

UNIVERSITY OF CALGARY

The Use of Naturopathic Medicine in Children Under the Age of 15

By

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Use of Naturopathic Medicine in Children Under the Age of 15" submitted by Brenda Mun Ying Leung in partial fulfilment of the requirements of the degree of Master of Science.

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## **Abstract**

The objectives of this cross-sectional survey were to assess sociodemographic backgrounds of children using naturopathic medicine, the reasons for use, whether naturopathic and conventional medicines were combined in treating children's conditions, and the characteristics of the naturopathic practice. Ninety-eight completed questionnaires from British Columbia, Alberta and Ontario were analyzed. Parents surveyed tended to be female, university educated, had household income >\$60,000 and to also see a naturopathic doctor for themselves. Naturopathic medicine was used in children for various conditions, the most common being allergies, digestive problems and skin problems and for a variety of reasons, including using all possible options and having a more holistic approach to care. Most parents reported combining naturopathic and conventional care for their children. A majority of the parents reported positive experiences with naturopathic treatments and were highly satisfied with the care they received from their naturopathic doctor.

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To my family: Thank you is not enough for your unwavering support.

## **Dedication**

To my mother, Sum Li Yin Leung

This is how far you have come, and there is further still yet to go; for all the steps I take,  
you will be there with me.

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## List of Symbols, Abbreviations and Nomenclature

Abbreviation	Definition
AANP	American Association of Naturopathic Physicians
BCNA	British Columbia Naturopathic Association
CAM	Complementary & alternative medicine
CAND	Canadian Association of Naturopathic Doctors
MD	Medical doctor
NCCAM	The National Centre on Complementary and Alternative Medicine
ND	Naturopathic doctor
NPLEX	Naturopathic Physicians Licensing Examinations
OAND	Ontario Association of Naturopathic Doctors
TCM	Traditional Chinese Medicine
URTI	Upper respiratory tract infection

## **Epigraph**

*To live well is to learn by seeing beyond the prescription lens of your knowledge and the perpetual fault that's mine, yours and others, so that you may find the potential of what could be and what could never be.*

## **Chapter One: Introduction**

### **1.1 Background**

Complementary and alternative medicine (CAM) is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine (The National Centre on Complementary and Alternative Medicine (NCCAM), May 2002). NCCAM in the United States classifies the CAM therapies into five domains: 1) alternative medical systems (e.g. naturopathic medicine or homeopathic medicine), 2) mind-body interventions (e.g. meditation, prayer, mental healing, therapies using creative outlets such as art or music), 3) biologically based therapies (e.g. herbs, foods, and vitamins), 4) manipulative and body-based methods (e.g. chiropractic or osteopathic manipulation, and massage), and 5) energy therapies (e.g. qi gong, Reiki, and therapeutic touch).

Naturopathic medicine offers primary health care services and has been classified as a whole system of care within CAM (Boon, Stewart, Kennard, & Guimond, 2003) because of its effort to combine medical sciences with an array of therapeutic modalities in assessing and treating patients (Smith & Logan, 2002). While most CAM therapists have varying standards of training, the education of naturopathic doctors (NDs) incorporates scientific knowledge with a wide range of therapeutic modalities that include traditional Chinese medicine (TCM), Ayurvedic medicine, homeopathy, and botanical medicine (Cherkin et al., 2002; Pizzorno, 2002; Smith & Logan, 2002). Thus, naturopathic medicine contains a standard of education and practice that can potentially bridge the disparity between conventional medicine and CAM by integrating scientific knowledge with CAM principles and practice. However, in practice, this has not yet

happened and naturopathic medicine continues to be considered as a CAM approach, very distinct from academic medicine.

The trend towards increased use of CAM therapies is well documented (Eisenberg et al., 1998; Eisenberg et al., 1993; Kessler et al., 2001; Millar, 2001). In Canada, the use of CAM practitioners by individuals aged 18 or older increased from about 15% in 1994/95 to 20% in 2003 (Park, 2005). The use of CAM in children is also on the rise (Fearon, 2005). Studies from the U.S., U.K and Denmark have reported the use of CAM therapies by children to range from 20% to 40% (Davis & Darden, 2003; Kemper, 2001; Madsen et al., 2003; Molassiotis & Cubbin, 2004). This range may be a conservative estimate as other studies have reported CAM use in children to be as high as 70% (Gardiner & Wornham, 2000; Kemper, 2001). The percentage of children using CAM varies and is dependent on factors such as age, socioeconomic background, types of conditions and access to services (Gardiner & Wornham, 2000; Ernst, 1999). While information on CAM use in adults is substantial, information on children's use of CAM therapies is limited. Some studies have assessed disease and sociodemographic characteristics of children who use CAM (Ernst, 1999; Fearon, 2005; Kemper, Cassileth, & Ferris, 1999). Other studies have examined children's use of a specific CAM system from the practitioners' perspective (Lee & Kemper, 2000; Lee, Li, & Kemper, 2000).

As with other forms of CAM, the use of naturopathic medicine is also on the rise. Presently, little is known about naturopathic medicine or the patients who consult naturopathic doctors; even less is known about children who use naturopathic therapies. Specifically research is needed to assess the characteristics of children, types of conditions presented, and the reasons for use from the parents' perspective. In addition,

to understand why naturopathic medicine is an attractive option for patients and how this form of care differs from conventional care, it is important to evaluate the characteristics of naturopathic practice. Within the context of the universal health care system in Canada, it is important to assess why parents are choosing a form of healthcare service not covered by government health plans.

### **1.2 Purpose**

The purpose of this study is to describe paediatric patients using naturopathic medicine, the health issues they present with, and to gain an understanding of parents' reasons for using naturopathic medicine for their children's healthcare. The findings of this study will provide insight into how the healthcare needs of children are met by naturopathic medicine, and whether naturopathic services for children are used in lieu of or in conjunction with conventional health care services.

### **1.3 Objectives**

The specific objectives of this study are to describe:

1. demographic information of children who use naturopathic services (such as parents' income level & educational level, types of conditions being treated);
2. the reasons for the use of naturopathic care in children from the parents' perspective (i.e. why they seek naturopathic care for their children);
3. whether naturopathic and conventional health care services are combined in treating children's conditions; and
4. the characteristics of naturopathic practice (e.g. number of visits, length of consult, types of tests, types of treatment).

## Chapter Two: Literature Review

The literature on children's use of naturopathic medicine was reviewed for the following topics: the diversity of complementary and alternative medicine (CAM) therapies, background information on naturopathic medicine, children's use of CAM therapies, and current knowledge of children's use of naturopathic medicine.

### 2.1 Diversity of CAM therapies

CAM encompasses a diverse group of healing practices (Furnham & Forey, 1994). Despite efforts by organizations such as NCCAM to come up with a standard definition of CAM and its categories (NCCAM, 2002), studies on CAM are usually inconsistent in their inclusion of different CAM therapies. For example, one study might include one therapy (e.g. prayer) that is very different in principle and practice from another therapy (e.g. iridology) under the common label of CAM, while another study on CAM might refer to vastly different therapies (e.g. herbal formulation or chelation therapy) altogether. This is the case in descriptive studies that looked at CAM use (Caspi et al., 2003; Cherkin, et al., 2002; Eisenberg et al., 1998; Kessler et al., 2001; Stewart, Weeks, & Bent, 2001) or the perceived benefits and/or safety of CAM (Cherkin, et al., 2002; Lee & Kemper, 2000; Stewart et al., 2001).

By assessing CAM use as a combination of various therapies and modalities, the true measure of utilization of a specific therapy is unknown, and the merit (benefit or lack of benefit) of that individual therapy cannot be ascertained (Cherkin et al., 2002; Eisenberg et al., 1998). For example, Stewart and colleagues (2001) surveyed patients who used acupuncture, massage or naturopathic medicine, and found high satisfaction and decreased use of conventional care and medications in the users of CAM. Despite

surveying patients by the modality used, the data were analyzed by grouping all the modalities together; thus, the level of benefit each modality provided was not determined.

When CAM therapies are grouped in studies, potential inter-modality differences among the various CAM therapies are not considered. Some researchers have concluded CAM to be effective or non-effective, not by the merits of an individual therapy, but by putting the array of therapies together (Carr & Nahata, 2006; Day, 2002; Markham & Wilkinson, 2004; Sinha & Efron, 2005). Thus, to interpret the findings for extent of use or perceived benefits for prayer versus a self prescribed botanical product or the use of chiropractics under a single label of CAM is not very meaningful. Thus, research needs to focus on one specific therapy or modality to gain an understanding of its value.

## **2.2 Naturopathic medicine**

Naturopathic medicine is a complete system of diagnosis and treatment outside conventional care. Naturopathic medicine is regulated by law in a number of provinces in Canada and states in the U.S. (American Association of Naturopathic Physicians (AANP), 2004). Regulation means the scope of practice for naturopathic doctors (NDs) is governed under the provincial or state law. Furthermore, the proper conduct of a ND is governed by the provincial/state naturopathic associations. Naturopathic doctors are licensed to practice in a regulated province only after completing a four-year, full-time program at an accredited school of naturopathic medicine and passing the standardized North American Board exams known as the Naturopathic Physicians Licensing Examinations (NPLEX) (Canadian Association of Naturopathic Doctors (CAND), 2006).

Regulation of naturopathic medicine has led to uniform standards of education and practice (South & Lim, 2003; Boon H, 1998). Naturopathic doctors are trained in

medical sciences such as anatomy, physiology, pathology, microbiology and clinical diagnosis, and the therapeutic modalities of traditional chinese medicine (TCM), Ayurvedic medicine, homeopathy, botanical medicine as well as therapies of physical medicine, clinical nutrition and therapeutic dietary supplementation (Cherkin, et al., 2002; Pizzorno, 2002; Smith & Logan, 2002). The principle that underlines naturopathic practice, namely, ‘to treat the whole person’, is a concept that appeals to patients in search of this form of primary healthcare (Smith & Logan, 2002).

The practice of naturopathic medicine is integrative by combining the most suitable therapies to address the individual patients’ needs, which results in treatment protocols that can vary considerably from patient to patient and among different NDs. This eclectic nature may pose a challenge to investigators used to working under the conventional paradigm of studying a single intervention at a time. In the face of conventional criticism regarding the lack of research on therapies used by CAM practitioners, NDs are starting to engage in research to further develop and validate the profession (Smith & Logan, 2002). While this increase in research is especially true in the United States, research by NDs is still very limited in Canada.

The demand for CAM requires qualified practitioners to provide knowledge on CAM therapies. In general, patients are told to consult a medical doctor for their healthcare needs, including inquiries about CAM. However, most medical doctors are not trained to provide advice on CAM therapies (South & Lim, 2003). Naturopathic doctors are considered as primary care practitioners trained to combine medical science with an array of CAM modalities (Boon, Stewart, Kennard and Guimond, 2003).

Therefore, naturopathic medicine may play an important role in the healthcare system that warrants closer examination.

### **2.3 Current knowledge on children's use of CAM**

Table 1 summarizes descriptive studies on children's use of CAM for specific conditions, the rate of use, types of CAM used, reasons for use and sociodemographic background of the family. The table is arranged by the frequency of condition studied (ranging from cancer to juvenile arthritis). The sociodemographic factors and reasons for CAM use were similar across studies that collected the information; however, the number and types of therapies under the CAM label were variable among studies. Only one of the studies (Sinha & Efron, 2005) listed, included the use of naturopathic medicine. The reported rate of CAM use in children was also highly variable. Other studies have reported that among paediatric patients with chronic, recurrent, or incurable conditions, such as cancer, asthma, rheumatoid arthritis, and cystic fibrosis, the rate of CAM use ranged from 30% to 70% (Davis & Darden, 2003; Ernst, 1999; Fong & Fong, 2002; Madsen et al., 2003; Matthew, Davis, Paul, & Darden, 2003). The discrepancy in rates of use likely reflects the inclusion of different CAM therapies.

The inclusion of different CAM therapies in a single study impedes the ability to discern the merits of specific CAM therapies. This is illustrated in a study by Day (2002) on children attending a gastroenterology outpatient clinic. The study found 36% of the children were using CAM. The therapies parents reported to use for their children included aromatherapy, homeopathy, herbal remedies, naturopathic remedies, multiple vitamin therapies, acupuncture and meditation. Of the CAM users, 73% of the parents in

this study attributed symptomatic improvement to the CAM therapies. However, the author did not examine which particular CAM therapy was beneficial and which was not.

Besides descriptive studies, the inclusion of different types of therapies under CAM is also problematic in other studies. For example, a review by Carr & Nahata (2006) assessed safety and efficacy of a number of CAM therapies for the prevention and treatment of upper respiratory tract infection (URTI) in children and found mixed results. The review looked at six clinical trials of herbal medicines and nine trials of other CAM therapies, such as osteopathy and stress management therapy with relaxation with guided imagery. Therapies such as osteopathy and relaxation were found to be beneficial, while the herbal therapies were found to be ineffective. However, the authors concluded that the “current data are generally inadequate to support CAM for the prevention or treatment of URTI in children” (Carr & Nahata, 2006).

The inconsistent inclusion of different CAM therapies limits interpretation of the data, especially when a self-prescribed CAM product such as herbal remedy is measured in the same way as a treatment from a trained practitioner such as osteopathy. Furthermore, issues such as how one specific CAM system impacts the healthcare needs of the patients, such as perceived benefits or side effects or how patients may be using the CAM therapies in conjunction or in lieu of conventional medical care have not been considered. Therefore, to gain a better understanding of how specific CAM systems are used to treat children’s conditions, the information must be obtained from one specific system within the Canadian context.

## **2.4 Current knowledge of children's use of naturopathic medicine**

Research on naturopathic medicine has been limited to date. Literature on children's health and the use of naturopathic medicine in Canada is almost nonexistent. A chart review by Wilson, Busse, Gilchrist, Vohra, Boon and Mills (2005) looked at demographic characteristics, reasons for presentation, use of CAM products and vaccination status among paediatric patients at the outpatient clinic of the Canadian College of Naturopathic Medicine in Toronto. The results showed that the children tended to be high-level consumers of CAM products and had lower rates of vaccination than the population averages. The data were limited to a sample from a single centre, using chart review of student-practitioners' notes on the initial visit, and no data on reasons for use and treatment were collected. The results of the study by Wilson and colleagues were unknown at the time this study was developed.

A survey of naturopathic doctors in the U.S. found that children and adolescents accounted for about 20% of visits to NDs (Lee & Kemper, 2000). The survey also examined demographics of the NDs, practice characteristics, fee structure, but issues of patient satisfaction, perceived efficacy or adverse effects were not addressed.

Another survey of a random sample of CAM practitioners found more than 10% of visits to NDs were by children and adolescents (Cherkin et al., 2002). The extent of use of naturopathic medicine by children is unknown in Canada and likely to be less than in the U.S.A. due to a much smaller number of NDs practicing in Canada. However, the use of naturopathic medicine may be increasing. With a high rate of satisfaction reported by patients using naturopathic medicine (Stewart et al., 2001), more parents are likely to seek out naturopathic care for their children (Wilson et al., 2005).

Presently, little is known about the patients seen by NDs (Boon et al., 2003; Stewart et al., 2001), and even less is known about children and their use of naturopathic medicine. Therefore, reasons for choosing naturopathic services, perceived efficacy of this type of healthcare service, and whether conventional and naturopathic therapies are combined by parents need to be studied. Research is required to understand how naturopathic medicine meets paediatric patients' needs within the current Canadian healthcare system. Furthermore, no study has looked at how naturopathic medicine works from a patient's perspective. Such findings may provide a basis for future studies on clinical implications and utilization of naturopathic medicine and its potential in treating specific conditions in the paediatric population.

**Table 1 – Summary of CAM use in children with specific conditions**

<b>Study author / sample size (n)</b>	<b>Condition being treated</b>	<b>Extent of CAM use (study location)</b>	<b>Type of CAM</b>	<b>Reasons for CAM use</b>	<b>Sociodemographic background</b>
Martel et al., 2005 n = 92	Cancer	49% (Montreal, QC)	Herbal remedies / homeopathy / vitamins (40%) Nutritional approach (7%) Spiritual/mental strategies (71%) Physical strategies (67)	To reduce side effects To relieve symptoms	55% of mothers had college / university education 54% of fathers had high-school / professional education 56% of families had annual net income of \$40,000 or more
Molassiotis & Cubbin, 2004 n = 49	Cancer	33% (large hospital in UK)	Multivitamins (56%) Aromatherapy massage (50%) Diets (37.5%) Music as therapy (25%) Aromatherapy (18.8%) Massage (18.8%) Herbal medicine (12.5%) Faith healing (12.5)	To use every possible option in healthcare To improve my child's general health Helps to relax my child Decreases my child's anxiety/stress To reduce side effects	91% of respondents were moms, 98% were white and 45% were professionally employed
Bold & Leis, 2001 n = 44	Cancer	36% (Saskatoon, SK)	Nutrition/Diet/Lifestyle (e.g. Echinacea, Essiac, garlic, selenium, herbal combinations (46.9%) Mind-body control (e.g. relaxation techniques, music therapy, visualization (12.5%)	Complementing medical treatment, Coping with side effects Making the child stronger	Most were two-parent families (90%), usually with both parents working (fathers, 98%; mothers, 77%) and with well educated parents

Study author / sample size (n)	Condition being treated	Extent of CAM use (study location)	Type of CAM	Reasons for CAM use	Sociodemographic background
			Traditional/Ethno-medicine (e.g. aboriginal healing and Chinese medicine (12.5%) Structural/Energetic (e.g. reflexology, aromatherapy, color therapy, massage therapy (18.8%))	Stopping cancer	(80% had at least a high school education; 51% were of Western European background, another 25% characterized their ethnicity as Canadian.
Neuhouser et al., 2001 n = 75	Cancer	73% (Seattle, WA)	21% consulted a practitioner such as an acupuncturist or ND 28% used high dose dietary supplements 35% used herbal preparations	To cope with disease symptoms To deal with side effects of medications To prevent recurrence or spread of cancer To maintain general good health	78.7% had some college education; 74.6% reported ethnicity as white; 55% of CAM users had annual household income >\$50,000
Fernandez, Stutzer, MacWilliam, & Fryer, 1998 n = 396	Cancer	42% (British Columbia)	Herbal teas (60.8%), plant extracts (56.2%), therapeutic vitamins (54.6%), diet (49.2%), Essiac tea (46.2%) Relaxation/imagery (75.2%), massage (66.0%) and therapeutic touch (42.2%)	Do everything possible (82%) Boost immune system (77%) Care cancer (40%)	n/a
Friedman et al.,	Cancer	65% of cancer	Prayer (64%), exercise (16%),	Majority (60%) did not	n/a

<b>Study author / sample size (n)</b>	<b>Condition being treated</b>	<b>Extent of CAM use (study location)</b>	<b>Type of CAM</b>	<b>Reasons for CAM use</b>	<b>Sociodemographic background</b>
1997 n = 161 (81 cancer patients, 80 controls)		patients compared to 51% of non cancer patients (Gainsville, Fl)	spiritual healing (16%)	provide a reason	
Sinha & Efron, 2005 n= 75	Attention deficit hyperactivity disorder (ADHD)	67% (Melbourne, Australia)	Dietary modification (66%), Vitamins/minerals (28%), Dietary supplements (26%), Aromatherapy (26%), Chiropractics (20%), Naturopathy (16%), Herbal therapy (14%) [a total of 23 different therapies were reported]	To minimize symptoms  Add benefit to conventional treatment  Avoid side effects	n/a
Chan, Rappaport, & Kemper, 2003 n = 114	ADHD	54% (Boston, MA)	Expressive techniques (art, music, dance) (21%), Vitamins (21%), Dietary manipulation (14%), Special exercises (e.g., yoga, tai chi) (10%)	Use of “natural therapy”  Have more control over treatment  Concern with side effects of medications  Hope for a cure	73% male; 80% white ethnicity; 59% had household income >\$50,000. 50% of fathers and 62% of mothers held a college or graduate degree.

Study author / sample size (n)	Condition being treated	Extent of CAM use (study location)	Type of CAM	Reasons for CAM use	Sociodemographic background
Day, Whitten, & Bohane, 2004  n = 46	Inflammatory bowel disease (IBD)	72% (Sydney, Australia)	*Probiotics, fish oils, herbal products, vitamins, homeopathy  <i>*percentage of use not provided by authors</i>	To help with their child's chronic disease  To avoid the side-effects of standard medications  Dissatisfaction with standard medications  Following the experiences of others  Desperation to do something,  Lack of suitable alternatives  Complement to other therapies	n/a
Heuschkel et al., 2002  n = 208	IBD	41% (Boston, Detroit, London, UK)	Megavitamin therapy (19%), Dietary supplement (17%), Herbal medicines (14%)	Side effects from prescribed medicines  Prescribed medicines not working  Hope for a cure	n/a
Braganza, Ozuah, & Sharif, 2003	Asthma	89% (Bronx, NY)	Prayers (53%), rubs (53%), massage (45%), honey (28%), oils such as cod liver oil and castor oil (21%), teas (21%),	n/a	Prevalence of CAM use was comparable for both African Americans and

Study author / sample size (n)	Condition being treated	Extent of CAM use (study location)	Type of CAM	Reasons for CAM use	Sociodemographic background
n = 310			lemon (19%), aloe juice (13%), foods such as onion and garlic (10%), and syrup preparations (10%).		Latinos (89% vs. 89%). Immigrants were more likely to be users of CAM than nonimmigrant (94% vs. 86%). CAM use did not vary by age of child, parental age, or parental education
Andrews et al., 1998 n = 51	Asthma	55% ( South Australia)	Massage (20%), dietary therapy (18%), relaxation exercise (16%), vitamins (12%)	n/a	n/a
Hagen, Schneider, Stephens, Modrusan, & Feldman, 2003 n = 141	Juvenile arthritis	64% (Toronto, ON)	Vitamins (37%), minerals (34%), relaxation techniques (22%)  Less frequently used (<10%) fish oil, other supplements, aromatherapy, reflexology, iridology, and naturopathy	n/a	n/a

## **Chapter Three: Methods**

This chapter describes the study design, the study population, recruitment and data collection methods, study variables, data analysis and ethical considerations.

### **3.1 Study design**

The study design was a cross-sectional survey of parents / caretakers of children consulting naturopathic doctors at the time of the survey. A questionnaire was developed specifically for the purpose of this study.

### **3.2 Study participants**

The study population consisted of children aged 0 to 15 consulting a naturopathic doctor (ND) in British Columbia (BC), Alberta and Ontario. All questionnaires were answered by proxy via parents / caretakers of the children who were patients of NDs. Participants were recruited from naturopathic offices.

#### ***3.2.1 Inclusion criteria***

- Children, defined as individuals age 0 (newborns) to 15
- Consulting a ND at the time of the survey (Feb. 1, 2005 to Nov. 30, 2005)
- Parents / caretakers who agreed to complete the questionnaire
- Having a follow-up visit with the ND (i.e. second or subsequent visit)

#### ***3.2.2 Exclusion criteria***

- Having a first (initial) visit with the ND

### **3.3 Recruitment**

The recruitment process included two stages. First, naturopathic doctors were invited to take part in the study. Second, participants were recruited from the patient base of the participating naturopathic offices. Participating offices were those that agreed to

recruit patients and to distribute the questionnaires. The initial recruitment took place in BC because the main investigator (BL) had access to the member list of the BC Naturopathic Association. However, due to a very slow response rate, Ontario and Alberta were added. Ontario because it has the largest number of practicing NDs and Alberta because it was the location of the study investigators, thus, increasing access to the naturopathic community.

### ***3.3.1 Recruitment of naturopathic offices***

The recruitment strategies used to attract naturopathic offices differed slightly by province. For BC and Alberta, a list of naturopathic offices was obtained from the membership directories of the BC Naturopathic Association and the Alberta Association of Naturopathic Physicians. A letter of introduction was sent to all NDs listed in the association directories. This letter invited the ND to participate and explained the nature of the study and the level of involvement required by the naturopathic office (see Appendix A). For Ontario, the Ontario Association of Naturopathic Doctors (OAND) was unable to provide a list of their members, citing that their database was too large. However, they agreed to send a notice about the study through their listserv to all their members. A shortened form of the introduction letter was provided by the investigator and was sent to members of the OAND (see appendix B).

In BC and Alberta, members were emailed a total of three times to follow up on the introduction letter, asking for their participation. In Ontario, the OAND was asked to repeat the listserv emailing three more time after the initial broadcast. Follow-up emails were sent at two week intervals.

Interested offices contacted the investigator (BL) via phone or email to consent to participate. These offices were sent a thank you letter and a step by step instruction sheet (see appendices C and D) on how to recruit patients and a set of questionnaires.

Each office was called by the investigator (BL) one week after the questionnaires were sent. BL inquired about receipt of the questionnaire and to answer any questions or concerns that the ND or his/her staff members might have about the study, the method of recruiting patients or distributing the questionnaires. Thereafter, an email was sent every four to six weeks to the participating offices as a courtesy follow up. Participating offices were encouraged to contact BL if questions or concerns arose.

### ***3.3.2 Recruitment of participants***

Front desk staff was asked to inform parents / caretakers of the study, obtain their agreement to complete the questionnaire and to hand out questionnaires at the time of a patient's appointment with the ND. Participants were recruited in sequential order. That is, each time a parent/caretaker called the office to make an appointment for a child, the parent/caretaker was asked if he/she would like to participate in the study. An information sheet explaining the nature of the study and the involvement required was available through the naturopathic offices for potential participants (see Appendix E). If the parent consented to be in the study, he/she was scheduled to complete the questionnaire prior to or after the next appointment with the ND. Consent to be in the study was assumed by the participant agreeing to complete the questionnaire.

### **3.4 Sample Size**

A sample size of 100 would yield survey estimates with a margin of error of 10 percent, 19 times out of 20 (Colton, 1974; Matthews & Farewell, 1996).

### **3.5 Data Collection**

#### ***3.5.1 Definitions***

*Child* – person age 0 (newborn) to 15 years

*Parent* – individual who is a primary caretaker responsible for the child and is bringing the child into the naturopathic clinic

*Naturopathic doctor* – individual with training in a recognized accredited school of naturopathic medicine and is licence by the respective provincial college or association

*Naturopathic consultation* – in-clinic or in-office visit by a child and his/her parent to a licensed naturopathic doctor

#### ***3.5.2 Instrument***

To meet the study objectives, a questionnaire was developed specifically for this project (see appendix F). The questionnaire was developed after review of the literature on questionnaire development (Aday, 1996; McDowell & Newell, 1996) and surveys that studied CAM use (Breuner, Barry, & Kemper, 1998; Fong & Fong, 2002; Molassiotis & Cubbin, 2004; Pitetti, Singh, Hornyak, Garcia, & Herr, 2001; Simpson & Roman, 2001). Review of the literature showed that studies on children and CAM use generally looked at the types of CAM therapies used; types of conditions most likely to turn to CAM; practitioners most commonly seen; demographics of children's primary caretaker; and reasons for use. A sample questionnaire was provided in the article by Bruener and colleagues that examined alternative medicine use in homeless youth (Breuner et al., 1998). No literature was found that specifically looked at children's use of naturopathic medicine.

Questions on socio-demographic background of the family and child, reasons for use (including perceived benefits, and perceived sides effects), and types of modalities used (see below for variable list) from surveys on CAM use were reviewed for applicability for this study and incorporated into the questionnaire. Questions on characteristics of the (naturopathic) consult and degree of (health service) use (e.g. combining of modalities) were developed specifically for this study, based on input from NDs and the supervisory committee members. That is, the NDs made suggestions on the types and contents of the questions to assess for patients' use of the various modalities. The format, wording, organization, and general layout of the questionnaire were finalized after pre-testing the questionnaire in Calgary, Alberta (see section 3.5.2.2).

The questionnaire was designed to be self administered by participants in the offices of the NDs. Time required to complete the questionnaire was estimated to take about 10 to 15 minutes. The questionnaire contained 27 close-ended questions (some questions had subsections) and one open-ended question (see appendix F).

#### 3.5.2.1 Variables

The questions were categorized into the following sections:

1. *Demographic info*
  - a. Age (Question 1)
  - b. Gender (Q2)
  - c. Relationship to child (Q3)
  - d. Educational level (Q25)
  - e. Income level (Q26)
  - f. Household size (Q27)
2. *Reasons for use*
  - g. Overall health status (Q4)
  - h. Reasons for use (Q5)
  - i. Type of conditions (Q6)
  - j. Perceived benefit (Q7)

- k. Perceived side effects (Q8)
- l. Extended health plan (Q9)

3. *Combining modalities*

- m. Regular medical doctor (Q10)
- n. Communication with medical doctor (Q11)
- o. Degree of use of conventional & naturopathic doctor (Q12)
- p. Use of other CAM practitioners (Q13)
- q. Use of therapies recommended by ND (Q14)
- r. Use of therapies – self treating (Q15)

4. *Characteristics of naturopathic practice*

- s. Number of naturopaths seen (Q16)
- t. Number of visits (Q17)
- u. Other family members use (Q18 & 19)
- v. Length of consult (Q20)
- w. Testing provided by naturopath (Q21)
- x. Treatment plan (Q22)
- y. Factors affecting recommendations (Q23)
- z. Satisfaction scale (Q24)

5. Open-ended question

Why did you choose to see a naturopath for your child's health care? (Q28)

### 3.5.2.2 Pretesting

The questionnaire was pre-tested among NDs and parents of paediatric patients of NDs in Calgary, AB. Individuals with knowledge of naturopathy, such as practitioners or patients, were invited to review and give feedback on the questionnaire. Changes such as wording, content and order of questions were incorporated into the questionnaire based on these suggestions. Pre-testing of the questionnaire allowed assessing face validity. Face validity is the extent to which an instrument appears to be valid to those who are completing it (Aday, 1996). That is, respondents were asked “what does (this) question look like it is asking you?” Their answers were reviewed to determine that they were consistent with the intended measure. If not, they were asked how the question may be formulated to obtain the intended measure. Face validity alone is insufficient to judge the

value of the test. It is but one aspect of content validity. Due to limited resources, content validity of the instrument was not established.

### ***3.5.3 Procedure***

The instruction provided to the office staff was to schedule participants 15 minutes prior to or after their appointment with the ND to fill out the questionnaire. An information sheet was attached to the questionnaire given to each participant. The information sheet informed them of their rights as participants. The questionnaires were completed at the NDs' offices. To ensure privacy and confidentiality, the completed questionnaire was sealed by the participant in a self-addressed, stamped envelope and mailed directly to Dr. Marja Verhoef at the University of Calgary. No personal identifiers were collected on the completed questionnaire. The survey was conducted between February 1 and November 30, 2005.

### **3.6 Data Analysis**

Data from the questionnaire were coded and entered in an Excel spreadsheet. The data were analyzed using STATA8.

The continuous variable "age" was collapsed into two categories, a younger group of preschoolers (children aged 0 to 6) and an older group of schoolers (aged 7 to 15); as age was not a normal distribution, the median value (6) was used as a cut-off for dividing the two age groups. "Household size" was collapsed to 2, 3 to 4, and 5 or more as a measure of family size of small, middle and large, respectively (Millar, 2001). The variables "satisfaction" and "number of NDs seen" were analyzed as collected.

The categorical variables "parental relationship", "general health rating", "treatment effect on child", "EHP coverage", "main healthcare provider", and

“education” were used in the analysis as collected. To ensure sufficient cell size (i.e. > 5 per cell), categories for some variables were collapsed in order to meet the criteria for the  $\chi^2$  test. The categories for “income” were collapsed to two levels (< \$60,000 and > \$60,000) because of small cell sizes. Responses to the “reasons for use” statements were collapsed from five to three categories of agree, neither and disagree because of small cell sizes and limited variation in the data. That is, “strongly” and “somewhat” agree were collapsed to “agree”, while “strongly” and “somewhat” disagree were collapsed to “disagree”.

The dichotomous variables including “gender”, “conditions”, “having a regular medical doctor”, “medical doctor’s knowledge of consulting with naturopathic doctor”, “other practitioners”, “therapies used”, “other family members use of a ND”, “types of in office tests”, “perceived difficulty” were used in the analysis as collected.

Descriptive statistics were used to summarize the study variables. Univariate analysis included frequency and mean for categorical and continuous variables respectively. Histograms were used to show the distributions of “age” and “age by gender”. Bar graphs showed distribution of the responses for the variables of “use of other practitioners”, “use of other CAM therapies”, “conditions”, “therapies recommended by ND”, “perceived side effects”, “types of tests by ND”, and “perceived difficulty”. Bivariate analysis using Pearson  $\chi^2$  test assessed for association of the following variables:

- Income level (Q26) by education level (Q25)
- Income level (Q26) by household number (Q27)
- Income level (Q26) by extended health plan (Q9)

- Age category (Q1) by overall health status (Q4)
- Having a family doctor (Q10) by degree of use of MD/ND (Q12)
- Perceived difficulty factors (Q23) by income level (Q26)
- Perceived difficulty factors (Q23) by extended health plan (Q9)

The above bivariate analyses were chosen for the reason that naturopathic medicine is not covered by government healthcare plans, hence, it was important to determine how income, extended health plan coverage, availability of having a regular family doctor might influence seeing a ND. Furthermore, income and EHP might also affect perceived difficulties in seeing a ND.

The odds ratio (OR) was calculated to measure the magnitude of association for the following relationships:

- The odds of seeing the MD as the main healthcare provider in those with a regular family doctor over those who do not have a regular family doctor
- The odds of the type of healthcare used (MD or ND) used in those with EHP coverage over those with no EHP coverage
- The odds of having a specific condition in the younger over older age group

The Pearson  $\chi^2$  test assessed whether there was a relationship between variables and the OR assessed the strength of the relationship (i.e. how strongly the variables were associated with each other).

Content from the open-ended question was analyzed using qualitative content analysis (Creswell, 2003). The step by step process of this method is as follows:

<b>Process</b>	<b>Action</b>
Step 1	Enter written responses into table format in MS Word
Step 2	Extract key words or phrases (i.e. bites of information from the <i>content</i> of the written responses)
Step 3	Group similar bites of information into <i>categories</i> (i.e. indicators with similar view)
Step 4	Derive common <i>concepts</i> from shared categories

The bites of information, appropriateness of the groupings under each category and concept were reviewed several times after the initial entry.

### **3.7 Ethics**

The proposal was submitted to the Conjoint Health Research Ethics Board of the Faculty of Medicine, University of Calgary for approval. The conduct of this study conformed to the ethical standards of the Tri-Council of Canada document (Canadian Institutes of Health Research, 1998). Accordingly, autonomy of the participant was recognized; an information sheet informed the participants of their rights as study participants and of any known risks and/or benefits. Participants' consent was assumed by completing and mailing in the questionnaire. Privacy and confidentiality of participants were ensured at all times. Any written information pertaining to the participants were kept in locked cabinets in the locked offices of the investigator (BL). Only members of the research team had access to the information. The research data will be kept for five years before being destroyed as stated in the University of Calgary research guide (University of Calgary, 2004). All members of the research team agreed to maintain confidentiality of the information they are privy to as part of the research

process. No malevolence was intended in the course of this study and the risk to the participant was minimal, although emotional distress may result. The potential benefit is the contribution to the body of knowledge for the understanding of health needs of this group of individuals, their particular experience and the use of naturopathic medicine as part of their healthcare.

## **Chapter Four: Results**

This chapter describes the results of the data analysis. Quantitative analysis was used to assess questions 1 to 27 and included results on the response rate, the sociodemographic variables of the children and their families, the reasons for use of naturopathic medicine, the level of healthcare use (whether or not naturopathic medicine was use in conjunction or in lieu of conventional medicine), and characteristics of the naturopathic practice. Qualitative content analysis was used to assess question 28 and resulted in six themes derived from the data.

### **4.1 Response rate**

#### ***4.1.1 Naturopathic offices***

A total of 42 naturopathic offices agreed to recruit patients and distribute the questionnaire. Thirty six offices were sent 15 questionnaires each, and six offices (who felt they had a “small” paediatric practice and were unlikely to be able to distribute 15 questionnaires within the time frame of the study) were sent 10 questionnaires. A total of 480 questionnaires were sent out. The number of people approached by the offices to participate in the study is unknown.

#### ***4.1.2 Participants***

A total of 99 (20.6% out of 480 questionnaires that were sent) questionnaires were returned. One was incomplete and was omitted from the analysis, therefore, 98 questionnaires were used in the analysis. Recruitment and data collection took about ten months from the time the introduction letter was sent to the naturopathic offices to the date that data collection was officially finished.

## 4.2 Demographics

### 4.2.1 *Demographics of naturopathic offices*

Of the 42 naturopathic offices, 29 were from British Columbia (BC), seven from Alberta and six from Ontario. In BC, the majority of the offices were from Vancouver and surrounding municipalities such as Abbotsford, Port Moody or Surrey (15). Other regions in BC included the city of Victoria (2), towns of Prince George (3), Nelson (1), Garibaldi Highlands (1), Salmon Arms (1), Cranbrook (1), and the Okanogan towns of Penticton (2), Kamloops (1), Kelowna (1) and Rossland (1). In Alberta, five offices were in Calgary, one in Edmonton and one in Grovesdale. In Ontario, two were from Thornhill, two from Mississauga, one from Orangeville and one from Dundas.

### 4.2.2 *Demographics of participants*

The majority of parents that served as proxy in completing the questionnaire for the children were mothers. A large proportion of parents in this sample were university educated (57.2% vs. 22.6% Canadian average). As well, a large proportion of parents had an annual household income > \$60,000 (51.0% vs. 12.4% Canadian average) (2001 Canada Census) (see Table 2).

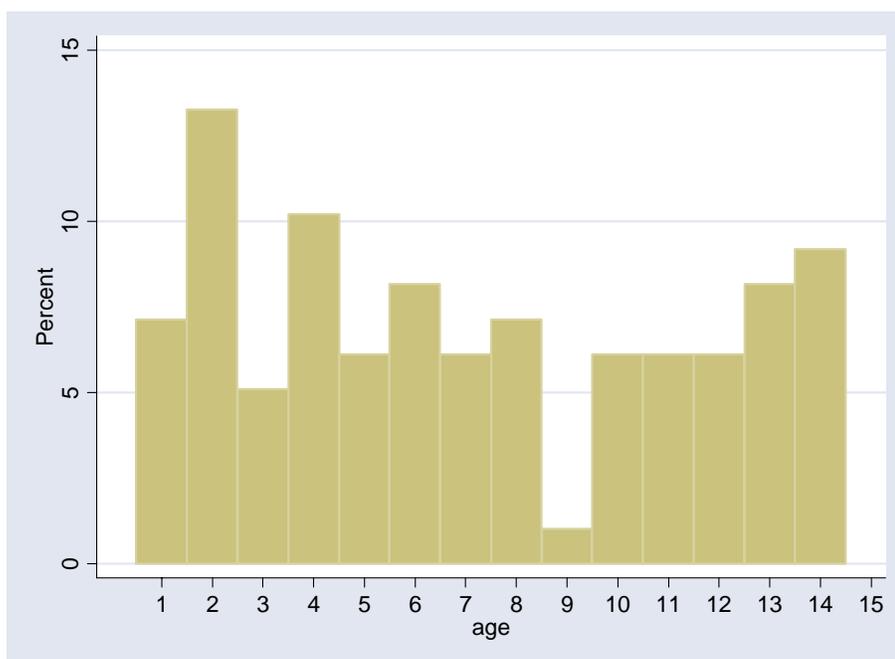
**Table 2 – Demographic characteristics of participants**

Characteristic	Measure
Relationship to the child	Mother 90 (91.8%)
	Father 5 (5.1%)
	Other 3 (3.0%)
Parent's highest education level	Senior high school 18 (18.7%)
	Technical college 23 (23.9%)
	University 55 (57.2%)
Annual household income	< \$30,000 6 (6.2%)
	\$30,001 – \$60,000 31 (32.2%)
	> \$60,001 49 (51.0%)
	Refused 10 (10.4%)
Extended health plan coverage	None 36 (36.7%)
	Partial 52 (53.0%)
	Complete 10 (10.2%)

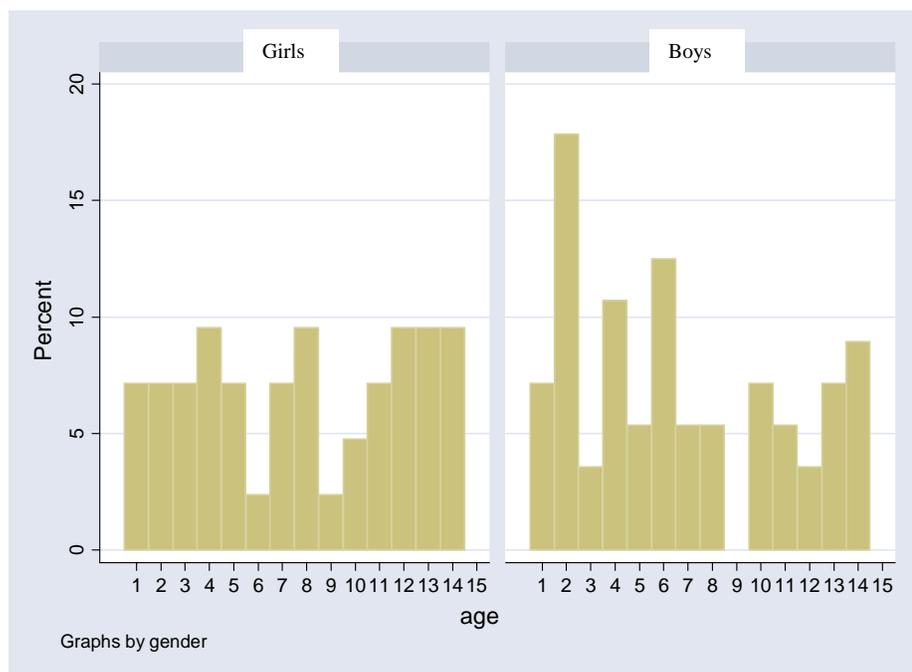
### 4.2.3 Demographics of the children

The mean age of the children was 7.1 (SD = 4.3); the youngest was 6 months, the oldest was 14 years. The sample comprised of 42 (42.9%) females with a mean age of 7.7 (SD = 4.3) and 56 (57.1%) males with a mean age of 6.6 (SD = 4.3). Children aged 2 years was the largest group and children aged 9 years was the smallest group as shown on the histogram (see figure 1).

**Figure 1 – Histogram of children’s overall age distribution**



When separated by sex, the histogram for the girls showed those aged 4, 8, 12, 13 and 14 were the largest groups with similar proportions while those aged 6 and 9 were the smallest groups. Among the boys, the largest group was those aged 2 and the smallest group was those aged 9 (see figure 2).

**Figure 2 – Histogram of age distribution by sex**

The children’s overall health status was rated mostly excellent or very good. As age was not a normal distribution, the median value (6) was used to categorize age into a younger group (age 0 to 6) and an older group (age 7 to 15). The association between age group and health status was found to be statistically significant ( $p = 0.01$ ) (see Table 3). That is, the younger group was associated with better health status than the older group.

**Table 3 – Children’s health status rating according to age group**

Age Group	Health Status Rating			
	Excellent	Very good	Good	Fair
≤ 6 yrs	25 (71.4%)	15 (37.5%)	7 (38.9%)	1 (25.0%)
7 – 15 yrs	10 (28.6%)	25 (62.5%)	11 (61.1%)	3 (75.0%)
<b>Total</b>	35 (100%)	40 (100%)	18 (100%)	4 (100%)
Pearson $\chi^2 = 10.80$ ; $df = 3$ ; $p = 0.01$				

#### 4.2.4 Household demographics

Household demographics were assessed using contingency table analysis of income level by household size, income level by education, and income level by extended health plan (EHP) coverage.

The relationship between the number of people in the household and income level was not statistically significant ( $p = 0.06$ ) (see Table 4).

**Table 4 – Distribution of household size according to income levels**

Number of people in household	Income $\leq$ \$60,000	Income $>$ 60,000
2	6 (16.2%)	1 (2.1%)
3-4	26 (70.3%)	39 (81.3%)
$\geq 5$	5 (13.5 %)	8 (16.6%)
<i>Total</i>	37 (100%)	48 (100%)
Pearson $\chi^2 = 5.53$ ; $df = 2$ ; $p = 0.06$		

The relationship between education and income levels was not statistically significant ( $p = 0.09$ ) (see Table 5).

**Table 5 – Distribution of education according to income levels**

Highest education level achieved by parent/caretaker	Income $<$ \$60,000	Income $>$ 60,000
Senior high school	7 (18.9%)	8 (16.3%)
Technical college	12 (32.4%)	7 (14.3%)
University	18 (48.6%)	34 (69.4%)
<i>Total</i>	37 (100%)	49 (100%)
Pearson $\chi^2 = 4.72$ ; $df = 2$ ; $p = 0.09$		

The relationship between EHP and income level was not statistically significant ( $p = 0.74$ ) (see Table 6).

**Table 6 – Distribution of EHP coverage according to income level**

Extended health plan coverage	Income < \$60,000	Income > 60,000
None	16 (43.2%)	18 (36.7%)
Partial	3 (8.1%)	25 (51.0%)
Complete	18 (48.7%)	6 (12.3%)
<i>Total</i>	37 (100%)	49 (100%)
Pearson $\chi^2 = 0.594$ ; $df = 2$ ; $p = 0.74$		

### 4.3 Reasons for use

Parents were given a list of options regarding their reasons for use of naturopathic medicine and asked to rate their level of agreement with each statement (see table 7).

The most important reasons parents cited were to use all possible options and to use a more holistic approach to care.

**Table 7 – Reasons underlying the use of naturopathic healthcare services**

Reasons	Agree	Neither	Disagree	Total
1. I wanted to use all possible options for my child	94 (97.9%)	2 (2.1%)	nil	96 (100.0%)
2 I wanted a doctor who would work with me and my child in more holistic way	93 (96.9%)	2 (2.1%)	1 (1.0%)	96 (100.0%)
3. I was concerned about the side effects of drugs on my child	81 (85.2%)	10 (10.5%)	4 (4.2%)	95 (100.0%)
4. I wanted more control over what treatment my child receives	77 (82.8%)	11 (11.8%)	5 (5.4%)	93 (100.0%)
5. My family generally consults naturopaths	70 (75.3%)	8 (8.6%)	15 (16.1%)	93 (100.0%)
6. Western medicine provided by the medical doctor was not working	58 (61.7%)	29 (30.8%)	7 (7.4%)	94 (100.0%)
7. I did not like the care my child received from the medical doctor	40 (43.9%)	32 (35.1%)	19 (20.9%)	91 (100.0%)

Parents were given the option to write their own reason for use of naturopathic medicine in addition to the above statements. The other reasons provided by parents were concerned with

1. wanting a natural, less invasive approach (7 respondents)
2. medical doctors unable to help with the child's condition(s) (4 respondents)
3. more time and attention given by the ND (3 respondents)
4. previous experience with ND (2 respondents)

#### 4.4 Perceived benefits

Parents were asked about perceived benefits of treatments used to treat their child's condition. For therapies prescribed by the ND, a majority felt their child's condition got better or a lot better. None of the respondents reported the child's condition getting worse with treatments recommended by the ND, while a very small percent did report worsening of the child's condition from treatments recommended by the MD. A majority of parents reported that drugs or therapy recommended by their MD did not apply to their case (see table 8).

**Table 8 – Perceived benefit of naturopathic & medical treatments for children**

Treatment	A lot better	Better	About same	Worse	Does not apply	Total
1. Supplement(s) prescribed by the naturopath	63 (70.0%)	17 (18.9%)	Nil	Nil	10 (11.1%)	90 (100.0%)
2. Other therapy recommended by the naturopath	57 (67.1%)	10 (11.8%)	Nil	Nil	18 (21.1%)	85 (100.0%)
3. Therapy I tried on my own for my child	9 (10.8%)	32 (38.5%)	15 (18.2%)	Nil	27 (32.5%)	83 (100.0%)
4. Drug(s) prescribed by the medical doctor (MD)	4 (4.7%)	17 (20.0%)	14 (16.5%)	6 (7.0%)	44 (51.8%)	85 (100.0%)
5. Other therapy recommend by the MD	1 (1.3%)	12 (15.2%)	17 (21.5%)	4 (5.0%)	45 (56.9%)	79 (100.0%)

Parents were also asked to write down treatments, other than those listed in table 8, that they used for their children. These included:

- Constitutional homeopathy (4 respondents)
- Allergen desensitization (technique unspecified) (2 respondents)

- Bowen therapy (1 respondent)
- Japanese/Chinese medicine; massage (1 respondent)

#### 4.5 Types of healthcare service use

A majority of the children who saw a ND also had a regular family doctor (MD). When asked which practitioner parents considered as the main healthcare provider for their child, a fifth of parents reported that they saw mainly the MD; a third consulted mainly the ND and another third saw both the ND and MD equally. A majority of respondents reported that the child's MD was aware that the child was consulting a ND (see table 9).

**Table 9 – The use of naturopathic and medical services by children**

Characteristic	Measure
Child has a regular family doctor (MD)	No 7 (7.1%)
	Yes 91 (92.9%)
Child's MD knows that the child sees a ND	No 16 (17.0%)
	Yes 57 (60.6%)
	Unsure 21 (22.4%)
Considered as the main healthcare provider by parents	MD 19 (20.0%)
	ND 34 (35.8%)
	Both MD & ND equally 33 (34.7%)
	Treat at home / other 9 (9.4%)

Contingency table analysis was used to explore possible associations between the following variables:

- regular MD and main healthcare provider – to assess whether having a regular family doctor (MD) is associated with consulting a ND for a child's health concerns,
- EHP coverage and main healthcare provider – to assess whether having EHP coverage is associated with using naturopathic care (i.e. lessen the financial constraint of consulting a ND).

No association was found between having a regular family doctor (MD) and whom the families considered as the main healthcare provider (i.e. MD, ND or both) ( $p = 0.58$ ). About a third consulted mainly the ND for their child's health concerns despite having a regular MD (see table 10).

**Table 10 – Families with or without a regular family doctor (MD) and their choice for the main healthcare provider (MD, ND, both or other)**

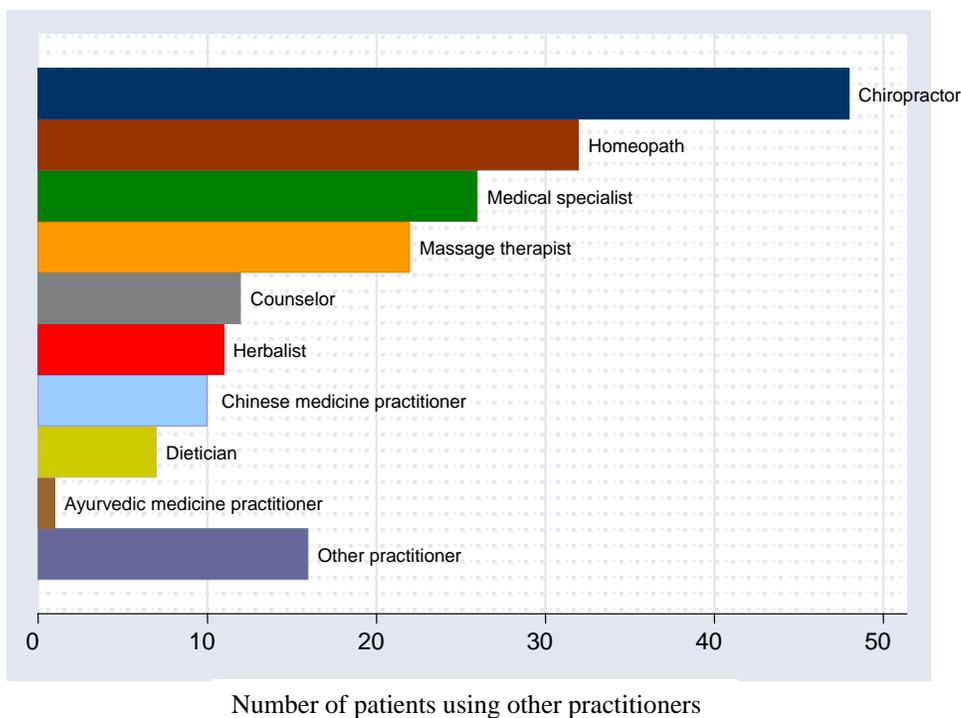
Child has regular family doctor (MD)*	Main healthcare provider n (% of 95)			
	MD	ND	Both	Other
Yes	19 (100%)	30 (91%)	31 (91.2%)	8 (88.9%)
No	Nil	3 (9%)	3 (8.8%)	1 (11.1%)
<i>Total</i>	19 (100%)	33 (100%)	34 (100%)	9 (100%)
Pearson $\chi^2 = 1.94$ ; $df = 3$ ; $p = 0.58$				

To determine whether having a regular MD affects seeing the MD or ND for main health concerns, the odds ratio was calculated. The variable main healthcare provider was dichotomized into MD/both and ND/other. The odds of seeing the MD as the main healthcare provider in those with a regular MD was 1.67 of those who did not have a regular MD, 95% confidence interval (CI) = 0.26 – 12.05,  $p = 0.51$ . This finding is not statistically significant, the CI is wide and includes 1; thus, having a regular MD does not affect whom the children saw as the main healthcare provider in this sample.

No association was found between EHP coverage and type of healthcare used (MD vs. ND vs. both) ( $p = 0.45$ ). The odds of those with EHP coverage and seeing the MD as the main healthcare provider is 2.44 of those not having EHP coverage and seeing the MD as the main healthcare provide (95% CI = 0.68 – 11.00,  $p = 0.13$ ).

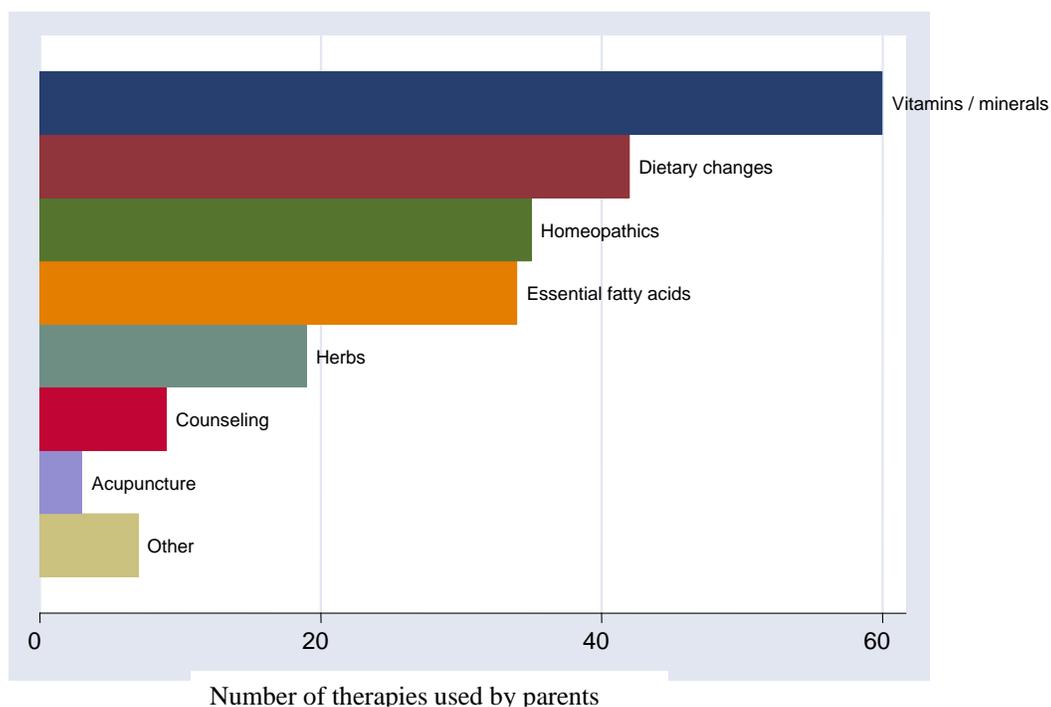
Parents reported that practitioners (other than NDs or MDs) they consulted for their children's health concerns were most commonly chiropractors, homeopaths, and medical specialists (see figure 3).

**Figure 3 – Practitioners other than ND or family MD ever used by children**



The most common CAM therapies (without consulting with a ND or MD) that parents used to treat children were vitamin/mineral supplements, dietary changes, homeopathics and essential fatty acids. No inquiry was made on where or how parents obtained information about these therapies.

**Figure 4 – CAM therapies used to treat children (without consulting a ND or MD)**



#### 4.6 Characteristics of the naturopathic practice

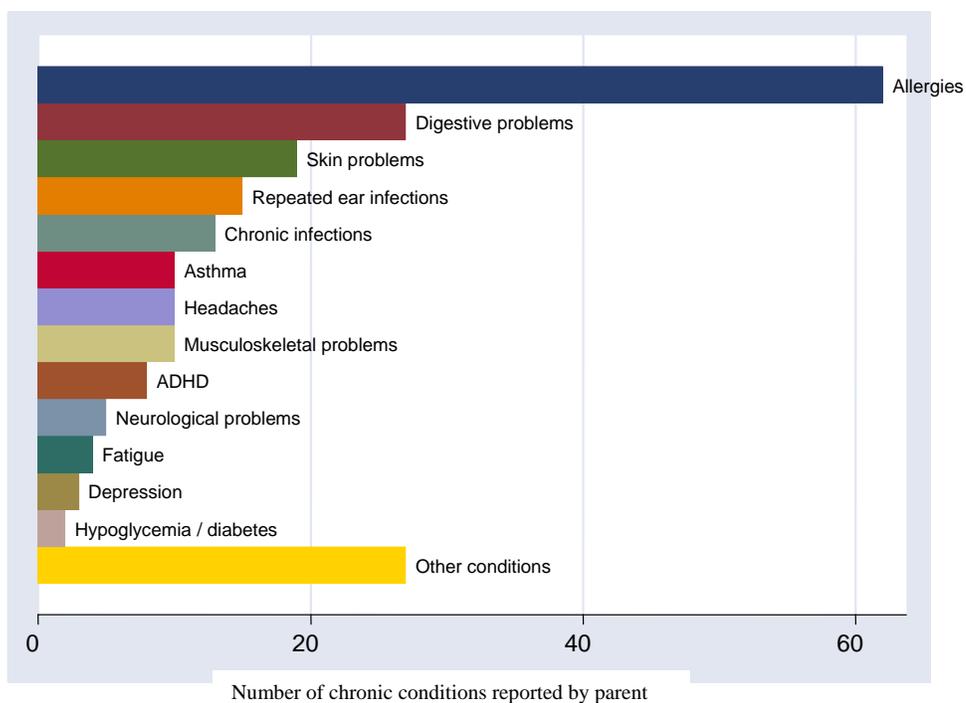
The average length of a naturopathic consult was 35.5 minutes (SD = 12.4). Most respondents (91.8%) reported that other family members also saw a ND. The satisfaction level was very high (see table 11).

**Table 11 – Characteristics of the naturopathic consultation**

Characteristic	Outcome	
Average length of consult with ND	Mean (minutes)	35.5 (SD 12.4)
	Range 10-60 (minutes)	
Number of NDs seen	1	71 (72.4%)
	2	24 (24.4%)
	4	3 (3.0%)
Number of visit with current ND	1 – 2	14 (14.2%)
	3 – 9	51 (52.0%)
	>10	33 (33.6%)
Other family members see ND	Parents	87 (88.7%)
	Siblings	50 (51.0%)
	Grandparents	24 (24.4%)
	Other	15 (15.3%)
Satisfaction with ND treatment	Mean (rating scale 0 to 6)	5.5 ( SD 0.5)

The type of chronic conditions in children presented to NDs is shown in figure 5.

Some children had more than one chronic condition at the time of the survey.

**Figure 5 – Chronic conditions in children as reported by parents/caretakers**

When sex differences were considered, allergies and digestive problems were still the top two conditions for boys and girls. However, repeated ear infections and ADHD were the next most common problems for boys while for girls, skin problems and headaches were the next two most common problems (see table 12).

**Table 12 – Distribution of children’s chronic conditions according to sex**

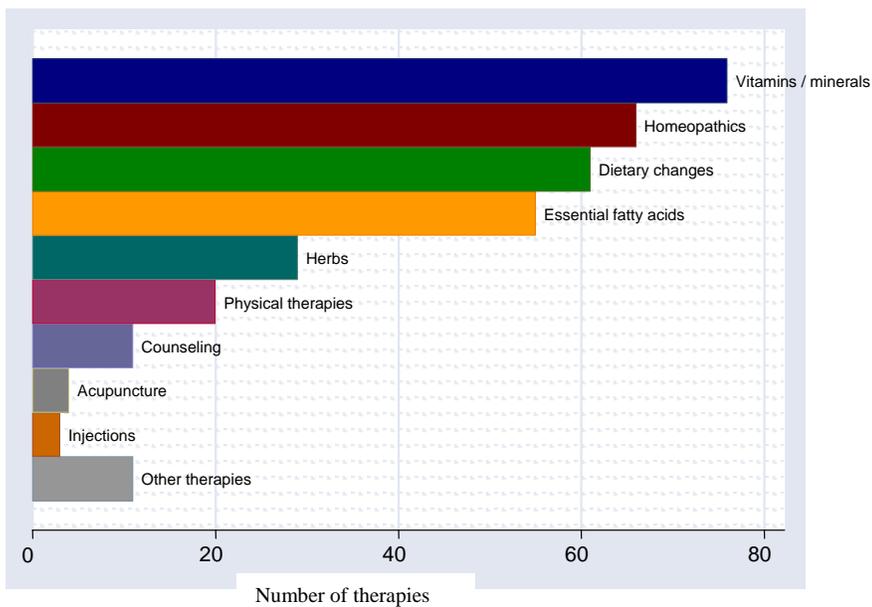
<b>Boys (n = 56)</b>		<b>Girls (n = 42)</b>	
1. allergies	34 (62.9%)	1. allergies	25 (62.5%)
2. digestive problems	13 (24.0%)	2. digestive problems	13 (32.5%)
3. repeated ear infections	9 (16.6%)	3. skin problems	11 (27.5%)
4. ADHD	7 (12.9%)	4. headaches	7 (17.5%)
skin problems	7 (12.9%)	5. repeated ear infections	5 (12.5%)
		chronic infections	5 (12.5%)
		musculoskeletal problems	5 (12.5%)

Contingency table analysis of the various conditions by age found a statistical significant relationship between allergies and headaches and age group; that is, those age seven or older were more likely to report having allergies ( $p = 0.01$ ) and headaches ( $p = 0.04$ ) than the younger group.

The odds ratio was calculated for the above stated relationships. The odds of having allergies in the older group was 2.96 (95% CI 1.16 – 7.70,  $p = 0.01$ ) more likely than in the younger group. As the CI is greater than one, this finding suggests that allergies are more likely in older children. The odds of having headaches in the older group was 4.58 (95% CI 0.84 – 46.06,  $p = 0.05$ ) more likely than the younger group. However, the CI is wide and includes one, so this finding must be interpreted with caution.

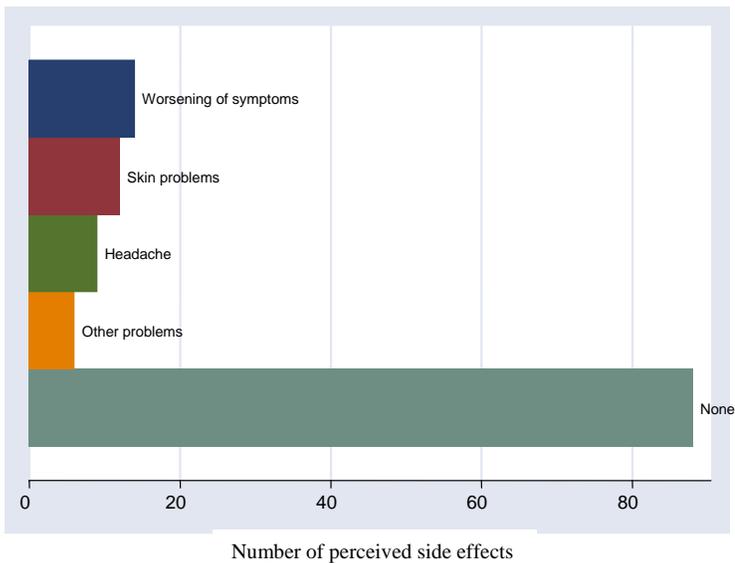
Parents reported the therapies most commonly recommended by NDs were vitamins/minerals, homeopathic remedies, dietary changes and fatty acids (see fig. 6).

**Figure 6 – Therapies recommended by ND for children**



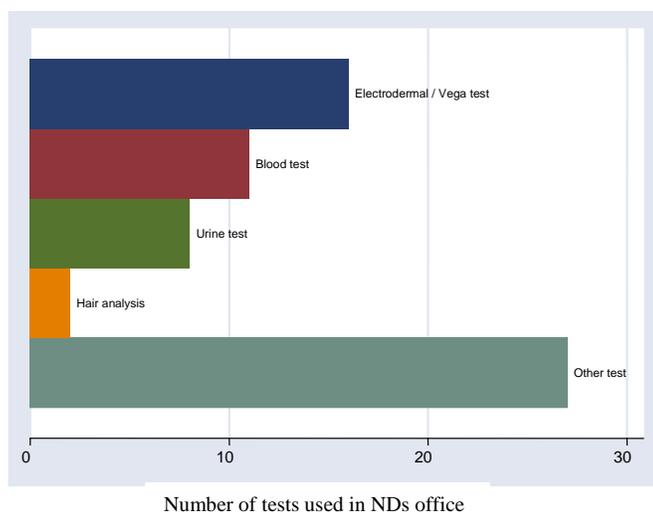
Most parents did not perceive any side effects from the treatments recommended by the ND (see fig. 7).

**Figure 7 – Perceived side effects of therapies recommended by ND for children**



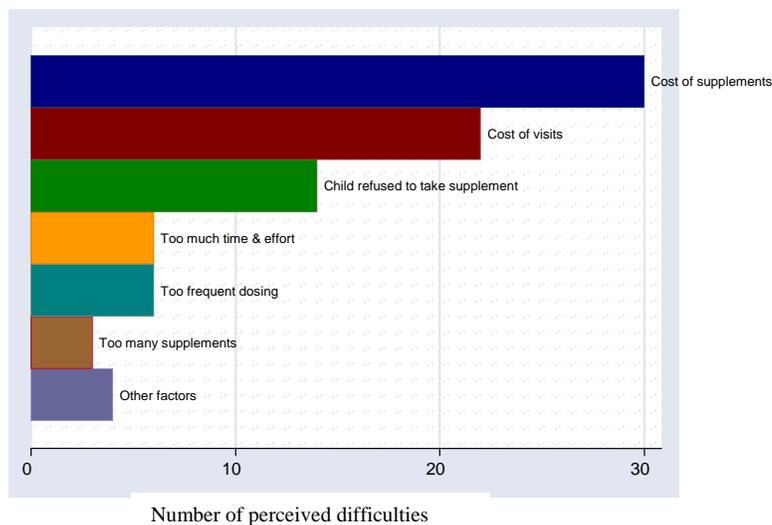
Parents reported most NDs did not perform laboratory or in-house tests on their children, while some NDs performed conventional tests (e.g. blood and urine tests) and/or CAM tests (e.g. Vega, hair analysis) (see figure 8).

**Figure 8 – Types of tests done on children at the NDs office**



Most parents reported no problems following their NDs recommendations. Those who reported difficulties with the NDs treatments were mainly concerned with cost (see figure 9).

**Figure 9 –Parents’ perceived difficulties in following naturopathic recommendations**



Perceived difficulties were not significantly associated with income level or EHP coverage (see tables 13 and 14).

**Table 13 – Parents’ perceived difficulties in following naturopathic treatments according to their income levels**

<b>Factors of difficulty</b> <i>(Among responses of ‘yes’)</i>	<b>Income &lt; \$30,000</b>	<b>Income \$30,001 to \$60,000</b>	<b>Income &gt; \$60,000</b>	<b>Total n (p value)</b>
Cost of supplements	3 (11.5%)	11 (42.3%)	12 (46.2%)	26 (p = 0.32)
Cost of visits	3 (15.8%)	10 (52.6%)	6 (31.6%)	19 (p = 0.06)
Child refusal	1 (7.7%)	4 (30.8%)	8 (61.5%)	13 (p = 0.91)
Too frequent dosing	1 (16.7%)	1 (16.7%)	4 (66.6%)	6 (p = 0.44)
Time & effort	Nil	1 (20.0%)	4 (80.0%)	5 (p = 0.54)
Too many supplements	Nil	Nil	3 (100.0%)	3 (p = 0.31)

**Table 14 – Parents’ perceived difficulties of following naturopathic treatments according to their EHP coverage**

<b>Factors of difficulty</b> <i>(Among responses of ‘yes’)</i>	<b>No EHP coverage</b>	<b>Partial EHP coverage</b>	<b>Complete EHP coverage</b>	<b>Total n (p value)</b>
Cost of supplements	9 (30.0%)	18 (60.0%)	3 (10.0%)	30 (p = 0.55)
Cost of visits	7 (31.8%)	15 (68.2%)	Nil	22 (p = 0.10)
Child refusal	2 (14.3%)	12 (85.7%)	Nil	14 (p = 0.20)
Too frequent dosing	1 (16.7%)	4 (66.6)	1 (16.7%)	6 (p = 0.54)
Time & effort	Nil	6 (100.0%)	Nil	6 (p= 0.50)
Too many supplements	Nil	3 (100.0%)	Nil	3 (p = 0.54)

#### **4.7 Content analysis of parents’ reasons for choosing naturopathic medicine**

An open ended question was included as the last question in the questionnaire. Respondents were given one full page to answer and were told to provide additional pages if required. The question was “why did you choose to see a naturopath for your child’s health care?” Of the 98 completed questionnaires, 92 provided written comments.

Written responses were analyzed using qualitative content analysis. This process involved extracting key words or phrases (i.e. bites of information) and categorizing them among similar groups. Broad categories were derived from the participants' written responses and analyzed for specific common concepts where it was possible to do so. Six themes were derived from the data that shared a number of similar indicators (see table 15). The six main themes were

1. *Treat the "cause" of the disease.* Parents believed that western medicine was limited and seemed to only mask the symptoms of the disease. Parents wanted the therapy to look at the "real problem", that is, beyond the physical symptoms, beyond the obvious pathology and go to the source/root/cause of the problem. However, none of the respondents elaborated on what they considered as the cause or root of the problem. One parent reported that he/she believed the naturopathic doctor paid attention to the little details that were usually ignored by medical doctors.
2. *A holistic approach to care.* Some parents indicated that the process of care attracted them to naturopathic medicine. These parents wanted the doctor to look at and treat the whole person, and use natural remedies, less toxic and less invasive therapies for their children. Some parents reported that for them, naturopathic practice can be incorporated as part of daily life because it emphasized a proactive or preventative approach and on wellness. Furthermore, some parents said they wanted other strategies to resolve the problem rather than just rely on drugs and that they believed medical doctors

rely too heavily on drugs as the only solution. This is demonstrated by the following comments provided by some respondents:

- “I appreciate the consultative, thorough & holistic approach of NDs and I would like my child to see that he has options .... Other than ‘traditional’ medicine”
- “I wanted to give same quality of care to my son (as I’d received during my pregnancy with him). The ND gave us more choices than MD .... & ND spent more time to know their client”
- “I want to give my child the best health care possible. The ND helps you to know your body ... take an active role in your health .... More holistic”

3. *Having a choice of care in the best interest of the child.* Choice was an important reason to why parents chose naturopathic medicine to treat their children. A number of parents wanted to have the best health care possible; they wanted something besides drugs (e.g. antibiotics, steroids, anti-depressants, narcotics). Some parents raised concern with side effects of drugs and wanted an alternative choice to pharmaceuticals to treat their children. To these parents, it was important to have options (other than the conventional system) as they had a different view to promoting health (from conventional medicine). Some parents found regular (conventional) medicine to be unsatisfactory or ineffective in treating their child’s condition(s). Moreover, parents wanted (reliable) information to make a wise choice on the course of treatment and believed they received that from the ND. A few respondents believed that medical doctors were appropriate for certain

conditions and naturopathic doctors for others; that no one was good at everything or could do everything. The sentiment was that there was a place for various forms of health care and that healthcare professions needed to work together for a common goal, for better health of the public.

4. *Meeting specific healthcare needs of the child (not provided by conventional medicine).* A number of parents reported that they turned to naturopathic medicine because conventional medicine was ineffective in treating their child's condition. Some parents wrote that the medical doctor could not diagnose or treat the problem (e.g. conditions that were atypical, chronic, or repetitive) or that the MD's prescriptions only helped in the short term, but the condition would return once the medication was stopped or that they had to keep increasing the dosage, but still not resolving problem. Still, other parents seek naturopathic medicine in hope of treating their child whose health was getting worse, or they could not accept the MD prognosis that the child's problem would get worse. As well, some parents felt that issues of importance for them, such as diet, immunity, and so forth, were not addressed by conventional care. As one parent wrote, "MDs don't take enough time and effort with their patients to explore all the options". Another respondent put it this way, "medical doctors (are useful) for certain conditions and naturopathic doctors for others; no one is good at everything or can do everything; there is a place for various forms of health care".
5. *Perceived benefits of the therapy.* Experiential knowledge was a strong factor in influencing parent's use of naturopathic medicine for their children.

Parents who had a positive experience with naturopathic care themselves reported that was the main reason why their child saw a ND. For others, a recommendation came from friends and family (who had knowledge or experience with the service) also influenced their decision to have their child see a ND. A child's previous recovery from illness after using naturopathic treatment, despite previous poor prognosis or a long bout of illness, was a strong reason for the parent to see a ND for other children in the family. A number of parents felt that their own or their child's untreatable health issues / concerns were successfully resolved by naturopathic treatment.

6. *Other factors that led parents to choose naturopathic medicine.* Some comments parents provided did not fit into a common theme. So the other factors influencing parents' decision to seek out naturopathic care for their children are discussed here. One factor was the trust established with the ND by the parent and/or child as a strong motivator to continue to use naturopathic medicine. Some parents felt the ND's understanding and addressing of their concerns were reasons why they saw a ND for their child. Some parents felt that the appointment with the ND was not rushed, that the time spent was more personal, and there was more individual focus to the care they and their child received. Other parents wanted to take personal responsibility and control (e.g. "wanted to be participants in choosing the right approach") by being educated about health and illness; they wanted informed choice and be active participants in decision making process of care and felt they received that from the ND. Some parents voiced their frustration with

the current healthcare system, and their concerns with short and long term side effects of drugs (known and unknown ones) as reasons for why they consulted a ND. One parent said he/she was perplexed that as a family, they had to pay out of pocket for the cost of visits and supplements for something (naturopathic medicine) that worked versus a “free” (conventional) system that did not seem to work. One respondent wrote, “our family rarely needs to go to the MD yet we pay lots to see our ND .... We get reimbursed for antibiotics which didn’t work, but not for a homeopathic which did work”. Another respondent wrote, “I would rather pay the extra money to see a ND than to take medication ..... (that) doesn’t cure what ails me. As I became healthier and healthier, I found I no longer needed a health care plan”.

Overall, the responses were highly positive (probably due to sampling bias, see page 57, section 5.3.2.1). One exception was a concern regarding the frequency of visits recommended by the ND. One respondent wrote that the ND always seemed to find something wrong or something to treat at every appointment, and thus kept the patient coming back for repeated consults that the patient did not think was necessary. However, the respondent appeared to be voicing concerns about her own care with a previous ND, and did not seem to be stating the concern on behalf of her child’s care. While her concern may be genuine, this was the only criticism that was voiced by a respondent in all the questionnaires. The concern of this one response was not supported or confirmed by other responses.

**Table 15 – Qualitative content analysis of why parents use naturopathic medicine for their children**

Theme	Category / indicators
1. Treat the “cause”	<ul style="list-style-type: none"> <li>• Limit of western medical view on the causes of disease</li> <li>• Masking of symptoms by western medicine</li> <li>• Look at what the real problems is ... beyond the physical, beyond the obvious pathology</li> <li>• Want to go to the source / root / cause of the problem</li> <li>• Wanted to pay attention to the little details ignored by medical doctors</li> </ul>
2. Holistic approach to care	<ul style="list-style-type: none"> <li>• Naturopathic practices can be incorporated as part of daily life; proactive, preventative; emphasis on wellness</li> <li>• To look at and treats the whole person</li> <li>• Naturopathic medicine has a different view to promoting health and treating the (whole) person then conventional medicine</li> <li>• Diet, immunity, etc was not addressed by conventional care</li> </ul>
3. Choice of care	<ul style="list-style-type: none"> <li>• To use natural remedies, and less toxic substances / less invasive procedures</li> <li>• Want other strategies to resolve the (health) problem rather than just rely on drugs</li> <li>• To have options (other than the conventional system)</li> <li>• Regular (conventional) medicine was unsatisfactory or ineffective in treating the condition(s)</li> <li>• Want something besides drugs (e.g. antibiotics, steroids, anti-depressants, narcotics); to avoid side effects of drugs, e.g. antibiotics, steroids</li> <li>• To have the best health care possible</li> <li>• To have a source of reliable information to make a wise choice on the course of treatment</li> <li>• Medical doctors for certain conditions and naturopathic doctors for others; no one is good at everything or can do everything; there is a place for various forms of health care</li> <li>• Healthcare professions need to work together for a common goal, better health</li> </ul>
4. Specific healthcare need	<ul style="list-style-type: none"> <li>• Medical doctor could not diagnose or treat the child’s problem (e.g. atypical, chronic, repetitive)</li> <li>• MD’s prescriptions only help in the short term, then condition would come back once the medication was stopped</li> <li>• Had to keep increasing the (drug) dosage, but still not resolving problem</li> <li>• Child’s health was getting worse, not better</li> <li>• MD prognosis that child’s problem would get worse, not better</li> </ul>
5. Positive experiences	<ul style="list-style-type: none"> <li>• Parent had positive experience with ND</li> <li>• Positive (naturopathic) experience of friends &amp; family</li> <li>• Child’s recovery from ND treatment, despite previous poor prognosis or long bout of illness</li> <li>• Previous experience of untreatable health issues / concerns that were subsequently resolved with naturopathic care</li> </ul>

Theme	Category / indicators
6. Other factors	<ul style="list-style-type: none"> <li>• Trust established with ND by parent &amp;/or child</li> <li>• Felt understanding received from ND</li> <li>• Felt concerns were being addressed by ND</li> <li>• Time spent (not rushed), more personal, more individual focused care</li> <li>• Educating about health and illness; informed choice, active participant in decision making</li> <li>• Medical doctors rely too heavily on drugs as the only solution</li> <li>• Take personal responsibility &amp; control (want to be participants in choosing the right approach)</li> <li>• Frustration with current healthcare system</li> <li>• Concerns with short &amp; long term side effects of drugs (known &amp; unknown one)</li> <li>• Cost of visits &amp; supplements for something that works (ND) verses a “free” system that doesn’t seem to work</li> <li>• Legitimacy of frequency of visits recommended by ND</li> </ul>

## **Chapter Five: Discussion**

This chapter summarizes and interprets the results of the study, compares the results to the literature, discusses the strengths and limitations of the study, considers the clinical relevance of the findings and provides recommendations for further research.

### **5.1 Summary**

Parents of paediatric patients were surveyed on the use of naturopathic medicine. The objectives of this study were to describe 1) the demographic background of children using naturopathic medicine; 2) the reasons for use of naturopathic medicine; 3) the degree to which naturopathic and conventional health care services were being used or combined; and 4) the characteristics of the naturopathic practice.

#### ***5.1.1 Demographic information***

Descriptive analysis was used to assess the demographic background of the children using naturopathic medicine. The children's mean age in this study was 7.1 with a female to male patient ratio of 1:1.33. The parents completing the questionnaire were mainly mothers, tended to be university educated and had an annual household income >\$60,000. The parents rated the children's overall health status as very good or excellent. Children aged six or younger were more likely to be in excellent health than children aged seven or older. Most families had partial extended health plan coverage for naturopathic care.

#### ***5.1.2 Reasons for use***

The main reasons that parents chose naturopathic medicine for their children were to use all possible options for their child's health care and to use a different (more holistic) approach to care. Qualitative comments confirmed the answers given in the

quantitative part of the questionnaire and provided more detailed reasons for choosing naturopathic medicine.

### ***5.1.3 Combining of modalities***

About a third of parents in this group reported combining conventional and naturopathic medical care equally for their child. Another third mainly saw the naturopathic doctor for their child's health related concerns. Parents had also used practitioners such as chiropractors (49%), homeopaths (33%) and medical specialists (26%).

### ***5.1.4 Characteristics of naturopathic practice***

Naturopathic doctors spent an average 35 minutes consulting with their patients and the most common complaints they saw were allergies, digestive problems and skin problems. NDs were most likely to recommend vitamin / mineral supplements, homeopathic remedies, dietary changes and essential fatty acids. Most NDs did not perform diagnostic tests for their paediatric patients. Most parents did not report any difficulty following the NDs' recommendations; some parents cited cost of supplements and cost of visits as possible barriers to following the naturopathic recommendations for their child.

## **5.2 Comparison with existing literature**

Very little information was available in the literature on children's use of naturopathic medicine and only few of our results can be meaningfully compared with the literature on CAM use in general due to the variability in data collection in CAM studies (see Chapter 2, section 2.3 and table 1).

### ***5.2.1 Demographic findings***

#### ***5.2.1.1 Participants***

The majority of CAM users are female, have high household income and post secondary education (Millar, 2001; Park, 2005; Boon, et al., 2003). As mothers are likely to make healthcare decisions for their children, the findings in this study are consistent with the findings of adult patients who used CAM practitioners and therapies.

#### ***5.2.1.2 Children***

The only other study on children and naturopathic medicine reported a mean age of 6.5 years and a ratio of female to male patients was 1.09:1 (Wilson, et al., 2005). While the average age was similar, the Wilson study had a higher ratio of girls to boys than our study. The difference in gender may reflect the fact that neither study had a representative sample of children who used naturopathic medicine. Other studies on children and CAM use also reported more boys than girls in their results (Madsen et al., 2003; Molassiotis & Cubbin, 2004; Pitetti, Singh, Hornyak, Garcia, & Herr, 2001). The mean age calculated for these studies was variable, ranging from a mean age of 5 to 10.3. The variability in age and gender distribution may reflect the fact that these factors do not appear to influence children's use of naturopathic medicine or CAM.

### ***5.2.2 Reasons for use***

The reasons for use of naturopathic medicine in this study were similar to the reasons for CAM use in children. The reasons in the literature included 1) conventional medicine was ineffective (Fong & Fong, 2002; Pitetti et al., 2001), 2) fear of side effects of drugs (Fong & Fong, 2002; Pitetti et al., 2001), 3) personalized attention (Fong & Fong, 2002; Pitetti et al., 2001), 4) personal recommendation from family and/or friends

(Fong & Fong, 2002; Pitetti et al., 2001), 5) to use every possible option in healthcare (Fernandez, Stutzer, MacWilliam, & Fryer, 1998; Molassiotis & Cubbin, 2004), and 6) complementing medical treatment and coping with side effects (Bold & Leis, 2001; Martel et al., 2005).

#### 5.2.2.1 Perceived improvements

Parents' reported improvement in their children's condition from CAM use ranged from 59% (Spigelblatt, Laine-Ammara, Pless, & Guyver, 1994) to over 70% (Fong & Fong, 2002; Pitetti et al., 2001). The high percentage of perceived improvements (88.9% for naturopathic supplements and 78.9% for other naturopathic therapies) in our study may reflect the difference between treatments received from a trained practitioner (ND) versus general CAM use that may range from self-prescribed treatments to untrained practitioner recommended treatments, thus, making the outcomes more variable. The result in our study also likely reflected a biased sample.

#### 5.2.3 *Combining modalities*

Combining different therapies and/or practitioners to meet specific healthcare needs is not unique to this study. Parents consult different types of practitioners (both conventional and CAM) and use various therapies on their own to treat their children for specific complaints (Pitetti et al., 2001; Spigelblatt et al., 1994; Millar, 2001). However, not all parents are reporting their use of naturopathic medicine or CAM to their family doctors.

In our study, more than 60% of the parents reported that the family doctor (MD) knew about the child seeing a ND. In the literature, the rate of reporting by parents to the family doctor (MD) is variable, ranging from 37% (Fong & Fong, 2002) to 70% (Pitetti

et al., 2001). A study conducted in Canada found about half of the parents reported CAM use to their family physician (Spigelblatt et al., 1994). These results imply that a percentage of parents/patients are not informing their family doctors about other types of therapies they are using. This may potentially lead to drug/supplement interaction that could be harmful to patients. All practitioners (conventional and CAM) should make the effort to be aware of all types of therapies patients may be using concurrently.

#### ***5.2.4 Characteristics of the naturopathic practice***

Findings on characteristics of naturopathic practice in the literature were variable due to differences in methodology and purpose of data collection.

##### ***5.2.4.1 Length of the naturopathic consult***

The average length of the naturopathic consult in the present study was similar to the 36 minutes found in a study by Lee & Kemper (2000). Parents reported they valued the time the ND spent on their child's care and cited this as one of the reasons for choosing naturopathic care. In the qualitative comments, some parents wrote that they did not feel rushed during their consult with the ND and were able to talk about issues of importance to the ND, which they were unable to do in a conventional consult.

##### ***5.2.4.2 Common conditions presented in the naturopathic practice***

The main medical reasons for using naturopathic medicine are similar to studies on CAM use. The most common complaints include skin disorders, gastrointestinal complaints, and psychiatric/behavioural disorders (Wilson et al, 2005), respiratory, ear/nose/throat and musculoskeletal problems (Spigelblatt et al., 1994; Pitetti et al., 2001), allergy and skin disorder (Fong & Fong, 2002). These conditions may be

challenging to treat conventionally and parents are seeking alternative treatments for their children.

#### 5.2.4.3 Commonly prescribed therapies and tests in naturopathic practice

Naturopathic doctors tend to recommend multiple therapies for their patients, including nutritional supplements, herbal therapies and phytotherapies and nutritional counselling (Lee & Kemper, 2000). However, there is little information available on the potential adverse events related to the concurrent use of multiple therapies. As NDs are trained to use an eclectic array of therapies, this may provide an ideal opportunity to study the efficacy, safety and adverse event of treatment protocols that use multiple therapies under the supervision of a trained clinician.

#### 5.2.4.4 Parental use of naturopathic medicine

Parents who saw a ND for their own healthcare were more likely to have their child see a ND (88%). This finding is higher than in studies on CAM use in general, which ranged from 49% (Davis & Darden, 2003; Fong & Fong, 2002) to 69% (Spigelblatt et al., 1994). Thus, parents' own experience appears to be a major determinant to the child's use of naturopathic medicine.

#### 5.2.4.5 Level of satisfaction

A high level of satisfaction has been reported on children's CAM use (Pitetti et al., 2001; Spigelblatt et al., 1994). As such, it has been shown that patients who report greater satisfaction with their treatment are likely to have better clinical (objective) outcomes than patients with low satisfaction rating (Hurwitz, Morgenstern & Yu, 2005). Furthermore, a third of parents in this study reported they saw the ND primarily for most healthcare concerns related to their child, even if the child had a regular medical doctor.

This finding implies that the knowledge and skill of the ND was adequate in meeting the healthcare needs of the children. Thus, parents' high satisfaction level, along with perceived benefit of the naturopathic treatment, may reflect positive treatment outcome for the children and continued use of naturopathic medicine as a consequence. However, the high level of satisfaction was reported in a very biased group.

#### 5.2.4.6 Perceived difficulties with naturopathic treatments

Most parents did not report any difficulties in following the ND's recommendations. The main difficulties were related to cost of the visits and the cost of supplements. This finding may reflect the Canadian perception that healthcare services are funded by governments (federally and provincially) according to the principles of the universal healthcare system, and thus, individuals should not have to pay out of pocket for such services. However, parents in this study were willing to pay out of pocket for care that helped their child's condition, despite the availability of the regular healthcare system. Thus there were incentives greater than cost that influenced the parents in this study. No comparative studies were found.

### **5.3 Strengths and limitations of the study**

#### ***5.3.1 Strengths***

A cross-sectional study is a useful way to gather information on the attitude and practices of parents of children using naturopathic medicine at one point in time. This method is relatively inexpensive and allows gathering a large amount of information for exploratory purposes.

This is the only study to survey parents of children who used naturopathic medicine in Canada. In exploring why parents are choosing naturopathic medicine for

their children, we gain some understanding on the healthcare needs of children and their parents. These needs included 1) conditions that conventional medicine was unable to treat, 2) different (more “holistic”) approach to care, 3) less invasive procedures and 4) longer consultation time from the ND. This information is particularly important within the Canadian context and the universal healthcare system where users do not pay for health services personally. The findings of this study suggests that despite the availability of conventional care, parents in this study are willing to pay out of pocket for an alternative healthcare service that they perceived to work for their children. That is, the quality of care matters to parents who want to choose the best type of service for their child.

Another strength was that data were collected from multiple naturopathic clinics, including urban and rural centres, and from three different provinces. While it was not a representative sample of all paediatric patients using naturopathic medicine, it provided information on parents and paediatric patients using naturopathic medicine within the three provinces.

Qualitative content analysis was used to summarize written comments regarding reasons for choosing naturopathic medicine for their children. Information generated from these data reflected the parents’ perspectives rather than the investigator’s perspective on reasons for use. This analysis provided a greater depth of information than the strictly quantitative data.

### ***5.3.2 Limitations***

#### **5.3.2.1 Potential sources of bias**

A number of biases have been identified in the study due to the sampling and recruitment methods. As the investigator was unable to directly recruit the participants, the use of the naturopathic offices for recruitment posed challenges to obtaining and interpreting the data. The procedure for recruitment was explicitly laid out in the instruction sheet to the ND offices; however, the instructions may not have been followed and information on how participants were actually selected and how the process differed by office are not known to the investigator. Thus, selection bias by participating offices may be a contributor factor.

Selection bias resulting from self-selection is probable because participants who completed the questionnaire may not form a representative sample of the population of interest because 1) the naturopathic offices that agreed to participate may differ from non-participating ones; 2) the parents who agreed to complete the questionnaire may differ from non-participating ones. That is, participating offices may be more successful in treating children than non-participating offices and participating parents may have positive experience with naturopathic care compared to non-participating parents. For these reasons, there was very little information on negative cases, such as unsuccessful treatment or outcome, or poor experiences. In addition, the staff from the participating offices may have been selective in asking only those parents whom they felt would provide a favourable response. Another reason is that only three provinces were surveyed and individuals from these three provinces may differ from those in provinces not surveyed. For example, the attitudes and practices of people from Nova Scotia may

differ from those in British Columbia in regards to using naturopathic medicine. This difference may stem from availability of naturopathic services, knowledge of naturopathic medicine, and/or sociodemographic factors that would influence use (see sections 5.1.1; 5.2.1.1; 5.4.5.2).

Reporting bias may occur if participants provide answers that they believed were favourable or in the direction that they perceived of interest to the investigator. For example, parented reported naturopathic treatments helped their child's condition might be influenced by completing the questionnaire at the naturopathic office. Another example is that the child's condition(s) was reported by the parent, not a confirmed diagnosis, so the number and type of conditions may be exaggerated or incorrectly labelled. Thus, the results may be distorted (e.g. overly positive) because of the information provided by the respondents.

#### 5.3.2.2 Limitations of questionnaire

Face validity of the questionnaire was tested among a group of parents and NDs in Calgary, Canada (see chapter 3, section 3.5.2.2). However, content validity was not evaluated. That is, the participants' interpretation of the questions may differ from each other and from the investigator. Hence, the questions might not have measured the intended concept or behaviour. As well, reliability of the questionnaire was not tested. Other limitations of the questionnaire included limited number of categories / options provided (e.g. list of common conditions, or perceived difficulties).

For the reasons stated, interpretation of the findings of this study is limited. For example, answers to "how helpful were therapies prescribed" (question #7), a majority of parents reported their child's condition got better or a lot better from therapies

recommended by the ND. However, whom the patients saw first may influence the reported perceived benefit; for example, for some patients, medical treatment may have been tried first and was unsuccessful, and thus they turned to naturopathic medicine. Alternatively, patients only saw the ND and thus, this question did not apply to them, and hence a highly positive response for treatments from the ND. The skewness in the response may be due to a biased sample, whereby patients who had a positive experience with the ND were more inclined to complete the questionnaire. However, a majority of the participants reported perceived benefit from the naturopathic therapies, and this information cannot be dismissed as recommendations from the ND appeared to have a positive effect on the child's condition.

#### 5.3.2.3 Limitations of statistical analysis

The true response rate was not calculated as the naturopathic offices did not report how many individuals were asked to take part in the survey, how many declined and how many accepted. As well, small cell sizes (e.g. zero in some cases) in some of the contingency table analyses affected the ability to detect an association between variables and may have limited accuracy of the findings.

Because of small cell values and a very biased sample, the results must be interpreted with great caution. The findings of this study cannot be generalized to the paediatric patients who use naturopathic medicine as the sample is not representative of paediatric patients that use naturopathic care. As well, the sample consisted of users of naturopathic medicine only, thus we could not determine how the characteristics of users differed from non-users.

### ***5.3.3 Recommendations for resolving limitations / biases***

Random selection of participants may be one strategy to control for selection bias. This means that the investigator would randomly select (using a preset randomly generated sequence) patient files from the naturopathic clinics and asks those parents to complete the questionnaire. Alternatively, the investigator could be present at the naturopathic offices and sequentially asked every parent to participate in the study. This would mitigate the possibility of the office staff selectively choosing potential participants who would give favourable responses.

Due to the nature of surveys, self-selection bias is much more difficult to control. However, one method for dealing with this source of bias would be to provide a shorter form of the questionnaire to collect basic information to determine if responders differed from non-responders. Reporting bias would also be difficult to control as respondents may be overly positive or negative in their responses. However, ensuring content validity of the questionnaire, such as wording of questions which participants will understand consistently, will help to minimize information bias.

## **5.4 Relevance**

The findings of this study may have relevance for children with health concerns and parents looking for a different system of care. A majority of parents in this study reported their children with chronic conditions (e.g. asthma, repeated respiratory infections, allergies and digestive problems), or conditions that conventional medicine failed to diagnose or treat, were helped by naturopathic treatments. Thus, naturopathic medicine may be a promising system of care for children. However, much more research is needed to establish the effectiveness and potential side effects of therapies

recommended by NDs. NDs can provide expertise on the individualized use of multiple therapies, an important insight to researchers studying the holistic nature of many CAM therapies. This is important as many people are using multiple supplements and therapies on their own with little knowledge on potential risks, and only a selected group are seeing trained practitioners such as NDs.

Naturopathic medicine is used by a small, selected group, namely individuals with higher education and income. This implies individuals of lower education and income do not access naturopathic medicine as readily. Reasons for the lack of access by this latter group need to be further explored.

While many patients are unable to access regulated naturopathic doctors, due to associated costs, lack of knowledge and geographic location, others are using naturopathic medicine to meet their health care needs. Some parents commented that they use naturopathic medicine for the treatment of a wide range of conditions. Despite the debate on formal integration of CAM therapies into conventional care, some parents of paediatric patients are already using various healthcare services, CAM and conventional, on their own and the type of service that works best for them and their children. Thus, physicians, regardless of philosophy or system of practice, need to know what patients are using in order to provide safe and effective care.

The relevance of these findings must be considered within the context in which this information was collected, including a highly biased sample with biased opinions, and therefore does not represent patients in the general population. Thus, statements about positive experience, satisfaction, reasons for use, conditions being treated or therapies used must be taken with great caution.

## **5.5 Hypotheses generated from data**

A number of hypotheses were generated from the study data. They include:

- Naturopathic medicine is effective in treating children with chronic conditions such as allergies, digestive problems and skin problems compared to conventional medicine;
- Paediatric patients who use naturopathic medicine are less reliant on the conventional healthcare system;
- Parents with lower education or lower income are less likely to use naturopathic medicine;
- Paediatric patients have better treatment outcome when combining naturopathic and conventional care than using either healthcare services alone.

## **5.6 Further research**

### ***5.6.1 Large scale national study***

A large scale national cross-sectional study would build on the findings of the present study. A large study would survey all paediatric patients using naturopathic medicine, including positive and negative cases and the use of a comparison group (e.g. paediatric patients from conventional medical practices). Comparison would be made on sociodemographic characteristics of users and nonusers, clinical outcome of medical complaints, satisfaction levels, and level of conventional medicine use. A large study would ensure a representative sample and allow implementation of strategies to minimize the biases discussed previously (see section 5.3.3).

### ***5.6.2 Cost benefit analysis***

Parents in this study reported naturopathic medicine met the health care needs of their children and were willing to pay out of pocket for the care. How and where naturopathic medicine services may be useful within the present healthcare system is a topic worth investigating. Spigelblatt (1994) reported CAM users consulted less than non-users at a paediatric outpatient clinic in her study. A U.S. study by Stewart (2001) found more than half of the (adult) respondents believed CAM decreased their use of conventional care "slightly" or "substantially." However, Millar's analysis found CAM users had more co-morbidity, more visits with a regular (family) physician, and more consults with a specialist. There may be differences between the paediatric and adult populations or between locations of study. Within the Canadian context, a prospective study is needed to determine the cost/benefit analysis of naturopathic medicine for specific chronic condition (e.g. allergies) compared to the standard conventional treatment.

### ***5.6.3 Prospective condition specific studies***

There is a general belief that conventional medicine does a poor job treating chronic conditions, and CAM therapies are better at dealing with chronic conditions. At present, no systematic data has been collected to study if that conjecture is true and in what cases of chronic disease. A prospective cohort or case control study on specific chronic conditions that conventional medicine has limited success in treating to determine where naturopathic medicine is beneficial and where it is not. As well, it would allow the study of individualized use of multiple therapies that reflect the clinical reality of naturopathic care and provide meaningful evidence besides the reductionistic

model of studying only one active ingredient or one specific mode of a therapy at a time. It would explore the concept of holistic approach to healthcare and determine the value and drawback of this form of care.

#### ***5.6.4 Exploring methods and issues of integration or collaboration of medical services***

Naturopathic medicine is a growing field and becoming a choice of healthcare for a segment of the population. Thus, how it may play a role the Canadian healthcare system should be investigated. Patients are obviously combining or integrating different types of healthcare service, conventional and CAM. To lessen the demand on the standard system, other forms of healthcare service such as naturopathic medicine should be considered. As a number of respondents stated, neither the medical or naturopathic professions can treat everything; they are good for different things (conditions), and meet different healthcare needs. Thus, a multidisciplinary approach to care that uses conventional and CAM therapies and how these services may be incorporated, combined or integrated should be studied.

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## APPENDIX A: LETTER TO NATUROPATHIC DOCTORS



FACULTY OF | UNIVERSITY OF  
**MEDICINE | CALGARY**

Project Title: The Use of Naturopathic Healthcare Services by Children Under the Age of 15

Investigators: Marja Verhoef, PhD; Brenda Leung, ND

June 21, 2005

«Title» «NAME» «SURNAME»

«Address»

«CITY», «PROV»

«Postal\_Code»

Dear «Title» «SURNAME»:

We are writing to ask for your assistance in a study we are conducting. The goal of the study is to describe the characteristics of children and their use of naturopathic therapies, and how conventional and naturopathic therapies are being combined by parents for their children. The findings of this study may provide insights into the healthcare needs of children; how these needs are met by naturopathic healthcare services; and how conventional and naturopathic services are being combined to treat children.

We would like to invite your office to participate. This would require that your office staff asks parents / caretakers of your children patients to fill out a survey at their next appointment with you. It will take about 10 minutes of the parent's time. Fifteen patient surveys will need to be completed at your office. We will provide postage paid return envelopes for the return of the surveys. A detailed instruction form will be provided to you and your office staff as how to recruit participants and distribute the survey. Every effort will be made to minimize any potential disruption to your practice. Your office will remain anonymous and no information will be collected on you, your practice or your office per se. As well, the identities of your patients will remain anonymous and no personal identifiers will be associated with the completed surveys.

You have a unique opportunity to help shape the future of our profession and, we hope, improve your own practice potential. By investing a few minutes of your time and some of your patients' time, you can help to collect some important information on children's use of naturopathic medicine. We would be happy to share the aggregated summary of the findings with you upon request.

*Please indicate your participation in this study by contacting us via phone or email.* Also, if you have any questions or want clarification regarding this research and/or your participation, do not

hesitate to contact us. Thank you very much for your help with this study. Your time and cooperation are greatly appreciated.

Sincerely,

Marja Verhoef, PhD  
Phone: 403/ 220-7813

Brenda Leung, ND  
Phone: 403/210-9320,  
email: [bleun@ucalgary.ca](mailto:bleun@ucalgary.ca)

## APPENDIX B: NOTICE TO OAND MEMBERS

Naturopathic study on children's health needs your help!!!!

- Dr. Brenda Leung, ND, at the University of Calgary would like to invite you to participate in a new study.
- The goal of the study is to describe the characteristics of children and their use of naturopathic therapies.
- The findings of this study may provide insights into the healthcare needs of children; how these needs are met by naturopathic healthcare services.
- You have a unique opportunity to help shape the future of the naturopathic profession and, we hope, improve your own practice potential.
- By investing a few minutes of your time and some of your patients' time, you can help to collect some important information on children's use of naturopathic medicine.
- For details on how you can participate, please contact Brenda Leung, ND, at 403/210-9320, or email: [bleun@ucalgary.ca](mailto:bleun@ucalgary.ca), by June 1, 2005.

## APPENDIX C: THANK YOU LETTER TO NATUROPATHIC OFFICES



FACULTY OF MEDICINE | UNIVERSITY OF CALGARY

July 4, 2005

«Title» «Surname» «Name»  
 «Address»  
 «City», «Prov»  
 «Postal\_Code»

Project Title: The Use of Naturopathic Healthcare Services by Children Under the Age of 15

Investigators: Marja Verhoef, PhD; Brenda Leung, ND

Dear «Title» «Name»:

Thank you for agreeing to participate in this study. Your involvement is much appreciated and valued. Please find enclosed an instruction sheet for your office staff, the patient information sheets, the questionnaires and self-addressed, stamped envelopes. Please have your staff review carefully the instruction sheet on recruiting patients and distributing the questionnaire. This procedure must be conducted in a systematic and consistent manner. Please ask all eligible participants if they wish to complete the questionnaire.

Eligible participants are parents/caregivers of children who are seeing you for a **follow up visit**, and who have agreed to complete the questionnaire.

It will take about 10 to 15 minutes to complete the questionnaire. We recommend that when the parent/caregiver calls in for an appointment with you, the staff should book the participant in before or after they see you to complete the questionnaire. To ensure privacy and confidentiality, please have the participant seal the completed questionnaire in the postage paid envelopes provided. Then ask the participant to put the envelope in the mail. Please keep recruiting for participants until all the questionnaires have been completed.

Thank you kindly for your assistance in this study. The information collected in this study will provide a foundation for expanding naturopathic research and your participation is very important. Should you or your staff have any questions or concerns, do not hesitate to contact us.

Best regards,

Marja Verhoef, PhD  
Phone: 403/ 220-7813  
[bleun@ucalgary.ca](mailto:bleun@ucalgary.ca)

Brenda Leung, ND  
Phone: 403/210-9320, email:

## APPENDIX D: RECRUITMENT INSTRUCTIONS FOR OFFICE STAFF



FACULTY OF | UNIVERSITY OF  
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### Guideline for patient recruitment and distribution of survey

July 4, 2005

Dear Office Staff,

Thank you for your assistance in this study. Your efforts are greatly appreciated. Please follow these instructions carefully and explicitly.

*About the study:* This study is to survey parents/caretakers of children (age 0 to 15) who are seeing the naturopath. So only ask those who are parent/caretakers bringing in their children to the office to complete the survey. NOTE: DO NOT ask those who are making their *first* appointment to see the naturopath. Please provide the following information when the parent/caretakers call to make an appointment with the naturopath. *Please read out loud to the parent/caretakers the text with bullets (●).*

*Recruitment script* (when parent/caretaker is making an appointment for their child):

- This clinic is participating in a study on the use of naturopathic medicine by children in the (*your city name*) area.
- The information you provide will allow researchers an insight into children's healthcare needs and how naturopathic medicine is used to meet those needs.
- The survey will take about 10 minutes of your time. If you are willing to participate, please come in 10 minutes before your next appointment to fill out the survey.
- Would you like to take part in this study?
- (If they answer "yes") Please come in at \_\_\_\_\_ (provide specific time that is 15 minutes prior to the appointment with the naturopath) to complete the survey.
- (If they answer "no") Please give it some thought, and if you change your mind, please call me back so we can schedule you in to do the survey.

*Survey distribution script* (when the parent/caretaker shows up for the appointment with their child):

- You had agreed to complete a survey on children's use of naturopathic medicine.
- Here is an information sheet about the survey. Please complete the survey and seal it in the self address, stamped envelope.
- Once the complete survey is sealed, you can return it to me to put into the mail or you can put it in the mail yourself.
- Thank you for taking the time to do this survey. On behalf of the investigator, your time and input is greatly appreciated.

If you have any questions or concerns, do not hesitate to contact Brenda Leung, ND at (403)210-9320 or email [bleun@ucalgary.ca](mailto:bleun@ucalgary.ca) . Thank you for your assistance.

**APPENDIX E: INFORMATION SHEET FOR PARTICIPANTS**

FACULTY OF | UNIVERSITY OF  
MEDICINE | CALGARY

July 4, 2005

Project Title: The Use of Naturopathic Healthcare Services by Children Under the Age of 15

Investigators: Marja Verhoef, PhD; Brenda Leung, ND

Dear Participant,

Thank you for taking the time to complete this survey. It will take about 10 minutes of your time. The purpose of this study is to learn about children's healthcare needs and how naturopaths are meeting those needs. The findings of this study may provide insights into how naturopathic medicine is utilized to meet the needs of children and provide a basis for future research on how it may fit into the overall healthcare system.

By completing and returning this questionnaire, you consent to your participation in the research study. Your participation is completely voluntary and your responses will be kept confidential. The survey contains no information that identifies you. You are free to refuse to answer any question and to discontinue the survey at any time. You are not waiving any legal claims, rights or remedies because of your participation in this study. While there may not be any direct benefit to you by participating in this survey, your participation in this study will help to develop an understanding of children's healthcare needs and how naturopathic medicine is used to meet those needs.

Please enclose the completed survey in the self addressed stamped envelope provide and mail it to the investigator. Thank you very much for your help with this study. Your time and cooperation are greatly appreciated.

If you have any questions concerning your rights as a possible participant in this research, please contact Pat Evans, Associate Director, Internal Awards, Research Services, University of Calgary at 220-3782

If you have any further questions or want clarification regarding details about this research, please contact:

Brenda Leung, ND

Dept. of Community Health Sciences

3330 Hospital Drive, NW, Calgary, AB T2N 4N1

Telephone: 403/210-9320, email: [bleun@ucalgary.ca](mailto:bleun@ucalgary.ca)

**APPENDIX F: QUESTIONNAIRE**

FACULTY OF | UNIVERSITY OF  
MEDICINE | CALGARY

**The Use of Naturopathic Healthcare Services by Children Under the Age of 15**

*Thank you for taking the time to complete this survey. By completing and returning this questionnaire to the investigator, you consent to take part in this study. Please answer the questions in this survey in reference to your child who is seeing the naturopath today.*

***Part I: First we would like to ask you about you and your child's background.***

1. What is your child's age?  
\_\_\_\_\_ years
2. What is your child's gender?  
 female                       male
3. What is your relationship to the child?  
 Mother  
 Father  
 Other, please specify: \_\_\_\_\_

***Part 2: Now we'd like to find out about the reasons for your use of healthcare services:***

4. In general, how would you rate your child's health?  
 Excellent  
 Very good  
 Good  
 Fair  
 Poor

5. What were the main reasons you took your child to see a naturopath?

Reasons	Strongly agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly disagree
1. My family generally consults naturopaths					
2. I wanted more control over what treatment my child receives					
3. Western medicine provided by the medical doctor was not working					
4. I did not like the care my child received from the medical doctor					
5. I was concerned about the side effects of drugs on my child					
6. I wanted a doctor who would work with me and my child in more holistic way					
7. I wanted to use all possible options for my child					
8. Others, please specify: _____ - _____ _____					

6. In the following list, please check the condition(s) your child has and if that condition is being treated by your naturopath. Check all those that apply.

<i>Disease</i>	<i>Please check if your child has the problem:</i>	<i>Is it being treated by the naturopath?</i>	
		<i>Yes</i>	<i>No</i>
1. Allergies; food / environment sensitivities			
2. Attention deficit (hyperactivity) disorder			
3. Asthma			
4. Chronic infections			
5. Depression			
6. Dermatitis (atopic, psoriasis, eczema, etc.)			
7. Hypoglycemia, diabetes			
8. Digestive problems			
9. Repeated ear infections			
10. Fatigue (chronic); low energy			
11. Headaches			
12. Musculoskeletal problems			
13. Neurological disorder			
14. Other, please specify: _____ _____ _____			

7. For each of the following treatments, indicate how much they helped your child's condition.

Treatment	Does not apply	A lot better	A little better	About same	A little worse	A lot worse
1. Drug(s) prescribed by the medical doctor (MD)						
2. Other therapy recommend by the MD						
3. Therapy I tried on my own for my child						
4. Supplement(s) prescribed by the naturopath						
5. Other therapy recommended by the naturopath						
6. Other: _____						

8. Do you believe your child may have experienced any of the following side effects from the therapies recommended by the naturopath?

Side effects	Yes	Maybe	No
1. Stomach upset (nausea, vomiting)			
2. Skin reaction (rash, itchiness)			
3. Headache, sleepiness			
4. Worsening of symptoms			
5. Others: _____			
6. None			

9. Do you have extended health plan (EHP) coverage for your child's naturopathic care?
- Yes, I have *complete* coverage
- Yes, I have *partial* coverage
- No, I have no coverage

***Part 3: This section is about how treatment use is combined by you or your naturopath.***

10. Does your child have a regular medical doctor / general practitioner?
- Yes (Go to question #11)
- No (Go to question #12)
11. Does your child's medical doctor / general practitioner know that your child also sees a naturopath?
- Yes
- No
- Not sure

12. Which of the following statements applies best to your child's healthcare?
- For most illness/health concerns, my child sees mainly the medical doctor
- For most illness/health concerns, my child sees both the medical doctor and the naturopath equally
- For most illness/health concerns, my child sees mainly the naturopath
- I usually treat my child's health concerns at home
- Other, please specify: \_\_\_\_\_

13. Has your child seen any of the following practitioners? Please check all that applies.

<i>Practitioner</i>	<i>Ever used?</i>	<i>In last 6 months</i>
1. Acupuncturist / TCM doctor		
2. Ayurvedic medicine doctor		
3. Chiropractor		
4. Dietician		
5. Herbalist		
6. Homeopath		
7. Massage therapist		
8. Medical specialist		
9. Counselor / psychotherapist		
10. Other, specify: _____		

14. Which of the following therapies did your child's naturopath, whom you are seeing today, use to treat your child? Please check all that applies.

<i>Therapy / modality</i>	<i>Ever used</i>	<i>In last 6 months</i>
1. Vitamins/minerals supplements		
2. Essential fatty acids / probiotics / enzymes		
3. Dietary changes		
4. Herbs		
5. Homeopathics		
6. Acupuncture		
7. Injections		
8. Counseling / behaviour modification		
9. Spinal/joint adjustments / physical therapies		
10. Others: _____		

15. Which of the following therapies have you used on your own to treat your child (without any doctor's recommendation or knowledge)? Please check all that applies.

<i>Therapy / modality</i>	<i>Ever used</i>	<i>In last 6 months</i>
1. Vitamins/minerals supplements		
2. Essential fatty acids / probiotics / enzymes		
3. Dietary changes		
4. Herbs		
5. Homeopathics		
6. Counseling / behaviour modification		
7. Acupuncture		
8. Others: _____		

**Part 4: This part asks you about the features of the naturopathic consultation process.**

16. How many naturopaths has your child seen (total number of naturopaths seen including the present one)?  
 \_\_\_\_\_ number of naturopaths
17. What is the number of appointments your child has had in total? Choose the appropriate range.
- b. With current naturopath     1 – 2             3 – 9             >10
- c. With all past naturopaths     1 – 2             3 – 9             >10             N/A
18. Have other members in your family seen a naturopath?
- Yes (Go to question #19)
- No (Go to question #20)
19. If answered “Yes” to question #18, who else has seen a naturopath? Check all that applies.
- Parents of the child
- Siblings of the child
- Grandparents of the child
- Other, please specify: \_\_\_\_\_
20. On average, about how much time does the naturopath spend with you and your child per visit?  
 Please specify: \_\_\_\_\_ minutes
21. What types of tests were given at the naturopath’s office in the past year? Please check as many as applicable.
- None (no testing was done)
- Blood test
- Urine test
- Hair Analysis
- Electrodermal test
- Other, please specify: \_\_\_\_\_
22. Overall, how would you rate the naturopath’s recommendations for your child?
- The treatment plan was too complicated to follow.
- The treatment plan was reasonable to follow.
- The treatment plan did not address what I needed.
- Other, specify: \_\_\_\_\_

23. Which of the following factors makes it difficult to follow the naturopath's recommendations? Check all that applies.

- I have no difficulty with the recommendations.
- The cost of the visits
- The cost of the supplements
- Too many supplements
- The dosing was too frequent.
- It took too much time and effort
- The child refused to take the supplement(s)
- Other, specify: \_\_\_\_\_

24. Overall, how satisfied are you with the naturopath's care of your child's health issues?

- |                  |          |          |          |          |          |                   |
|------------------|----------|----------|----------|----------|----------|-------------------|
| <b>0</b>         | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b>          |
| Not<br>Satisfied |          |          |          |          |          | Very<br>Satisfied |

*Part 5: We'd like to ask you some more about your background:*

25. What is the highest education level you completed?

- No formal education
- Elementary school
- Junior high school
- Senior high school
- Technical/professional college
- University or higher

26. What is the annual net household income level at your home?

- < \$30,000
- \$30,001 to \$60,000
- > \$60,001
- Prefer not to answer

27. What is the total number of people living in your household?

\_\_\_\_\_ number(s) of people.

