

Declaration



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This Research Project entitled Predictors of Parents seeking Osteopathic Care for their Infant is submitted in partial fulfilment for the requirements for the Unitec degree of Masters of Osteopathy

Candidate's declaration

I confirm that:

- This Thesis/Dissertation/Research Project represents my own work;
- Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: 2010-1114

Candidate Signature:Date:

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Predictors of parents seeking osteopathic care for their infant

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Preface

The following research project is divided into three sections:

1. Review of literature, separated into two parts focusing on:
 - Part I
 - Common healthcare complaints within the first two years of life
 - Healthcare available to children within New Zealand
 - Prediction studies of Complementary and Alternative Medicine (CAM) use
 - Prediction studies of CAM use and children
 - Part II
 - Internet Use for Access to Health Information
 - Internet as a Research Tool
2. A manuscript in the format designated for submission to the *International Journal of Osteopathic Medicine*.
3. Appendices including:
 - Ethics approval
 - Clinic information and consent form
 - Recruitment advertisement
 - Participant information form
 - Participant questionnaire
 - The guidelines for authors to the *International Journal of Osteopathic Medicine*

Section 1: Review of Literature

Introduction

This literature review aims to highlight important issues that relate to this study. In order to explore these issues this review of literature has been divided into two parts; Part I addressing infant health concerns, healthcare utilisation and predictors of Complementary and Alternative Medicine (CAM) use; and Part II, which looks into internet use relating to health.

Osteopathy comes under the umbrella term of CAM, therefore the following areas will be discussed: Common health complaints within the first two years of life; Health care available to children within New Zealand; and Prediction studies involving general healthcare, child healthcare, CAM use, and Children and CAM use.

When recruiting participants for research, regardless of strategies used, researchers often come across barriers to reaching their required amount of participants. More researchers are using online means to recruit potential participants because of the ever growing popularity of the Internet. As this study was conducted in an online environment, with the majority of participants being recruited online, a small section of this literature review looks into the nature of accessing health information and participants via the Internet.

Part I

Common Health Complaints within the First Two Years of Life

During the first two years of life infants may experience many different healthcare complaints. These may include birth trauma, breathing difficulties, feeding problems, infections (nose, ear, throat, chest, urinary), fever, excessive crying, irritability, sleeping difficulties, gastro-intestinal upsets (vomiting, diarrhoea and constipation), musculoskeletal problems (e.g. hip disorders, club foot), and reflux (Moeckel & Mitha, 2008; Valman, 1990). According to The Royal New Zealand Plunket Society (2011) some of the more common complaints infants may experience are as follows: spilling and reflux; colic (defined here as “baby cries for several hours a day and no other cause for crying can be found”) and crying; sleeping difficulties; diarrhoea and constipation; nappy rash; shape of head and skull bones; cold and flu; and thrush.

Common Symptoms

Many of these problems are non-life threatening, are often deemed trivial by health professionals, thus there is currently limited research into these complaints, specifically into which ones are more common. There is however one study that may give insight into which complaints commonly appear in childhood. Mindlin (1970) conducted a study where 484 mothers of new born infants were interviewed monthly regarding their child’s health. Results were compared between White, African-American and Hispanic groups. The study found that colds, rashes, teething and gastro-intestinal disturbances were the most common complaints through-out all ethnic groups. Complaints were considered common if it was reported at least five times per 100 babies per year. This study is 40 years old, but may give insight into the more common conditions children may experience and it is unlikely that the nature of common complaints in this age group has changed.

A similar study undertaken by Holmes (1995), which looked at the incidence and prevalence of non-specific symptoms and behavioural changes in infants under the age of two years, may also help gain insight into this under-researched topic. Over a space of two years, mothers of 323 new born infants were recruited to fill in diary cards on a daily basis, recording any non-specific symptoms or behavioural changes. The study found that out of 15 categories, upper respiratory symptoms, such as cold, snuffles, sneezing, wheeze, noisy or altered breathing and cough, were especially prevalent in this age group. Respiratory illness was also found to be the most prevalent symptom in two other studies relating to prevalence of symptoms in children (Bruijnzeels, Foets, Van der Wouden, Van den Heuvel, & Prins, 1998; Hay, Heron, & Ness, 2005). Bruijnzeels et al. (1998) found 15.7% of children suffered from colds and/or the influenza virus, and a further 11.4% with other respiratory symptoms. Both Bruijnzeels et al. (1998) and Holmes (1995) found that parents managed 67% to 99% of these symptoms without consulting a health professional and this may explain the lack of research into these non-specific symptoms.

Research within the Context of New Zealand

After comprehensive searches of the literature, only two studies were found that may be of relevance within the New Zealand context. The first study by Cross, Heath, Ferguson, Gray, & Szymlek-Gay (2009) also note the lack of literature in this field and looked at the incidence of parental report of illness in otherwise healthy South Island, New Zealand toddlers. Although this study looked only at infants between the age of 12 and 24 month olds, it gives insight into relevant health related problems within New Zealand. Respiratory illnesses were found to be the most common illness experienced in this group, however this was out of the four general categories of respiratory infection, ear infection, gastrointestinal infection and total illness (none of which fit into the above categories). Unfortunately, these broad categories give little insight into specific symptoms the infant may be experiencing. Possibly of more relevance is the study that looked at maternal reports of health concerns for

their Pacific Island infants in the first six weeks of their lives (Paterson, Carter, Williams, & Tukuitonga, 2006). Paterson et al. (2006) explored the associations between the health concerns and infant and maternal socio-demographic factors. This research showed that 55% of mothers reported minor health problems within these first six weeks after birth, with breathing difficulties (43%) and skin rashes (24%) being the main problems reported. They also found no associations between infant and maternal socio-demographic variables with general infant health. This study was also consistent with the previous studies discussed, with 43% of all reports related to breathing difficulties, confirming that respiratory complaints may be the most prevalent symptoms experienced within the first year after birth. Interestingly, this study found moderate correlations between breathing difficulties and factors such as maternal smoking during the third trimester, cold housing, and parents who have resided in New Zealand for over 10 years (Paterson, et al., 2006).

Healthcare Available to Children within New Zealand

There are two avenues through which healthcare is available to children within New Zealand (NZ): public and private healthcare. Public healthcare is funded by the government, available to all NZ residents, and private healthcare is funded by the individual or another private organization (e.g. insurance company).

Public Healthcare Available to Children in New Zealand

In NZ there are many government funded healthcare services available to children, some completely free and others that are subsidised. Free services include access to public hospital specialists via referral; some prescription medication (when under 6 years old); immunization and most laboratory tests. Most general practitioners will see children under the age of six years for free or for minimal charge (Ministry of Health, 2011). All NZ children are also entitled to free 'Well Child' check-ups. These check-ups assess the development of

the child and are carried out by either The New Zealand Plunket Society nurses or 'Well Child' practitioners. 'Well Child' is a program developed to help fulfil the Child Health Strategy that was developed by the NZ Ministry of Health in order to make sure the health needs of children are being met. Maori children, Pacific island children, children with high health and disability support needs, and children from families with multiple social and economic disadvantages are considered to be the priority populations (Ministry of Health, 1998).

As part of public healthcare in NZ, some services are subsidised. For example, the use of an ambulance is subsidised by an organisation such as St John's, and services funded by the Accident Compensation Corporation (ACC) are government funded.

Private Healthcare Available to Children in New Zealand

Most allied health services are also available privately, including specialist consultations, hospital services, medical imaging and laboratory testing. These are available to anyone who has the means to pay the fees (either personally or via another organisation). The main benefit of private allied healthcare is the access to healthcare when it is needed (rather than waiting on priority lists through the public scheme).

Other healthcare services available privately include the CAM therapies. These may include, but are not limited to osteopathy, manual therapy, homeopathy, naturopathy, acupuncture, and traditional Chinese medicine. Although some providers of these therapies offer reduced rates for children, they can still be quite expensive, limiting their availability to lower socio-economic populations.

Prediction Studies of CAM Use

Many studies have looked into the predictors of CAM use by not only the general population, but also specific populations such as cancer survivors, individuals with complaints like migraine or rheumatological disorders etc. and certain ethnicities to name a few (Astin, 1998; Callahan, Wiley-Exley, Mielenz, Brady, & Xiao, 2009; Chandola, Young, McAlister, & Axford, 1999; Fouladbakhsh & Stommel, 2007; Freeman, Mischoulon, Tedeschini, Goodness, & Cohen, 2010; Hunt, Coelho, Wider, Perry, & Hung, 2010; Kim & Chan, 2004; Klingberg, Wallerstedt, Torstenson, Håwi, & Forsblad-d'Elia, 2009; Marrie, Hadjimichael, & Vollmer, 2003; Rao & Mihaliak, 1999; Rossi, Di Lorenzo, Malpezzi, Faroni, & Cesarino, 2005; Saquib, 2010; Shumay, Maskarinec, Gotay, Heiby, & Kakai, 2002). The most common predictors found relate to demographics, symptoms and severity of specific conditions and the attitudes and beliefs of the individual.

Demographic Predictors

The most prominent demographic predictors include gender, age, ethnicity, education and income. Having a higher education seems to be the most common demographic predictor found for CAM use (Astin, 1998; Callahan, et al., 2009; Fouladbakhsh & Stommel, 2007; Hunt, et al., 2010; Hyland, Lewith, & Westoby, 2003; Kim & Chan, 2004; Lökk & Nilsson, 2010; Marrie, et al., 2003; Rao & Mihaliak, 1999; Saquib, 2010; Shumay, et al., 2002; Xue, Zhang, Lin, Da Costa, & Story, 2007). This may be due to the fact that higher educated individuals are more likely to investigate their options for health care and are also less likely to take a passive role in their health (Astin, 1998). Similarly, having a higher income was a predictor of CAM use (Fouladbakhsh & Stommel, 2007; Marrie, et al., 2003; Rossi, et al., 2005; Xue, et al., 2007), which often has a positive relationship with a higher education, and may be due to the fact that individuals with higher incomes are able to utilize more resources, as increased costs of CAM use may be less of a barrier. Being female (Callahan, et al., 2009; Chandola, et al., 1999; Fouladbakhsh & Stommel, 2007; Freeman, et al.,

2010; Hunt, et al., 2010; Klingberg, et al., 2009; Lökk & Nilsson, 2010; Shumay, et al., 2002; Xue, et al., 2007), of a younger age (Kim & Chan, 2004; Klingberg, et al., 2009; Marrie, et al., 2003; Saquib, 2010; Xue, et al., 2007) and white (Fouladbakhsh & Stommel, 2007; Nahin, Barnes, & Bloom, 2009; Shumay, et al., 2002; Xue, et al., 2007) were also strong predictors of who is more likely to use CAM.

Predictors of Specific Populations Living with Specific Conditions

When it came to specific populations, such as individuals living with cancer or multiple sclerosis, individuals attending a migraine clinic and individuals visiting a rheumatological clinic, three common predictors became apparent. The site or type of condition was a strong predictor for CAM use. For example, in people living with cancer, individuals with breast cancer were more likely to seek CAM treatments (Saquib, 2010; Shumay, et al., 2002). This may be due to majority of breast cancer individuals being female; however, there is no way of knowing this. Other examples of this are individuals with transformation migraines who were attending a migraine clinic in Italy (Rossi, et al., 2005) and individuals living with osteoarthritis who were more likely to use CAM than other individuals at the same clinic (Rao & Mihaliak, 1999). Severity of the disease and its associated symptoms, such as nausea, vomiting and pain were also used to predict the use of CAM, as were co-morbidities (Fouladbakhsh & Stommel, 2007; Hunt, et al., 2010; Hyland, et al., 2003; Klingberg, et al., 2009; Lökk & Nilsson, 2010; Rao & Mihaliak, 1999; Rossi, et al., 2005; Shumay, et al., 2002). As these conditions all decrease quality of life, it is understandable that individuals experiencing these diseases would seek alternative means for relief.

Personal Attitudes and Beliefs

Personal attitudes and beliefs were found to be predictor when they were perceived to be compatible with the common philosophies of CAM (Astin, 1998; Kim & Chan, 2004). Both Astin (1998) and Kim and Chan (2004) discuss philosophical congruence with regards

to CAM and explain it as the appeal of alternative therapies to individuals with like-minded “values, worldviews, spiritual/religious philosophy, or beliefs regarding the nature and meaning of health and illness” (Astin 1998, p 1548). This may be due to CAM therapies having a holistic view point on health. Kim and Chan (2004) also discussed individuals who felt orthodox medicine was not as effective as CAM or has not worked for them, and how this view point influenced their choice of CAM as treatment.

The idea of philosophical congruence is further supported by the study of Strutt, Shaw and Leach (2008) that qualitatively looked at individuals’ perception and satisfaction with treatment in a UK osteopathic training clinic. From the answered questionnaire the core theme of “underlying personal values” emerged. This theme related to the way in which the surveyed individuals managed their quest for health (Strutt, Shaw, & Leach, 2008). However, because this study was not specifically designed to look into these personal values, the topic was not discussed in great depth and little insight into the related personal values can be gained from the study. This research does however support the necessity of looking into these personal values, which may possibly be the strongest predictors of CAM use.

Also of relevance is the study conducted by Sirois (2008) who looked at motivators for CAM use in 1997-1998 and then compared the same individuals in 2005 as to whether their motivations had changed. What was found was that a shift from a negative focus on conventional medicine changed to a more positive focus on health. For example the one of the top motivators found in 1997-1998 was conventional medicine was ineffective for their health problems (41.8%), to 2005 where one of the top motivators being CAM provides a treatment for the whole person (78.3%). With this in mind it is important to reassess these beliefs and motivators as over time with more information, individuals views on CAM can change.

Prediction Studies of CAM Use and Children

Many studies throughout different populations in the world have shown that around one fifth of children receive some form of CAM treatment per year (Hughes & Wingard, 2006; Lim, Cranswick, Skull, & South, 2005; Sawni, Ragothaman, Thomas, & Mahajan, 2007; Smith & Eckert, 2006) and anywhere from 17.9% - 58% of children have received CAM treatment at least once in their lives (Araz & Bulbul, 2011; Armishaw & Grant, 1999; Ozturk & Karayagiz, 2008; Simpson & Roman, 2001; Zuzak, Zuzak-Siegrist, Simões-Wüst, Rist, & Staubli, 2009). A study by Hughes and Wingard (2006), on CAM use amongst 0-18 year olds within the San Diego area, found that 23% of children used CAM in the previous year. This was not only for sick children, but also for routine check-ups. The specific CAM wasn't recorded, however they were only counted if a practitioner had been consulted (therefore excluding over the counter supplements and vitamins). This study found that children with white parents had increased odds (amount not given) of CAM use compared to Hispanic parents. A study using data from the 2007 National Health Interview Survey in America also found children with white parents (43.1%) were more likely to use CAM compared to children with Asian (39.9%) or black (28.8%) parents (Nahin, et al., 2009). Several studies found that children whose parents were college graduates had an increased likelihood of seeing a CAM provider than those of parents with only a high school education (Birdee, Phillips, Davis, & Gardiner, 2010; Cincotta et al., 2006; Erez, Reuveni, Freud, & Peleg, 2009; Gottschling et al., 2011; Ozturk & Karayagiz, 2008; Zuzak, et al., 2009). Other factors found to influence the use of CAM modalities include parents having used the particular CAM themselves (Birdee, et al., 2010; Cincotta, et al., 2006; Erez, et al., 2009; Huillet, Erdie-Lalena, Norvell, & Davis, 2011; Kemper, Vohra, & Walls, 2008; Nahin, et al., 2009; Ozturk & Karayagiz, 2008); parents being concerned with of adverse effects of conventional medicine (Erez, et al., 2009); children who were insured were more likely to use CAM than uninsured children (Hughes & Wingard, 2006); and children with chronic conditions were likely to receive CAM therapy (Huillet, et al., 2011). These studies may show possible associations between the predictors of children

seeing a CAM provider and those of adults who seek CAM therapies discussed above, therefore socio-economic status may also be a predictor in use of CAM amongst children.

When it comes to common symptoms relating to CAM therapy, little was found relating to prediction studies. There was however one study that collected demographic data of paediatric individuals (15 years and under) presenting to a chiropractic teaching clinic over four years (Miller, 2010). Just over 20% (20.5%) of all individuals presenting to this clinic were classed as paediatric individuals, with the most common complaints being musculoskeletal in nature (35%). Infants under the age of twelve weeks were the most prevalent age group (62.3%), with 30% of this group complaining of excessive crying. A whopping 83% of this age group had been referred for chiropractic care by other medical professionals. Although this was not a prediction study, it may help gain some insight in to who is seeking manual therapeutic care for their children.

Part II

Internet Use for Access to Health Information

As the internet becomes more accessible to the world population, with over 2.1 billion estimated users (a 480.4% increase between 2000 and 2011) (Miniwatts Marketing Group, 2011), it makes sense that people are using this easily accessible source to facilitate communication. New Zealand alone is estimated to have 83.9% of the population as Internet users, 44.0% of them having Facebook accounts. With the use of Web sites and Web-based communities, social networking sites and email, information and communication options have never been so readily available. It is therefore no surprise that more researchers are using the internet as a research tool.

Accessing Health Information

With the convenience of access to information for Internet users, people are now using the Internet as a portal for health information, with research showing the Internet has changed how we access information (Koo & Skinner, 2005; McAnulty, 2009). According to a study conducted by Fox (2006), where a sample of 2,928 American adults were surveyed; it was found that 80% of Internet users go online for health related information and around 8 million American adults look online for health information on a typical day. This relates well with a New Zealand survey, in which members of the Southern Cross Society, a private health insurer, were questioned (Bourke, 2009). This survey showed that 80% of Southern Cross Society members use the Internet to find information on medical matters, a 7% increase from the previous survey two years prior (Bourke, 2009).

Credibility and Interpretation of Internet-based Health Information

Potentially of concern is the credibility of health information collected from the Internet. Due to a lack of regulation, any person can publish their understanding of illness, despite their lack of expertise or relevant qualification. Three quarters of Internet users participating in an American survey accessing health information online did not consistently check the source and date of health information they found online (Fox, 2006). Basing decisions on unreliable and invalid information may lead to user's not seeking medical advice when needed, potentially posing a threat to their health (Bourke, 2009). Unlike the previous study, Bourke (2009) found only one in four New Zealand Southern Cross Society members would trust the Web as a reputable source for health information. This finding may, however, be associated with a biased sample. This being that the participants all had medical insurance which has a strong relationship with a higher income (Bernard, Banthin, & Encinosa, 2009). Higher incomes have a well-established relationship with a higher education status (Alstadsæter, 2009; Baum & Ma, 2007). The subsequent association of higher education and increased critical thinking (Deal & Pittman, 2009) may lead to the participants of this survey being less trusting to information gathered on the internet, than those with a lower education level.

However, it is not difficult to obtain health information from reputable sources when one has access to the internet. With websites like that of the New Zealand Ministry of Health (Ministry of Health, 2011), one is able to easily access their A-Z of health topics, providing information not only for consumers but also for practitioners. This enables credible health-related information to be readily available when the consumer needs it, and in the context of this study, those consumers are the parents of children aged up to two years old.

Empowerment using Internet-based Health Information

Used in a cautious manner, information obtained from the Internet can be a valuable tool for consumers of healthcare. If the research accessed online is used to better prepare the

individual with questions for the health practitioner, the individual is then able to take a more active role in their healthcare (Bourke, 2009). This was expressed in the Southern Cross Society survey, with 37% claiming they would challenge a medical professional's advice based on their own internet-based research.

Online Communities

Also worth noting is the level of participation in online communities. Internet users are able to sign up to bulletin boards, electronic mailing lists, personal home pages, and chat rooms, in order to seek information, find support and establish a connection with others in similar situations (Mendelson, 2007). These online communities are not unique to health related topics, however they may be an integral part of their member's health journeys. Mendelson (2007) describes how members of online communities meet their needs by relating to other peoples stories, being part of a community and having access to the expertise that they need.

Internet as a Research Tool

Online Recruitment and Data Collection

The advantages to recruiting and collecting data online include the possibility of reaching a wider population, instant recruitment and data collection, reducing costs associated with data collection, and the opportunity for greater anonymity for both the researcher and the participant. With such positives it is no wonder more and more researchers are turning to the Internet as a research tool.

Online screening allows researchers to reach a greater population and filter eligible participants quicker than traditional methods. Researchers may also be able to recruit participants on the spot, saving time and maintaining participants motivation (McAnulty,

2009). The decrease in the time between the potential participant being informed about the study and deciding to be a participant, and also between that stage and actually participating in the study is beneficial when comparing to traditional methods of recruitment. Usually with traditional methods, there is an increased amount of time between each stage of recruitment and participations where by the participant may lose motivation or have other things come up causing them to drop out of the project. Along with the possibility of instant recruitment, online recruitment is also being found to be a more cost effective method. Researchers are able to target certain audiences via specified marketing and accessing special interest sites, as well as being able to track more accurately where money is being spent with the most success (McAnulty, 2009). However, some ethical issues do arise when accessing online communities for recruitment, such as special interest sites, where recruiting from these groups may be seen as an intrusion into an otherwise safe/supportive environment (Im & Chee, 2004; Mendelson, 2007). Also worth noting is the possibility of selection bias. When targeting special interest sites, the researcher runs the risk of reducing their generalizability by only accessing those who use these online forums (Wright, 2005).

One of the greatest advantages of online data collection is real-time gathering of data in an electronic format. This in turn reduces the time-consuming task of data entry and also decreases the cost of resources such as paper and printing. However, possibly the greatest advantage to collecting data online is that of anonymity for the participant. When a person is able to participate in research in a secure environment via an impersonal means (i.e. an online survey), this enables the participant to be their 'true self', potentially leading to participants being more truthful in answers, or feel more comfortable to participate in research of more sensitive nature (McAnulty, 2009; Mendelson, 2007). Unfortunately, with this great source of anonymity there is also the issue of authenticity, with the ability of any internet user to make up a fictional persona and possibly participating in research from which they would normally be excluded (Koo & Skinner, 2005; Mendelson, 2007). On the

other hand this issue is probably not only limited to online research, as people can be deceptive in any format.

Conclusion

This review of literature has covered two important aspects of this study. Firstly the literature relating to infant health and CAM use; and secondly literature concerning the Internet as not only a tool for obtaining health related information, but also a tool used for recruiting participants and for online data collection.

Within health-related research there is scant data about the prevalence of different health complaints within the first two years of life. Of the few studies that do look at this topic, respiratory complaints appear to be the most prevalent health concern in infants. It was also found that parents deal with majority of health concerns for infants on their own, possibly explaining the lack of research in this field.

As CAM therapies are usually a private healthcare option and are therefore not government subsidised, only those who have the means to fund this more expensive option for health care can use it. These higher costs may in turn deter some parents from using CAM therapies for their child. With these high costs it is no surprise that a higher income has been found to be a predictor of CAM use in adults. Other factors found to predict CAM use in adults include a higher education, being female, of a younger age, White ethnicity, site and/or severity of a certain disease, as well as a strong philosophical congruence with CAM modalities.

Research has shown around one fifth of children receive some form of CAM each year. Fewer studies have looked at predictors of CAM use amongst children, however, it is possible that similar factors relating to adult use, such as parental ethnicity, education level and openness to CAM modalities, also can be used to predict CAM use in children.

Regarding this study, it was of interest to the author to determine whether the same or similar predictors of CAM use amongst adults influenced parents in choosing osteopathy

treatment for their infants. As there were no studies known to the author involving predictors of osteopathy use amongst infants, one could not theorize whether the same factors would be strong predictors in this case.

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Section 2: Manuscript

Note: This manuscript has been prepared in accordance with the instructions for authors for the *International Journal of Osteopathic Medicine* [see Appendix F].

Predictors of parents seeking osteopathic care for their infant

Predictors of parents seeking osteopathic care for their infant

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ABSTRACT

Objective

To determine the predictors of parents seeking osteopathic care for their infant and then to compare these with the predictors of Complementary and Alternative Medicine (CAM) use amongst adults.

Method

One hundred and eighty two parents of children under the age of two years old were recruited via www.GetParticipants.com (an internet based research recruitment site), Facebook advertising and posters within osteopathic clinics. Eligible participants completed an online-based three-part survey, gathering information related to parental demographics, attitudes and beliefs towards CAM, and information about pregnancy, birth, and their child's health. From these variables, those found to have associations with osteopathic use ($P < 0.1$) were then entered into a logistic regression to identify predictors.

Results

One hundred and sixty seven participants were eligible and completed all relevant sections. Ten variables were entered into a backwards stepwise logistic regression. Six of these variables remained in the final model. These variables included the age of the parent, openness to CAM, ethnicity, means of referral, length of pregnancy and length of labour. Together these variables accounted for 47% of the variance in the probability of a parent taking their infant to an osteopath ($P < 0.001$).

Conclusion

This study found that an increase in age, reaching full term in the pregnancy, a low score in the Holistic and Complementary and Alternative Medicine Questionnaire (HCAMQ), or a short labour length caused an increase in odds of seeking osteopathic care. Whereas being of

Maori ethnicity or being referred by a midwife or Royal New Zealand Plunket nurse decreased the odds of a parent using osteopathy for their child. A low score in the HCAMQ and ethnicity were the only two variables that were found to also be predictors of CAM use in adults. In order to gain more insight into this subject, more research is needed into each of the predictors in order to assess why they predict osteopathic intervention.

Keywords: Infant, osteopathy, predictors, CAM, child,

INTRODUCTION

During the first two years of life infants can experience an array of health complaints ranging from something mild, such as irritability, feeding difficulties, and to what is often referred to as 'colic' to the less common but more serious conditions such as infections and chronic illnesses. Any of these conditions can put a great deal of strain on the parents. As many of the complaints parents report are seen from a medical perspective as normal infancy problems and are non life-threatening (including but not limited to sleeping difficulties, mood changes and reflux), parents are often left only with the information that their child will grow out of these complaints. Waiting for an infant to grow out of these complaints can be distressing for parents, who may then seek alternative care for what they perceive as their unhappy child.

There are two avenues through which healthcare is available to children within New Zealand (NZ): public and private healthcare. Public healthcare is funded by the government, available to all NZ residents and includes free services such as access to public hospital specialists via referral; some prescription medication; immunization; 'Well Child' check-up's, the main objective of which includes maximising child development and health from birth to the age of five¹; and most laboratory tests. Most general practitioners will see children under the age of six years for free or for minimal charge². On the other hand private healthcare is funded by the individual or another private organization (e.g. insurance company) and includes private medical care, along with Complementary and Alternative Medicine (CAM) therapies. Although some CAM therapies offer reduced rates for children, they can still be quite expensive, limiting their availability to lower socio-economic populations.

Many studies have looked into the predictors of CAM use. The most common relate to demographics, symptoms and severity of specific conditions and the attitudes and beliefs of

the individual. The most prominent demographic predictors of CAM use for adults include gender, age, ethnicity, education and income. Having a higher education appears to be the most common demographic predictor found for CAM use³⁻¹⁴. Similarly, having a higher income was a predictor of CAM use^{8, 10, 14, 15}, which often has a positive relationship with a higher education. Being female^{4-6, 8, 12, 14, 16-18}, of a younger age^{3, 9, 10, 14, 18} and white^{8, 12, 19} were also reported as predictors of who is more likely to use CAM, however, of the statistics available, only a trivial to small effect is detected²⁰. Within specific populations the site or type of condition were also reported as strong predictor for CAM use^{3, 11, 12, 15}. Severity of the disease and its associated symptoms, such as nausea, vomiting and pain were also used to predict the use of CAM, as were co-morbidities^{4, 5, 8, 11-13, 15, 18}. Lastly, personal attitudes and beliefs were reported as predictors when they were perceived to be compatible with the common philosophies of CAM therapies^{7, 9, 21}, however, this predictor only had a small effect of increased odds of using CAM (OR=1.4)²⁰. Both Astin⁷ and Kim and Chan⁹ discuss philosophical congruence with regards to CAM and explain it as the appeal of alternative therapies to individuals with like-minded “values, worldviews, spiritual/religious philosophy, or beliefs regarding the nature and meaning of health and illness” (Astin 1998, p 1548)⁷. The idea of philosophical congruence is further supported by the study of Strutt, Shaw and Leach²² that looked at individuals’ perception and satisfaction with treatment in a UK osteopathic clinic. From the answered questionnaire the core theme of “underlying personal values” emerged. Kim and Chan⁹ also discussed individuals who felt orthodox medicine was not as effective as CAM or has not worked for them, and how this view point influenced their choice of CAM as treatment.

Many studies have shown that around one fifth of children receive some form of CAM treatment per year²³⁻²⁶ and up to 58% of children have received CAM treatment at least once in their lives²⁷⁻³¹. Hughes and Wingard²³, who looked at CAM use amongst 0-18 year olds within the San Diego area, found that 23% of children received CAM in the previous year. From this study, it was found that children with White parents had a small increase in odds of

seeking CAM use compared to Hispanics (OR=1.9). Likewise Nahin, et al¹⁹ found children with white parents more likely to use CAM compared to children with Asian or black parents. Children whose parents were college graduates had an increased likelihood of seeing a CAM provider than those of parents with only a high school education^{23, 32}. A higher level of education was found to be a predictor of CAM use in multiple other studies exploring the use of CAM for children^{29-31, 33-35}. Other factors found to influence CAM use for children include parents who use CAM themselves^{29, 33, 34, 36, 37}, parents being concerned with adverse effects³³, children with chronic conditions³⁶ and children who were insured were more likely to use CAM than uninsured children²³. These studies may show that the predictors of children seeing a CAM provider potentially relate to those of adults who seek CAM therapies discussed above, therefore socio-economic status may also be a predictor for CAM use amongst children.

The purpose of this study was to identify parental and child-related variables that predict the use of osteopathy by parents for their infant. It was also of interest to the author to compare whether these variables were similar to predictors found for CAM use in adults and children.

METHODS

Recruitment and Participants

Ethical approval to conduct this cross-sectional survey was obtained from the Unitec Research Ethics Committee. Participants were recruited using posters displayed in five consenting osteopathic clinics located in Tauranga and the Auckland region; via the website www.GetParticipants.com, a site dedicated to research study recruitment; and through advertising on the social media website Facebook. People who were the parent or legal guardian of a child under the age of two years old at time of survey completion and had access to the Internet were eligible to take part.

Prospective participants were directed firstly to a host page on www.GetParticipants.com where they could access information about the study. If they agreed to participate they were directed to the online survey website, Survey Monkey, where they answered eligibility screening questions and then completed the questionnaire. Because incentives have been shown to increase survey response rate^{38, 39}, study advertisements stated that participants would enter a draw to win one of five \$50 Pumpkin Patch vouchers on completion of the questionnaire.

Survey

The survey tool consisted of three parts. Part A assessed parental/guardian demographics and was largely based on the New Zealand Census of Population and Dwellings (2006), with relevant questions sourced directly from the survey. Part B covered parental/guardian attitudes and beliefs toward CAM therapies. Attitudes and beliefs were assessed using the Holistic Complementary and Alternative Medicine Questionnaire

(HCAMQ), which is an 11-item six point Likert scale designed as a single tool to assess where on a scale of two belief-orientations CAM users might be placed¹³. In the validation of this instrument, the authors derived two orientations from two parent questionnaires (Attitudes to Alternative Medicine Scale and an earlier pilot questionnaire) primarily based on content. The first orientation is characterised by beliefs about effective treatment, namely whether CAM is or is not an effective treatment compared to conventional medicine. The second orientation emphasises the degree of openness to holistic models of health¹³. Hyland, Lewith and Westoby¹³, who developed the questionnaire, reported high test re-test reliability of $r=0.86$ and internal consistency of $\alpha=0.8$. Part C comprised two sections: the first, regarding child demographics and presenting complaint was completed by all participants, and the second, regarding birth-related factors was only completed by participants who were biological parents. Part C questions were based on osteopathic case history forms obtained from local practices and typical history screening questions recommended for use in osteopathic treatment of infants, medical and midwifery practice⁴⁰⁻⁴³.

Data Analyses

Data were analysed using SPSS version 18 (IBM Corporation, Somers, NY). Statistical comparisons were made between groups of participants of variables collected from this survey using appropriate parametric and non-parametric statistics. A logistic regression model was employed to identify predictors of the outcome measure of osteopathic use. Because of the exploratory nature of this study, a backwards stepwise method was used as recommended by Field⁴⁴. Hosmer and Lemeshow's R^2 was calculated to assess fit of the model. Change in odds were interpreted from Exp(B) statistic⁴⁴. On the basis that there is a great deal of contention surrounding the interpretation of statistical significance and the magnitude of P values²⁰ it was arbitrarily decided to assign $P < 0.05$, P s 0.05 to 0.10, and $P > 0.10$ as probable, possible, and unlikely associations respectively.

RESULTS

Participants

One hundred and eighty two participants were recruited. Two participants were ineligible for the study (neither had a child under two years) and a further 13 participants withdrew before completing the survey. Therefore, 167 participants answered all relevant sections of the survey. All but one respondent was a biological parent of their child and 161 (96.7%) were female. Of the 167 who completed the survey, 44 did not report any concerns about their child's health. Due to a design flaw in Survey Monkey, it was not possible to ask these participants whether they had consulted any other practitioners despite having no health concerns for their child. Because these 44 participants could not report the practitioners seen for their child, their data was excluded from the planned analyses. However, in order to ensure generalizability, the parents who reported concerns (Concern Group; n=123) were compared to those who did not (No Concern Group; n=44) (Tables 1 and 2). Only four variables were found

Table 1: Characteristics of respondents with and without concern for the health of their child.

Variable	Participants with health concerns for their infant (n=123)	Participants with no health concerns for their infant (n=44)	P
Age of parent (years)	32.3 ± 5.9	31.1 ± 7.3	0.3
Total children	2 (1 - 2)	2 (1 - 3)	0.2
Median household income (\$k)	65 (45 - 95)	65 (45 - 95)	0.8
HH score (out of 30)	10.3 ± 2.9	10.3 ± 2.7	1.0
CAM score (out of 36)	20.2 ± 4.8	20.5 ± 4.7	0.7
Age of child (months)	12.3 (7.0 - 19.5)	8.5 (3.2 - 14.2)	.004
No. persons in household	3.8 ± 1.0	4.2 ± 1.2	0.02

Data show medians and interquartile ranges for nonparametric data (total children, household income and age of child) and means ± SD for all other data

P values are from Mann-Whitney U tests for nonparametric data and independent T-tests for parametric data

Holistic Health (HH) and Complementary Alternative Medicine (CAM) scores are from the Holistic Complementary and Alternative Medicine Questionnaire¹³

to have notable differences between the two groups: median age of child and median total number of people in the household (Table 1); and prior diagnosis and birth weight of the infant (Table 2). More participants had a complaint than expected, when their child had a previous diagnosis ($P=0.06$) or an average birth weight ($P=0.01$) whereas less participants than expected reported a concern when their child's birth weight was above average ($P=0.01$) than those who had no concern for their infant.

Table 2: Percentages of categorical variables, grouped into parental and child related variables.

Variable group	Variable	Participants with concern (% of n=123)	Participants with no concern (% of n=44)	P
Parental	Birth country			0.7
	New Zealand/Australia/Pacific	86.2%	88.6%	
	Other	13.8%	11.4%	
	Ethnicity			0.9
	European	81.3%	84.1%	
	Maori and Pacific	13.8%	11.4%	
	Other	4.9%	4.5%	
	Religion			0.4
	No religion	61.0%	59.5%	
	Christian	35.0%	40.5%	
	Other	3.3%	0.0%	
	Relationship status			0.2
	Never married	4.9%	11.4%	
	Married	67.5%	61.4%	
	De facto relationship	22.8%	27.3%	
	Separated	4.9%	0.0%	
	Education			0.3
	No secondary school qualification	6.6%	6.8%	
	5th form	7.4%	9.1%	
	6th form	5.0%	15.9%	
7th form	3.3%	6.8%		
Tertiary certificate	18.2%	22.7%		
Diploma	13.2%	4.5%		
Bachelor	34.7%	27.3%		
Masters	9.1%	4.5%		
Doctorate	2.5%	2.3%		

Child related variables	Gender of child			0.2
	Female	52.0%	40.9%	
	Male	48.0%	59.1%	
	Prior Diagnosis			0.06
	No	84.6%	95.5%	
	Yes	15.4%	4.5%	
	Illness or hospitalisation			0.7
	No	82.1%	79.1%	
	Yes	17.9%	20.9%	
	Full term			0.3
	No	16.3%	9.3%	
	Yes	83.7%	90.7%	
	Labour induced			0.6
	No	74.0%	69.8%	
	Yes	26.0%	30.2%	
	Waters break spontaneously			0.5
	No	49.6%	55.8%	
	Yes	50.4%	44.2%	
	Pain relief			0.4
	None	26.0%	27.9%	
	Non-invasive	5.7%	4.7%	
	Invasive	58.5%	48.8%	
	Both	9.8%	18.6%	
	Length of labour			1.0
	Less than 6 hours	57.7%	58.1%	
	Between 6 and 14 hours	25.2%	23.3%	
	More than 14 hours	17.1%	18.6%	
	Intervention			1.0
	None	68.3%	69.8%	
	Partial	8.9%	9.3%	
	Full (Caesarean section)	22.8%	20.9%	
	Birth Weight			0.01
	Less than 2500g	8.9%	9.3%	
	2500g - 4000g	78.0%	58.1%	
	Above 4000g	13.0%	32.6%	
	Special Care			0.7
	No	83.7%	81.4%	
	Yes	16.3%	18.6%	
	Breastfed			0.8
	No	12.2%	14.0%	
	Yes	87.8%	86.0%	
	Vaccinations			0.6
	No	6.5%	7.0%	
	Yes	93.5%	93.0%	

Data shows percentages within each group.
P values were calculated using Chi-square models.

Osteopathic Associations

Univariate analyses of the relationships between variables and the outcome measure of osteopathic use were completed using T-tests for continuous variables and Chi-squared for categorical variables. Along with the individual complaints (n=20), data were manipulated to produce seven categories of complaints that were also tested against osteopathy use. These categories were based on logically grouping the complaints in order to be consistent with previous research^{23, 45, 46}.

CAM score was lower in those who had visited an osteopath compared to those who had not visited an osteopath (18.4 ± 3.9 and 21.0 ± 5.0 respectively; $P=0.05$). In addition, a number of other parental, child related and complaint-related variables were independently associated with whether or not someone had visited an osteopath for their child (Table 3). Specifically, less than expected Maori/Pacific Island participants sought the advice of an osteopath compared to other ethnicities ($P=0.047$). Similarly, referral type was associated with osteopathy use ($P=0.01$). Some individuals cited multiple referral sources and there were 11 separate

Table 3 Variables found to be possibly associated with osteopathic use.

Variable Group	Variables tested	P Value
Parental	Ethnicity	0.047
	Referral type	0.01
Child related	Full Term	0.003
	Pain relief	0.07
	Length of labour	0.095
	Vaccinated	0.05
Complaint	Unsettled	0.000
	Colic	0.000
	Asthma	0.08
	Regurgitation	0.001
	Diarrhoea	0.06
	Foot	0.02
	Behaviour/ Development	0.01
	Musculoskeletal	0.04

P values are based on Pearson Chi-Square values.

combinations of these but no individual referral type displayed a systematic pattern of deviation between observed and expected frequencies. When a participant's pregnancy did not reach full term ($P=0.003$) more participants chose an osteopath than expected. More participants than expected sought the services of an osteopath if: they chose non-invasive pain relief measures in labour ($P=0.07$); they reported a short or long labour as opposed to a regular length labour ($P=0.095$); or their child's vaccinations were not up to date ($P=0.05$). Parents complaining of an unsettled child ($P< 0.001$), colic/excessive crying ($P<0.001$), regurgitation/vomiting ($P=0.001$), a foot complaint ($P=0.02$), a behavioural/developmental complaint ($P=0.01$), or a musculoskeletal complaint ($P=0.04$) showed an increased use of an osteopath than estimated. Conversely, when parents complained of child asthma or diarrhoea, less sought osteopathic care than expected ($P =0.08$; $P =0.06$ respectively). All other variables were deemed unlikely to be associated with osteopathy use ($P>0.1$).

Variables found to have associations ($P< 0.1$) with osteopathic use were subsequently tested against each other using Chi-squares for categorical variables and T-tests for continual variables. No probable associations were found between variables ($P>0.1$).

Logistic Regression

Variables related to the age, income and education of the parent were chosen to enter the logistic regression as they have been previously shown to be predictors of CAM use within adults^{7-12, 15}. CAM score (from the HCAMQ), ethnicity of the parent, referral means, whether the pregnancy reached full term and length of labour were also entered based on the potential univariate associations found with osteopathic use ($P<0.1$). Of the reported complaints showing associations with osteopathy use, the grouped complaints (behavioural/developmental and musculoskeletal) were chosen over the individual complaints in order to provide consistency with previous research in similar fields.

As a consequence of these findings, ten variables were entered into a logistic regression model: age of parent; total household income; education level; CAM score; ethnicity; means of referral; behavioural/developmental complaint; musculoskeletal complaint; whether the pregnancy reached full term; and the length of labour. After the regression was run, six variables were retained in the model. An increase in age of parent and reaching full term had a positive relationship with osteopathic use, whereas CAM score, ethnicity, means of referral and length of labour had a negative relationship. Together these six variables account for 43% of the variance in the probability of a parent taking their infant to an osteopath ($P < 0.001$). Interpretation of Exp(B) statistic for each variable showed that the odds of parents who reached full term in their pregnancy visiting an osteopath for their child were six times higher than those who did not reach full term (OR=6.3; $P=0.03$). With each yearly increase in parental age there is an increase in odds of the parent seeking osteopathic care for their child (OR=1.1; $P=0.06$) and with every ten year increase in parental age, the odds are 11 times higher for visiting an osteopath. With an increase in CAM score the odds of seeking osteopathic care were 0.8, indicating with an increase in CAM score there is a decrease in odds of visiting an osteopath (OR=0.8; $P=0.01$). Similarly an increase in labour length saw a decrease in odds of the parent visiting an osteopath, with the change in odds being 0.3 with an increase of labour length ($P=0.006$). Parents who based their decision on previous knowledge and own research as to which practitioner to visit had decreased odds of taking their child to an osteopath (OR=0.07; $P=0.007$) as do those who were referred by a midwife or Plunket nurse (OR=0.03; $P=0.01$), compared to those referred by alternative means.

DISCUSSION

The aim of this study was to determine predictors of parents seeking osteopathic care for their infant and to compare them to predictors of Complementary and Alternative Medicine use amongst adults. Parental age, ethnicity, openness to CAM, means of referral, whether the pregnancy reached full term and the length of labour were all found to be predictors of parents seeking osteopathic care for their child under the age of two years old. Comparing these predictors to those of CAM use amongst general population adults, some similarities arose with age, ethnicity and openness to CAM being predictors, however the majority of predictors found in previous literature were not predictors in this study. Of the data collected the results worthy of discussion are explored below.

Concern Versus No-Concern Groups

Of the variables collected, only four had notable differences between participants who had a health concern for their infants (Concern group), compared to those who did not (No Concern group). The median age of the infant in the Concern group was higher than that of the No Concern group, however this possibly could be explained by the fact that the older the child is, the more time they have had to fall ill at some stage in their lives. It is no surprise that participants within the Concern group reported more prior diagnoses than those of the No Concern group, as it is highly probable that the parents would have had some health concerns for their infant for them to be diagnosed with an ailment. When it came to the total number of people living within the household, the total was smaller in the Concern group than the No Concern group. This goes against past literature, where over-crowding is a predictor of poor health⁴⁶. However, for this study this statistic could possibly be explained by the difference of a one-child family (Concern group), compared to that of a two or three-

child family (No Concern group), whereby the parents with only one child are potentially more cautious with their first child due to increased anxiety and unfamiliarity of common infancy ailments⁴⁷⁻⁵¹. More children than expected with an average birth weight and less with an above average birth weight had health concerns reported by parents (Concern group). Although the author sees no logical reasoning for this difference, it is possible that parents of an infant with an average birth weight may still have anxieties about their child's health compared to parents whose child had an above average birth weight, as a higher birth weight is often perceived as a healthy baby.

Predictors

Parental Factors

In this study parental age was found to be a predictor of osteopathic use for an infant, with an increase of odds seen with the increase in parental age. This finding is consistent with previous literature exploring factors which influence a parent choosing CAM for their child^{31, 36}. Conversely, when considering age as a predictor of CAM use for adults, many studies have found that with an increase in age there are decreased odds of using a CAM modality⁸⁻¹⁰. However, when comparing this predictor it is important to consider the participant population. All but one participant were biological parents, and 96.7% were female, therefore the vast majority of participants would need to be at a child rearing age, with an infant under the age of two. This age range therefore does not represent a normal range of age within an adult population.

Ethnicity was also found to be a predictor for osteopathic use. Maori were less likely to seek the services of an osteopath when compared to those of European ethnicity. Armishaw and Grant²⁸ conducted a study looking at the use of CAM by those hospitalised with acute illness within a paediatric hospital in Auckland, finding no probable difference

between ethnic groups. They did however note a difference in treatment used by some ethnic groups. Most frequently those of European ethnicity used homeopathy, naturopathy, chiropractic treatment and aromatherapy; those of Maori ethnicity used homeopathy, naturopathy and spiritual healing; and those of Pacific ethnicity used Pacific Island healers (massage with oils and herbal remedies). What this research shows is that although ethnicity may predict or be associated with specific modalities, it may not predict the overall use or openness to CAM treatment.

Means of referral has been found to be an indicator of who might use CAM^{27, 52}, with referral from a friend or family member having the most positive relationship with CAM use. Although type of referral was also found to be a predictor of osteopathic use amongst infants, this study has identified other possible relationships. When parents were referred by a midwife or Plunket nurse to see another practitioner, or when the parents were basing their decision on previous knowledge and own research, the odds of consulting an osteopath decreased. However this finding may be based on a flaw within Survey Monkey, which would not allow individual pathways of referral to be followed. Through-out the survey, the specific practitioner seen and referral means could not be tracked individually in a way that would have allowed more detail. For example a participant could report consulting a doctor, osteopath and a naturopath for their infant's health complaint, followed by a question addressing referral means and/or what influenced their decision to consult the practitioner(s) marked in the previous question. They could then go on to say they were referred by a Plunket nurse and a friend and/or family member. Because each pathway was not specifically followed (e.g. did the Plunket nurse influence the decision to consult the doctor, osteopath or naturopath etc.) it is difficult to conclude whether this variable is a true predictor in this case (see appendix E, Part C, questions 4 and 5).

Attitudes and Beliefs

When participants were more open to CAM modalities (a low CAM score from the HCAMQ), they had increased odds of seeking osteopathic care for their infant. As osteopathy is considered a CAM modality, it is not surprising that an increased openness would increase odds of visiting an osteopath. This is consistent with predictors found for adult use of CAM, with researchers describing philosophical congruence as being a major factor when choosing health care^{7, 9, 13, 37, 53}. With this in mind it also makes sense that previous researchers have found that when parents use CAM modalities themselves, they are more likely to use CAM for their children^{29, 31, 33, 36}. This can be explained by the theory that people turn to CAM modalities as they feel more attention is paid to themselves as a whole and they feel they play a mutual role in their healthcare, being able to express their autonomy within their own health care^{7, 9, 33}.

Child-related factors

Gestational length was found to predict the use of osteopathic treatment amongst infants when the pregnancy reached full term. As the length of gestation has a well-established inverse relationship with morbidity and mortality rates⁴⁰⁻⁴³ it is surprising that reaching full term was found to be a predictor with a positive relationship, of osteopathic care. This unexpected finding could be explained with further studies into why a parent chooses an osteopath, and to also look into parental patterns of utilising health care. Previous research has shown maternal health care utilisation can predict the use of health care for their children⁴⁹⁻⁵¹, therefore making it possible that when a mother takes a preventative stance on her own health, she may also employ the same thinking for her infant. As preventative care, including postnatal “check-ups” of infants, is an established aspect of osteopathic treatment, this predictor of full term gestation, usually associated with a potentially healthier infant, may in turn explain the positive relationship with osteopathic

care^{42, 54, 55}. However this is only a hypothesis and further investigation is needed to determine whether this is in fact the case.

In this study a longer than average labour resulted in lower odds of visiting an osteopath. Within osteopathy, a short or precipitous labour (< 3 hours)²⁴ is believed to have the potential to contribute to neonatal problems after birth due to the amount and speed of force exerted through the cranium and also an increase in shock to the infant as it has a shorter period of time adjusting to life outside the womb^{41, 42}. This may indicate why a short labour is a predictor for osteopathic use in infants. However, within the context of osteopathy, a long labour is considered just as much of a strain as a precipitous labour. During a long labour the infant is compressed from each contraction for an extended amount of time, and this is believed to also put strain through the infants skull and body resulting in the need for osteopathic treatment^{41, 42}. In hindsight, as the relationship between length of time and the normality of labour length is not linear, it is possible that classifying this variable as a continuous variable was inappropriate. Instead, defining this variable as categorical may have been more appropriate in order to get a better understanding of how labour length affects osteopathic use.

Non-Predictors

It was part of the aim of this study to compare the established predictors of CAM use amongst adults, to the predictors found in this study. Three well established predictors found in previous literature were shown to be non-predictors in this study. These include a higher education status⁷⁻¹³, an increased household income^{8, 10, 15} and being female^{8, 12, 16}.

It was of great surprise to the author that neither education status nor household income were found to be predictors in this study. Both have been found to predict not only CAM use in adults^{7-13, 15}, but also CAM use for children^{23, 29-31, 33, 35}. Although Simpson³⁰, who

looked at the extent and reasons for CAM use amongst children within the UK, also found a lack of association between parental income and CAM use. Regarding this study, these non-predictors may also be explained by a flaw in the study, whereby the data collected having too much of a range for the sample size⁴⁴. It may have been beneficial to re-group the data in order to give broader categories (e.g. high school graduate, undergraduate, postgraduate etc.; and low income, medium income, high income) rather than each individual qualification and income to the \$10,000 (see Appendix E, Part A, Questions 7 and 11).

Due to a lack of variance in participant gender (96.7% of participants were female), parental gender was not entered into the logistic regression. Had there been an equal distribution, the author is of the opinion that this variable still could not be used as a valid predictor, when considering osteopathic use for an infant. Primarily this opinion is based on the fact that the survey only collected data on who was filling out the questionnaire (i.e. the mother or the father), not the parental role of making health decisions for their infant, i.e. whether the decisions were made largely based on mothers, fathers or a joint opinion, as it was outside the scope of this study. This complex relationship of how parents go about deciding on healthcare would need to be further studied before including it as a predictor for osteopathic use for an infant. However in saying that, Gibbons³⁹ has shed some light on the process a mother goes through to make the decision to take her infant to an osteopath (as opposed to the dynamic between parents when making a healthcare decision). By integrating researched information with information gathered by listening to other mother's similar experiences, mothers were able to come to their own conclusion about osteopathy⁵⁶. Through this process, mothers were able to identify with others, alleviating a sense of isolation, and in doing so supporting their decision to visit an osteopath.

Infant's gender was not entered into the logistic regression as no associations were found with osteopathic use, and also because infants under the age of two years old do not make their own healthcare decision. Again it comes down to this complex relationship of

parents making a decision. Although no associations were found with osteopathy in this study, one cannot rule out infant gender as a predictor, as it is an established fact that male infants have higher rates of morbidity and referral rates⁴⁰⁻⁴², therefore creating a need for further research into this topic.

Limitations and Future Studies

Two major limitations came up within this study involving the design of the questionnaire, along with the generalizability of the data collected. Along with design flaws mentioned above, other potential flaws have been found. The first includes the lack of data collected from the No Concern group. It is quite possible that although these participants did not have any major concerns for their child's health, they may have still have sought treatment and/or "check-ups" from different practitioners, including osteopaths. Within the osteopathic profession, there is occasionally a notion that due to the higher cost of treatment and the often non-life-threatening conditions treated, osteopaths primarily treat the "worried well". The term "worried well" has been related to people who tend to be overly cautious about their health, high users of medical care and often request screening for illnesses which they have little to no risk of having, based on a disproportionate anxiety to ill-health^{57, 58}. It may also describe those who are of a higher socio-demographic whom have the means to fund non-essential treatment in order to increase quality of life, or those with a syndrome of unexplained symptoms of minor acute illnesses⁵⁸. It is therefore possible for parents with "worried well" tendencies to want to have their child screened despite no major concerns for their health. Had data regarding osteopathic use been collected from the group with no concerns, this idea may have been able to be explored in more depth and there is room for future qualitative study in this area. On a similar note a study which looked into how individuals use CAM therapies described how consumers use CAM therapies in four different ways: as a treat; as alternative treatment; as complementary treatment; or as

conventional treatment⁵⁹. As mentioned earlier, the parental view on healthcare can influence healthcare utilisation for infants, e.g. whether the parents prefer preventative medicine as opposed to curative medicine or whether they view CAM as a treat as opposed to essential medicine. With this in mind, parental, primarily maternal views of healthcare need to be explored more in order to gain more understanding into why a parent might choose osteopathy for their infant, giving room for further studies in this area.

Due to the exploratory nature of this study a large magnitude of variables were collected of multiple different factors potentially affecting the decision to consult an osteopath. This may have led to irrelevant data being collected. Now that key associations have been established, those variables found to have probable relationships with osteopathic care of infants, can be looked into in more depth and other variables may be able to be excluded in future studies.

As mentioned above, the generalizability of this study must also be discussed. As the participants were primarily recruited via the Internet, and data was collected online, this may have unintentionally excluded potential participants due to lack of access and/or familiarity to the Internet. Also of concern is the fact that the majority of participants were recruited from an Internet based recruitment site, in which members are actively interested in participating in research. These research 'enthusiast' may not represent the general population and further investigation is needed to assess the generalizability of this group.

Conclusion

In conclusion this study has found multiple variables that may predict the use of osteopathy for an infant, some of which are also found in predictors of CAM use in adults. In order to gain more insight into this subject, more research is needed into each of the predictors in order to assess why they predict osteopathy use. It is also hoped that this study

will fuel similar studies to be undertaken in New Zealand, as there is little known on the population who use Osteopathy. Follow on studies could include looking at different age groups, or perhaps researching the effectiveness of treatment of the most common complaints.

By being able to predict those who are more likely to consult an osteopath, marketing can be used to target this specific audience. On a similar note, it may be in the interests of the osteopath to inform the public of some of the less common conditions treated, increasing the public awareness of Osteopathy.

Most importantly it is hoped the information gathered from this study will contribute to better management of common infancy health complaints for mothers and other health professionals. These complaints are often deemed as trivial by the medical profession, and as these are often non-specific symptoms and/or non-life threatening, parents are often dismissed with the information that the complaint is a natural part of infancy. This can leave the parents feeling frustrated and helpless. It is therefore important for parents and other health professionals to know of an avenue which can help manage these complaints, increasing the wellbeing and quality of life of not only the child, but the entire family.

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Section 3: Appendices

Appendix A: Ethics approval

Nicola Gardyne
16 McBreen Ave
Northcote
Auckland 0627

27 October 2010

Dear Nicola

Your file number for this application: 2010-1114

Title: Demographic factors, attitudes and beliefs of parents/legal guardians, and birth related factors as predictors of who might take their infant to an osteopath

Your application for ethics approval has been reviewed by the Unitec Research Ethics Committee (UREC) and has been **approved** for the following period:

Start date: 20 October 2010
Finish date: 31 December 2011

Please note that:

1. the above dates must be referred to on the information AND consent forms given to all participants
2. you must inform UREC, in advance, of any ethically-relevant deviation in the project. This may require additional approval.

You may now commence your research according to the protocols approved by UREC. We wish you every success with your project.

Yours sincerely

Lyndon Walker
Deputy Chair, UREC

cc: Sue Gasquoine
Cynthia Almeida

Appendix B: Clinic Information Sheet and Consent Form



OSTEOPATHIC CLINIC INFORMATION SHEET

PREDICTORS OF WHO MIGHT TAKE THEIR INFANT TO AN OSTEOPATH

My name is Nicky Gardyne and I am currently enrolled in the Master of Osteopathy degree in the Department of Osteopathy, Faculty of Social and Health Sciences at Unitec Institute of Technology and am an OSNZ student member. I have contacted you to seek your help in meeting the requirements of research for my thesis.

The aim of my project is to determine the extent to which demographic factors, attitudes and beliefs of parents/caregivers, and birth related factors predict who might take their infant to an osteopath.

My study involves a three part questionnaire in which I would like to get parents/legal guardians to complete, when they bring their infant under the age of two years old to an osteopath. The survey collects demographics, attitudes and beliefs of the parents/legal guardians, along with presenting complaint, pregnancy and birth related factors for the infant. The information gathered has nothing to do with treatment of these presenting complaints, or the quality of services at the clinic, minimising any potential conflicts of interest. In order to recruit participants, I will need my questionnaires to be available in osteopathic clinics through-out New Zealand. This is why I am asking for your help.

What I would require from participating clinics is the ability to display a sign to draw clients' attention to the study and staff to be able to distribute the questionnaire to any willing participants and to return completed surveys to the researcher via post with prepaid, pre-addressed envelopes provided. Participants also have the option to take the questionnaire home with them to complete in their own time, either on a hard copy or via the internet programme Survey Monkey. I have included a copy of the questionnaire and information form that will be given to participants, for your own perusal.

If you choose to participate, please email me at nickygardyne@gmail.com , complete the consent form and return it to me with the prepaid, pre-addressed envelope provided. Once I have received your acceptance I will send out the appropriate material, and will also phone you to go over finer details.

If I have not heard anything from you after 10 days of sending you this information, I will phone to confirm your willingness to be involved.

I hope that you will agree to take part and that you will find your involvement interesting. If you have any queries about the research, you may contact my principal supervisor at Unitec New Zealand.

My supervisor is Sue Gasquoine, phone 815 4321 ext. 5104 or email sgasquoine@unitec.ac.nz

UREC REGISTRATION NUMBER: 2010-1114

This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.



PREDICTORS OF WHO MIGHT TAKE THEIR INFANT TO AN OSTEOPATH

I _____ of _____ (*name of clinic*) give consent for Nicky Gardyne to undertake research in this organization as discussed with the researcher.

The consent is subject to approval of research ethics application number 2010-1114 by the Unitec Research Ethics Committee and a copy of the approval letter being forwarded to the organization immediately it is available.

Signature:

Date:



Do you have a child under the age of two?



I would like to invite you to participate in my study which is looking at predictors of why a caregiver might take their infant to an osteopath.

To be eligible you need to:

- Be the parent or legal guardian of a child who is currently under the age of two years old. It does not matter whether you have used an osteopath or not.
- Have access to the internet

If you agree to participate in this study, I will ask you to complete a three part questionnaire (primarily multi-choice), relating to you and your child. The questionnaire can be completed online via the website below.

If you are interested please visit www.getparticipants.com/ios

If you choose to participate, as a token of my appreciation, you will be invited to enter a draw to win one of five Pumpkin Patch vouchers valued at \$50 each!

UREC REGISTRATION NUMBER: 2010-1114

This study has been approved by the UNITEC Research Ethics Committee from 30 October 2010 to 31 December 2011. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix D: Participant Information Sheet



PARTICIPANT INFORMATION FORM

INFANT OSTEOPATHY STUDY

My name is Nicola Gardyne. I am currently enrolled in the Master of Osteopathy degree in the Department of Osteopathy, Faculty of Social and Health Sciences at Unitec Institute of Technology and seek your help in meeting the requirements of research for a Thesis course which forms a substantial part of this degree.

The aim of my project to determine the extent to which demographic factors, attitudes and beliefs of parents/caregivers, and birth related factors predicts who might take their infant to an osteopath.

If you agree to participate in this study, I will ask you to fill in a three part questionnaire, relating to you and your child(ren). The questionnaire can either be completed at a participating osteopathic clinic, or via the internet survey programme, Survey Monkey. On completion of the questionnaire, as a token of my appreciation I also invite you to enter a draw to win one of five \$50 vouchers for Pumpkin Patch children's clothing store.

As the questionnaire will be completely anonymous, completion of it will be taken as consent to use the results in my research. Due to the anonymity of the questionnaires, once they are submitted there is no way of withdrawing the information.

Personal details obtained for entry into the draw will be kept completely confidential and stored separately from the questionnaires. There will be no identifiers that correlate between your questionnaire and your entry form, therefore preserving the anonymity of your questionnaire. All information collected will be stored either on a password protected file or in a locked filing cabinet in which only I and my supervisors will have access to.

I hope that if you agree to take part that you will find your involvement interesting. If you have any queries about the research, you may contact my principal supervisor at Unitec New Zealand.

My supervisor is Sue Gasquoine, phone 815 4321 ext. 5104 or email sgasquoine@unitec.ac.nz

UREC REGISTRATION NUMBER: 2010-1114

This study has been approved by the UNITEC Research Ethics Committee from 20 October 2010 to 31 December 2011. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix E: Participant Questionnaire

Only to be completed by the child's parents or legal guardians.

Inclusion questions

1. Do you have a child currently under the age of two years old?
 Yes
 No
2. Please enter the date of birth of your child who is under the age of two years old
_____ (dd/mm/yyyy)

Part A

1. What is your relation to the child presenting to the osteopath?
 Biological mother
 Adoptive mother
 Legal Guardian
 Biological father
 Adoptive father
2. Please mark the age range which you fit in to
 19 years and under
 30 – 39 years
 50 – 59 years
 Over 70 years
 20 – 29 years
 40 – 49 years
 60 – 69 years
3. Which country were you born in?
 New Zealand
 England
 Samoa
 Other (please state) _____
 Australia
 China
 Cook Islands
4. Which ethnic group do you belong to? *Mark as many spaces as apply to you*
 New Zealand European
 Samoan
 Tongan
 Chinese
 Other (please state) _____
 Maori
 Cook Island
 Niuean
 Indian
5. What religion are you?
 No religion
 Buddhist
 Muslim
 Other (please state) _____
 I do not wish to answer
 Christian
 Hindu
 Jewish
6. What is your current relationship status
 Married
 Widowed

Part B (HCAMQ)

Holistic Complementary and Alternative Health Questionnaire

Listed below are a number of statements concerning your health and complementary medicine. Please decide to what extent you agree or disagree with each statement. For each statement you should circle the number that corresponds most closely to your own view. There are no right or wrong answers. **Please do not leave out any statements.**

<i>Disagree</i>	<i>Strongly Agree</i>	<i>Agree</i>	<i>Mildly Strongly Agree</i>	<i>Mildly Disagree</i>	5	<i>Disagree</i>
1 Positive thinking can help you fight off a minor illness	1	2	3	4	5	6
2 Complementary medicine should be subject to more scientific testing before it can be accepted by conventional doctors	1	2	3	4	5	6
3 When people are stressed it is important that they are careful about other aspects of their lifestyle (e.g. healthy eating) as their body already has enough to cope with	1	2	3	4	5	6
4 Complementary medicine can be dangerous in that it may prevent people getting proper treatment	1	2	3	4	5	6
5 The symptoms of an illness can be made worse by depression	1	2	3	4	5	6
6 Complementary medicine should only be used as a last resort when conventional medicine has nothing to offer	1	2	3	4	5	6
7 If a person experiences a series of stressful life events they are likely to become ill	1	2	3	4	5	6
8 It is worthwhile trying complementary						

medicine before going to the doctor	1	2	3	4	5	6
9 Complementary medicine should only be used for minor ailments and not for the treatment of more serious illness	1	2	3	4	5	6
10 It is important to find a balance between work and relaxation in order to stay healthy	1	2	3	4	5	6
11 Complementary medicine builds up the body's own defences, so leading to a permanent cure	1	2	3	4	5	6

- Website or pamphlet
- Other (*please state*) _____

6. Was the child's consultation covered by any of the following?

- Insurance
- ACC
- Neither
- Not sure

7. Has the child been diagnosed by a recognised medical professional with any congenital or long term disorders?

- No
- Yes (*Please state the diagnosis*) _____

Section 2

The following questions are in regards to the pregnancy and birth of the child presenting to the osteopath. Please only complete the following questions if you are the child's biological parent; if not, please go to the last page and follow the instructions in red.

8. During this pregnancy did you experience any of the following? (Please mark as many as apply)

- Physical trauma
- Emotional trauma
- Serious illness or hospitalisation (*please give details*)

9. Did the pregnancy go to full term (40 weeks)?

- Yes
- No (*please state how many weeks the pregnancy went to*) _____

10. Was labour induced?

- No
- Yes → How? _____
- Why? _____

11. Did the waters break spontaneously?

- Yes
- No

12. Please mark the pain control used for this birth

- No pain relief was used
- Hydrotherapy
- Homeopathy
- Self-Hypnosis
- Transcutaneous Electrical Nerve Stimulation (TENS)
- Nitrous oxide (gas)
- Pethidine
- Epidural
- Other (*Please state*) _____

13. Please mark the range which the length of labour fits into

- Short (less than 6 hours)
- Average (between 6 and 14 hours)
- Long (greater than 14 hours)

14. Please mark any intervention used during the birth

- Caesarean section → Elective
- Emergency
- Forceps
- Vacuum extraction

- Other (*please state*) _____
15. Please mark the range which the child's birth weight fits into
- Below average (less than 2500g) Average (between 2500g and 4000g)
- Above average (greater than 4000g)
16. Was there any need for special care of the child after the birth?
- No
- Yes (*Please give details*) _____
- _____
17. Please mark most applicable with regards to breastfeeding
- This child is still regularly breastfed
- This child was regularly breastfed in the past
- This child has never been regularly breastfed
18. Is the child's vaccinations up to date?
- Yes they are all up to date
- No they are not up to date, however my child has had some
- No they are not up to date as I do not wish to vaccinate my child

Thank you for taking the time to complete this survey.

Appendix F: Author Guide for Submission to the International Journal of Osteopathic Medicine

International Journal of Osteopathic Medicine



Guide for Authors

An official journal of:

- General Osteopathic Council (UK)
- Australian Osteopathic Association
- Ontario Association of Osteopathic Manual Practitioners

Former title: Journal of Osteopathic Medicine

The journal Editors welcome contributions for publication from the following categories:

Letters to the Editor, Reviews and Original Articles, Commentaries and Clinical Practice case studies with educational value.

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The above represents a very brief outline of this form of submission. It can be advantageous to print this "Guide for Authors" section from the site for reference in the subsequent stages of article preparation.

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, without the written consent of the Publisher.

Types of contributions

Letters to the Editor as is common in biomedical journals the editorial board welcomes critical response to any aspect of the journal. In particular, letters that point out deficiencies and that add to, or further clarify points made in a recently published work, are welcomed. The Editorial Board reserves the right to offer authors of papers the right of rebuttal, which may be published alongside the letter.

Reviews and Original Articles These should be either i) reports of new findings related to osteopathic medicine that are supported by research evidence. These should be original,

previously unpublished works. The report will normally be divided into the following sections: abstract, introduction, materials and methods, results, discussion, conclusion, references. Or ii) critical or systematic review that seeks to summarise or draw conclusions from the established literature on a topic relevant to osteopathic medicine.

Short review The drawing together of present knowledge in a subject area, in order to provide a background for the reader not currently versed in the literature of a particular topic. Shorter in length than and not intended to be as comprehensive as that of the literature review paper. With more emphasis on outlining areas of deficit in the current literature that warrant further investigation.

Research Note Findings of interest arising from a larger study but not the primary aim of the research endeavour, for example short experiments aimed at establishing the reliability of new equipment used in the primary experiment or other incidental findings of interest, arising from, but not the topic of the primary research. Including further clarification of an experimental protocol after addition of further controls, or statistical reassessment of raw data.

Preliminary Findings Presentation of results from pilot studies which may establish a solid basis for further investigations. Format similar to original research report but with more emphasis in discussion of future studies and hypotheses arising from pilot study.

Commentaries Include articles that do not fit into the above criteria as original research. Includes commentary and essays especially in regards to history, philosophy, professional, educational, clinical, ethical, political and legal aspects of osteopathic medicine.

Clinical Practice Authors are encouraged to submit papers in one of the following formats: Case Report, Case Problem, and Evidence in Practice.

Case Reports usually document the management of one individual, with an emphasis on presentations that are unusual, rare or where there was an unexpected response to treatment eg. an unexpected side effect or adverse reaction. Authors may also wish to present a case series where multiple occurrences of a similar phenomenon are documented. Preference will be given to reports that are prospective in their planning and utilise Single System Designs, including objective measures.

The aim of the *Case Problem* is to provide a more thorough discussion of the differential diagnosis of a clinical problem. The emphasis is on the clinical reasoning and logic employed in the diagnostic process.

The purpose of the *Evidence in Practice* report is to provide an account of the application of the recognised Evidence Based Medicine process to a real clinical problem. The paper should be written with reference to each of the following five steps: 1. Developing an answerable clinical question. 2. The processes employed in searching the literature for evidence. 3. The appraisal of evidence for usefulness and applicability. 4. Integrating the critical appraisal with existing clinical expertise and with the individual's unique biology, values, and circumstances. 5. Reflect on the process (steps 1-4), evaluating effectiveness, and identifying deficiencies.

Presentation of Typescripts

Your article should be typed on A4 paper, double-spaced with margins of at least 3cm. Number all pages consecutively beginning with the title page.

To facilitate anonymity, the author's names and any reference to their addresses should only appear on the title page. Please check your typescript carefully before you send it off, both for

correct content and typographic errors. It is not possible to change the content of accepted typescripts during production.

Papers should be set out as follows, with each section beginning on a separate page:

Title page

To facilitate the peer-review process, two title pages are required. The first should carry just the title of the paper and no information that might identify the author or institution. The second should contain the following information: title of paper; full name(s) and address(es) of author(s) clearly indicating who is the corresponding author; you should give a maximum of four degrees/qualifications for each author and the current relevant appointment only; institutional affiliation; name, address, telephone, fax and e-mail of the corresponding author; source(s) of support in the form of funding and/or equipment.

Keywords

Include three to ten keywords. These should be indexing terms that may be published with the abstract with the aim of increasing the likely accessibility of your paper to potential readers searching the literature. Therefore, ensure keywords are descriptive of the study. Refer to <http://www.nlm.nih.gov/mesh/meshhome.html> for the MeSH thesaurus.

Abstract

Both qualitative and quantitative research approaches should be accompanied by a structured abstract. Commentaries and Essays may continue to use text based abstracts of no more than 150 words. All original articles should include the following headings in the abstract as appropriate: *Background, Objective, Design, Setting, Methods, Subjects, Results, and Conclusions*. As an absolute minimum: *Objectives, Methods, Results, and Conclusions* must be provided for all original articles. Abstracts for reviews of the literature (in particular systematic reviews and

meta-analysis) should include the following headings as appropriate: *Objectives, Data Sources, Study Selection, Data Extraction, Data Synthesis, Conclusions*. Abstracts for Case Studies should include the following headings as appropriate: *Background, Objectives, Clinical Features, Intervention and Outcomes, Conclusions*.

Text

The text of observational and experimental articles is usually, but not necessarily, divided into sections with the headings; introduction, methods, results, results and discussion. In longer articles, headings should be used only to enhance the readability. Three categories of headings should be used:

- major ones should be typed in capital letter in the centre of the page and underlined
- secondary ones should be typed in lower case (with an initial capital letter) in the left hand margin and underlined
- minor ones typed in lower case and italicised

Do not use 'he', 'his' etc. here the sex of the person is unknown; say 'the individual' etc. Avoid inelegant alternatives such as 'he/she'. Avoid sexist language.

Statement of Competing Interests

When submitting a Research report you will need to consider if you, or any of your co-authors, are an Editor or Editorial Board member of the International Journal of Osteopathic Medicine. If this is the case you will need to include a section, at the end of your manuscript immediately before the reference section, called "Statement of Competing Interests". Example statement, which may require editing, is as follows: {Name of author} is an Editor of the Int J Osteopath Med; {Name of author} is a member of the Editorial Board of the Int J Osteopath Med but was

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References

Responsibility for the accuracy of bibliographic citations lies entirely with the Authors.

Citations in the text: Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Avoid using references in the abstract. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either "Unpublished results" or "Personal communication" Citation of a reference as "in press" implies that the item has been accepted for publication.

Text: Indicate references by superscript numbers in the text. The actual Authors can be referred to, but the reference number(s) must always be given.

List: Number the references in the list in the order in which they appear in the text.

Examples:

Reference to a journal publication:

1. Van der Geer J, Hanraads JA, Lupton RA. The art of writing a scientific article. *J Sci Commun* 2000;**163**:51-9.

Reference to a book:

2. Strunk Jr W, White EB. *The elements of style*. 3rd ed. New York: Macmillan; 1979.

Reference to a chapter in an edited book:

3. Mettam GR, Adams LB. How to prepare an electronic version of your article. In: Jones BS, Smith RZ, editors. *Introduction to the electronic age*. New York: E-Publishing Inc; 1999, p. 281-304

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Describe your selection of observational or experimental subjects (including controls). Identify the methods, apparatus (manufacturer's name and address in parenthesis) and procedures in

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Indicate whether procedures followed were in accordance with the ethical standards of the institution or regional committee responsible for ethical standards. Do not use patient names or initials. Take care to mask the identity of any subjects in illustrative material.

Results

Present results in logical sequence in the text, tables and illustrations. Do not repeat in the text all the data in the tables or illustrations. Emphasise or summarise only important observations.

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Emphasise the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the introduction or the results section. Include implications of the findings and their limitations, include implications for future research. Relate the observations to other relevant studies. Link the conclusion with the goals of the study, but avoid unqualified statements and conclusions not completely supported by your data. State new hypothesis when warranted, but clearly label them as such. Recommendations, when appropriate, may be included.

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The manuscript should contain a statement that has been approved by the appropriate ethical committees related to the institution(s) in which it was performed and that subjects gave informed consent to the work. Studies involving experiments with animals must state that their care was in accordance with institution guidelines. Patients' and volunteers' names, initials, and hospital numbers should not be used. In a case report, the subject's written consent should be provided. It is the author's responsibility to ensure all appropriate consents have been obtained.

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