

Perceived Effectiveness of Complementary Medicine by Mothers of Infants with Colic in Gauteng

Natalie Christina Di Gaspero

University of Johannesburg, Faculty of Health Science

ABSTRACT

Infantile colic is a self-limiting condition that is characterised by spasmodic, excessive and inconsolable crying without apparent cause. Infantile colic is one of the most common reasons parents take their infants to paediatric healthcare practitioners despite there being no widely accepted conventional treatment for colic. Due to the recent growth of the complementary medicine market in South Africa and numerous complementary medicines being available over-the-counter, parents may turn to complementary medical treatments for their infants' colic. There is currently no gold standard treatment for colic and there is limited research available on the use, safety and effectiveness of complementary medicine in infantile colic.

The aim of this study was to determine the perceived effectiveness of complementary medicine by mothers of infants with colic in Gauteng, by means of an Infantile Colic Questionnaire. A quantitative-descriptive design was used whereby data was collected through a randomised cross-sectional survey to determine the perceived effectiveness of complementary medicine. The research sample consisted of 152 mothers (participants), aged between 18-45 years with a child/children who suffer/suffered from symptoms of infantile colic and use complementary medicine as a form of treatment. Results from this study, conducted on the perceived effectiveness of complementary medicine by mothers of infants with colic in Gauteng, indicated that participants perceived complementary medicine as an effective form of treatment for infantile colic; however, there is uncertainty whether it works well in conjunction with conventional medicine. Further education is also needed on complementary medicine due to the misunderstanding of terms, complementary medicine and conventional medicine.

KEYWORDS

Infantile colic; complementary medicine; homeopathy

1. INTRODUCTION

Infantile colic is defined as a behavioural disorder that is characterised by spasmodic, excessive and inconsolable crying without apparent cause in an otherwise healthy infant. Infantile colic is a common but poorly understood condition that affects many infants between the ages of 2-16 weeks and is prevalent in both males and females. It is defined according to Wessel's criteria as crying in a seemingly healthy infant that lasts for more than three hours each day, on more than three days a week, for a period of more than three weeks (Savino, Tarasco, Sorrenti, Lingua, Moja, Gordon *et al.*, 2014b). Infantile colic occurs in 10-30% of infants making it one of the most common reasons parents take their infants to paediatric healthcare practitioners. Infantile colic is not only distressing to the infant but on the family too; and since there is no widely accepted conventional treatment for colic, parents may turn to complementary medical treatments (Savino & Tarasco, 2010). The recent growth of the complementary medicine market in South Africa has resulted in complementary medicines being available in numerous retail outlets where they are obtainable without a prior medical consultation (Gqaleni, Moodley, Kruger, Ntuli & McLeod, 2016). Despite this, there is currently no gold standard treatment for colic and there is limited research available on the use, safety and effectiveness of complementary medicine in infantile colic (Perry, Hunt & Ernst, 2011).

There is a growing necessity and demand for complementary medicine in South Africa, despite conventional medicine being the main source of healthcare (Snyman, 2014). South Africa has made substantial progress with integrating complementary medicine into the legal framework, mainly due to the need and increase in demand for medical care (Gqaleni *et al.*, 2016). With limited research available on the use, safety and effectiveness of complementary medicine in infantile colic, it is important to establish the use and perceived efficacy of these products (Perry, Hunt & Ernst, 2011). Not only is it important to establish which complementary medicines are popular and effective for infantile colic, but also to identify the perceived effective products allowing for further clinical, investigatory and safety research to be conducted on them.

Infantile colic is a common but poorly understood condition (Savino & Tarasco, 2010). The survey may also provide some additional information on the signs and symptoms of colic, the prevalence and the assumed causes. This allows for further research to be conducted in this field.

The aim of this study was to determine the perceived effectiveness of complementary medicine by mothers of infants with colic in Gauteng, by means of an Infantile Colic Questionnaire.

The objectives for this study were:

- To provide insight into the use and perceived effectiveness of complementary medicines in order to develop an approach for the treatment of infantile colic.
- To provide valuable information regarding the understanding and use of complementary medicine in Gauteng.
- To provide a better understanding of infantile colic due to limited research being available on the aetiology and development of infantile colic. This may open up the field for additional research.

2. MATERIALS AND METHODS

2.1 Research Sample

The research sample consisted of 150 participants (Wilson Van Voorhis & Morgan, 2007). The sample consisted of mothers aged between 18-45 years who have/had a child/children with infantile colic and used complementary medicine as a form of treatment. A search engine was used to randomly select various places from different regions in Gauteng. Weleda Pharmacies and Wellness Warehouse were selected as both are popular complementary medicine retailers meeting inclusion criteria. Schools and baby clinics were also chosen due to its great accessibility to the required sample group, mothers aged between 18-45 years who have/had child/children with infantile colic. Various businesses were selected at random to allow for unsystematic selection outside of the aforementioned sources. Recruitment of participants occurred through word-of-mouth and advertising flyers.

2.1.1 Inclusion criteria

Prospective participants needed to meet the following criteria in order to participate in the research study. Mothers were included who:

- Were aged between 18-45 years;
- Have/had one or more children who suffer/suffered from symptoms of infantile colic;
and
- Are using/have used complementary medicine as a form of treatment for infantile colic.

2.2 Research Procedure and design

A quantitative-descriptive design was used whereby data was collected through a randomised cross-sectional survey. A total of 152 participants were recruited and interested participants were given an Information Leaflet that explained the purpose and procedure of the study. All interested prospective participants were given a Consent Form to complete and once consent had been given, participants then completed the Infantile Colic Questionnaire. Participants were required to answer the questionnaire by crossing the appropriate response box or by a short written response. This allowed for ease of answering the questions and limited the time it took to complete the survey, which encouraged greater participation in the study. Participants were provided with a private area to complete the survey in. The survey took approximately 8-10 minutes to complete.

2.3 Reliability and validity measures

The Infantile Colic Questionnaire is used as a reliable tool in research related to infantile colic and reflux (Murphy, 2015). Research studies on colic in new-borns have utilised the questionnaire (Hodge & Murphy, 2014). Development of a valid and reliable questionnaire is important as it reduces measurement errors by utilising several steps to test the questionnaires used for data collection (Radhakrishna, 2007). Prior to the commencement of the study, five mothers who met the study criteria were asked to participate in a pilot study, pre-testing the questionnaire. Findings were analysed and changes were made accordingly, with expert supervisory input from the statistician (Kuhudzai, 2016a). The results recorded were not utilised during analysis of the study.

2.4 Data collection and analysis

Statistical analysis was prepared with the assistance of Statkon using SPSS Statistics (Statistical Package for Social Sciences) (version 23). The following tests were utilised:

- Frequencies and custom tables
- Multiple response analysis for questions where more than one answer can be selected.
- Open ended responses (Kuhudzai, 2016b).

Data presented as frequencies and custom tables provided information on infantile colic and the usage of complementary medicine for infantile colic by mothers in Gauteng (Kuhudzai, 2016b).

2.5 Ethics

This study aimed to uphold and protect the well-being of all participants. It was explained to all participants that they have the right to anonymity, privacy and confidentiality. The participants were informed about the requirements, duration and purpose of the study. Each participant was given an Information Leaflet as well as a Consent Form, which was signed before the study commenced. The researcher was honest and transparent and was available to the participants if they had any other questions and concerns about the study. No identifying information was requested from the participant ensuring anonymity throughout the study. The completed surveys were placed in a sealable envelope and stored in a lockable box which only the researcher, supervisor and statistician had access to, ensuring confidentiality. Completion of the survey took place in a private area, thus ensuring privacy and confidentiality. The research did not infringe on any human rights, or deceive on any findings. There were no anticipated risks by participating in this study. It was stressed that this study was voluntary and that participants had the right to withdraw from the study at any time, up until the questionnaire had been submitted, for whatever reason and without consequence. Feedback of the results of the study was provided to the participants who requested it.

Ethical clearance was obtained from the University of Johannesburg Faculty of Health Sciences, Research Ethics Committee (REC-01-126-2016) and Higher Degrees Committee (HDC-01-46-2016) prior to the conduction of the research.

3. THEORY

3.1 Introduction to infantile colic

Infantile colic is defined according to Wessel's criteria as crying in a seemingly healthy infant that lasts for more than three hours each day, on more than three days a week, for a period of more than three weeks (Savino & Tarasco, 2010; Savino *et al.*, 2014b) Around the age of 6 weeks, the occurrence of crying intensifies, especially in the late afternoon and evening. Colic tends to naturally ease around the age of 16 weeks, the definitive reason for this is unknown (Savino, Ceratto, De Marco & di Montezemolo, 2014a).

Infantile colic is a prevalent condition that occurs in 10-30% of infants. There is no genetic link for this condition and it affects infants of all socio-economic groups. It is thought to be

equally prevalent in both genders and there have been no reported differences in incidence between breast-fed and formula-fed infants (Savino, 2007).

Infantile colic is not only distressing to the infant, but on the family too; and since there is no widely accepted conventional treatment for colic, parents may turn to complementary medical treatments (Savino & Tarasco, 2010).

3.1.1 Aetiology of infantile colic

The aetiology of infantile colic is not fully understood despite its frequent occurrence. Research suggests that there may be numerous independent causes of this disorder (Savino *et al.*, 2014b). As a result of this, many interventions for infantile colic have been investigated. Many theories exist as to what could cause infantile colic. One possibility stems off the notion of the gut hypothesis, with hypertonicity and increased formation of intraluminal gas (Marek, 2011). Allergic theories suggest that food allergies may result in infantile colic. This may occur due to lactose intolerance, hypermotility, gastro-oesophageal reflux, gut hormones, gut microflora, and food hypersensitivity (Savino & Tarasco, 2010).

3.1.2 Diagnosis

The diagnosis of infantile colic is made through an extensive medical history of the patient as well as performing the relevant physical examinations based on the presenting symptoms and case history. It is important to rule out any other underlying conditions as well as excluding any feeding disorders. The history taking should include the association between the behaviour of the infant and the duration and timing of the crying. Evaluation to see if the infant is being fed correctly, is gaining weight, has a fever or has abnormal stools is important. Common conditions such as cow's milk protein allergy and gastro-oesophageal reflux need to be ruled out as well as other uncommon conditions such as bowel intussusception and infections (Savino *et al.*, 2014a).

3.2 Treatment approaches

The treatment of infantile colic is aimed at reducing the intensity of crying or eliminating factors that appear to exacerbate the crying. There is no gold standard treatment for colic and as a result many treatment options are utilised (Bailey, D'Auria & Haushalter, 2013).

3.2.1 Conventional medicine

Conventional medicine is defined as a health care system comprising of medical doctors and other healthcare professionals that treat symptoms and diseases with drugs, radiation or surgery. Commonly it is also referred to as allopathic medicine, mainstream medicine, orthodox medicine and Western medicine. Conventional medicine makes use of a broad spectrum of medications including both over-the-counter and prescription medications. Numerous conventional treatments are available for infantile colic (National Cancer Institute, 2016). In a systematic review of treatments for infantile colic, it was found that there was little evidence to support many conventional medicines and that many of them are prohibited due to the reported side effects. It was found that an integrative approach, combining both conventional and complementary medicines, to be the most effective (Rosen, 2007).

Some of the following products available for infantile colic include:

- Adcock Ingram Muthi Wenyoni

Muthi Wenyoni is an antacid consisting of calcium carbonate and magnesium carbonate, which helps to relieve dyspepsia by neutralising stomach acid (Resmed, 2016). The side effects that could result from the calcium carbonate are constipation, vomiting and loss of appetite. The magnesium carbonate could cause side effects such as nausea, diarrhoea and abdominal discomfort (Bland, Rollins, Broeck & Coovadia, 2014).

- Buscopan®

Hyosine butylbromide is an antispasmodic used in infants over one month of age. Buscopan® relieves pain by exerting a spasmolytic action on the smooth muscle of the gastrointestinal, biliary and genitourinary tracts. It is indicated in conditions with gastrointestinal spasms, colic being one of them (Whittaker, 2010). The side effects that could result from hyosine butylbromide are urticaria, xerostomia, tachycardia, dyshidrosis, and urinary retention (Boehringer Ingelheim, 2013).

- Telament Paediatric Colic Drops®

Telament Paediatric Colic Drops® contains simethicone that is indicated for symptoms associated with excessive gas accumulation in the gastrointestinal tract such as colic, flatulence and dyspepsia (Adcock Ingram, 2004a). Simethicone works by dispersing and preventing gas bubble formation in the intestinal tract. The use of simethicone is a widely accepted over-the-counter medication for infantile colic however studies indicated that there

is no benefit on colic symptoms. If there is any calming effect, it is suspected to be due to the sweet taste (Halpern & Coelho, 2016). The side effects that could result from Telament Paediatric Colic Drops® are abdominal distension, diarrhoea, constipation, flatulence and gastro-oesophageal reflux (Adcock Ingram, 2004a).

3.2.2 General complementary medicine for infantile colic

Complementary medicine (CM) is defined by the World Health Organisation (WHO) as “a broad set of health care practices that are neither part of that country’s own tradition, nor integrated into the dominant health care system”. In some countries, the term is often used interchangeably with traditional and complementary medicine (T&CM), a term that is used globally to describe traditional products, practitioners and practices (WHO, 2016). However, in South Africa, traditional medicine and complementary medicine are seen as two different modalities. According to the Medicines Control Council (MCC) of South Africa, complementary medicine means any substance or mixture that originates from plants, minerals or animal that is intended to be used to alleviate or prevent illness. To guarantee the safety and efficacy of medicines, the MCC controls the manufacturing, distribution and sale (MCC, 2016).

3.2.3 Individualised homeopathic remedies

Homeopathy is a holistic, natural, health care system that has been around for more than 200 years. Homeopathy makes use of plant, animal or mineral based remedies aimed at treating each patient individually in order to stimulate the body’s own healing ability (WHO, 2016). In homeopathy, the minimum dose is prescribed to overcome the disease and this is achieved in a gentle and permanent manner. Homeopathy is favoured in the treatment of infantile colic due to it being considered safe in infants and it does not have the adverse effects of conventional medicine. There are numerous homeopathic remedies that can be prescribed to treat colic based on the infant’s individualised symptoms (Loo, 2008).

3.2.4 Over-the-counter complementary medicine for infantile colic

Complementary medicine is often promoted in the treatment of infantile colic however, there has been no synthesis of information to provide practitioners about their uses and benefits (Perry *et al.*, 2011).

The recent growth in the South African complementary medicine market has resulted in complementary medicines being available for purchase in numerous health shops, pharmacies and some large supermarket chains. The majority of the medicines are currently unscheduled, allowing for them to be purchased over-the-counter without a practitioner prescription (Gqaleni *et al.*, 2016).

Some of the following complementary products are available over-the-counter for infantile colic in South Africa includes:

- Colic Calm

Colic Calm is a homeopathic preparation that relieves abdominal discomfort, flatulence and gastroesophageal reflux found in colic. There are no reported side effects; however, due to the activated charcoal (*Carbo vegetabilis*) the stool may become darker in colour, although this is not harmful to the infant (Colic Calm, 2013).

- Telament Paediatric Gripe Water®

The Gripe Water contains sodium bicarbonate (50mg per 5ml) and *Anethum graveolens oil* (2.15mg per 5ml) that is an antispasmodic and antifatulent. There are no known adverse reactions however, hypersensitivity to the ingredients due to allergies have been reported in rare cases (Adcock Ingram, 2014b).

- Woodward's Gripe Water®

The Gripe Water contains *Anethum graveolens oil* (2.3mg per 5ml) and sodium hydrogen carbonate (52.5mg per 5ml) that relieves abdominal pain and is an antacid and antifatulent. There are no reported side effects however, infants who are allergic to the ingredients may experience hypersensitivity reactions (Woodwards, 2017).

- Probiotics

Various probiotics are available over-the-counter and they are frequently used to reduce colic by promoting bowel mobility and intestinal health. It is believed that the possible mechanism of action of the probiotics is that it improves bowel motility and function thus reducing possible visceral pain. The use of the probiotic, *Lactobacillus reuteri*, has shown to be more effective in the treatment of colic than simethicone or placebo (Savino *et al.*, 2014a). A randomised study consisted on ninety breastfed colic infants who were randomly assigned to receive either the *Lactobacillus reuteri* ATCC 55730 or simethicone for 28 days. Results

showed that 95% of participants receiving *L. reuteri* had a significant decrease in the crying time compared to the 7% of participants in the simethicone group. *L. reuteri* improved the colic behaviour within seven days of treatment (Savino & Tarasco, 2010).

4. RESULTS AND DISCUSSION

4.1 Introduction

A total of 157 questionnaires were completed with only 152 questionnaires being utilised for data collection as they were completed correctly and with no omitted responses. The data was analysed through frequencies, custom tables, multiple response analysis and open ended responses. The results identified the following areas of statistical significance.

4.2 General information

The typical occurrence of infantile colic was determined by demographical and basic information provided by participants. Data obtained referenced both the mother of the infant and the colic infant. The results indicated that majority of mothers were aged between 30-39 years (44.1%) and had either one (40.8%) or two (39.5%) children. Results indicated a fairly even spread with regards to the gender of the child however, majority of the infants were female (55%). Most participants did not self-diagnose their child as having colic (56.6%), with most infants diagnosed as having colic by a medical health practitioner (76.3%). The results showed that the prevalent age for colic to start was between 4-8 weeks of age (88.8%). Most colic started at 5-6 weeks of age (28.3%), with the number of reported cases sharply decreasing after 8 weeks of age. The results indicated that the first born child was more likely to have suffered from colic (68.4%) and that only one child in the family experienced colic (82%). Results showed that most participants attended an antenatal class (53%) and that they were sufficiently taught about how to take care of their new-borns in the postnatal stage (67.9%).

4.3 Crying

Participants were asked about the infant's colic episodes and their crying patterns. The majority of participants reported that their infant experienced colic twice a day (32.2%) with a combined total of bouts occurring three days a week or more (63.1%). These bouts lasted 11-20 minutes at a time (31.6%). Participants stated they had difficulty soothing their infant

twice a day (25.7%), which is in line with the frequency of colic episodes per day (twice per day). Participants reported that their infants cried excessively for 1-10 minutes at a time (38.8%).

Wessel's criteria defines colic as crying in a seemingly healthy infant that lasts for more than three hours each day, on more than three days a week, for a period of more than three weeks (Savino *et al.*, 2014b). With regards to the duration criteria (hours per day), this was found not to be true in this study as majority of infants experienced a bout of colic for 11-20 minutes at a time, with this occurring twice a day resulting in a total colic time of 22-40 minutes a day. However a few participants reported that they weren't able to soothe their child countless times or they weren't able to soothe their child at all. In this study it was reported that 36.9% of infants experienced colic one to two days a week however, 63.1% of participants experienced colic three or more times a week. The results from this study therefore, correlate to the Wessel's criteria of three times a week.

In this study, the most common reasons stated for excessive crying in the infant were: pain or discomfort (83.6%); being tired (73%); and a dirty nappy (62.5%); while the least reported reasons were: the mothers' tension (24.3%); the infant being fussy (20.4%); and the infant being nervous (9.2%).

4.4 Timing of colic symptoms

Participants were asked when most of the colic symptoms occurred as well as the time of the day that they occurred. The majority of participants noted colic symptoms occurred straight after feeding (63.8%) and that colic most often occurred in the evening (40.1%).

4.5 Reasons for discomfort

Participants were asked what they believed was making their infant uncomfortable. The most common reasons were: build-up of wind (75%); difficulty bringing up wind (59.2%); and discomfort (57.2%); while the least common reasons were: food from the mother's diet (12.5%); either food allergy or growth spurt (9.9%); and the environment (9.2%).

4.6 Vomiting

Participants were asked if their infant vomited and if they felt this was a normal thing for their baby to do. It was reported that 71.1% of participants noted that their baby did vomit after being fed and that this was not a normal thing for their baby to do (67.1%).

4.7 Sleeping

Participants were asked what resulted in their infants sleeping. Majority of participants (55.9%) stated that it was difficult to determine the factor that induced sleep and they weren't sure if it was due to the infant being comfortable and tired, or exhausted from crying.

4.8 Feeding and burping

Participants were asked about their feeding methods; if they changed their infants feeding method; if they fed their infant on demand from birth; and if they increased their feeding in the evening. Participants were also asked if they consciously burped their babies. Most participants used a combination of breastfeeding and bottle feeding (44.7%) and the feeding method was changed by 65.4% of participants in order to try and ease the colic symptoms. In this study it was reported that 71.1% of participants fed their infant on demand from birth and they increased feeding hours in the evening between 5:00pm-12:00am (54.6%). Majority of participants (78.3%) consciously burped their infant.

4.9 Methods to soothe

Participants were asked if their infants used a dummy (pacifier) and/or their thumb to self soothe as well as what methods were effective in soothing their baby. The majority of participants reported that their baby used a dummy and/or their thumb (71.1%) to self soothe. The most effective methods of soothing reported by participants were: bouncing or jiggling (59.2%); pacing (51.3%); and baby massage (44.7%), with the least effective being: drinking warm water (19.1%); white noise (9.2%); and drinking sugar water (9.2%).

4.10 Treatments

The use of both complementary medicine and conventional medicine was seen in 73% of participants, while complementary medicine alone was only used by 27% of participants to treat their infant's colic.

4.11 Consultation with a complementary medicine practitioner

It is observed that the majority of participants (68.4%) had consulted with a complementary medicine practitioner. This could be directly related to the fact that three complementary/natural pharmacies were utilised for data collection compared to the one conventional/main-stream pharmacy. This resulted in a high probability of the participants having been referred to a natural pharmacy by a complementary medicine practitioner.

Of the 152 participants, 31.6% of participants had not consulted with a complementary medicine practitioner. This could be due to participants being unfamiliar with the term complementary medicine practitioner and therefore not fully understanding which health practitioners are classified as complementary medicine practitioners. The recent influx of complementary medicines into the South African market has allowed the medicines to be purchased in numerous shops. The majority of the medicines are currently unscheduled, allowing for them to be purchased over-the-counter without a practitioner prescription resulting in an increase in self-medication (Gqaleni *et al.*, 2016).

4.12 Sources of complementary information

Participants gained their information regarding complementary medicine for colic mainly from complementary practitioners (61.8%), friends and family (53.9%), general practitioner (50%) and the internet (49.3%). The reason numerous participants received information from a complementary practitioner and a general practitioner could be correlated to the fact that 68.4% of participants had consulted with a complementary medicine practitioner for their infant's colic and that 73% of participants had used both conventional and complementary medicine for the colic. Furthermore, one of the most common reasons for parents taking their infants to a paediatric healthcare practitioner is due to infantile colic (Rosen, 2007).

4.13 Complementary medicine

Participants were asked to state which complementary products they had used for their infants colic. The following products were utilised by majority of participants: individualised homeopathic remedies (58.6%); probiotics (46.7%); either Colic Calm or herbal medicines (44.1%); and gripe water (41.4%). The high use of individualised homeopathic remedies could correlate to the fact that 68.4% of participants had consulted with a complementary medicine practitioner.

In this study participants were also asked to provide reasons why they chose to treat their infant's colic with complementary medicine. Most participants stated that it was recommended to them by a health care practitioner; friends or family; that it has no side effects; and is perceived as safer and less harmful for their child.

4.14 Conventional medicine

The most commonly used conventional medicines reported were: Buscopan® (50%); Telament Paediatric Colic Drops® (32.9%) and Muthi Wenyoni (25.7%).

4.15 Statements regarding complementary medicine

Participants were asked their opinions on statements regarding complementary medicine. More than half the participants (66.4%) agreed that complementary medicine is an effective form of treatment for infantile colic; this opinion is supported by Rosen, Bukutu, Le, Shamseer and Vohra (2007) whereby complementary therapies have shown to be beneficial in infantile colic. Participants stated that they were uncertain if complementary medicine works well in conjunction with conventional medicine for infantile colic (55.9%), this opinion is supported by Ben-Arye *et al.*, (2010) as more clinical studies are needed on the integration of complementary and conventional medicine. Most participants (47.4%) agreed with the statement that complementary medicine had no side effects however; 44.7% of participants were uncertain about the statement. The opinion that most participants felt that complementary medicine had no side effects is supported by Gqaleni *et al.*, (2016) as the increase in the use of complementary medicine can be associated with its low frequency of adverse effects.

5. CONCLUSIONS AND RECOMMENDATIONS

Infantile colic is a common concern for parents whose children suffer from the condition, resulting in many parents consulting a health care practitioner. This study found colic to be the most prevalent around 5-6 weeks of age and that it tends to ease between 8-13 weeks of age. Infants experienced prolonged and continual bouts of crying and discomfort however, most infants did not satisfy Wessel's criteria, "the rule of three".

Analysis of the results indicated that most participants made use of both complementary medicine and conventional medicine for their infant's colic. However it was evident that most

participants aren't familiar with the term "complementary medicine" and were therefore confused as to which products are classified as complementary medicine. For some products the distinction is vague as the products contain both complementary and conventional medicine, which further contributed to the misunderstanding of the terms. This appears to be a common trend amongst other studies on complementary medicine, indicating a need for further education and research conduction (Wieland *et al.*, 2011).

The most commonly used complementary products for infantile colic were individualised homeopathic remedies, probiotics and over-the-counter herbal medicines. These results are consistent with other studies conducted on integrative treatment approaches for infantile colic (Rosen, 2007). The use of these complementary products correlates to the result that most participants had consulted with a complementary medicine practitioner. Results showed that complementary medicine practitioners, family and friends and general practitioners were the main sources of information for parents. Complementary medicine was chosen as a modality for treatment due to it being perceived as safe, less harmful and with fewer or no side effects. The most commonly used over-the-counter conventional medications were products containing: hyoscine butylbromide, lactase and simethicone. This finding is consistent with other studies on commonly recommended products by pharmacists for infants (Whittaker, 2010).

As a result of parents concern with infantile colic, the frequency of consultations with healthcare practitioners increased as well as the use of complementary medicine (Rosen, 2007). Results from the research conducted on the perceived effectiveness of complementary medicine by mothers of infants with colic in Gauteng, indicated that participants perceived complementary medicine as an effective form of treatment for infantile colic. However, there is uncertainty whether it works well in conjunction with conventional medicine.

The outcome of this research study indicated that further education is needed on complementary medicine due to the misunderstanding of terms, complementary medicine and conventional medicine. Complementary medicine is perceived to be an effective form of treatment for infantile colic; however, further research and larger scale studies should be conducted to validate this result.

5.1 Recommendations

This study or future studies, may offer potential improvement or refinement by incorporating the following recommendations:

- The number of participants in the study may be increased. A sample group larger than 152 participants should be utilised to allow for further validation of these results and to allow for a representation of a wider population.
- Conducting a similar study in other regions of the country will yield a more comprehensive perspective of the use of complementary medicine for colic in South Africa.
- Providing definitions, synonyms and examples of complementary medicine and conventional medicine on the questionnaire so that participants may have a better understanding of the terms. This will allow participants to feel more comfortable in answering the questions as they will have a better understanding of the terms and it will also not subject them to feeling uncomfortable for asking for an explanation of the term. This will also indirectly result in more of the population becoming educated on complementary medicine.
- The inclusion criteria for the study should only include participants who have only used complementary medicine as a singular form of treatment for colic. The outcome of the confusion between the terms, complementary medicine and conventional medicine, made isolating the effects of only the complementary medicine difficult.
- The inclusion criteria should be more in line with Wessel's criteria for colic, so that the timing, duration and frequency of the colic will be able to be fully determined. This will allow for a better understanding of the severity of the colic and if complementary medicine is effective in more severe colic cases.
- The data collection tool should take into consideration participants who have had more than one infant suffering from colic. Participants should be required to fill in a questionnaire pertaining to each colicky infant or the questionnaire should be designed in such a way that permits participants to answer the questions for multiple suffering

children. If not, the participant should be requested to answer the questionnaire based on the most recent suffering infant.

- A more intensive pilot study should be conducted to determine the reliability of the questionnaire as questions 16 and 27 in the Infantile Colic Questionnaire were very similar. Both questions enquired about the reasons for the baby feeling uncomfortable and the reasons for the baby crying so much. The question could either be combined or the repetition deleted.
- Include the demographical and socioeconomic information of the participants in the questionnaire in order to obtain further valuable information about the access to complementary medicine.

REFERENCES

Adcock Ingram (2004a). *Telament® Paediatric Colic Drops* (Leaflet). Johannesburg: Adcock Ingram Limited.

Adcock Ingram (2004b). *Telament® Paediatric Gripe Water* (Leaflet). Johannesburg: Adcock Ingram Limited.

Bailey, S., D'Auria, J. & Haushalter, J. (2013). Information on Infantile Colic on the World Wide Web. *Journal of Pediatric Health Care*, 27(6), pp. 443-450. Available from: <http://0-www.sciencedirect.com.ujlink.uj.ac.za/science/article/pii/S0891524512000806> (Last accessed 9th June 2017).

Ben-Arye, E., Traube, Z., Schachter, L., Haimi, M., Levy, M., Schiff, E. et al. (2010). Integrative Pediatric Care: Parents' Attitudes Toward Communication of Physicians and CAM Practitioners. *Pediatrics*, 127(1), pp. 84-95. Available from: <http://pediatrics.aappublications.org/content/pediatrics/early/2010/12/27/peds.2010-1286.full.pdf> (Last accessed 7th June 2017).

Bland, R., Rollins, N., Broeck, J. & Coovadia, H. (2014). The use of non-prescribed medication in the first 3 months of life in rural South Africa. *Tropical Medicine and International Health*, 9(1), pp. 118-124.

Boehringer Ingelheim (2013). *Buscopan®* (Leaflet). Johannesburg: Ingelheim Pharmaceuticals (Pty) Ltd.

Colic Calm (2013). *Frequently Asked Questions*. Available from: <http://www.coliccalm.co.za/> (Last accessed 10th July 2016).

Gqaleni, N., Moodley, I., Kruger, H., Ntuli, A. & McLeod, H. (2016). *Traditional and Complementary Medicine*. Available from: http://www.hst.org.za/uploads/files/chap12_07.pdf (Last accessed 31st July 2016).

Halpern, R. & Coelho, R. (2016). Excessive crying in infants. *Jornal de Pediatria*, 92(3), pp. 40-45. Available from <http://0-www.sciencedirect.com.ujlink.uj.ac.za/science/article/pii/S0021755716000462> (Last accessed 24th November 2016).

Hodge, S. & Murphy, P. (2014). Crying Newborns: The Colic and Reflux Situation in New Zealand as depicted by an Online Questionnaire. *International Journal of Nursing and Midwifery*. 6 (8), pp. 97-107.

Kuhudzai, A. (2016a). *Statkon*. Personal conversation on 26th July 2016. akuhudzai@uj.ac.za, 20 Chiselhurst Avenue Kingsway Campus, (011) 559 4407.

Kuhudzai, A. (akuhudzai@uj.ac.za). (13th December 2016b). *Emailing: Custom Tables, Frequencies & Open Ended Responses, Infantile Colic Data File, Other Open Ended Responses*. Email to Di Gaspero, N. (natz_dg90@hotmail.com).

MCC (2016). *About the MCC - Overview*. Available from: <http://www.mccza.com/About> (Last accessed 1st July 2016).

Murphy, P. (2015). RE: *Colic Questionnaire – Reliability and Validity*. Email to Di Gaspero, N. philippa@naturalwinding.com. Email date 2nd August 2015

National Cancer Institute (2016). *NCI Dictionary of Cancer Terms*. Available from: <https://www.cancer.gov/publications/dictionaries/cancer-terms?cdrid=449752> (Last accessed 31st May 2017).

Perry, R., Hunt, K. & Ernst, E. (2011). Nutritional Supplements and Other Complementary Medicines for Infantile Colic: A Systematic Review. *The American Academy of Pediatrics*, 127(4), pp. 720-733. Available from: <http://pediatrics.aappublications.org/content/127/4/720.long> (Last accessed 15th November 2016).

Radhakrishna, R.B. (2007). *Tips for Developing and Testing Questionnaires/Instruments*. Available from: <http://www.joe.org/joe/2007february/tt2.php> (Last accessed 20th July 2016).

Resmed (2016). *Intungwa Umuthi Wenyoni*. Available from: <http://resmed.co.za/product?id=52> (Last accessed 10th July 2016).

Rosen, L.D. (2007). "The Gripe": An Integrative Approach to Infant Colic. *Pediatrics*. 3 (4), pp. 417-422.

Rosen, L.D., Bukutu, C., Le, C., Shamseer, L. & Vohra, S. (2007). Complementary, Holistic, and Integrative Medicine: Colic. *Pediatrics in Review*, 28(10), pp. 381-385. Available from: <http://www.nccpeds.com/ContinuityModules-Fall/Fall%20Continuity%20Source%20Materials/Colic-CAM.pdf> (Last accessed 7th June 2017).

Savino, F. (2007). Focus on infantile colic. *Acta Paediatrica*, 96(9), pp. 1259-1264. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1651-2227.2007.00428.x/full> (Last accessed 10th March 2016).

Savino, F., Ceratto, S., De Marco, A. & Cordero di Montezemolo, L. (2014a). Looking for new treatments of Infantile Colic. *Italian Journal of Pediatrics*, 40(1), p. 53. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4050441/> (Last accessed 14th June 2016).

Savino, F. & Tarasco, V. (2010). New treatments for infant colic. *Current Opinion in Pediatrics*, 22(6), pp. 791-797. Available from: [http://media.mycme.com/documents/45/savino tarasco 2010_11186.pdf](http://media.mycme.com/documents/45/savino_tarasco_2010_11186.pdf) (Last accessed 23rd August 2016).

Savino, F., Tarasco, V., Sorrenti, M., Lingua, C., Moja, L., Gordon, M. *et al.* (2014b). Dietary modifications for infantile colic. *Cochrane Database of Systematic Reviews*. Available from: <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD011029/full> (Last accessed 14th June 2017).

Snyman, W. (2014). *A Survey to Determine Attitudes and Perceptions of Complementary and Alternative Medicine users in Johannesburg Health Shops*. Johannesburg: University of Johannesburg. Master's Dissertation, unpublished. University of Johannesburg. pp. 11-19, 27-39.

Whittaker, C. (2010). Over-the-counter medicines for infants (0-6 months). *SA Pharmaceutical Journal*, pp. 22-26.

WHO (2016). *Traditional Medicine: Definitions*. Available from: <http://www.who.int/medicines/areas/traditional/definitions/en/> (Last accessed 1st July 2016).

Wieland, S., Manheimer, E. & Berman, B. (2011). Development and classification of an operational definition of complementary and alternative medicine for the Cochrane Collaboration. *Alternative therapies in health and medicine*, 17(2), pp. 50-59. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/21717826> (Last accessed 6th June 2017).

Wilson Van Voorhis, C.R. & Morgan, B.L. (2007). Understanding Power and Rules of Thumb for Determining Sample Sizes. *Tutorials in Quantitative Methods for Psychology*. 3 (2), pp. 43-50.

Woodwards (2017). *Gripe Water* (Leaflet). United Kingdom: Reckitt Benckiser Healthcare (UK) Ltd.