expressed: “There is always controversial stuff on the Internet...you read about all the bad stuff in vaccines...” Finally, one mother said: “I am not saying that everything is based on the Internet, because you know the Internet can be false.”

One mother also expressed her concerns with online information:

When I did have more access to the Internet, I would go on there, but it’s risky going online because you could find anything online to back up your opinion, and you don’t necessarily know the source...if a trusted friend would point me in the direction of a specific article online, then I would take that more seriously rather than just kind of randomly Googling vaccinations.

Books. Books were mentioned by study participants as a source of information on immunization. “I took out every single book in the library, and I spent two months and just read and educated myself and really weighed out the pros and cons just from that” was expressed by one mother. This mother revealed that the majority of the books she read were written by doctors, however, one or two may have been written by mothers about their negative experiences with immunization. One mother acknowledged a book she read as a primary factor in her decision not to immunize her children.

I read one book and I do remember the source...called *What your Doctor May not Tell you about Childhood Vaccinations*, and I think the author is Stephanie Cave, and I wouldn’t say that book convinced me, but it was probably the main thing and then other sources would back up what she said...it felt really balanced.

Mothers spoke of books influencing their decision not to immunize by the following quotes: “Reading those really balanced books” and “Doing the research and reading the books and looking at everything kind of led us to the decision we did.” One mother pointed out: “I read some of the books by Jenny McCarthy about her son getting autism, and stuff like that, but that’s pretty much about it.” Another mother mentioned Dr. Sears’ book about vaccines and said, “I think he’s quite balanced as well. I think he gives an alternate schedule for vaccinating too.”

Journals. A small portion of mothers mentioned journal articles as a source of information. One mother said: “I printed off an article online that was called *Why are Vaccines Safe*...it had like an ingredient list too, but I am not interested in the bashing of either side.” The difficulty understanding medical journals was expressed by one mother who acknowledged: “They are not usually in regular language, and so I really would have to read them and re-read them, and sometimes still not fully understand what they were getting at.” One mother expressed her views of the sources she used by saying:

I try to find books or articles written by doctors, medical doctors, who have been on both sides [referring to for and against immunization], who have, especially now, seeing so many of their young patients coming in with side effects, and that they’ve decided to look into it, which I appreciate in a doctor.

Anecdotal Information. Anecdotal information or hearsay was another common source of information revealed by all mothers in the study. Mothers spoke of obtaining information from friends on the topic of immunization as well as hearing stories about immunization that influenced their decision. One mother openly acknowledged that she based her decision on this information when she said: “You realize that a lot of it is based on what you’ve heard.” This thought was also expressed by a mother who mentioned: “I’ve heard lots of things...there are a lot of different opinions out there...”

Friends were a common source of information, as evidenced by the following quotes: “You go by what friends have their [with their] experience...that is important”, “Friends that have the same beliefs”, and “talking to other parents.” One mother said she sought information from friends on the topic, however, acknowledged inaccuracy with hearsay when she said: “Things I’ve read and heard...how people around me think about immunizations...from friends...I mean it can be valuable, people’s insights, but it is good to check it because a lot of it could just be hearsay right...”

One mother mentioned obtaining information from a close friend “that knew a lot about it, and so she started giving me some advice and some books to read and information and websites to go to...” The importance of friends in decision-making was expressed by another mother who said: “The same friends that I kind of go back to because they are very knowledgeable in that aspect...”

Obtaining information from a family member was revealed by one mother.

I have a sister-in-law who has really done research on the Internet, and she sent us a lot of information that we printed out like ten years ago already...I have a binder full of it...that’s really the scientific side effects and bad things about immunization...

Information obtained from other parents was also expressed. “For me it is more of a gut feeling...listening to other mothers, other parents, what is happening in other families...” was outlined by a mother. This idea was similarly expressed by one mother who mentioned: “I also read a lot about what other parents have to say, because they know right? And hopefully there aren’t parents out there, just making it up for no reason.” Furthermore, one mother spoke of her experiences with other parents by saying: “Hearing from parents, even in this area, and wondering if it happens to people I know, maybe it’s not as rare as my doctor would say it was.”

Stories also resonated with study participants. As mentioned earlier in this chapter, one mother spoke of a close relative who died from SIDS following immunization, and this information was obtained from another relative. “Just because, just like the whole my relative thing...that was a huge part too. I was like seriously? If that is somehow linked, I don’t even want to take that risk...” One mother spoke of a story she heard in the following quote: “I’ve heard that, about a study apparently where a doctor or someone studied Amish kids or something who did...where there was lower

rates of autism compared to the general population, where there are more vaccinations...”

This mother was referring to the fact that many Amish communities in the United States do not immunize their children, and are sometimes compared to mainstream society in research studies.

One mother acknowledged that she spoke to a friend whose children became very sick following immunization, as well as a nurse who did not immunize her children because of her concerns, which influenced her decision not to immunize. Another mother said she talked to other mothers whose children experienced negative side effects following immunization, and became lethargic, non-responsive, febrile and who also cried extensively.

Health Care Professionals. Mothers mentioned that health care professionals, such as physicians, chiropractors, and public health nurses, were a source of information on the topic of immunization.

Mothers said that using public health nurses for information and going to the public health clinics for pamphlets on immunization was confusing because the information they received from the public health nurses was much different than what they obtained from the Internet. Interestingly, one mother indicated that the public health nurse who visited her following the birth of her baby presumed that she did not immunize based on her religious affiliation, so did not inquire about her decision. Other mothers mentioned similar experiences in that the public health nurses briefly asked if they were planning to immunize, however, did not engage in a discussion on the topic.

When asked about their relationship with public health nurses, study participants who had a relationship with a public health nurse were satisfied that they did not push or

pressure them into immunizing, but respected their decision not to immunize. “They are pretty respectful...I really appreciate that because I am so exhausted about hearing about it.” However, one mother expressed her frustration with public health nurses by saying: “The first thing she brings out is like the vaccination schedule and says, here’s your schedule, this is when your time is, and so it was just kind of shoved into me. I really didn’t get a choice.”

One mother spoke of her relationship with a public health nurse who really helped her make her decision not to immunize. This participant revealed that this public health nurse was fired from her job for providing information to parents on vaccine ingredients.

She was actually a public health nurse herself...she started giving me pamphlets and stuff about it...she does group get-togethers for pregnant mothers and mothers that just have babies...she used to give the shots...she switched her opinion very into the natural world...I have little cards that I got from this lady and it gives the websites...

Receiving information from a family physician was mentioned by one mother.

We asked quite a few people when we were trying to decide whether to immunize or not, like our doctor, our family doctor...like I obviously don’t believe everything my doctor says, but I do value his knowledge as a professional in an area that is not my expertise.

One mother expressed her perceptions of her family physician and said, “He helped inform me. He’s pro immunization, but he was willing to take the time and really discuss it without belittling my concerns.” This was also expressed by another mother:

We talked to our doctor who really recommended it...like I obviously don’t believe everything my doctor says, but I do value his knowledge as a professional...he have his perspective about it, which was very much for immunizing...he was respectful, and said if you don’t I understand that’s your decision, but I do think that you should realize you are kind of benefiting from...like your child may not get disease that he otherwise would have been able to, so like I think we took that into consideration.

Chiropractors influenced four mothers' decision-making process. One mother received an information sheet on the influenza vaccine from her chiropractor that she referred to during the interview. Although the information was specifically on influenza, this mother used this information throughout the interview as she explained her concerns with childhood immunization. The information sheet provided details about influenza vaccine ingredients, as well as the dangers associated with the vaccine. With reference to her chiropractor, one mother said: "Chiropractors don't push for immunizations at all, and so they thought it was a really good decision that I had made not to...they helped solidify it" [referring to decision]. This thought was similarly communicated by a mother: "The doctors are yelling at you, you know, 'Why don't you?' [immunize] and then you go to your chiropractor, and they are like, 'You don't? [immunize] Good.'"

Study participants acknowledged that in their interactions with health care professionals, they were faced with a variety of responses related to their decision not to immunize their children, which often caused confusion. One mother said: "The doctors are yelling at you, you know, why don't you, and then you go to your chiropractor, and they are like, 'You don't? Good'...it's like they both went to the same schools..." Another mother mentioned: "The one [physician] before was pushy, like, you need your booster shot, and I said, 'Well I am not having it', and then he made me sign some papers" [referring to waiver form refusing immunizations].

One mother revealed the fear she experiences with her physician.

I don't want to hear the lecture...I know that my doctor would be pretty upset about it, so I just say I am delaying it and try and make that be the end of it...I have to lie to her, just because I know if I tell her I am not immunizing, she might drop me as my doctor.

One mother spoke about her experience with a pediatrician by saying:

He grilled us for an hour. He really went after us, why don't you do it, why don't you...it's not good, and you know, he really tried to scare us...it made me feel bad. You second guess yourself then for sure.

Four of the study participants mentioned that the topic of immunization never comes up when they visit health care professionals, such as their physician. "Our doctor never really mentioned it...he never says you should immunize, he never mentions it, never talks about it..." Another mother revealed the same: "We've never really discussed immunization." Finally, a number of mothers expressed the following: "He [referring to physician] probably just assumed we wouldn't."

Determining Credibility of Sources of Information

The study participants discussed how they determined the credibility of the sources they used for information.

Source is one. I think your gut instinct can tell you a lot. I think you can read something and see if it is really far-fetched, or if you see something repeatedly...you can almost assume there's got to be some truth to it.

One mother said: "Just having the facts without a lot of emotion or opinion thrown in there...to me that was more compelling than someone who was really emotional." "You look at the credentials of the person writing it...I guess I could kind of feel...sense whether something was an opinion of whether something was act" was expressed by a mother. Furthermore, one mother said: "That is really hard to say because I think just how it affects you and how like when you read something, and you think about it..."

A small portion of mothers spoke of the need for evidence-informed information, which was an interesting finding in this research. "I need evidence-based, that is the biggest thing." When asked how she determines the credibility of a source, one mother

said: “Looking where the information comes from, whose read it, if it can be found in other places...looking if it is peer-reviewed.” One mother acknowledged:

I didn't go to websites because you can write anything on a website and no one has to check it. With a book you have to have fact-checkers...there has to be something reputable in it. They won't let you publish a book that just has whatever in it.

Risk versus Benefit Analysis

As described in detail previously in this chapter, there are numerous factors which influenced non-immunizing mothers' understanding and decision-making regarding immunizations. These factors were explored under four main themes, namely, emotions, beliefs, facts, and information. During data analysis, it was discovered that following examination of the various factors, mothers engage in a process of risk versus benefit analysis, which includes processing, filtering, and weighing factors. This risk versus benefit analysis of childhood immunization, as explained by study participants, is outlined below.

All study participants described the risk versus benefit analysis in detail during the interviews. They spoke of the importance of their decision and how they had to consider both sides of the issue. “I think you just have to process it and just look at everything you've read and consider things.” One mother said: “You have a choice, and if you want to do that, there's risks, and if you don't do that, well you might get sick.” Similarly, another mother expressed: “What's better and what's not? There are risks on one side and there can be risks on the other side.” One mother expressed her concerns by saying: “I don't even want to take that risk...” Furthermore, mothers mentioned that the risks of immunization do not allow them to immunize their children, as evidenced by this quote: “The risk factor is what holds me back.”

The perception of risk was clearly described by mothers.

There are risks with both decisions, so I think there is risks that can be associated with choosing to immunize, and on the flip side, you know, I think there is the general assumption that if you don't immunize, you want your kids to get these illnesses.

One mother expressed her fear by saying: "We weighed the risks...and do you want to take the risk even if it is one in 17 billion? There's got to be that one somewhere." The risk versus benefit analysis was summarized by one mother when she said: "I guess the risk is there, but to me that was a better risk...I can see both sides, but to me that was a greater risk. To immunize was a greater risk than to not immunize."

The risks perception of certain diseases compared to other diseases was also expressed by mothers. For instance, mothers felt that tetanus was one disease where the risk was much higher to take as a non-immunizer, as evidenced by the following quotes: "With the tetanus, it could be fatal, so that's a big deal for me" and "Especially tetanus...that is one that could affect your child anytime right?" One mother confessed: "Tetanus is the one that scares me...it has the most potential for harm and fatality."

Mothers spoke of needing to feel comfortable with their decision. "I felt the most comfortable not immunizing." This feeling was similarly expressed by a mother: "I don't feel they are really a safest choice as we are made to believe, and I don't feel comfortable getting my kids immunized." Finally, one mother revealed: "I just didn't feel comfortable with it, and I guess I was willing to take the risk of not immunizing."

The importance of making an informed decision was also clearly discussed. "I really wanted to make an informed decision" was expressed by one mother. Another participant said: "There is not necessarily a right and a wrong...as long as they [referring to parents] think about it and find out all the information, and based on that make their

decision.” The significance of making an informed choice was further expressed by two mothers who said the following: “I think it needs to be an educated decision on both sides” and “So it’s a well-informed, responsible decision.”

In summary, analyzing the risks and benefits of choosing not to immunize, which includes processing, filtering, and weighing factors, leads mothers to their decision not to immunize their children.

Decision-Making Process

Mothers’ decision not to participate in childhood immunization occurs as a process, and study participants expressed a number of important aspects in their decision-making process. One mother revealed: “I think everything influences our decisions,” which directly relates to the numerous factors discussed previously. Mothers also acknowledged that they continually re-evaluate their decision not to immunize, and all participants indicated that the combination of factors led them to their decision.

The difficulty of the decision not to immunize was expressed by mothers. “It was difficult, that decision not to immunize...I really thought about it...because there are two sides to it...you don’t know what’s best.” One mother confessed the following:

It was a very long process, and I really agonized because it’s my child...I mean as a parent you don’t want to do the wrong thing...the vast majority of parents want to do the right thing...I wasn’t going to make the decision lightly.

This concern was echoed by another mother.

You realize that each decision you may have, has consequences, and ultimately as a parent you are responsible for your child, and you would always wonder whether you did the right thing or not...so that was hard...it’s obviously a very different decision when you make are making it for your children then for yourself...it is easier to take the consequences of your actions for yourself than it is for your child...he is more vulnerable right, and you just want the very best for your child, so in that sense it is different.

Two study participants acknowledged that they are benefiting from those who do immunize. “We are kind of riding along on everybody else immunizing, we are benefiting from everybody else immunizing, which is not really fair in a way either.”

This was further supported by a mother who said: “You are still benefiting from the fact that more people do and those diseases aren’t around anymore, so that’s like...you are still benefiting from other people doing it, which is kind of good to think about too.”

Making the right decision was expressed by the mothers. One mother expressed her belief in her decision by saying: “I am confident that our decision was the right one, at least for now.” This belief was further expressed by a mother who acknowledged: “I know I am not always going to do the right thing, but I do feel very firm in this decision.”

Summary of Perspectives of Non-Immunizing Mothers

In summary, research findings indicate that non-immunizing mothers’ have a questioning attitude which directly impacts their understanding of childhood immunization and their decision-making process not to participate in childhood immunization. As a result of this questioning attitude, all of the mothers considered a variety of inter-related factors as they engaged in the decision-making process, including:

- Emotions
 - Fear
 - Negative Experiences
 - Guilt
 - Social Belonging
 - Indifference

- Beliefs
 - Religious/Philosophical
 - Mistrust of Government, Pharmaceutical Companies, and Health Care Professionals
 - Natural Health Beliefs
- Facts
 - Lack of Exposure to Vaccine-Preventable Diseases
 - Vaccine Ineffectiveness
 - Vaccine Ingredients
 - Multiple Vaccines/Antigens
- Information
 - Not Knowing
 - Sources of Information
 - Media Influences
 - Anecdotal Information
 - Health Care Professionals
 - Books
 - Journals

Following this consideration, a risk versus benefit analysis occurs where mothers' process, filter, and weigh these factors, weighing out the risks of immunization and vaccine effects against the risks of potential disease and harm. The final step in the process is mothers' making a decision not to immunize their children, which for some mothers is a final decision, and for others it is a decision that they continually re-evaluate.

The research findings also illustrate that the decision-making process is lengthy, difficult, and complex.

Demographic Information of Health Care Professionals

Demographic information was collected on health care professionals following each interview as a means to obtain a holistic understanding of study participants. Twelve health care professionals in Southern Alberta were interviewed, as determined by the inclusion criteria outlined in Chapter Three. The detailed demographic information is noted in Table 4.2. In summary, four of the health care professionals were public health nurses, five were chiropractors, two were pediatricians, and one was a specialist physician. There was an even representation of both genders. The study participants' age ranged from 29 years to 61 years, with the mean age of 44 years.

Highest level of education varied among participants; three had an undergraduate degree and one participant had a graduate degree; five participants had obtained a Doctor of Chiropractic degree, and three identified themselves as having a Doctor of Medicine degree. Length of time as a health care professional also differed among participants, with a range of less than one year to greater than 20 years. The mode length was greater than 20 years. One participant had practiced for less than one year, two were in practice for six to 10 years, three identified a length of 11 to 15 years, and six indicated they were in practice for longer than 20 years. Four of the participants indicated that they practiced in an urban setting; seven stated they practiced in a rural setting in Southern Alberta, and one participant did not respond to this question.

Eleven of the twelve health care professionals indicated they had children. Of the eleven with children, nine professionals stated their children were immunized and two specified their children were not immunized. Ten health care professionals identified their ethnicity as Caucasian, and two participants identified another ethnicity.

Table 4.2. Demographic Characteristics of Health Care Professionals

Demographics	<i>n</i> = 12	%
Sex		
Male	6	50
Female	6	50
Age		
Range	29 years to 61 years	
Mean Age	44.5 years	
Practice Setting		
Rural Community	7	58.3
Urban Community	4	33.3
Not Answered	1	8.3
Education		
Undergraduate Degree	3	25
Graduate Degree	1	8.3
Doctor of Medicine	3	25
Doctor of Chiropractic	5	41.7
Profession		
Public Health Nurse	4	33.3
Pediatrician	2	16.7
Physician - Specialist	1	8.3
Physician - Family	0	0
Chiropractor	5	41.7
Length as Health Care Professional		
Less than one year	1	8.3
1 to 5 years	0	0
6 to 10 years	2	16.7
11 to 15 years	3	25
16 to 20 years	0	0
Greater than 20 years	6	50
Children		
Yes	11	91.7
No	1	8.3
Children Immunized		
Yes	9	75
No	2	16.7
Not Applicable	1	8.3
Ethnicity		
Caucasian	10	83.3
Other	2	16.7

The Perspectives of Health Care Professionals

A variety of health care professionals, namely a specialist physician, pediatricians, public health nurses, and chiropractors, were interviewed and diverse research findings were discovered, which are described in detail below.

Health Care Professionals' Beliefs of Childhood Immunization

Health care professionals discussed their personal beliefs and opinions of childhood immunization in great detail. The majority of health care professionals believed in childhood immunization, while two health care professionals, namely chiropractors, did not believe in immunization.

For Immunization

Health care professionals who believed in immunization expressed their beliefs and opinions through a variety of phrases. They mentioned the safety and efficacy of vaccines, as well as their firm beliefs in science and evidence. One chiropractor stated: "It's a situation of science and knowledge and overwhelming scientific evidences that it's [immunization] a safe and very effective procedure." A public health nurse mentioned her "belief in science...I trust science...so I think we can't just point to vaccines as being a big risk, when so many other things could potentially have risks, but it is a calculated risk that we choose to take." This thought was similarly expressed by a pediatrician who said: "When we come out with a recommendation that is based on evidence that we should go by evidence."

Health care professionals spoke of vaccines as a miracle of modern medicine, which can be seen through the eradication of disease and the fact that vaccines have stood the test of time. The specialist physician said: "It is one of the greatest feats of public

health.” The success of immunization was mentioned by a public health nurse: “I am a very big advocate of it, being that the evidence...other than water sanitation and things like that; immunization is the single most thing that’s decreased death rates and increased health outcomes. You can’t disagree with the numbers.” Health care professionals revealed that they believe vaccines are necessary and important, and there are fewer risks with vaccines compared to the risks of acquiring a vaccine-preventable disease. The following quote by a chiropractor: “On the whole, I think the benefits outweigh the risks for sure” demonstrates this belief.

Health care professionals who support immunization also noted that they are advocates of immunization and are passionate about the issue. One pediatrician mentioned this:

I am a strong proponent of immunization. From a point of view of my medical training and also from what I have read and researched about immunizations and then especially my personal experience in the past of having children die or be seriously compromised by many of the infections that are possibly prevented with immunizations today.

The following quote was expressed by a public health nurse: “I have to say I am a strong advocate of it. I will say, if you could protect them, you are putting their seatbelt on, you are protecting them. You are giving them their immunization, we are protecting them.”

Community protection was outlined by three public health nurses. One public health nurse said: “The whole idea of immunization is community. We need to look at the community, not the individual, because if you do not immunize enough people in the community, we will have outbreaks.” Another nurse said: “Seeing the public health benefit...just to see how by vaccinating you contribute to the common good by protecting those who cannot be immunized.” “I think it is important to get them done...for the

protection of the larger group...so it would be the golden rule I guess” was similarly expressed by a public health nurse.

Against Immunization

The two chiropractors who did not believe in immunization mentioned that they oppose vaccines because they are not effective, not necessary, not safe, and there are increased risks with vaccines. “I certainly don’t think it is a good thing...I think we need to be advocating for healthier approaches to life.” One chiropractor revealed his concerns by saying:

I personally started doing some research on, what is actually in a vaccine...and that really sparked a lot of concern with me...vaccines still contain thimerosal, which is a derivative of mercury, and mercury is the most toxic substance besides radioactive material to our body...does putting this into my child’s body, these chemicals, outweigh the risk of them actually having the disease, but I believe that if you are healthy, your body should be able to fight it off.

This chiropractor also discussed concerns with vaccine ingredients, such as human diploid tissue, when he said: “Human diploid tissue...what that means is fetus...and to me...I have an ethical problem with that...that’s wrong...life to me is a gift.”

They also spoke of their belief that the concept of immunization is false because vaccines do not create immunity, and they prefer to view this as vaccination.

Immunization...like in the name itself, it implies that you will be immune after it, but you really aren’t. And so...well now you need a booster shot...it doesn’t work very well...well if you are immune, you are immune. And so it’s all these little nuances that make it misleading...I don’t believe it is immunization, so it’s vaccination.

The body as a self-healing organism, and thus there is no need for vaccines, was explored with the two chiropractors.

Inside of us is a power to heal...I believe we've been blessed with an immune system that is designed to, if working properly, ward off these infections...so I think it is part of your body's natural development is getting infections...your nervous system controls every cell tissue and organ in your body, and if it is allowed to function properly, your body can basically heal.

One chiropractor revealed his mistrust of pharmaceutical companies, contributing to his beliefs of immunization by saying:

I believe as long as these pharmaceutical companies are very, very powerful, and they have a lot of money, if they can control a lot of things that come out, and if they don't let us see something, we are not going to see it. And if they produce a study that...they do a study on something and it shows that this doesn't work, well they are going to change the study until it is favored to them.

Health Care Professionals' Sources of Information on Childhood Immunization

Health care professionals who promote immunization revealed a number of sources used to access information on the topic of childhood immunization. Most health care professionals spoke of searching for information on the Internet, and identified a number of sources accessed online. Professionals mentioned numerous websites, including the following: the Vaccine Education Center, which is founded by Dr. Paul Offitt, Public Health Agency of Canada [PHAC], Canadian Pediatric Society [CPS], Health Canada, National Advisory Committee on Immunization [NACI], Alberta Health Services [AHS], Alberta Health and Wellness [AHW], Medscape, PubMed, Medline, Centers for Disease Control and Prevention [CDC], Every Child By Two, and Immunize BC.

Books from reputable sources, such as *Your Child's Best Shot*, which is published by the Canadian Pediatric Society, and resources from local public health units were also outlined as sources accessed. One chiropractor mentioned a documentary produced by the

Public Broadcasting Service called *The Vaccine Wars* and government websites as trusted sources of vaccine information.

One chiropractor discussed his method of obtaining information in the following quote:

I would Google the topic and see what came up...I would go online and look around, and you know, you have to be careful who your sources are. If you are going to form an opinion on what you Google, you have to see that the person is...whether they are published in a peer-reviewed journal, and what they are saying is based by solid science, or whether it is just some philosophical opinion.

The chiropractors who do not promote childhood immunization accessed information on websites as well, such as the Vaccine Risk Awareness Network [VRAN], which is an anti-immunization website. One chiropractor mentioned:

I am looking for what's there, what's accurate information...I don't like the biomedical stuff. I really don't trust it at all. I would rather see original sources as opposed to the health region talks about things...I've used the Merck [referring to the Merck Manual of Diagnosis and Therapy, which is the world's best-selling medical textbook] a lot, as opposed to like the health region. It has an agenda.

This thought was echoed by another chiropractor who stated he accesses information, such as vaccine ingredients, on pharmaceutical company websites.

Sources, such as Dr. Mercola's anti-immunization, natural health website, were mentioned by a chiropractor who is not in support of childhood immunization. "Dr. Mercola...he does a lot of research...he was a medical doctor, and then he became a Doctor of Osteopath...he looks at different subjects, from the other side." In addition, NVIC.org [National Vaccine Information Center], Center for Disease Control [CDC], and Dr. Dan Murphy's [Doctor of Chiropractic] newsletter were also mentioned by this chiropractor.

Health care professionals revealed that sources, such as Google, online blogs, and sensational media information, were their least-trusted sources of information. One chiropractor revealed his concerns in the following quote:

There's a lot of activist groups out there that tend to...it's real easy for people to find whatever it is they are looking for, so you have groups that for whatever reason, are anti-vaccine, and they tend to attract doctors who are of the same mindset, and those types of celebrities...

Other sources not to be trusted are “personal observations, personal testimonials” as noted by a chiropractor.

One chiropractor who did not support immunization had a different view on credible sources.

Those stories [referring to personal stories of people who suffered negative effects of vaccines] mean more to me than a double-blind, peer-reviewed journal article, because I mean, I understand it thoroughly. We need that, but really if you don't produce the results you want, you are not going to really put that article out...we know double-blind studies aren't as fool proof as they should be.

Health care professionals mentioned accessing both credible and non-credible sources of information to obtain a holistic view of readily-available information. One public health nurse summarized this thought by saying:

Articles, as far as journals, especially the peer research based ones, rather than anecdotal ones. I find all of them beneficial in their own respect though, even if they are anecdotal, and some of the books that aren't research based; it is just taking a different viewpoint. I love to read what my parents are reading...and I like to know what they are hearing, and what is scaring them, and why they are concerned about it, or what they are concerned about.

The specialist physician also found value in accessing a variety of information and said:

“It is good to mystery shop...I mean you roughly know what is out there.”

As mentioned above, health care professionals access a variety of sources on the topic of childhood immunization. Online resources, whether it was websites or journals,

were widely used as reputable sources of information, which certainly correlates to the use of technology in the health care system.

Health Care Professionals' Role in Immunization

All of the health care professionals, namely pediatricians, the specialist physician, public health nurses, and chiropractors who were interviewed, perceived that they have a role in childhood immunization. This role was dependent upon their specific occupation.

Chiropractors

The chiropractors interviewed revealed a number of roles in childhood immunization, however three chiropractors who promote immunization confessed that immunization is not within their scope of practice. "It is not really part of our scope of practice." One chiropractor mentioned the stance that the Canadian Chiropractic Association [CCA] has taken regarding immunization, namely that chiropractors should support immunization, although it is not within their scope of practice as chiropractors and the topic should not be discussed with clients. When discussing the CCA, a chiropractor who does not promote immunization mentioned the following:

And so our profession is certainly muzzled us a bit in that they don't want us talking about this. And so although some are, like the CCA [Canadian Chiropractic Association] is pro-vaccine, Alberta has softened it. It is not as...it used to be we encourage informed decisions, and individual choice, but now they basically don't want us talking about the issue, because it's such a hot topic.

Two chiropractors mentioned that the majority of chiropractors support immunization, however, some do not, as evidenced by the following quote: "I think it is 75-80% of chiropractors are fully in support of immunization, but unfortunately the ones that aren't...a few are very vocal about it."

All of the chiropractors acknowledged that they would provide their opinion if asked about childhood immunization, and three mentioned that they would indicate their support for it. "I have confidence that it's the right thing to do... When I am asked, I encourage it." One chiropractor said: "I would strongly encourage them to do it." All but one chiropractor mentioned they do not usually question mothers about their children's immunization status, which is summarized in the following quote: "I don't seek opportunity to advise about it." A chiropractor who does not support immunization mentioned: "Never once do I tell someone to or not to get their vaccinations."

Two chiropractors indicated that they are not an advocate of immunization, as exemplified by the following quote:

I am certainly not an advocate for it, but I guess I am a sounding board for parents who are concerned about vaccines...so I guess I am being an advocate in the sense that I don't vaccinate, so they might find some solidarity there. I just want to reassure people that it's okay not to vaccinate. If they've made that choice, they are not bad people. That's probably where I see my biggest role.

An educational role was also discussed by the chiropractors. "It's more of an educational role...I would really encourage them to look at both sides of the issue and then to make the decision that they feel is right for them." A chiropractor who does not support immunization mentioned that he refers his patients to the Vaccination Risk Awareness Network [VRAN] website, and encourages them to make a decision based on the information they obtain. This chiropractor further mentioned his role is providing information to people.

My role is to give information to people, not to influence their decision by any means, just to provide them with resources...where to look, what their options are, what's in a vaccine. I will give them information...I will say, would you like some information about the pros or cons or what's in a vaccine or what you are doing? I will steer them to personal stories too, just because they need to hear a personal story.

Two chiropractors who do not support immunization revealed that they inform parents that they have options about childhood immunization and that it is not mandatory in Alberta. One chiropractor stated the following:

The worst thing for me, as a health care practitioner, is a mother coming in here and me not giving her an option and she goes and has the vaccination done, and something happens to that child. That would really weigh heavy on me because I believe when you are entrusted with knowledge; you need to share that knowledge. I believe knowing that the knowledge that I have, keeping that knowledge inside of me is really just as bad as giving false information, because you are not giving people the choice.

Current research findings indicate that chiropractors who believe in and support immunization are more likely to recommend childhood immunization to their clients, as evidenced by the discussion above.

Pediatricians and Specialist Physician

The specialist physician and pediatricians interviewed also perceived themselves to have a role in childhood immunization. Physicians indicated they are strong advocates of immunization. The specialist physician mentioned: “My role is to advocate...my role within health care is to advocate.” They also acknowledged that they discuss childhood immunization with their patients. For instance, the following comment was made by a pediatrician: “I will usually launch a discussion into what their concerns are and what my experiences are with babies that died from these diseases.” They confessed that these discussions are usually time-consuming; however, the benefits can be relatively positive. One pediatrician said: “I will ask them about the immunizations. No patient goes through my clinic without being asked about their immunizations. So I ask the question all the time...just discussing why, telling them why, and why not yes.”

Physicians mentioned that they provide information to mothers to assist them in making a decision about childhood immunization, as evidenced by the following comment made by a pediatrician: “I can usually give them some kind of insight into what their risks are, and then I leave it up to them.”

Public Health Nurses

As providers of the immunization program in Alberta, public health nurses have a vital role in childhood immunization. Public health nurses spoke of a variety of roles regarding childhood immunization, with an important role as educators. One public health nurse said: “I am willing to provide those individuals seeking information with information based on science that would hopefully help them make a decision that they would feel comfortable with.” Another public health nurse mentioned that her role is “to offer information to those who are inquiring...giving them the evidence.” This thought was further expressed by a public health nurse who said: “Trying to educate families about the importance of it and the spread of disease and that there is still a risk out there.” They spoke of providing resources to parents, such as evidence-based websites, videos, books, and other educational materials.

Meeting with parents and having discussions about the risks and benefits of vaccines was discussed by public health nurses.

We’ve gone over some of the risk-benefit analysis – the risk of getting the disease versus the risk of potential side effects...giving them current information just on the MMR and autism study and how it has been rescinded...just to reassure them with the most up-to-date information that I have.

One public health nurse further supported this role by saying:

I always try to make it very clear – this is your decision that you are making for your family, and these are the reasons why, these are the pros and cons, and you need to make an informed decision about this.

Furthermore a public health nurse mentioned: “As public health nurses, there is such an opportunity to teach, to show, and to have discussions with everybody.”

Public health nurses also discussed other roles in childhood immunization, such as administering vaccines, which is exemplified by this quote: “Actually giving the vaccines and ensuring the child is comfortable through the process.” One public health nurse acknowledged that administering vaccines is a small piece of the whole immunization puzzle. “I do administer them, but I see that as a very small piece of it.” Another public health nurse viewed her role as an “educator, facilitator, and a comforter”, which encompasses the various aspects listed above.

The importance of a non-judgmental attitude and trust was clearly identified by the public health nurses. “I am very non-judgmental...not judging them. No parent wants to be judged...and so trying to build trust and rapport.” One public health nurse said, “I try to be a resource instead of someone they are going to fear...I try to be very open...I try to leave the door open to come back...rapport is a big thing.” This thought was further summarized by a public health nurse in that “we need to be open-minded. And that’s sometimes the hardest thing.” Finally, one noted: “The best thing we can do is support them, encourage them, and try to give them information, reassurance, but also listen to them.”

Informed Choice

Health care professionals unanimously believed that their role is to encourage informed choice and informed decision-making regarding immunization. One chiropractor mentioned that he would point people in the right direction for information.

I would encourage them to go to the health unit, for instance, and read the stuff that is in favor, so if they want to make a decision on their own, they should at least study it, and not just listen to one side.

Another chiropractor said: "I would encourage them to look at both sides of the issue, and then to make the decision that they feel is right for them." Mother's having the appropriate level of education to ensure that an informed choice is made was also mentioned.

In addition, two public health nurses mentioned the importance of informed decision-making, as evidenced by the following quotes: "It is also a decision that needs to be based on an informed choice" and "Giving them an informed choice...I feel responsible for that."

One chiropractor believed the following:

[Parents] have a responsibility to make an informed choice, and make sure they find some good medical literature; you go to the alternative literature, so I give them the VRAN website because it's the most current stuff that I have and then tell them to make a choice.

Another chiropractor mentioned a similar thought:

I don't go out and say, 'You know if you look what's in a vaccine'...I know you should tell people, 'Go look what's in there. Go on the Internet and look it up' and they will come back and I say, 'Did it say human diploid tissue?' 'Yes.' And I will say 'Do you know what that is?' 'No.' 'I will say, well that's fetus material. Do you think that is a good thing to put into your child?' 'No.' 'Well then okay, and then make your decision based on that.'

Health care professionals also spoke of discussing the risks and benefits of immunization with their patients, and encouraging informed decision-making based on the risk/benefit analysis. One public health nurse mentioned the following:

I always try to make it very clear – this is your decision that you are making for your family, and these are the reasons why, these are the pros and cons, and you need to make an informed decision about this.

These ideas are inter-related with making informed choices, which according to one public health nurse is based on the parent having sufficient information to do so.

However, one public health nurse related that the parents “are making an informed, educated choice in their mind of risk and benefit.”

Immunization as a Health Care Issue

All health care professionals outlined their belief that immunization is a health care issue, and health care professionals from a variety of disciplines need to work together to address this issue. One chiropractor stated that it is a “significant impediment to interprofessional relations” when professionals have varying opinions on health care issues and clients are hearing different messages from various health care professionals. A number of health care professionals mentioned their perceptions of chiropractors, and generalized that chiropractors do not promote and support childhood immunization. One public health nurse mentioned that mothers often ask, “Why don’t I [referring to mothers] listen to the chiropractor, who says, oh no, you do that all by manipulation and it is all the natural stuff...” Furthermore, a pediatrician stated:

I know at some of the chiropractors conferences...because I was at a conference and they were next door, and I walked past some of their things, and there was a huge amount of information there being pushed, you know videos and stands...anti-immunization was very prevalent at their conference.

When discussing consistent messages among health care professionals, one pediatrician believed the following: “If every health care professional, with every encounter, will ask them the same question, it would break the barrier. Immunization has to be a question at all health care encounters.” The specialist physician echoed this notion by saying: “We really need all our health care providers, who are also doctors, naturopaths, homeopaths, on board with some of our public health concerns and messaging.”

One chiropractor acknowledged how excited he was to be a part of this research study “because I think we can be part of the health profession more than we are, and I think because we take more of a holistic approach to health care.” One public health nurse recognized that various health care professionals, such as physicians, chiropractors, and other providers have a strong influence on what patients choose to do. However, another public health nurse believed that health care professionals have created this issue that we are encouraging self-health care, and “They [referring to patients] are becoming more informed. They are not just saying whatever the doctor says is okay. And we’ve made the push to make them change...self-health care...so I think things are going to have to change.” This thought was echoed by a public health nurse who mentioned: “People are relying on their own research...they are going to the Internet, and they are getting books out themselves, which is great, but is also a huge challenge for us as professionals because the trust level in us isn’t there anymore.”

Other participants discussed the challenges faced by health care professionals with regards to public information and media on the topic of immunization. One pediatrician expressed his role with this challenge:

To try and challenge that wave of public information that is based more in innuendo or hysteria, and giving one side of the thing without being able to balance it with the other side...so I at least provide somewhat of an alternative to what they've heard out there.

Health care professionals realize that negative stories about immunization receive more media airtime because they are newsworthy and sensational, whereas the facts about immunization are not interesting and do not secure as much media attention. Health care professionals deal with the difficulty of conveying the message about immunization, which is challenging in society today, as expressed by another pediatrician: "It has to be in the public forum, rather than having public health clinic educational programs. It has to be in the public program, in a popular way that people would like to hear."

Health care professionals acknowledged that they need to be more proactive in the immunization debate because it is a significant health care issue, as revealed by a pediatrician:

I think people who work in the health field, with, either directly with immunizations, or indirectly, we have to be more proactive. And I think we need to be more willing to, not reinvent, but reenergize the debate, the other side of the debate. I think it's too passive at times...we allow too much of the negative thing to be out there and there's not enough to counter that perception. So I think all of us may be to blame. Encouraging generally people to do it [immunize] is our... keeping people well, general wellness that is part of the whole wellness concept, and we all need to be positive, to be advocating for that.

Furthermore, a pediatrician expressed her concerns by saying: "A lot of professionals are not engaging themselves with vaccination issues simply because I think the time issue and it's not becoming the priority of doctors' offices."

Perceptions on Mothers' Understanding of Immunization

Health care professionals considered mothers' understanding of childhood immunization across a spectrum, ranging from poor understanding to excellent understanding, as described by the study findings below.

A variety of the health care professionals who were interviewed described non-immunizing-mothers' understanding as limited or poor. One chiropractor stated: "Non-immunizing mothers are very smart on belief and faith than they are on evidence and knowledge." Another chiropractor revealed his perceptions by saying: "Poor understanding – I don't think you can read the solid research that is out there and step away and say that this [immunization] is not a good thing." This was confirmed by the specialist physician who mentioned: "Their understanding is limited...I don't think mothers are adequately informed."

On the other side of the spectrum, health care professionals also felt mothers were educated and informed, as mentioned by one pediatrician:

It's not necessarily lack of information or lack of understanding...it seems to be that they have enough information...they are clever enough to understand certain things, but depending on what they are using as their resources, they make it a certain perception, and not the full picture.

This belief was echoed by a public health nurse who said: "I think a lot of them are quite educated. I don't know if it is correctly educated, but they are very well-informed."

Furthermore, a chiropractor believed the following:

They are earnestly trying to figure this out and understand this. They are pretty well-informed about issues...people who are asking are trying to understand this...the reason being is it's so much easier to vaccinate than not to vaccinate, and so to make that choice not to, I think they have to do a lot of research and have formed an opinion.

The power of convictions related to knowledge and understanding was also explored with health care professionals. One public health nurse expressed her perceptions:

Strong personal convictions will take over and overrun or overrule any evidence that is out there...I think you can understand something but still not agree with it because your convictions, if that is where you are coming from, are contrary to that...for somebody it was maybe a negative experience, I think they understand, but their heart won't let them do it. So I think it's bigger than understanding.

Personal conviction can be associated with fear, which was also explored by professionals during the interviews. In fact, one public health nurse revealed: "It is just fear and they don't know what to do and they don't know who to believe or ask, so it's paralyzing. They don't do anything."

Professionals also acknowledged that sensational information is often easier to understand for mothers because they can associate themselves with this information, as expressed by one chiropractor:

The trouble with that is the information that is out there is pretty sensational and to someone who doesn't really know how to sift through valid information from conjecture and rhetoric, they would read the non-immunization book and it would speak more clearly to them, they would understand it easily, and then when they try to read the technical stuff that is in favor and support of it [immunization], it would seem kind of dull and dry to them.

This thought was echoed by another chiropractor who mentioned:

For a mother, their number one priority is to protect their children...a lot of people find what they are looking for and so for a mother who has questions about immunization, and for whatever reason believes that there is a risk there, they will tend to be attracted towards people who share the same beliefs...they are trying to act in the best interests of their child...and it seems like non-action is the easiest course.

A pediatrician further confirmed this by saying: "The information is way too long and it does not focus on the questions that the parents have at this point of time."

As discussed above, health care professionals revealed varying beliefs and opinions about non-immunizing mothers' understanding of immunization. Perceptions ranged from poor understanding to well-informed, however, health care professionals also acknowledged that sources of information accessed by mothers are often unreliable, focusing on sensational information and personal stories rather than evidence and fact.

Perceptions on Non-Immunizing Mothers' Decision-Making Process

Health care professionals expanded on their perceptions of non-immunizing mothers' decision-making process regarding childhood immunization, which closely corresponds to their perceptions on mothers' understanding of immunization. Health care professionals explored a variety of factors influencing mothers' decision-making process, many of which were similar to the factors identified by mothers in their interviews. To assist in comparison of the factors outlined by the mothers and the perceptions of health care professionals, the identified factors are summarized according to the themes identified earlier in this chapter by the mothers.

Emotions

Health care professionals perceived mothers' decisions to be motivated by emotional factors. One chiropractor expressed his views by saying: "I think it's more of an emotional decision for them. And some of it is the tenderness of motherhood." A public health nurse felt that "there is so much emotion attached to it [referring to immunization]." One pediatrician spoke of emotional connections to a choice. "The problem is that immunizing is an active thing, and non-immunizing is not. So if you don't do anything, you basically defer to the passive thing, which is not immunizing."

Fear as a significant emotional factor was expressed by health care professionals in the decision-making process. One public health nurse said: “Many are fear motivated...fear motivated that if I do this, this will happen.” Fear as a paralyzing factor was identified by another public health nurse: “They are hearing all these different things, it influences them, because it scares them...and it almost paralyzes them to not know what to do...they are really quite fearful for their own children...fear based ones are probably the biggest.” She went on to further expand on this thought by saying: “There’s no rationale for someone with fear. It is genuine fear.”

The vulnerability of children related to fear was mentioned by a number of professionals. One pediatrician mentioned: “When you are scared about something happening, we tend to react more strongly when it is our children than ourselves... it is much more a protective and a much more emotional response to that.” Fear of vaccine effects was also outlined, including the considerable fears of autism or other developmental concerns, allergies, asthma, cancer, seizures following immunization, or other adverse events. In support of this information, one of the pediatricians said: “The main thing they [parents] are thinking about is the side effects. They are thinking that they are overloading the immunizations, overloading their children with immunological challenges that expose them to allergy.”

Social inclusion and pressures from family, friends, and cultural groups were explored with health care professionals. One chiropractor said: “Everybody wants to fit in. No one wants to be on the outside. They don’t want to sit on the outside.” A public health nurse supported this by saying: “If you build an environment around you that believes the same way as you, you don’t have to question it.” One public health nurse

outlined the power of pressures for mothers: “Sometimes that informed choice is peer pressure...they want to keep their cultural identity...there is a tremendous amount of peer pressure.” This was further explained by the specialist physician who discussed the influences of culture for a number of the large, predominantly non-immunizing communities in Southern Alberta.

Their strength, their self-esteem, when we look at the social determinants of health, their social networks, and their social inclusion are those groups. And that is strong. And if you immunize, and you’re part of that social inclusion, and somebody finds out, what then? Their cultural group is their social net...that is their social network, and that is their identity.

Family pressures were identified by health care professionals in the interviews as evidenced by the following statement made by a public health nurse: “Families are huge...you trust your family even more than evidence because they’ve always been right, and so you go with that. I think that is huge.” One chiropractor mentioned “family choices” and “family history” as important factors in their decision. Family influences were also mentioned by a public health nurse who said: “They are dealing with another family member...their husband doesn’t believe in it...” Furthermore, a chiropractor expanded on this thought by saying:

I don’t know how much of that happens in the sidelines too, or in the wings, where it’s you know, it’s mom and grandmas and aunts and some women of authority saying, you should do this or you shouldn’t do this, and vice versa.

The influence of pressure, which closely relates to social inclusion, was discussed with a public health nurse.

You have so much pressure from people, and so I do think that with our non-immunizing population, we are seeing a lot of outside pressure, whether it be from parents who didn’t immunize and are telling them not to, or friends, or people who have autistic children, who are saying, ‘I think this is maybe the reason’, or family members who don’t know why... religious pressures or you know, ‘Well we have been told not to do this, and so it’s a comfort I don’t have to

think about it. I don't have to go there, because I don't have to make that decision. It has already been made for me'.

Beliefs

Mistrust, as a belief system, was perceived by professionals as a factor in mothers' decision-making. Mistrust of government, health care professionals, and pharmaceutical companies was discussed. One public health nurse shared her thoughts with the following quote:

We will have some that don't trust the system, whatever the system is. Some will say Big Pharma...the governments' ploy trying to make money or some will go as far as to say they are implanting a chip, but it's all the government conspiracy.

A similar thought was expressed by a chiropractor: "Especially nowadays, distrust of the government and of pharmaceutical companies, and of anyone who has a financial backing in the sales and production of medicine, so that's definitely some powerful, persuasive forces for people to weed through." The specialist physician mentioned: "There is just this anti-government. Period anti-government. You are not going to tell me what to do."

One pediatrician revealed his thoughts on this issue:

I think, you know that we are somehow getting some kind of financial...the physicians have some kind of financial interest in immunizations. And I said, that if you follow that logic, actually we would have a financial interest in, not in immunization, because then kids would get sick and we would have more work. So the argument is ridiculous, you know. There is no...nothing...I don't have any, you know, positive thing out of immunizing. All that happens is that they stay well and they don't come to hospital. I don't get paid then. You know, so there is no financial thing for me.... I mean, the Big Pharma...I mean are producing the immunizations, but I don't have any direct interest in them or they don't have any direct effect with me.

This was similarly expressed by another public health nurse who said: “They [referring to mothers] hear that it is conspiracy theories made up by government and pharmaceutical companies to make money.”

Religious beliefs were also identified by health care professionals. One public health nurse mentioned: “If it is a Sovereignty of God issue that is difficult to get past.”

According to Theopedia (n.d.):

The *Sovereignty of God* is the biblical teaching that all things are under God's rule and control, and that nothing happens without His direction or permission. God works not just some things but all things according to the counsel of His own will (para 1).

A public health nurse and the specialist physician mentioned that taking the will of God out of His hands is cause for not immunizing among some religious communities. “Religious overtones” was also identified as a factor by a chiropractor. One public health nurse revealed that some mothers believe that: “Immunization is interfering with how things are supposed to be...free will and predetermined destiny...what is destined by God, so if you are to get sick, that is supposed to happen...it would basically be questioning God.”

A pediatrician spoke of the relationship between religious and natural health beliefs by saying: “You [referring to perceptions of non-immunizing mothers] want to leave things naturally to sort of God or...it’s natural and you will fight if off naturally.” Natural health beliefs, such as beliefs in supplemental vitamins, was expressed by a public health nurse who indicated that mothers believe that “Natural is better...to get everything natural, and whatever is natural is better.”

Facts

Perceptions of the influence of facts for non-immunizing mothers, such as vaccine ingredients and lack of exposure to vaccine preventable diseases, were discussed with the health care professionals. This group was aware that mothers are concerned about vaccine ingredients, such as the belief that vaccines contain certain metals and aborted fetuses. When referring to the lack of disease one public health nurse stated: “Weighing out the difference between which one is going to cause harm is sometimes difficult for a parent when you don’t see disease.” She further expressed her views that mothers feel that “There isn’t a risk....they don’t have to worry about it, but if they did, you would have to wonder what risk they would weigh out.”

Information

Health care professionals offered in-depth views of mothers’ sources of childhood immunization information. They also spoke of their belief that mothers engage in “misinformed decision-making” because many sources of information create scare tactics that promote misinformed decisions. Health care professionals perceived that mothers’ locate sources that resonate with their belief system or way of thinking. A chiropractor summarized this thought by saying: “They look for sources that kind of back up and support their own fears or their own beliefs....celebrities and groups can be very charismatic and influential and tend to attract these people.” He further emphasized the fact that there is a multitude of information available on this topic and “It is tough to really sit down and objectively weed through all of it and find the good stuff, so it’s almost you know, a losing situation right from the get-go.”

Other health care professionals in the sample acknowledged that often these sources do not outline evidence, but opinions, as expressed by one chiropractor: “The more sophisticated ones call up evidence which they say backs up their opinion...where they distort the situation, distort the body of knowledge to try and further their opinion.”

This thought was supported by a public health nurse who said:

It’s sad to me that there are sources out there that are so negative and so contrary and so anti-science and so non-substantiated, that it can influence somebody to make a decision that is potentially detrimental to their health and others.

Modern popular media, such as the Internet, television, and radio, were identified as primary sources of mothers’ information. One public health nurse said: “A lot has been Google...some has been Dr. Sears...” Another chiropractor mentioned: “I think the major media outlets are probably number one...whatever they hear on Fox News...the celebrities who endorse certain groups...” Dr. Phil, Dr. Oz, and Jenny McCarthy were also identified as sources of information available through modern media. Professionals acknowledged the dangers with modern media, as summarized by a pediatrician: “People tend to take things on the Internet as fact. And there’s no filter on the Internet.”

Health care professionals explored the barriers and challenges with modern media. One public health nurse discussed her frustration with modern media:

Shows on TV drive me crazy because you put someone out there who’s a professional on immunization, has so much knowledge, and then some mom, which is great, but I just feel strongly that it is wrong. How is that even comparable on showing two sides?

This thought was echoed by a public health nurse who stated the following:

The personal is more appealing. We want to be entertained. We are showing the entertaining side of the story and when it comes to vaccines, the entertainment is the arguments. The reality is people are dying from these diseases that shouldn’t be dying from these diseases.

Health care professionals acknowledged the power of modern media, as summarized by the perceptions of one pediatrician below:

The media never, never let the facts get in the way of a good story...it is no good giving a little story...you have to sensationalize something so they dress it up to make it sound very, very prevalent or severe, and they take it totally out of proportion to the real risks, but people remember that because it is emotional...the press-like drama...the negative stories get way too much airtime or you know, there is way too much of that being propagated because it's newsworthy and it is juicy, and the alternative to that, and the information about it [immunization] isn't quite as newsworthy.

Anecdotal information as a primary factor in decision-making was explored in the interviews. One chiropractor stated: "It's not based on fact, it's based on hearsay" and two public health nurses supported this thought by the following quotes: "A lot of places where it is really word of mouth" and "There is a lot of informal talk, neighbors talking...so lots of hearsay and neighbor talk." One chiropractor mentioned: "I think mothers are a very close-knit group...I think a lot of information they get is from other mothers."

Furthermore, the influence of anecdotal information was expressed by a public health nurse who said:

The anecdotal information is very powerful, and it just seems to mushroom way more than the actual evidence-based research because it could very well be that it is too difficult to read, whereas when you are talking about "Johnny" and his mom and the horrible stuff that happened to him, that pulls at your heart strings, so you feed into that...

The specialist physician also mentioned the influences of anecdotal information in cultural and religious communities by saying: "Bad information from friends, relatives, ministers...not that I am trying to pick on ministers but I know it is prevalent in some of the churches that they encourage them not to..."

One pediatrician commented that mothers listen to health care professionals because they are seen as the authority by saying:

Who [members of the health care profession] cause negative... actively or indirectly, or just by the comments that they make, the importance of what they are saying will be assumed because of their position, and in this area we have a couple of chiropractors that are very actively working to stop parents to immunize.

A public health nurse expressed a similar thought regarding the influences of chiropractors on mothers' decision-making process, where "They [referring to chiropractors] believe in adjustments to prevent disease."

One public health nurse and the specialist physician mentioned the influences of family physicians on mothers' decision-making, where mothers will inform them that their physician said it was "okay" not to immunize, as evidenced by the following quote:

The biggest barrier I would say are some of the physicians. Not all physicians, some physicians will tell them you don't have to immunize. So that is a huge discredit to the public health system. And then of course that's going to spread very fast...there are other doctors who are the total opposite. So it is a huge spectrum.

Risk versus Benefit Analysis

Health care professionals perceived the risk versus benefit analysis to be one of the greatest factors influencing the immunization decision-making process. One public health nurse mentioned:

It's a risk/benefit analysis between the risk of getting the disease versus the risk of a potential side effect, even though I know that is not the only reason why people choose not to vaccinate, but that tends to be one of the primary reasons that I come against.

This thought was further supported by a chiropractor who stated: "They have basically weighed the risk/benefit. I think they are...what they perceive as risk and what they

perceive the benefit is. And then they made a decision based on that, so that's been the analysis."

The risk versus benefit analysis is an important factor for mothers to consider as summarized by one public health nurse.

A lot of people are looking at, do I know these diseases, and have I heard of these diseases, am I seeing these diseases? No. What have I heard about the vaccine? It can cause fever, irritability, and I even heard about this autism thing...it just sounds a little bit risky compared to nothing because I haven't heard of any of these diseases. And so they really are weighing out the risk and benefit.

Responsibility

A number of health care professionals expressed their view that non-immunizing mothers are making irresponsible decisions regarding immunization. One chiropractor revealed his perspective:

I heard someone give the opinion that the safest thing for a child is to be unimmunized in the middle of an immunized population. But how can you say that is a responsible position? They expect everyone else to immunize because they perceive there might be some slight dangers to it. So really, that's a very logical thing to say, but it would be a very irresponsible position.

Another chiropractor confessed his view that "These people [referring to non-immunizers] are being selfish in that they don't immunize and we all do. And so because we take the precautions, the diseases aren't out there as much as they used to be...I see the choice as a bit selfish."

The view that mothers' decision not to immunize their children negatively influences the children around them was expressed by a chiropractor:

Their decisions are negatively influencing the kids around them, by providing a conduit for these diseases for which they might have been vaccinated to come into the community...it's important for mothers to know as well that when they go about making these decisions, the protection, the yeah, the protection of your child versus the protection of everybody's kids.

This thought was similarly outlined by a public health nurse who said, “I think it is very important to get them done...if not only for your own kids, but also for others...for the protection of the larger group.”

Summary of Perspectives of Health Care Professionals

Health care professionals interviewed discussed a variety of personal beliefs and opinions regarding childhood immunization. Research findings indicate that the majority of health care professionals support and encourage childhood immunization, while two chiropractors were opposed to childhood immunization for a variety of reasons. The issues identified by the chiropractors opposing childhood immunization were similar to the factors outlined by the non-immunizing mothers. A variety of sources are used by health care professionals to obtain information on childhood immunization and to establish their beliefs and opinions, of which modern media, namely the Internet, is the primary resource.

Health care professionals perceived themselves to have a role in childhood immunization, which ranged from educator to advocate. Health care professionals unanimously believed in the importance of encouraging informed choice and informed decision-making as a primary element of their role. Interestingly, health care professionals acknowledged that they are only one source of information, among many others, accessed by non-immunizing mothers. As a result, health care professionals strongly indicated that immunization is a health care issue and all health care professionals from a variety of disciplines need to work together to address this issue. Health care professionals also recognized the need for increased exposure and promotion of immunization and informed decision-making in popular media forums.

Health care professionals considered non-immunizing mothers' understanding in various ways, from poor or limited understanding to very well-informed and educated on the topic. On the whole health care professionals perceived mothers' sources of information as inaccurate or lacking evidence-based, scientific information. Health care professionals also identified factors that influence mothers' decision-making on this topic, which were very similar to the factors discussed by the mothers themselves. Health care professionals perceived the following factors as primary elements in mothers' decision-making process:

- Emotions
 - Fear
 - Social Inclusion
- Beliefs
 - Mistrust
 - Religious Beliefs
- Facts
 - Vaccine ingredients
 - Lack of Exposure to Vaccine-Preventable Diseases
- Sources of information
 - Media
 - Anecdotal Information
 - Health Care Professionals

Professionals also recognized the importance of the risk versus benefit analysis in this process, where mothers' weigh the risks of immunization and possible negative effects

against the risk of potential disease, which is often difficult to recognize as a result of the success of immunization programs.

Summary of Main Findings

- Non-immunizing mothers have a questioning attitude which may influence their understanding of childhood immunization and decision-making process not to participate in childhood immunization.
- By means of a risk versus benefit analysis, mothers consider a wide variety of inter-related factors, namely: emotions, beliefs, facts, and information as they engage in the decision-making process regarding childhood immunization.
- The decision not to participate in childhood immunization is an extensive, multi-faceted, and complex process.
- Mothers feel that making decisions about the health and well-being of their children is a very responsible undertaking.
- Health care professionals have appropriate insight into mothers' understanding and decision-making regarding childhood immunization, as suggested by the similarity of factors identified by both mothers and health care professionals.
- Health care professionals perceive the risk versus benefit analysis as a primary factor in decision-making.
- Health care professionals recognize they are only one factor in mothers' decision-making process regarding childhood immunization.
- Health care professionals perceive themselves to have a role in childhood immunization; encouraging informed decision-making is a principle aspect of their role.

- Health care professionals are more likely to recommend immunization to their patients if they believe in it themselves.
- Health care professionals who support childhood immunization perceived non-immunizing mothers sources of information to be inaccurate and lacking evidence, while those professionals who oppose immunization identified similar sources of information as the mothers.
- Health care professionals believe immunization is a health care issue and all health care professionals from a variety of disciplines need to collaborate to address this matter. The topic of immunization should be addressed at all health care encounters.
- Health care professionals feel they should be more pro-active in public forums and media to moderate anti-immunization information portrayed to the public.

Conclusion

This chapter offers a summary of the research findings of both groups who were interviewed in this study, namely: non-immunizing mothers and health care professionals who have a professional relationship with mothers. Discussion of the meaning of the research findings contrasted with available literature will be presented in the next chapter.

CHAPTER FIVE: DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

This chapter offers a discussion of the meaning of the research findings when situated in the current literature on this topic and set within the context of the research questions addressed in this study. Comparisons of the research findings of the two study groups in this study, including mothers do choose not to immunize their children and health care professionals who have a professional relationship with mothers, will also be explored in this chapter.

Research Findings Related to Current Literature and Research Questions

In this section, the study findings related to the research questions are examined, and current, relevant literature on immunization is incorporated into the discussion. Participants in this research study offered rich data from which the research findings developed, and the goal of this chapter is to offer a discussion of this data.

Mothers' Development of Immunization Understanding

The first research question in this study was: How do mothers develop an understanding of immunization? Study findings revealed that the non-immunizing mothers interviewed have a questioning or critical-thinking attitude. This behaviour influences their understanding of immunization and the decision-making process not to participate in childhood immunization. Mothers recognized that their questioning attitude prompts them to find answers to their questions. They discussed a personal need for understanding, rather than making a decision based on the influences of those around them, including their physician, other health care providers, family members, or friends. It appears their questioning attitude is a form of intrinsic motivation, within which mothers feel the need to have control over their understanding. This suggestion is closely

associated with a research study conducted by Gross and Howard (2001), where intrinsic motivation enables individuals to possess the “need to feel competent and self-determining within their environment” (p. 160).

In the current study, mothers described their understanding of immunization by considering a wide variety of inter-related factors, which are placed under four primary themes: emotions, beliefs, facts, and information. According to Gross and Howard (2001), understanding the factors involved in decision-making is critical because it impacts quality of life and health care costs. These themes, with the accompanying factors, are discussed in greater detail below.

Emotions

Emotional factors, such as fear, negative experiences, guilt, indifference, and social belonging, were identified by mothers as influences in their understanding of childhood immunization.

Fear

General fear and fear of vaccine effects were identified in the current research findings. Fear is a controlling pressure which can motivate understanding or the decision-making process. According to Ruiters, Abraham, and Kok (2001), fear and perceptions of significance of fear are primary elements to defense responses to health information. The authors affirm that people with high levels of fear have well-developed avoidance strategies to deal with their fear. Fear among mothers was certainly identified as an important factor in understanding childhood immunization in the current study, which relates closely to the findings of Ruiters et al. (2001), where fear was found to be a defense mechanism used to avoid action. Mothers identified comfort in choosing a

passive decision [not immunizing], rather than an active decision [immunizing]. This finding was also established by Marfe (2007), who suggests that parents feel more responsibility when making active decisions that influence their children's health.

Fear of the unknown and fear of vaccine risks were recognized by participants in the current study. Mothers feared unknown consequences of vaccines, which according to the participants, may not present until years later. Fear of vaccine effects, including side effects, such as fever, lethargy, fainting, and crying, as well as long-term effects, such as autism, SIDS, asthma, ADHD, cancer, and death were explored by the mothers. This fear was also studied by Diekema (2005), Gust et al. (2003), Luthy et al. (2009), and Niederhauser and Markowitz (2007), who discovered that parents have concerns about adverse effects and safety of vaccines. In their review of qualitative studies on barriers to childhood immunization, Mills et al. (2005) reported similar findings related to concerns about the risk of adverse effects following immunization.

The alleged correlation between vaccines and autism was a significant concern for mothers in the current study, which has similarly been explored in other relevant research studies (Austin et al., 2008; Downs et al., 2008; Stevenson, 2009).

Negative Experiences

Fear related to negative experiences, such as personal detrimental experiences with vaccines, experiences with older children, and close relatives who had unexpected adverse reactions were recognized as factors in decision-making by the mothers. Two of the mothers spoke of close relatives becoming severely handicapped or dying following immunizations, which significantly affected their understanding of immunization. This finding is closely related to literature by Wilson (2000), who found that unpleasant past

experiences with immunization was an important factor in immunization decision-making.

Guilt

Guilt was acknowledged as a powerful emotional influence in the mothers understanding of childhood immunization in the current study. Mothers spoke of the personal guilt they would experience if they immunized their child(ren) and negative effects occurred following the event. Mothers indicated they would never forgive themselves and would have difficulty living with that decision if harm would result, as exemplified in the following quote: “That is the biggest thing that holds me back. If something goes wrong with it, then you have done it yourself.” Austin et al. (2008) and Downs et al. (2008) similarly identified guilt as a factor in immunization decision-making, with parents feeling guilty if their child was to be injured over their action [immunization] versus a passive choice [not immunizing]. Emotional factors, such as feeling responsible if harm occurred following the action of immunization [commission], are considered in the decision-making process, according to Wroe et al. (2004).

Indifference

The current study findings suggest that mothers possess somewhat of an indifferent attitude toward vaccine-preventable diseases, in that these diseases are not as serious as they are thought to be. Their indifferent attitude is associated with personal experiences with these diseases, such as whooping cough, mumps, and chickenpox, which were tolerable and endurable. Mothers mentioned that serious effects, including death, from vaccine-preventable diseases is rare in today’s society due to technological advances in the medical system. This indifferent attitude impacts mothers’ understanding

of immunization and the need for childhood immunization. According to Kennedy and Gust (2008), who conducted research with a church congregation in Indiana following experience with a measles outbreak, most participants stated that their experience did not change their perceptions of immunizations and they did not feel that the disease experienced was serious.

Social Belonging

Social belonging, or pressures from family, friends, religious, or cultural groups, is an important factor which influenced the mothers' understanding in the current study. Although findings suggest that non-immunizing mothers in this study have a questioning attitude, they also felt the need to belong in a social environment, and as such would question those in their social groups on the topic of immunization.

According to Walker and Walker as cited in Johner and Maslany (2011), social exclusion is "the dynamic process of being shut out...from any of the social, economic, political and cultural systems which determine the social integration of a person in society" (p. 150). Consequently, mothers felt the need to be socially included to avoid the negative effects of social exclusion.

Mothers' knowledge about childhood immunization was often obtained from friends and family and based on what the majority of those around them were choosing to do. Austin et al. (2008) and Tarrant and Thomson (2008) support this finding in their research, namely that family and social factors have an influence on childhood immunization. Social group norms or social networks influencing decision-making have been found as relevant findings in other studies (Leask et al., 2006; Rogers & Pilgrim, 1996; Sturm et al., 2005). However, findings from the current study revealed that mothers

also identified challenges with social belonging, including the fact that mainstream society does immunize, and they were choosing not to immunize.

Beliefs

The second major theme which emerged as a finding in the current study and appears to contribute to mothers' understanding of immunization is their beliefs.

Religious/philosophical beliefs, natural health beliefs, and mistrust of government, pharmaceutical companies, and health care professionals, were discussed during interviews with mothers.

Religious/Philosophical Beliefs

All the mothers interviewed in the current research study indicated a religious affiliation, while actual religious affiliation varied among participants. A number of mothers indicated that their decision was associated with religiosity; however, others mentioned that although they consider themselves to be religious, this did not influence their decision. Mothers also revealed that religion was not a dominant factor or precursor in their decision-making process.

The belief in God and the will of God was portrayed by a number of mothers in the current study, meaning that anything that arises in life occurs through providence, and thus dependency on God is important. These findings were also discovered by Downs et al. (2008) and Kennedy and Gust (2008) who discussed the association of religion with immunization refusals. As quoted by one of the mothers in the current study, sickness and death is "out of [from] God's hand" and as a result, one should not try and prevent illness through immunization because it may never be needed if sickness does not result. This belief was also identified in the literature by Wynia (2007), who states that "vaccines are

often seen as a ‘treatment’ for a disease one doesn’t have” (p. 5). The belief that God created the human body in a miraculous way, without the need for human interventions, was also noted by the mothers in my sample.

Kulig et al. conducted a study on immunization in Southern Alberta in 2002 and found that participants of Dutch ethnicity refused immunization based on religious beliefs. In comparison, in the current research study, although study participants included members of the Dutch Reformed community, religious concerns were also identified by participants of other faith communities. In addition, for mothers who identified themselves as Dutch Reformed in the current study, their religious concerns with immunization were not a precursor to their understanding of immunization or the singular factor in their decision-making process, but rather they considered a wide variety of factors.

Natural Health Beliefs

Strong beliefs in natural health were identified by the mothers in the current study findings. Mothers indicated their preference for a natural body, without the influences of unnatural substances, including immunization. The belief that the human body is designed to be healthy and the immune system is created to combat diseases was also explored by mothers in the current study, with the result that the immune system can fight off vaccine-preventable diseases. These findings are consistent with results obtained by DiBonaventura and Chapman (2008) in their quantitative study of decision biases and decision-making, namely that naturalness bias correlates with negative attitudes toward immunization and may promote belief in natural remedies.

Mistrust

Mistrust as a belief system, including mistrust of health care professionals, pharmaceutical companies, and government was openly recognized as a factor influencing understanding and decision-making among mothers in the current study. This is confirmed in the literature by Ropeik and Slovic, who state that people have decreased trust in those who are mandated to protect the public, which include government and health care professionals (as cited in Wynia, 2007).

In the current study, mistrust of health care professionals resulted from anecdotal stories and personal experiences, as well as the belief that information on immunization provided by health care professionals is biased, related to their position in the health care system. Findings illustrate that mothers believed that health care professionals do not adequately inform the public about negative effects of vaccines to avoid fear and hostility. According to Callreus (2010), trust of health care professionals and public health interventions is necessary for parents when deliberating the importance of childhood immunization. In their review of qualitative studies on barriers to childhood immunization, Mills et al. (2005) discovered that distrust of the medical community and perceptions of vaccine conspiracy by health care professionals advocating for immunization was a common theme.

Mistrust of pharmaceutical companies was explicitly mentioned by the mothers in the current study, who believed that vaccines are not given appropriate testing to ensure safety, and they are “pushed” on the public with financial motivations. Other mothers spoke about pharmaceutical companies producing vaccines as a deliberate attempt to curb population growth. This belief is different than what Smith, Lipsitch, and Almond (2011)

state about vaccines: “For human vaccines to be available on a global scale, complex production methods, meticulous quality control, and reliable distribution channels are needed to ensure that the products are potent and effective at the point of use” (p. 428). However, Smith et al. (2011) acknowledge that anti-vaccine propaganda is a current issue which discourages uptake of safe and effective vaccines. According to the authors, anti-vaccine propaganda may foster conspiracy theories about pharmaceutical companies among people, such as mothers, who have concerns about immunization.

Lack of trust in government officials, related to their relationship with both health care professionals and pharmaceutical companies, is a factor in understanding childhood immunization as discussed by the mothers in the current study, and noted as a factor influencing childhood immunization as found in other research (Gullion et al., 2008; Gust et al., 2008; Niederhauser & Markowitz, 2007; Tarrant & Thomson, 2008). The alliance between government and pharmaceutical companies using vaccines to control the population or curbing population growth was mentioned by mothers in the current study.

Facts

Facts is the third primary theme which emerged from the current study findings, and this theme consists of a number of contributing factors, such as lack of exposure to vaccine-preventable diseases, vaccine ingredients, multiple vaccines and/or antigens, and vaccine ineffectiveness.

Lack of Exposure to Vaccine-Preventable Diseases

Vaccine-preventable diseases, such as measles, mumps, polio, and pertussis, which once caused widespread childhood illness and death, are no longer prevalent as a direct affirmative outcome of immunization programs. Consequently, these diseases are

not perceived as a threat, which makes it difficult to appreciate the impact of immunization, as discussed by mothers in the interviews. Hilton et al. (2006), Marfe (2007), Niederhauser and Markowitz (2007), and Stevenson (2009) confirm that parents have little experience with vaccine-preventable diseases, and subsequently, these diseases are not viewed as a threat to their child(ren)'s health. Diseases, such as measles, mumps, and polio are rarely experienced by families in today's society, whereas in previous generations, people understood the severity of these diseases because they personally experienced these diseases or witnessed the devastating effects.

Vaccine Ingredients

All study participants in the current study outlined vaccine ingredients as an obstacle to immunizing their children. Vaccine ingredients were equated with unnatural and harmful chemicals and toxins, such as mercury, formaldehyde, DNA from animals, animal cells, and blood. A significant concern for three mothers in the current study was the alleged presence of human diploid tissue, or aborted fetus cells, in vaccines. These concerns are fostered by false literature available to mothers, such as an article written by Stephanie Cave (2008) and published in an alternative therapies journal, where she declares that vaccines contain "a combination of thimerosal, aluminum, live viruses, and other toxic chemicals such as formaldehyde, monosodium glutamate, and phenoxyethanol" (p. 54-55). Interestingly, one mother who was interviewed revealed that she had read a book written by Stephanie Cave called, *What your Doctor May not Tell you about Childhood Vaccinations*, which significantly influenced her decision not to immunize her children.

Multiple Vaccines/Antigens

The number of available, recommended vaccines, often given in a single visit, as well as the number of antigens in a vaccine raised concerns in mothers in the current study who felt that multiple vaccines and/or antigens bombard or overload a young child's immature immune system. This perception is also congruent with the literature, where Gellin et al. (2000) found that an important misconception by parents is that multiple vaccines can weaken the immune system. Diekema (2005) also suggests that parents refuse immunizations because of the administration of multiple vaccines at a single visit. Frustration over lack of choice to separate vaccines or separate antigens in vaccines was explored by mothers in the interviews. For instance, mothers often desire to separate the measles, mumps, and rubella antigens in the MMR vaccine, which is not an option in Canada. This factor was also discovered by Austin et al. (2008) in their qualitative study conducted in the United Kingdom that focused on parents' difficulty with decision-making regarding childhood immunization.

Vaccine Ineffectiveness

Immunization understanding is also influenced by vaccine ineffectiveness, as discussed by the mothers in the current study. They are aware that vaccines do not offer 100% protection for their children, and immunized children can still contract disease, whereas becoming ill with natural disease will produce life-long, lasting immunity. Dissatisfaction with the need for vaccine booster doses was also voiced. "You get booster shots...and in the end they are still not fully immunized." Similarly, Rogers and Pilgrim (1996) mentioned that mothers in their qualitative study revealed that natural immunity is permanent; whereas vaccine-induced immunity may decline over time or fail to provide

the necessary antibodies to protect children from vaccine-preventable diseases. Kumar et al. (2010) also found that lack of faith in vaccine effectiveness was a factor in choosing not to immunize.

The belief that advances in personal health and hygiene, such as sanitation and nutrition, contributing to the decline of vaccine-preventable diseases, rather than the introduction of vaccines, was expressed by mothers in the current study. This is true to an extent, considering the inspiration of Florence Nightingale and her discovery of the correlation between environment, disease, and death during the Crimean War (Stamler, 2012). However, science also demonstrates the effectiveness of vaccines contributing to the decline of diseases. For instance, when the measles vaccine was introduced in Canada in 1963, the incidence of measles decreased dramatically (PHAC, 2007). Prior to the measles vaccine, the incidence of measles was 369 cases per 100,000 people in an average five-year period, and following the vaccine, in 2000-2004, the average incidence of measles per 100,000 people in a five-year period was 0.2 cases (PHAC, 2007).

Information

The fourth main theme which appears to contribute to mothers' understanding of childhood immunization is information. The factors contained in this theme include: not knowing and sources of information.

Not Knowing

Not knowing refers to a lack of knowledge or understanding explored by mothers in the current study as well as their personal views, including not entirely understanding risks and benefits of immunization related to contradictory sources of information on the topic. A number of mothers confessed that they had not researched the topic thoroughly

and relied on information from others concerning childhood immunization. This finding is supported by Thomas et al. (2004) who recognized that knowledge deficits can be barriers to immunization, because parents are confused about what vaccines are and how they work. Misunderstanding the importance of immunization was also identified by Niederhauser and Markowitz (2007). Current study findings revealed that feelings of uncertainty and not knowing what to do were factors in decision-making. Mothers' recognized that there is no right answer or no risk-free decision to make, which makes the situation very difficult.

Lack of knowledge about vaccines and immunization schedules was apparent in the research findings of the current study. Mothers acknowledged that they had no or limited knowledge about the immunization schedule and vaccines currently offered to infants and children, as exemplified by this quote: "I don't know anything other than that. I don't even know when the first one is." This finding was similarly explored in a number of research studies, where lack of knowledge and low levels of health literacy were primary factors influencing immunization understanding and decision-making (Bertz et al., 2008; Downs et al., 2008; Kumar et al., 2010; Wilson et al., 2008). However, in the current study, mothers also revealed that they lacked knowledge on vaccines and vaccine schedules because they had made a decision not to immunize their children, and consequently, this knowledge was not of importance to them.

Interestingly, a number of mothers in the current study felt they were informed on the topic of immunization, as they had read up on the topic in books, journals, and online, and discussed the issues with friends and family, and consequently believed they had made an informed decision.

Sources of Information

A variety of sources of information, including: media, books, journals, anecdotal information, and information obtained from health care professionals, were mentioned by mothers to assist in understanding childhood immunization. This finding is consistent with current literature, which suggests that parents obtain information from a variety of sources, including physicians, nurses, friends, family, colleagues, television, books, newspapers, magazines, the Internet, and alternative health practitioners (Bedford & Lansley, 2006; Gellin et al., 2000; Gust et al., 2005). According to AHW (2007), misinformation about immunization is easily accessible, which was explored in the current research study.

All study participants in the current study identified media and online sources as principal resources accessed, which is also found in the literature (Downs et al., 2008; Kennedy & Gust, 2008; Zimmerman et al., 2005). In the current study, mothers' indicated that "Google" was used to search for information, which may not be an appropriate method of searching for information, as evidenced by Davies et al. (2002). These authors found that there is an abundance of anti-vaccination websites available when Google was utilized as a search engine. Mothers in the current study indicated a variety of websites accessed, some of which are evidence-based, such as Alberta Health Services and the Centers for Disease Control, and others which present inaccurate information on immunization, including: Dr. Mercola, National Vaccine Information Center [NVIC], www.risksand909shot.com, www.naturalnews.com, <http://www.mercola.com/>, and www.thinktwice.com. Facebook and blogs were also mentioned as sources of information and support.

Mothers in the current study discussed books as important sources of information, including ones written by medical professionals, such as Dr. Sears, who wrote *The Vaccine Book*, where he educates parents on the risks and benefits of vaccines, as well as informs parents which vaccine-preventable diseases are severe or mild (AskDrSears, 2012). In addition, books written by Jenny McCarthy were mentioned. Jenny McCarthy is an anti-immunization celebrity activist who believes that vaccines are linked to autism, and is a frequent guest on popular television shows such as Dr. Oz and Dr. Phil. Journals were also accessed, however, one mother indicated difficulty with reading and interpreting scientific information found in these articles, which directly relates to a commonly-known issue which is that sensational information is much easier to understand than science-based information.

All study participants in the current study acknowledged the significance of anecdotal information or hearsay in their understanding of childhood immunization. Friends were common sources of information and support, as stated by one mother: “You go by what friends have their [with their] experience...that is important.” Listening to other parents’ experiences with childhood immunization was also influential, which directly relates to the emotional impact that startling stories have on mothers. The significance of anecdotal information was established by Wilson (2000) who found that knowledge learned about vaccines from others contributed to decision-making.

Current study findings revealed that health care professionals, including physicians, chiropractors, and public health nurses, were accessed by mothers for information and advice on immunization, which is similar to findings by Stevenson

(2009) that physicians and nurse practitioners can influence immunization decision-making.

Interestingly, Benin et al. (2006) found that mothers who decided to immunize their children obtained information from a pediatrician while those who did not immunize obtained information from alternative health care providers. A comparable finding was noted by Rogers and Pilgrim (1996) in that the non-immunizing mothers in their study obtained information from alternative medical practitioners. In contrast to this, in the current research study, a number of mothers obtained information from their physicians, however, regardless of this fact, decided not to immunize their children.

Mothers in the current study distinguished information received from public health nurses as being substantially different than information obtained through popular media, which ultimately caused confusion about the accuracy of the information received. Physicians, on the whole, promoted immunizations and recommended them to the mothers. However, four mothers in the current study who had personal experiences with chiropractors indicated that they are not pro-immunization, and consequently, supported their decision not to immunize their children. Confusion over mixed messages about immunization from health care professionals was acknowledged by mothers, but there were also mothers who mentioned that the topic of immunization did not arise with health care professionals. Austin et al. (2008) also explored confusion over conflicting information as a factor in decision-making.

One last finding which arose from this research study was that although lack of knowledge appeared to be a factor in mothers' understanding and decision-making regarding childhood immunization, there were also mothers who revealed their

determination to access evidence-informed information. These mothers seemed to be educated on accessing information, and mentioned that peer-reviewed material and replication of findings is important when determining credibility of information. This finding contrasts conclusions obtained by Wilson et al. (2008) and Wu et al. (2008), that lack of knowledge and low literacy levels influenced mothers' decision not to immunize their children.

In summary, the first research question addresses the development of mothers' understanding of immunization, which occurs by considering a wide variety of factors. Emotions, such as fear, negative experiences, guilt, indifference, and the need for social belonging were identified. Religious and natural health beliefs, in addition to mistrust of government, pharmaceutical companies and health care professionals also appear to influence mothers' understanding of immunization. Consideration of facts, including lack of exposure to vaccine-preventable diseases, vaccine ingredients, multiple vaccines and/or antigens, and vaccine ineffectiveness were discussed. Finally, lack of knowledge and sources of information were explored as contributing factors in the mothers' understanding.

Understanding Influencing the Decision-Making Process

The second research question examines: how does mothers' understanding of immunization influence the decision-making process not to participate in childhood immunization? This question is directly related to the first research question, which has already been discussed. Following development of an understanding by examining a variety of inter-related factors, mothers engage in a risk versus benefit analysis, which

involves processing, filtering, and weighing the factors. This analysis contributes to the decision to decline participation in childhood immunization.

Risk versus Benefit Analysis

According to Hilliar (2006), risk perception involves two fundamental principles: gender and worldview. As such, women tend to take risk more seriously than men, and elements, such as social environment, culture, physiological factors, and political environment may influence risk perception (Hilliar, 2006). In the current research study, mothers engaged in a risk versus benefit analysis following examination and consideration of a variety of factors, which are grouped under four main themes: emotions, beliefs, facts, and information. This analysis involves processing, filtering, and weighing these factors. Fischbacher-Smith et al. (2010) suggest that risk analysis involves identifying the risk, estimating the risk, and analyzing consequences of the risk.

According to Austin et al. (2008), Hilton et al. (2006), and Marfe (2007), parents weigh the risks and benefits of immunization compared with natural disease. In the current study, all of the mothers alluded to the fact that childhood immunization is an important decision to consider, and consequently a process occurred which involved examining both sides of the issue, namely, the risks and benefits. Participants recognized that there are risks involved with the decision to immunize their children, such as fear of vaccine effects and guilt if harm would result. However, mothers also acknowledged the risk of choosing not to immunize, which would place their children at risk of acquiring vaccine-preventable diseases, some of which are capable of creating long-term, devastating effects on their children.

Hilliar (2006) identifies a number of factors which influence decision-making, including: 1) perception, 2) social influences, 3) experience, 4) knowledge, 5) significant others, 6) power, 7) desire, 8) religion, 9) sub-culture, and 10) dominant culture. Similar factors were discovered in the current research study, which suggests that when a person is analyzing the risk of a health action, including immunization, there are numerous elements involved in the process of decision-making. Hobson-West (2003) also acknowledges that risk analysis is an important indicator in immunization decision-making.

Mothers in the current study specified that in their analysis of risk, they decided to take the “lesser risk”, as summarized in the following quote: “I guess the risk is there, but to me that was a better risk...I can see both sides, but to me that was a greater risk. To immunize was a greater risk than to not immunize.” Feeling comfortable with the decision made was also expressed by mothers: “I just didn’t feel comfortable with it, and I guess I was willing to take the risk of not immunizing.” Mothers acknowledged that there is no right or wrong decision regarding childhood immunization, as some children are immunized and others are not, however, they believed they needed to feel comfortable knowing that they made a responsible, informed decision for their children. As discussed above, the characterization of an “informed” decision for these mothers consisted of considering a wide variety of sources of information, many of which portray inaccurate or false information.

Decision-Making Process

As explored in the current study, decision-making occurs as a process, which is supported in the literature. Research studies by Hobson-West (2003), Marshall and Swerissen (1999), and Rogers and Pilgrim (1996) suggest that the decision to engage in childhood immunization is not a static decision, but rather a process which consists of considering, implementing, and maintaining the decision. Although dated, the findings from Marshall and Swerissen's study are applicable to the current study. For example, the decision-making process noted by Marshall and Swerissen was explored during the interviews in the current study, where mothers' decision not to immunize their children was discussed. Study participants indicated that "everything influences our decisions", which correlates with the numerous factors considered in their attempt to understand childhood immunization more fully.

The difficulty of the decision-making process was expressed by mothers in the current study, as summarized in the following quote:

It was a very long process, and I really agonized because it's my child...I mean as a parent you don't want to do the wrong thing...the vast majority of parents want to do the right thing...I wasn't going to make the decision lightly.

This finding is similarly explored in the literature, where Austin et al. (2008) and Marfe (2007) recognize that the decision whether or not to immunize may be one of the most important decisions made by parents for their children. In the current study, mothers mentioned the difficulty of their decision as they were making it for their children, rather than themselves, which is revealed in this quote by one mother: "It is easier to take the consequences of your actions for yourself than it is for your child...he is more vulnerable right, and you just want the very best for your child, so in that sense it is different."

Participants' acknowledged the need to feel comfortable with their decision, appreciating that it was a responsible, informed decision that contemplates the health and well-being of their children.

Findings obtained in the current study are similar to a research review conducted by Sturm et al. (2005), who created a conceptual model of immunization decision-making, applied in Chapter Two to discuss current literature that consists of five domains:

- Personal factors – beliefs, knowledge, attitudes, and concerns about side effects
- Institutional factors – public policy, mandates, and professional group recommendations
- Social/environmental factors – cultural attitudes, social group norms, religion, and media influences
- Interface with the health care system – health care provider attitudes and practices
- Physical environment – prevalence of vaccine-preventable diseases

Although Sturm et al. (2005) identified the factors influencing immunization decision-making differently than the theoretical model created in the current research study, the findings are similar. For instance, in the current study, factors influencing decision-making were categorized into four main themes, namely, emotions, beliefs, facts, and information, whereas Sturm et al. (2005) classified their findings into the five categories listed above.

Similar findings of both studies include beliefs, concerns about side effects, professional group recommendations, culture perspectives, social group pressures, religion, health care provider beliefs, and the prevalence [or lack of] of vaccine-preventable diseases in the environment as factors in the immunization decision-making process. There were also factors recognized in the current study which was not identified by Sturm et al. (2005), including: guilt, indifference, mistrust, vaccine ineffectiveness, vaccine ingredients, multiple vaccines/antigens, not knowing, and sources of information. The conceptual model created by Sturm et al. (2005) did not accurately depict the findings in the current study, and subsequently I created a theoretical model of mothers' decision-making to reflect the current study findings.

Research findings related to immunization decision-making were also explored in a research study conducted with parents by Austin et al. (2008) in the United Kingdom, where the researchers found the following factors influencing decision-making:

- Safety concerns
- Risk versus benefit of vaccines
- Fear of disease, side effects, and long term health effects
- Worry and guilt
- Anger toward government and media
- Trust and/or mistrust of health care professionals and government
- Confusion over conflicting information
- Feeling pressure from friends, media, professionals, and government
- Feeling alienated and judged
- Conflict and distress in decision-making

These ten factors closely relate to the factors explored in the current research study, namely, the concerns with vaccine safety, risk versus benefit analysis, fear of disease and vaccine effects, guilt, mistrust of health care professionals and government, challenges with conflicting information, social inclusion or pressures, feeling alienated, and conflict and distress in decision-making. This suggests that the factors influencing understanding and decision-making identified by non-immunizing mothers in Southern Alberta are consistent with findings from other research studies.

In summary, the second research question focuses on the influence of mothers' understanding on the decision-making process not to participate in childhood immunization. Mothers appear to develop an understanding of immunization by examining a wide variety of factors, outlined above, which is followed by engagement in a risk versus benefit analysis. This analysis, consisting of processing, filtering, and weighing of the various factors, results in the decision to decline to participate in childhood immunization. The decision-making process is complex, multi-faceted, lengthy, and challenging for mothers, as evidenced by current study findings.

Perceptions of Health Care Professionals

How health professionals perceive non-immunizing mothers' understanding of immunization and their decision not to participate in childhood immunization was the third research question in the current study. To assist in answering this question, it was necessary to explore health care professionals' beliefs and opinions of childhood immunization as well as their role in childhood immunization during data collection. In the current study, ten health care professionals believed in childhood immunization, and mentioned that immunization is safe and effective and is a miracle of modern medicine.

Their support and advocacy for immunization appears to be based on their belief in evidence and science, as well as personal and/or professional experiences with vaccine-preventable diseases in children. Immunization as a community benefit was also acknowledged by public health nurses supporting childhood immunization.

There were two chiropractors in the current study that did not believe in or support childhood immunization for a variety of reasons, including: vaccines are not effective, are not necessary, are not safe, and the risk of immunization outweighs the benefits. Concerns with vaccine ingredients, the ineffectiveness of vaccines, which results in the need for booster doses, and the notion that the body is a self-healing organism, and thus does not require vaccines, were explored with these chiropractors. The concerns identified by the chiropractors in the current research study were also recognized by health care professionals in a study by Leask et al. (2008), where concerns were mentioned about safety of vaccines, harmful additives, number of vaccines, and the fear of overloading the immune system.

Health Care Professionals Role in Immunization

All health care professionals interviewed in the current study perceived that they have a role in childhood immunization; however, this role differed among health care professionals. According to Austin et al. (2008) and Kuehn (2010), health care professionals' recommendations for immunization may influence uptake and can lead to positive outcomes.

Three chiropractors indicated that childhood immunization is not within their scope of practice, which is supported by the CCA in their position statement on immunization (CCA, 2012). Khorsan et al. (2009) acknowledge that chiropractors have

differing opinions and beliefs about childhood immunization, which is suggested by the findings in this research study. In the current study, the three chiropractors who believed in immunization recognized that their role is to support and encourage it, whereas the two chiropractors who did not believe in immunization confessed that they would not advocate for vaccines.

Chiropractors perceived their role as an educator, which involved providing information or resources, and encouraging informed decision-making. According to Khorsan et al. (2009), chiropractors are often perceived to be knowledgeable on the issue of immunization, and their clients frequently seek information on immunization from them. Two chiropractors in the current study indicated that they have a responsibility to inform people about their options, including the fact that childhood immunization is not mandatory. Current study findings suggest that chiropractors who believe in immunization are more likely to encourage immunization with their clients, which was also found by Medd and Russell (2009) and Page et al. (2006) in their research involving Alberta chiropractors.

The pediatricians and specialist physician in the current study revealed that they are strong advocates of immunization and engage in discussions on this topic with their patients, providing information, as well as encouraging parents to make an informed choice. This finding was explored by Diekema (2005) who reports that pediatricians attempt to educate parents on the importance of immunization. Kuehn (2010) found that education on immunization is most effective when provided by physicians and Smith (2010) suggests that physicians are the most influential source of vaccine information.

Public health nurses have a complex responsibility with childhood immunization and assume a variety of roles. The role of educator was fundamental for the public health nurses interviewed, as they mentioned that they provide information and resources to parents who are attempting to make a decision about childhood immunization. Encouraging informed decision-making and risk versus benefit analysis was included in these discussions with their clients. This finding is similarly found in the literature, where public health nurses are often viewed as important sources of information and support (Austvoll-Dahlgren & Helseth, 2010). Administering vaccines is another important role of public health nurses; however, the nurses in the current study felt that this was a minor component of their role.

The importance of trust, openness, respect, and a non-judgmental attitude was discussed with the public health nurses in the current study, which is consistent with the literature, where a trusting relationship with the health care professional communicating information is significant and may lead to positive effects on immunization (Austvoll-Dahlgren & Helseth, 2010; Bedford & Lansley, 2006; Wu et al., 2008). Benin et al. (2006) also suggest that a trusting relationship between health care professionals and parents is critical when examining immunization.

Perceptions on Mothers' Understanding of Immunization

Health care professionals who were interviewed perceived mothers' understanding of immunization in various ways, from poor understanding to very well-informed on the subject. The perception that mothers are not adequately informed and possess limited understanding was noted by a number of professionals in the current study; however, other professionals in the study felt that mothers are well-educated and

informed about immunization. Health care professionals recognized that although mothers may be educated and informed, they questioned whether they were correctly or accurately informed. Austvoll-Dahlgren and Helseth (2010) suggest that parents require the ability to understand the information they are accessing to facilitate valuable decision-making.

A number of health care professionals in the current study perceived that personal convictions may influence mothers' knowledge and understanding on the topic of immunization, which is summarized in the following quote: "I think you can understand something but still not agree with it because your convictions. So I think it's bigger than understanding." The power of sensational information was also explored during the interviews, as health care professionals recognized that sensational information may be easier to understand and access, in comparison to journals and science-based information that are often technical and theoretical.

Perceptions of Non-Immunizing Mothers' Decision-Making Process

Health care professionals perceived a variety of factors which influence mothers' decision-making process regarding childhood immunization, many of which were similar to the data derived from interviews with mothers. As a result of the lack of scholarly literature on health care professionals' perceptions of non-immunizing mothers' decision-making process, the following research results cannot be compared with current literature on the topic.

Emotions

Emotional motivation as an important factor in decision-making was clearly recognized by health care professionals in the current study. “There is so much emotion attached to it” was expressed by one participant, and echoed by other professionals, which primarily relates to the fact that mothers recognize the vulnerability of their children and may feel the need to protect them. Fear was perceived as a significant aspect in the decision-making process, with the recognition that fear can be paralyzing, and thus mothers defer to the passive decision, which is to refuse childhood immunization.

Health care professionals acknowledged that mothers may have grown up in families where for many generations no one has been immunized, so it becomes a way of life and a method of social and familial inclusion not to participate in childhood immunization. Consequently, social inclusion, which may involve peer, family, or religious pressures, was perceived as a crucial emotional factor in decision-making. The need to “fit in” and feel included can be a powerful response for mothers. In addition, health care professionals felt that cultural and/or religious identity may be important for mothers because they obtain social support from the groups that they belong to.

Beliefs

Health care professionals in the current study perceived beliefs to be a factor in mothers’ decision-making, including religious beliefs, natural health beliefs, and mistrust. Health care professionals recognized that in Southern Alberta, religious beliefs may be a strong influence for mothers not to immunize their children. A public health nurse and the specialist physician discussed the various cultural groups in Southern Alberta, namely

the Dutch Reformed, Mennonites, and Hutterites, and how their beliefs contribute to their refusal of childhood immunization.

However, these professionals appeared to generalize the mothers who decline to immunize into these cultural groups, while the mothers who were interviewed in the current indicated that religiosity was only one factor in their decision-making process. According to the health care professionals interviewed, these mothers may believe that immunization is taking the will of God out of His hands and it is interfering with predetermined destiny. Belief in natural health or leaving the body in its natural state was also perceived as a factor.

Mistrust of government, health care professionals, and pharmaceutical companies was explored by health care professionals during the interviews as another factor which may influence mothers' understanding and decision-making. Health care professionals in the current study recognized that mothers have little trust in them as health care professionals, because of the belief that professionals are associated with government and pharmaceutical companies, and obtain financial benefits by promoting and administering vaccines. This was also outlined in the literature by Walther (2011), who states that parents assume that health care professionals are financially rewarded based on the number of vaccines given. Health care professionals in the current study clearly identified that this does not occur, and interestingly, one pediatrician acknowledged that if he obtained financial benefit from immunization, it would be more advantageous for him to encourage parents not to immunize, because more children would develop illness, which would result in increased workload.

Facts

Vaccine ingredients and lack of exposure to vaccine-preventable diseases were revealed by health care professionals as additional factors that may influence mothers' understanding and decision-making. Health care professionals suggested that mothers have concerns with vaccine ingredients, such as various metals and fetal tissue. The perception that vaccine-preventable diseases are no longer customary was also discussed with health care professionals, and professionals understand that if disease is not prevalent, the perceived risk of acquiring vaccine-preventable diseases is less than the perceived risk of potential vaccine effects.

Information

Health care professionals discussed their perceptions of mothers' sources of information as an important factor in understanding and decision-making. Professionals perceived mothers to access information or resources that resonate with their thoughts and feelings. Health care professionals acknowledged that it may be difficult for mothers to differentiate between evidence and opinion, in addition to the challenge in locating accurate information given the multitude of information available on this topic. This finding is consistent with the literature by Betsch et al. (2010), Davies et al. (2002), Diekema (2005), Levi (2007), and Marfe (2007).

Modern media, such as the Internet, television, and radio were mentioned as sources of information accessed by mothers in the current study. Sources such as Google, Dr. Sears, Dr. Phil, Dr. Oz, Jenny McCarthy, and Fox News were identified as perceived sources of information. Health care professionals recognized the influences of modern media, namely that the media's mandate is to entertain people and as a result, sensational

or emotional stories are given much more attention than science or evidence. Walther (2011) outlines that misleading information on the Internet is easily accessible by parents and Mills et al. (2005) and Smith (2010) suggest that antivaccination websites are increasing, which correlates with the findings of the current research study.

Anecdotal information or hearsay was identified by health care professionals as an important aspect in mothers' understanding and decision-making regarding childhood immunization. Health care professionals suggested that mothers are a close-knit group where word of mouth and informal talk are often primary sources of information and understanding. Anecdotal information is often sensationalized and based on personal stories, which may create more meaning for mothers than evidence-based information.

Health care professionals also acknowledged themselves as sources of information, however, they realized that they are only one source of information accessed and that mothers are often obtaining opinions of childhood immunization from various health care professionals and other sources. This study finding is unlike what Bigham et al. (2006) found in British Columbia, Canada, where parents perceived physicians and public health nurses to be primary sources of information on childhood immunization.

A number of public health nurses and a pediatrician also outlined their perceptions of their fellow professionals, namely chiropractors, and generalized that chiropractors do not promote and support childhood immunization, while current study findings indicate that chiropractors have different perceptions of childhood immunization.

Luthy et al. (2009) noted that health care providers were common sources of information. However, Downs et al. (2008) found that only 33% of study participants

would consult a physician or government source for information and 70% of parents would look to the Internet, which was comparable to the findings of the current research study, where mothers indicated that modern media was a primary source of information. According to Austvoll-Dahlgren and Helseth (2010) and Smailbegovic et al. (2003), parents feel that information accessed from health care professionals is biased, which was similarly explored in the current research study.

Risk versus Benefit Analysis

Health care professionals recognized that risk versus benefit analysis of childhood immunization may be a significant factor explored by mothers, which influences their decision-making process. Mothers are weighing the risks of immunization against the risks of their child(ren) acquiring vaccine-preventable diseases. In addition, mothers are weighing the benefits of immunization against the benefits of natural immunity, which includes long-lasting immunity. Health care professionals acknowledged the challenges with this analysis, namely that the risks of vaccine-preventable diseases are viewed as minimal due to the success of immunization programs, whereas the risks of immunization are perceived to be greater, associated with anecdotal information, hearsay, or concerns about vaccine side effects.

In summary, the third research question deals with health care professionals' perceptions on health non-immunizing mothers' understanding of immunization and their decision not to participate in childhood immunization. This question was addressed above by examining health care professionals' beliefs about childhood immunization, their role in childhood immunization, and finally, their perceptions on mothers' understanding and decision-making process.

Comparison of Perceptions

The fourth research question in this study is as follows: How does the understanding and decision-making process of mothers compare with the perceptions of health care professionals regarding childhood immunization?

The current study findings suggest that overall health care professionals have appropriate insight into mothers' understanding and decision-making regarding childhood immunization. Health care professionals' beliefs and opinions of childhood immunization differed from advocating for immunization to opposing immunization, and the chiropractors who opposed immunization perceived mothers to be very educated and informed on the topic compared to a number of professionals who believed in immunization. Several health care professionals who support immunization felt that mothers' understanding of immunization is limited or poor. Health care professionals recognized that although mothers may be well informed, they are often misinformed as a consequence of unreliable and sensational information accessed. The difficulty in accessing evidence-informed information and scholarly journal articles, as well as the challenges in understanding this material, was also acknowledged by professionals.

Study findings of non-immunizing mothers' understanding of immunization suggest that mothers, in general, perceived that they are informed on the topic and may not recognize that the sources of information accessed, such as anecdotal information, media, and books, may be inaccurate in the eyes of health care professionals. Mothers outlined a variety of online sources accessed for information, including:

www.risksand909shot.com, www.naturalnews.com, <http://www.mercola.com/>, www.thinktwice.com, and <http://www.nvic.org/>, none of which are scholarly, evidence-

informed information, which demonstrates that the meaning of *evidence* for mothers and for health care professionals is very different.

All health care professionals interviewed felt they have a role in childhood immunization, with their primary focus encouraging informed choice and informed decision-making regarding childhood immunization. This belief is supported in the literature by AHW (2007), Khorsan et al. (2009), Marfe (2007), PHAC (2008), and Plastow (2006). Professionals in the current study recognized that accessing evidence-informed information may be difficult for mothers, especially considering the vast amount of information available on the topic of immunization that parents must sift through. In addition, sensational information or stories are often easier to understand and create more of an emotional impact than facts or empirical information.

Health care professionals recognized that immunization is a health care issue, and health care professionals from a variety of disciplines need to work together to address this issue. They felt that the topic of immunization should be discussed at health care encounters with all professionals. Health care professionals also acknowledged that they have not been proactive in public forums and media to promote immunization and informed decision-making, and as a result, mothers are bombarded with anti-immunization messages from these sources, which may certainly influence their decision not to immunize their children.

Comparison of Sources of Information

Non-immunizing mothers and health care professionals explored a variety of sources of information accessed on the topic of childhood immunization during the interviews. Mothers indicated using Google to search for information, as well as additional websites, such as Alberta Health Services [AHS], Mayo Clinic, the National Vaccine Information Center [NVIC], www.risksand909shot.com, www.naturalnews.com, <http://www.mercola.com/>, and www.thinktwice.com. Online newsletters, such as *Natural Health*, and Facebook were also identified.

Books, such as: *What your Doctor May not Tell you about Childhood Vaccinations* and *The Vaccine Book*, books written by the celebrity, Jenny McCarthy, as well as books written by doctors were acknowledged as sources that the mothers turned to. Two mothers also mentioned journal articles as sources of information. In addition, anecdotal information obtained from friends, family, and other parents was discussed by the mothers. Health care professionals, such as physicians, chiropractors, and public health nurses, were accessed by mothers for information, although mothers expressed confusion over conflicting information received from health care professionals, and the view that information provided by health care professionals may be biased.

During the interviews, health care professionals who promote immunization discussed their sources of immunization information; however, many of these sources differed significantly from sources utilized by the mothers. Websites accessed include: Vaccine Education Center, which is founded by Dr. Paul Offitt, Public Health Agency of Canada [PHAC], Canadian Pediatric Society [CPS], Health Canada, National Advisory Committee on Immunization [NACI], Alberta Health Services [AHS], Alberta Health and

Wellness [AHW], Medscape, PubMed, Medline, Centers for Disease Control and Prevention [CDC], Every Child by Two, and Immunize BC. Reputable books, documentaries, and peer-reviewed journals were also identified.

The two chiropractors who opposed immunization mentioned websites, such as the Vaccine Risk Assessment Network [VRAN], National Vaccine Information Center [NVIC], and Dr. Mercola, as their sources of information. Interestingly, they accessed similar sources of information as non-immunizing mothers, which suggests that people will access sources of information that relate to their perceptions or beliefs on an issue.

Similar sources identified by both groups included the National Vaccine Information Center [NVIC] and Dr. Mercola's natural health website. The NVIC is a "non-profit charity" co-founded by Barbara Fisher "with parents of DPT [diphtheria, polio, tetanus] vaccine-injured children in 1982" (NVIC, 2012, para 1). Fisher has a B.A. and was a writer and community relations professional prior to her experience with one of her children who "suffered a convulsion, collapse, and brain inflammation within hours of his fourth DPT shot in 1980" (para 2). As mentioned previously in this thesis, Dr. Mercola is a Doctor of Osteopathic Medicine who is highly critical of standard medical practice, including immunization (Wikipedia, 2012).

Comparison of Factors Identified in Decision-Making

Factors influencing childhood immunization decision-making were similarly explored by mothers and health care professionals in the current study. To assist in comparing the perceptions among the two groups, the themes identified by the mothers were also used to organize factors mentioned by health care professionals, as summarized in the table below:

Table 5.1. Comparison of Factors Identified by Mothers and Health Care Professionals

Factors Addressed by Mothers	Factors Addressed by Health Care Professionals
Emotions	Emotions
Fear	Fear
Fear	Social Inclusion
Fear of Vaccine Effects	
Fear Related to Negative Experiences	
Guilt	
Social Belonging	
Indifference	
Beliefs	Beliefs
Religious/Philosophical	Religion
Mistrust	Mistrust
Natural Health Beliefs	Natural Health Beliefs
Facts	Facts
Lack of Vaccine-Preventable Disease	Lack of Vaccine-Preventable Disease
Vaccine Ineffectiveness	Vaccine Ingredients
Vaccine Ingredients	
Multiple Vaccines/Antigens	
Information	Information
Not Knowing	Media Influences
Sources of Information	Anecdotal Information
Media Influences	Health Care Professionals
Anecdotal Information	
Health Care Professionals	
Books	
Journals	

There were a number of factors identified by the mothers that were not mentioned by health care professionals, however, health care professionals recognized that the decision whether or not to participate in childhood immunization is influenced by a variety of inter-related factors, as depicted in the table above. It appeared during interviews with health care professionals that they often generalized non-immunizing mothers into a number of religious and cultural communities in Southern Alberta, and although a large number of members in these communities do not believe in immunization, there are also mothers in these groups who do immunize their children. In

addition, there are mothers in Southern Alberta who do not participate in childhood immunization, and do not belong to these cultural groups.

Health care professionals viewed the decision made by mothers not to engage in childhood immunization as irresponsible and selfish. They felt that unimmunized children provide a means for vaccine-preventable diseases to enter communities, which may also jeopardize the health of immunized children. This perception was similarly confessed by a number of mothers in the current study who indicated that they realize they are benefiting from herd immunity, and “riding along on everybody else immunizing”, however, there were also mothers who felt that they were making a responsible decision for their children.

Both non-immunizing mothers and health care professionals acknowledged the importance of the risk versus benefit analysis in the decision-making process. During this phase of the process, all the above-mentioned factors are processed, filtered, and weighed. From this analysis, a decision regarding childhood immunization is made.

In summary, the fourth research question addresses the comparison of understanding and decision-making of mothers to the perceptions of health care professionals regarding childhood immunization. The similarities and differences among perceptions of both groups were highlighted above.

Discussion of Theoretical Model of Mother’s Decision-Making Process

Following data collection and analysis, I re-examined current literature on immunization decision-making and was not able to locate a theoretical model of decision-making that correctly represented the current research findings. As discussed previously in this chapter, although a conceptual model of decision-making has been created by

Sturm et al. (2005), and used in Chapter Two to discuss current literature on this topic, I felt that this model did not accurately depict the findings in the current research study because it did not appear to address the decision-making process holistically or illustrate complexity of the immunization decision-making process as explored with the mothers that I interviewed. Consequently, a theoretical model was created which illustrates the current study findings, as represented below.

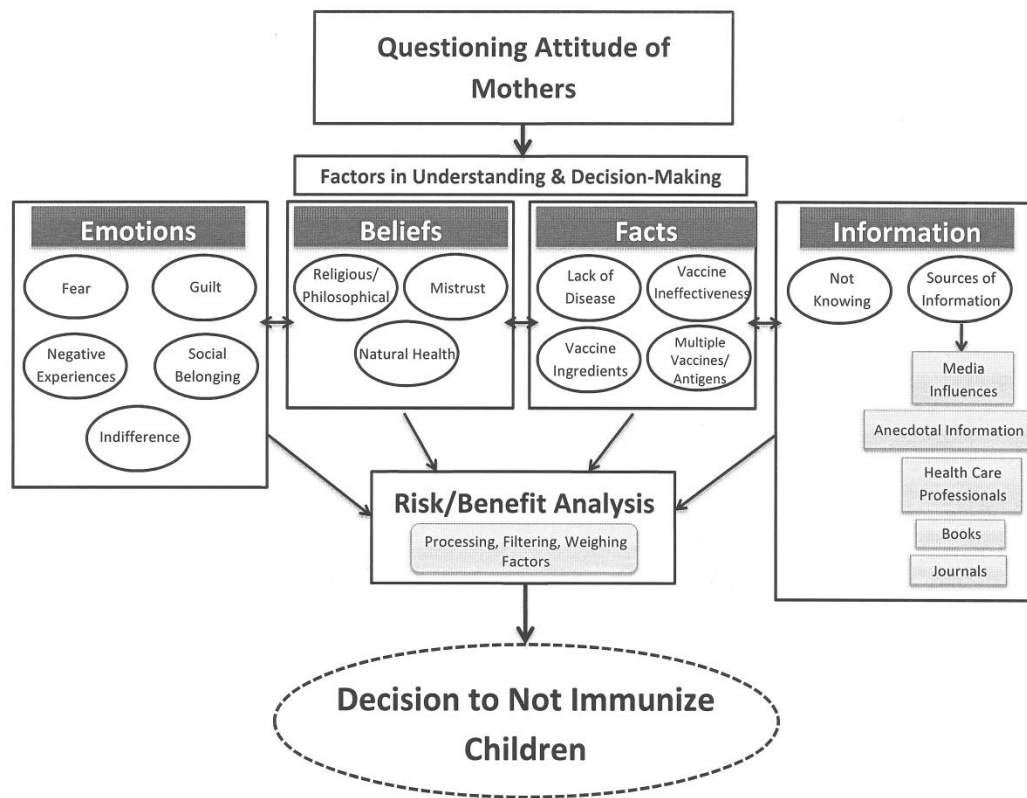


Figure 5.1. Theoretical Model of Understanding and Decision-making Process of Non-Immunizing Mothers Regarding Childhood Immunization

As depicted in the theoretical model of mother's decision-making process, non-immunizing mothers have a questioning attitude, which may motivate them to develop an understanding of immunization by examining a wide variety of factors. Mothers indicated that there was not only one factor influencing their understanding and decision-

making, but rather they all considered a variety of factors. They also recognized that these factors are inter-related, referring to the fact that there are multiple elements involved in immunization decision-making, represented by reciprocal arrows in the model. Consideration of these factors appeared to be followed by engagement in a risk versus benefit analysis. This analysis, consisting of processing, filtering, and weighing of the various factors, results in the decision to decline to participate in childhood immunization. In the theoretical model, a dotted line rather than a solid line is used to represent the decision made by mothers, because mothers in the current study indicated that they continually re-evaluate their decision.

Study Findings, Symbolic Interactionism and Grounded Theory

Study findings were guided by the theoretical framework of symbolic interactionism, as symbolic interactionism is a beneficial perspective for understanding human actions and behaviour as well as provides a method for studying how the process of interpretation leads to behaviour. Interviews with non-immunizing mothers and health care professionals fostered an understanding of the process of how their views developed, as well as promoted awareness of the process of human action and behaviour on the topic of childhood immunization.

Findings also resulted from the grounded theory research method, as the goal of grounded theory research is to discover dimensions of social processes and interprets the phenomenon of interest. Theoretical insight into mothers' understanding and decision-making process regarding childhood immunization was achieved through creation of a conceptual model of mothers' decision-making process, depicted and discussed in the section above. Insight into the perceptions of health care professionals on this issue has

also been achieved. As a result of this grounded theory research study, a number of central findings emerged, which were discussed in Chapter Four and revisited below:

- Non-immunizing mothers have a questioning attitude which may influence their understanding of childhood immunization and decision-making process not to participate in childhood immunization.
- By means of a risk versus benefit analysis, mothers consider a wide variety of inter-related factors, namely: emotions, beliefs, facts, and information as they engage in the decision-making process regarding childhood immunization.
- The decision not to participate in childhood immunization is an extensive, multi-faceted, and complex process.
- Mothers feel that making decisions about the health and well-being of their children is a very responsible undertaking.
- Health care professionals have appropriate insight into mothers' understanding and decision-making regarding childhood immunization, as suggested by the similarity of factors identified by both mothers and health care professionals.
- Health care professionals perceive the risk versus benefit analysis as a primary factor in decision-making.
- Health care professionals recognize they are only one factor in mothers' decision-making process regarding childhood immunization.
- Health care professionals perceive themselves to have a role in childhood immunization; encouraging informed decision-making is a principle aspect of their role.

- Health care professionals are more likely to recommend immunization to their patients if they believe in it themselves.
- Health care professionals who support childhood immunization perceived non-immunizing mothers sources of information to be inaccurate and lacking evidence, while those professionals who oppose immunization identified similar sources of information as the mothers.
- Health care professionals believe immunization is a health care issue and all health care professionals from a variety of disciplines need to collaborate to address this matter. The topic of immunization should be addressed at all health care encounters.
- Health care professionals feel they should be more pro-active in public forums and media to moderate anti-immunization information portrayed to the public.

A well-grounded theory which explains and interprets the phenomenon of interest was constructed in this research study, namely that understanding and collaboration is necessary between non-immunizing mothers and health care professionals to promote positive health outcomes in children.

Practice Implications

The current study offers valuable implications for the health care practice setting. Health care professionals have a role in childhood immunization and should make an effort to understand the factors contributing to the immunization decision-making process. This understanding will assist in planning, coordinating, and implementing effective immunization programs. Furthermore, health care professionals should refrain from making generalizations about mothers who do not immunize their children by

grouping them into predominantly non-immunizing religious or cultural groups, as there are mothers in these communities who immunize their children. In addition, there are mothers who do not belong to these communities who choose not to participate in childhood immunization.

Health care professionals are responsible for addressing immunization with all their patients, regardless of religious or cultural background, at each health care encounter and avoid assumptions that certain religious or cultural groups do not participate in immunization. Taking the time to listen to patient's concerns about immunization is important. In addition, promoting informed decision-making is crucial, which involves educating the public on the meaning, significance, and implications of informed decision-making. Providing appropriate resources and information to patients that addresses a range of literacy levels, as well as educating clients how to access accurate information and determine if information is evidence-based, is fundamental.

Collaboration of all health care professionals from a variety of disciplines is instrumental in addressing this issue to promote trust and credibility. The trust in health care professionals has been lost as a result of conflicting information obtained from various providers. Health care professionals should avoid making generalizations about the beliefs and practices of practitioners in other disciplines, as this can affect relationships between professionals. Trust and respect can only be restored through collaborative relationships among all health care professionals. Study findings also indicate that mothers are seeking support and respect from professionals for their decision on childhood immunization.

Health care professionals must be more pro-active in promoting childhood immunization through channels accessed by the public, such as public forums and popular media. The topic of immunization is undergoing an immense amount of damaging scrutiny, and it is the responsibility of health care professionals to revitalize the topic to foster positive health outcomes for children.

Education Implications

This research study suggests that health care professionals have a role in childhood immunization, and thus knowledge and education on this topic is instrumental. Health care education programs, including medical, chiropractic, and nursing programs must focus on the topic of immunization so practitioners have adequate knowledge to address this subject with patients.

Discussions with health care students should take place regarding the risks associated with making generalizations in the practice environment. For instance, programs should educate students to refrain from forming generalizations about individuals who belong to cultural or religious groups, as well as making assumptions about the beliefs of health care professionals, such as the supposition that all chiropractors do not support childhood immunization. This may result in enhanced collaboration among health care disciplines and promote enhanced patient outcomes.

From personal experience as a nursing student and currently as a nurse educator in a baccalaureate nursing program, the subject of immunization is given very little attention. It is essential that education programs instruct students on the issues, barriers, benefits, and risks of immunization, as well as methods of accessing evidence-informed information on the topic. Health care education programs also have a responsibility to

promote successful public health achievements, such as immunization, with students to ensure the health and well-being of patients, families, communities, and populations.

Recommendations for Research

This qualitative study was instrumental in examining the issue of childhood immunization among non-immunizing mothers and health care professionals in Southern Alberta, however, further research would be beneficial on this topic. The current study findings may inform future quantitative research approaches, such as creating survey questions on the topic of immunization.

Further research to investigate childhood immunization decision-making among mothers and parents in a larger geographical area, such as the province of Alberta, and encompassing study participants from a wider variety of cultural, social, religious, and political backgrounds is required. It may also be beneficial to consider the understanding and perceptions of expectant parents toward childhood immunization. Further research, using quantitative methods, to analyze the relationship between health literacy and childhood immunization would be advantageous.

The perceptions of a small group of health care professionals, namely, pediatricians and a specialist physician, chiropractors, and public health nurses were explored in this research study; however, it would be valuable to conduct further research on this topic with a larger group of diverse health care professionals including: family physicians, nurses in other practice settings, nurse practitioners, midwives, and alternative health practitioners, such as naturopathic and homeopathic practitioners, in other geographical areas where religious inferences may not be as prevalent.

Further research is required to examine immunization programs in Alberta and Canada to determine if the current delivery and administration methods are conducive to positive health outcomes and immunization targets. Trialing and researching innovative methods of delivering immunization programs would be beneficial.

Limitations of the Research Study

Although the research conducted in this study is sound and credible, there are a number of limitations to the study. One limitation is the unique geographical area of this research study, as Southern Alberta is home to a number of large, predominantly non-immunizing cultural and religious groups. A further limitation is the mothers who participated in this study represented a homogenous sample, as suggested by the similarity of factors considered in the immunization decision-making process identified by all mothers interviewed. As such, findings may only be applicable to Southern Alberta, and transferability of results may be limited.

In addition, it was not possible to recruit mothers from a wider variety of cultural and religious backgrounds, including mothers in Hutterite, Mennonite, and First Nations communities. However, mothers were recruited from diverse urban and rural areas in Southern Alberta.

Health care professionals were recruited from a number of disciplines, including pediatricians, a specialist physician, chiropractors, and public health nurses, and from a diverse range of rural and urban communities in Southern Alberta, however a further limitation is that additional health care professionals who have a role in childhood immunization, such as family physicians, were not involved in this research study. Despite the limitations outlined above, this research study has generated innovative and

rich data, which can be transferable to other settings and inform research, health care practice, and education.

Research Dissemination

I intend to disseminate research findings, as the theoretical findings explored in this research study may be beneficial in other settings. Research findings will be shared with participants and other interested individuals by means of an executive research report. Preliminary research findings have already been disseminated to a number of individuals working with Alberta Health Services, including a Medical Officer of Health, who shared preliminary research findings at the Canadian Public Health Association annual conference in Edmonton in June 2012, and honored my request for appropriate credit given for the current research study.

Research findings will be further disseminated with health care professionals who are involved in childhood immunization education and administration, both in Southern Alberta, and in other health regions as invited. I have been invited by Alberta Health Services South Zone Public Health to share research results at a meeting of all Public Health Nurses in South Zone. I will be presenting my research findings at the Canadian Public Health Association annual conference in Ottawa in June 2013. Finally, it is the intent to publish and present this research, as a means of distributing beneficial information regarding immunization within the public domain, to promote greater understanding of this issue.

Conclusion

Immunization is considered one of the greatest public health achievements of all time. Despite the success of immunization, vaccine-preventable diseases continue to exist (AHW, 2007) and Southern Alberta faces a particular challenge relating to immunization uptake as this geographic area is home to a number of large, predominately non-immunizing cultural groups, including Hutterites, Mennonites, Dutch Reformed, and people who adhere to alternative health practices (Kulig et al., 2002).

The purpose of this study was two-fold; first, to explore how mothers living in Southern Alberta develop an understanding of childhood immunization and how their understanding contributes to the decision-making process that results in a decision not to participate in childhood immunization. Second, the perceptions of health care professionals in Southern Alberta who have a professional relationship with mothers on pertaining to childhood immunization were also examined. The understanding and decision-making process of mothers was compared with the perceptions of health care professionals regarding childhood immunization. In total, eight mothers who choose not to immunize their children and twelve health care professionals (i.e. public health nurses, a specialist physician, pediatricians, and chiropractors) were individually interviewed to generate information about this topic.

Research findings indicate that non-immunizing mothers possess a questioning attitude, which may influence their decision-making process. They consider a variety of inter-related factors, such as emotions, beliefs, facts, and information, and complete a risk versus benefit analysis as they engage in this process. Health care professionals perceive themselves to have a role in childhood immunization and have appropriate insight the

various factors that may influence mothers' understanding and decision-making regarding childhood immunization. The importance of encouraging informed decision-making was viewed as important by health care professionals. Collaboration and understanding between non-immunizing mothers and health care professionals is vital to promote positive health outcomes in children.

Engaging in this research study with non-immunizing mothers and health care professionals has been a transformative experience. A greater understanding of childhood immunization has been achieved through the honest, meaningful, and detailed data obtained from study participants, as summarized by the quote below:

“All truths are easy to understand once they are discovered;
the point is to discover them.”

(Galileo Galilei, n.d.)

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Appendix A

Incidence of Select Vaccine-Preventable Diseases in Canada

Disease	Details	Pre-vaccine era*		2000-2004**	
		5-year average annual incidence per 100,000	Peak annual number of cases	5-year average annual incidence per 100,000	Peak annual number of cases
Diphtheria	Diphtheria toxoid introduced in 1926, routine infant immunization since 1930, national notifiable diseases reporting began in 1924	1925-29 84.2	1925-29 9,010	0.0	1
Invasive <i>Haemophilus influenzae</i> type b (Hib) in children < 5 years of age	PRP vaccine introduced in 1986, currently approved Hib PRP-T and PRP-OMP conjugate vaccines introduced in 1991/92, national notifiable diseases reporting of invasive Hib disease began in 1986	1986-90 22.7	1986-90 526	0.9	17
Measles	Live vaccine approved in 1963, MMR universal infant program implemented in 1983, 2 dose MMR introduced 1996/97, no notifiable diseases reporting from 1959-68	1950-54 369.1	1950-54 61,370	0.2	199
Mumps	Vaccine approved in 1969, MMR universal infant program implemented in 1983, 2 dose MMR introduced 1996/97, no notifiable diseases reporting from 1960-85	1950-54 248.9	1950-54 43,671	0.3	202
Pertussis	Whole cell pertussis vaccine approved in 1943, acellular pertussis vaccine replaced whole cell in 1997-98, adolescent/adult acellular formulation approved in 1999	1938-42 156.0	1938-42 19,878	10.4	4,751
Paralytic poliomyelitis	IPV approved in 1955, OPV approved in 1962 and in use in Canada until 1997, IPV used exclusively from 1998-present	1950-54 17.3	1950-54 1,584	0	0
Rubella	Rubella vaccine introduced 1969, MMR universal infant program implemented in 1983, 2 dose MMR introduced 1996/97	1950-54 105.4	1950-54 37,917	0.1	29
Congenital rubella syndrome (CRS)	See Rubella above. National notifiable diseases reporting of CRS began in 1979	1979-83 2.4†	1979-83 29	0.5†	3
* Five years preceding vaccine introduction					
** Provisional numbers from National Disease Reporting System 2002-04					
† per 100,000 live births					

Incidence of Select Vaccine-Preventable Diseases in Canada - Pre-vaccine Era Compared with Five Most Recent Years (PHAC, 2012, p. 18-19).

Appendix B

Research Timeline

Activity	Description	Timeline
Considering a Research Topic	Researching topic of immunization seemed appropriate related to personal and professional experiences.	September 2010
Reviewing Appropriate Literature	Reviewing current literature to determine possibility of research study and relevant literature.	September 2010 – November 2012
Selecting a Research Method	Qualitative approach using Grounded Theory was preferred given research topic and interest areas.	September 2010 – December 2010
Completing Course Requirements and Preparing Research Proposal	Completed mandatory MSc courses and prepared research proposal	September 2010 – July 2011
Submission of Research Proposal to Committee	Research proposal (Chapters 1, 2, and 3) submitted to committee	July 2011
Research Proposal Presentation to Committee	Presentation of research proposal to committee. Given permission to proceed with research study.	September 2011
Obtaining Ethical Approval	Submitted ethics applications to University of Lethbridge Human Subject Review Committee and Alberta Health Services. Approval granted from both committees.	October 2011
Sample Recruitment, Data Collection, & Preliminary Data Analysis	Recruited mothers and health care professionals, completed individual interviews, and transcribed interview recordings.	January – June 2012
In-depth Data Analysis	Data analyzed manually and using NVivo to generate research findings.	June – November 2012
Writing Findings & Discussion	Writing up research findings and discussion, as well as editing thesis to submit to committee members in preparation for thesis defense.	November 2012 – January 2013
Thesis Defense	Presentation and defense of research study.	February 2013

Appendix C

National Immunization Strategy Indicator of Success: Disease Incidence

Vaccine Preventable Disease	Disease Incidence (Per 100,000)		Disease Incidence Goals for 2010*
	2004	2006	
Varicella	National population-based surveillance data are not available [‡]		Achieve a sustained reduction of 70% in the incidence of varicella
Invasive pneumococcal disease (IPD)	National population-based surveillance data are not available for vaccine program-specific age groups [‡]		Achieve a sustained reduction of: <ul style="list-style-type: none"> • 80% in the incidence of IPD among children < 2 years of age compared with pre-conjugate vaccine incidence • 40% in the incidence of IPD among adults ≥ 65 years of age compared with 1998 incidence
<1 year old	42.1	19.2	
1-4 years	31.1	13.8	
>60	20.7	18.8	
All age groups	9.1	8.7	
Invasive meningococcal disease, serogroup C			Achieve a sustained reduction of: <ul style="list-style-type: none"> • 90% in the incidence of <i>N. meningitidis</i> serogroup C in children < 5 years of age • 95% in the incidence of <i>N. meningitidis</i> serogroup C in adolescents 12 to 19 years of age • 70% in the incidence of <i>N. meningitidis</i> serogroup C
All age groups	0.18	—**	
Pertussis			Achieve a sustained reduction in the reported incidence of pertussis among those 10 to 19 years to at least the levels present in persons 1 to 4 years of age
10-14 years	50.4	19.0	
15-19 years	18.7	5.5	
All age groups	9.69	6.87	

* As recommended at the 2005 Canadian Consensus Conference.

[‡] Varicella, though listed as a nationally notifiable disease within the Notifiable Disease Reporting System (NDRS), does not yet have a national agreed-upon strategy and standards for national population-based surveillance. Likewise, varicella it is not a reportable disease in many P/Ts, and surveillance systems to accurately measure disease incidence are lacking. It is estimated that approximately 90% of the population will have had chickenpox by 12 years of age (with as many as 350,000 cases/year); however, < 10% of these are reported to the NDRS in any given year.

[‡] Caution should be employed when interpreting these decreases, as national goals were set for the < 2 and > 65 age groups, which may show a different degree of reduction than the available age groups shown. Data for 2006 are preliminary; reporting by P/Ts may not be complete.

** National enhanced surveillance data not currently available for this year. Reporting by P/Ts is not complete.

(PHAC, 2009, <http://www.phac-aspc.gc.ca/im/pdf/nis07-eng.pdf>)

Appendix D

Approximate Herd Immunity Thresholds for Infection Elimination

Infection	R₀	Herd Immunity Threshold
Diphtheria	6-7	~85%
Measles	12-18	83-94%
Mumps	4-7	75-86%
Pertussis	12-17	92-94%
Polio	5-7	80-86%
Rubella	6-7	83-85%
Smallpox	5-7	80-85%
Pandemic Flu (H1N1)	1.6?	~40%

(Smith, 2009)

Appendix E


Comparison of Classic and Straussian Grounded Theory

	<i>Glaser & Strauss/Glaser</i>	<i>Strauss & Corbin/Corbin & Strauss</i>
Epistemology	No preconceived ideas about the area of study. No literature review is to be conducted. The researcher begins from a position of naiveté and learns from the experts.	Researchers can gain insights into data through literature review. Theories are considered a lens through which the researcher approaches the data, and should be named, if used.
Research Question	The researcher studies an area of interest; a specific research question is not needed.	A research question is stated.
Ethical Considerations	Grounded theory is about concepts, not people. Transcription of interviews is not necessary, but information about specific individuals should be confidential.	Interviews can be transcribed, and this is recommended for novices. Data should be stored securely. Confidentiality should be ensured.
Data Gathering	No interview guide is needed because these are based on preconceptions. The participants are considered the experts and will reveal their main concern. Field notes can be used, as well as photos, news articles, historical documents, and other information that clarifies the concepts.	Unstructured interviews are recommended. Observations of the participants are also part of the data, but are subject to interpretation and should be clarified with the participants.
Data Analysis	The researcher sorts and resorts memos until the major concepts become clear. Then, the theoretical connections among the concepts should be stated.	Computer programs can be used to aid data analysis.
Results	The results of the study should be “written up” from the memos. The study will result in a substantive theory that explains what is going on in the area of interest. Numerous theories can be constructed from one study.	Data analysis, at a minimum, results in themes and concepts. Theories can also be developed from the data, but this is not the necessary outcome.
Evaluation	Fit, Work, Relevance, and Modifiability	Fit, applicability, concepts, contextualization of concepts, logic, depth, variation, creativity, sensitivity, and evidence of memos.

(Carpenter, 2011, p. 127)

Appendix F

Recruitment Poster for Mothers



**ARE YOU A NON-
IMMUNIZING MOTHER
WITH A CHILD OR
CHILDREN UNDER THE
AGE OF 6 YEARS?**

If so, I would appreciate hearing from you!

**Would you be interested in participating in
a research study on the topic of
immunization understanding and decision-
making?**

**Please contact Shannon:
(403) 330-3686 or (403) 359-3136 or
shannon.vandenberg@uleth.ca
to sign up or for more information.**

Appendix G

Letter to Health Care Professionals

Shannon Vandenberg
Office: 403.332.4085
Cell: 403.359.3136
Email: shannon.vandenberg@uleth.ca

Date

Dear: _____

I am a graduate student in the Master of Science (Nursing) program at the University of Lethbridge currently involved in a research study. The purpose of this research study is to explore how non-immunizing mothers develop an understanding of immunization and how their understanding influences the decision-making process not to participate in childhood immunization. The perceptions of health professionals regarding non-immunizing mothers' understanding and decision-making process will also be examined.

I am interested in learning more about your perceptions of non-immunizing mothers' understanding of immunization and their decision-making process, as a health care professional with a working relationship with non-immunizing mothers.

Your contribution to this study would be greatly appreciated. I plan to conduct the interviews in January – April 2012; the interview will last between 1 to 2 hours. The interview will be held at a quiet location of your choice, and your participation in this study will be confidential. Once the study is complete, you will be given a summary of the research findings.

If you are interested in participating in this study, please call me at any of the telephone numbers listed above or email me at the email address listed above. If you have questions or concerns, please feel free to contact me.

Sincerely,

Shannon Vandenberg, RN BN
Master of Science (Nursing) student
University of Lethbridge

Appendix H

Alberta Routine Childhood Immunization Schedule

Age	Vaccine
2 months	<ul style="list-style-type: none"> • DTaP-IPV-Hib¹ • Pneumococcal conjugate (PCV13) • Meningococcal conjugate (Men C)
4 months	<ul style="list-style-type: none"> • DTaP-IPV-Hib • Pneumococcal conjugate (PCV13) • Meningococcal conjugate (Men C)
6 months	<ul style="list-style-type: none"> • DTaP-IPV-Hib • Pneumococcal conjugate (PCV13) (for high risk children only)
12 months	<ul style="list-style-type: none"> • MMRV² • Meningococcal conjugate (Men C) • Pneumococcal conjugate (PCV13)
18 months	<ul style="list-style-type: none"> • DTaP-IPV-Hib
4-6 years	<ul style="list-style-type: none"> • DTaP-IPV³ • MMRV • Pneumococcal conjugate (PCV13) only for children up to 71 months (catch up program)

Note: Each bullet represents one vaccine/injection unless otherwise noted.

- ¹ Diphtheria, tetanus, acellular pertussis, polio, hemophilus influenza type b
- ² Measles, mumps, rubella, and varicella
- ³ Diphtheria, tetanus, acellular pertussis, polio

(Alberta Health and Wellness, 2012)

Appendix I

Informed Consent Document for Mothers

LETTER OF CONSENT FOR MOTHERS

Understanding and Decision-Making Regarding Childhood Immunization among Non-immunizing Mothers and Perceptions of Health Care Professionals in Southern Alberta

(Insert Date)

Dear *(Insert Potential Research Participant's Name)*:

You are being asked to participate in a study about immunization understanding and decision-making. Specifically, you will be asked about your understanding of childhood immunization and how you arrived at the decision not to immunize your child(ren). The purpose of this study is to discover how mothers engage in the decision-making process regarding childhood immunization.

You are invited to participate in a digitally-recorded interview because I believe you are able to provide me with valuable information about childhood immunization. I also believe you are able to discuss, from your perspective, your understanding of, experiences with, and values toward childhood immunization.

As the interview unfolds, you can choose not to answer any question asked. The session should take only one to two hours of your time. If you decide to withdraw from the study, simply let me know and we will end the interview. There are no consequences for not answering a question or withdrawing from the study. Because of the nature of the interview, all data you have shared prior to the time of withdrawal will remain in the data set.

There are no known physical risks for participating in this study. However, you may sometimes feel emotionally uncomfortable if reflecting on an unpleasant experience. If this happens, simply contact the Principle Investigator, Shannon Vandenberg, at: shannon.vandenberg@uleth.ca or let the interviewer know at the end of the session. The Principle Investigator will then provide you with names and contact information of counseling and/or mental health services available to you.

Although there are no direct benefits to you for participating in the interview, you will be providing the researcher with valuable information regarding your experiences, ideas, values, and beliefs regarding childhood immunization. Your information will enhance our understanding of this health topic. As a token of appreciation for your participation and time, you will be given a small gift, regardless of whether the interview is completed.

The information you share with the researcher will remain confidential. As well, the researcher will be using other strategies intended to protect your identity. For example, all identifying information like your name will be removed from the transcript and replaced with a pseudonym. Identifying events will be modified in such a way as to protect your identify and the identity of your family. All results of the study will be reported in aggregate form. Your name and/or identifying information will not be made public.

Once the recording is transcribed, the recording will be destroyed. All transcripts from the study will be stored in a locked cabinet located in the Principal Investigator's locked office. Data will be kept for an indefinite period of time, as the researcher may wish to use the data in for future research. Only the researcher and the researcher's supervisor will have access to the data.

Findings from this study may be presented at conferences and published in relevant nursing journals. The findings may also be discussed with health care professionals whose role is related to childhood immunization, including public health nurses, physicians, and pediatricians, as well as Alberta Health Services administrators so that strategies might be developed to better support non-immunizing mothers and their children. ***If you wish to review the completed project prior to its release to the public, please contact the Principle Investigator at Shannon.vandenberg@uleth.ca***

If you require any information about this study, or would like to speak to the Principle Investigator, please contact: Shannon Vandenberg (phone: 403-359-3136 or 403-332-4085) or email: Shannon.vandenberg@uleth.ca at the University of Lethbridge. Questions regarding your rights as a participant in this research may be addressed to the Office of Research Services, University of Lethbridge (phone: 403-329-2747 or email: research.services@uleth.ca).

I have read (or have been read) the above information regarding a study about mothers understanding and decision making regarding childhood immunization, and consent to participate in this study.

_____ (Printed Name)

_____ (Signature)

_____ (Signature of Researcher)

_____ (Date)

Appendix J

Informed Consent Document for Health Care Professionals

LETTER OF CONSENT FOR HEALTH CARE PROFESSIONALS

Understanding and Decision-Making Regarding Childhood Immunization among Non-immunizing Mothers and Perceptions of Health Care Professionals in Southern Alberta

(Insert Date)

Dear *(Insert Potential Research Participant's Name)*:

You are being asked to participate in a study about immunization understanding and decision-making. Specifically, you will be asked about your perceptions of the understanding and decision-making process of non-immunizing mothers regarding childhood immunization. The purpose of this study is to discover how non-immunizing mothers engage in the decision-making process regarding childhood immunization, and the perceptions of health care professionals on mothers' understanding and decision-making. The researcher will also determine if there are any comparisons between non-immunizing mothers' understanding and decision-making and the perceptions of the health care professionals on this topic.

You are invited to participate in a digitally-recorded interview because I believe you are able to provide me with valuable information about your perceptions on this topic. I also believe you are able to discuss, from your perspective, the understanding and decision-making process of non-immunizing mothers regarding childhood immunization.

As the interview unfolds, you can choose not to answer any question asked. The session should take only one to two hours of your time. If you decide to withdraw from the study, simply let me know and we will end the interview. There are no consequences for not answering a question or withdrawing from the study. Because of the nature of the interview, all data you have shared prior to the time of withdrawal will remain in the data set.

There are no known physical risks for participating in this study. However, you may sometimes feel emotionally uncomfortable if reflecting on an unpleasant experience. If this happens, simply contact the Principle Investigator, Shannon Vandenberg, at: shannon.vandenberg@uleth.ca or let the interviewer know at the end of the session. The Principle Investigator will then provide you with names and contact information of counseling and/or mental health services available to you.

Although there are no direct benefits to you for participating in the interview, you will be providing the researcher with valuable information regarding your perceptions on this issue. Your information will enhance our understanding of this health issue. As a token of appreciation for your participation and time, you will be given a small gift, regardless of whether the interview is completed.

The information you share with the researcher will remain confidential. As well, the researcher will be using other strategies intended to protect your identity. For example, all identifying

information like your name will be removed from the transcript and replaced with a pseudonym. Identifying events will be modified in such a way as to protect your identify and the identity of your family. All results of the study will be reported in aggregate form. Your name and/or identifying information will not be made public.

Once the recording is transcribed, the recording will be destroyed. All transcripts from the study will be stored in a locked cabinet located in the Principal Investigator's locked office. Data will be kept for an indefinite period of time, as the researcher may wish to use the data in for future research. Only the researcher and the researcher's supervisor will have access to the data.

Findings from this study may be presented at conferences and published in relevant nursing journals. The findings may also be discussed with other health care professionals whose role is related to childhood immunization, including public health nurses, physicians, and pediatricians, as well as Alberta Health Services administrators so that strategies might be developed to better support non-immunizing mothers and their children. ***If you wish to review the completed project prior to its release to the public, please contact the Principle Investigator at Shannon.vandenberg@uleth.ca***

If you require any information about this study, or would like to speak to the Principle Investigator, please contact: Shannon Vandenberg (phone: 403-359-3136 or 403-332-4085) or email: Shannon.vandenberg@uleth.ca at the University of Lethbridge. Questions regarding your rights as a participant in this research may be addressed to the Office of Research Services, University of Lethbridge (phone: 403-329-2747 or email: research.services@uleth.ca).

I have read (or have been read) the above information regarding a study about mothers' understanding and decision making regarding childhood immunization and perceptions of health care professionals on this topic, and consent to participate in this study.

_____ (Printed Name)

_____ (Signature)

_____ (Signature of Researcher)

_____ (Date)

Appendix K

Interview Guide for Non-Immunizing Mothers

1. When I say the word ‘immunization’, what comes to your mind?
2. What does the word ‘immunization’ mean to you?
3. What do you know about childhood immunization?
4. What have you heard about childhood immunization?
5. Are you aware of the childhood immunization schedule?
 - a. If yes, can you tell me what you know?
 - b. If no, have you heard of immunization schedules?
6. Which diseases are protected by vaccines for your child(ren)?
7. What experiences have you had with your physician or public health nurse regarding immunization?
 - a. How do you feel?
 - b. How do you respond?
8. How would you describe your relationship with your physician?
 - a. Is your relationship positive?
 - i. If so, why is it positive?
 - b. Is your relationship strained?
 - i. If so, why is it strained?
9. How would you describe your relationship with your public health nurse?
 - a. Is your relationship positive?
 - i. If so, why is it positive?
 - b. Is your relationship strained?
 - i. If so, why is it strained?

10. Do you have a relationship with other health care providers?
11. If so, which health care providers do you have a relationship with?
12. How would you describe your relationship(s) with other health care providers?
 - a. Is your relationship positive?
 - i. If so, why is it positive?
 - b. Is your relationship strained?
 - i. If so, why is it strained?
13. What are your experiences with childhood immunization?
14. What are your opinions of childhood immunization?
15. What are your beliefs surrounding childhood immunization?
16. Are your beliefs associated with a religious affiliation?
 - a. If so, can you tell me more about your religion and immunization?
 - b. If not, are your beliefs associated with another belief system?
17. How did you come to believe what you do about immunization?
 - a. What contributes to your beliefs?
18. I am interested if you discuss childhood immunization with anyone you interact with?
 - a. In a social setting?
 - b. In a work setting?
 - c. In a religious setting?
 - d. Anywhere else?
19. How do you obtain information about childhood immunization?
 - a. Where do you go for information?
20. How do you determine if the information obtained is true and factual?
21. How do you obtain your understanding of childhood immunization?

- a. Is there anything else that we have not talked about that contributes to your understanding?
22. How did you decide not to immunize your child(ren)?
- a. How did you make this decision?
 - b. What influenced your decision?
 - c. Was it a difficult decision to make?
23. Has your decision regarding immunization changed over time?
- a. Is your decision final?
 - b. Is there anything that would cause you to change your mind?
24. Think about all we've talked about today. Suppose you had one minute to talk to a friend about immunization, what would you say?
25. To summarize, _____ is what I have learned from you today. Is this accurate?
26. Is there anything you would like to add?
27. Do you have any questions?

Thank-you very much for your time. You provided me with some excellent information about childhood immunizations which will be very beneficial for me.

Demographic Questions for Mothers (Separate Piece of Paper):

1. What is your age (please fill in the blank)? _____ years
2. What is your marital status (please circle response)?
 - Married
 - Common-Law
 - Divorced
 - Widowed
 - Single
3. What is your highest level of education (please circle response)?
 - Graduate Degree
 - Undergraduate Degree
 - College/Technical Degree
 - High School Degree
 - Part of High School
 - Less than High School
4. What is your occupation (fill in blank)? _____
5. Where do you reside (please circle response)?
 - Rural Southern Alberta
 - Urban Centre
6. What is your employment status (please circle response)?
 - Employed full-time
 - Employed part-time
 - Employed on a casual basis
 - On maternity leave
 - Stay-at-home mother
 - Unemployed
 - Student

7. How many children do you have (please circle response)?

1

2

3

4

5

6

Greater than 6

8. What is your ethnicity (please circle one)?

Caucasian

African-American

Aboriginal

Japanese

Chinese

Other (please state)_____

9. Do you have any religious affiliations?

a. If so, can you state your religion?_____

b. Do you practice your religion (please circle)?

Yes

No

10. *Please note this question is optional.* What is your average annual family income (please circle response)?

Greater than \$150 000

\$100 000 - \$150 000

\$75 000 - \$100 000

\$50 000 - \$75 000

\$25 000 - \$50 000

Less than \$25 000

Appendix L

Interview Guide for Health Care Professionals

1. What do you know about childhood immunization?
2. What have you heard about childhood immunization?
3. What are your opinions of childhood immunization?
4. What are your perceptions of childhood immunization?
5. What are your beliefs surrounding childhood immunization?
6. Are your beliefs associated with a religious affiliation?
 - a. If so, can you tell me more about your religion and immunization?
 - b. If not, are your beliefs associated with another belief system?
7. How did you come to believe what you do about immunization?
 - a. What contributes to your beliefs?
8. I am interested if you discuss childhood immunization with anyone you interact with?
 - a. In a social setting?
 - b. In a professional setting?
 - c. In a religious setting?
 - d. Anywhere else?
9. How do you obtain information about childhood immunization?
 - a. Where do you go for information?
 - b. What sources do you trust the most about childhood immunization?
 - c. What sources do you trust the least about childhood immunization?
10. How do you determine if the information obtained is true and factual?
11. How often do you obtain information about childhood immunization?

12. What is your role in childhood immunization?
13. What are your experiences with non-immunizing mothers?
 - a. How do you feel?
14. What is your relationship with non-immunizing mothers?
 - a. Is your relationship positive?
 - i. If so, why is it positive?
 - b. Is your relationship strained?
 - i. If so, why is it strained?
15. How would you describe your relationship with non-immunizing mothers?
16. What are your experience consulting non-immunizing mothers?
 - a. Do they consult you for advice, information?
 - b. How do you feel in this process?
 - c. What advice/recommendations do you provide?
 - d. Do they heed your advice?
17. What are your perceptions on non-immunizing mothers' understanding of childhood immunization?
 - a. Can you tell me a little about how they formulate an understanding?
 - b. How have you obtained your perceptions?
18. What are your perceptions on non-immunizing mothers' decisions regarding childhood immunization?
 - a. Can you tell me a little about how they make their decisions?
 - b. How have you obtained your perceptions?
19. Think about all we've talked about today. Suppose you had one minute to talk to a non-immunizing mother about immunization, what would you say?
20. To summarize, _____ is what I have learned from you today. Is this accurate?

21. Is there anything you would like to add?

22. Do you have any questions?

Thank-you very much for your time. You provided me with some excellent information about childhood immunizations which will be very beneficial for this research study.

Demographic Questions for Health Care Professionals (Separate Piece of Paper):

1. What is your age (please fill in the blank)? _____ years

2. What is your profession (please circle response)?

Physician – Family

Physician - Specialist

Pediatrician

Chiropractor

Public Health Nurse

3. What is your highest level of education (please circle response)?

Doctorate Degree

Graduate Degree

Undergraduate Degree

College/Technical Degree

High School Degree

4. Is your practice in an urban area or rural area of Southern Alberta (please circle response)?

Urban

Rural

5. How long have you been a health care professional (please circle response)?

Less than 1 year

1-5 years

5-10 years

10-15 years

15-20 years

Greater than 20 years

6. Do you have any children (please circle response)?

Yes

No

7. Do you immunize your children (please circle response)?

Yes

No

8. What is your ethnicity (please circle response)?

Caucasian

African-American

Aboriginal

Japanese

Chinese

Hispanic

Other (please state)_____

Appendix M

University of Lethbridge Application for Ethical Review of Human Subject Research Approval

CERTIFICATE OF HUMAN SUBJECT RESEARCH
University of Lethbridge
Human Subject Research Committee

PRINCIPAL INVESTIGATOR: Shannon Vandenberg

ADDRESS: Faculty of Health Sciences
University of Lethbridge
4401 University Drive
Lethbridge, AB T1K 3M4

PROJECT TITLE: Saying No to Childhood Immunization: Perceptions of
Non-immunizing Mothers and Health Care Professionals in
Southern Alberta

INTERNAL FILE: 2011-076

INFORMED CONSENT: Yes

LENGTH OF APPROVAL: November 1, 2011 – December 1, 2012

The Human Subject Research Committee, having reviewed the above-named proposal on matters relating to the ethics of human subject research, approves the procedures proposed and certifies that the treatment of human subjects will be in accordance with the Tri-Council Policy Statement, the Health Information Act, and University policy.

Susan Eady, Ethics Officer
Human Subject Research Committee

October 28, 2011
Date

Appendix N

Alberta Health Services Application for Ethical Review of Human Subject Research Approval



February 13, 2012

Shannon Vandenberg
4401 University Drive West
Lethbridge, AB
T1K 3M4

VIA Email: shannon.vandenberg@uleth.ca

Dear Ms. Vandenberg:

Re: **Research Study Proposal 2011-06**
Saying No to Childhood Immunization: Perceptions of Non-Immunizing Mothers and Health
Care Professionals in Southern Alberta

The above-noted research study was reviewed and approved by the Chinook Health Regional Research Committee on January 24, 2012.

Approval is hereby provided for this study, pending:

1. **Signed research agreement (attached).**

Best wishes for a successful research project.

Yours truly,

A handwritten signature in black ink, appearing to read "Paul A. Easton".

Paul A. Easton, MD, PhD, FACP, FCCP, FRCPC, ABSM
Chairman – Chinook Health Regional Research Committee

PE/tj

cc: Mark Maxwell, Legal Counsel-Clinical Trials
File

Lethbridge • Chinook • Regional Research Committee
Attention: Trudi Jersak, Medical Affairs
960 – 19th Street South Lethbridge, AB, Canada T1J 1W5
Phone: 403-388-6552