Exploring the asthma interventions of rural pharmacies: Pharmacist experiences and the HAPA model

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Abstract

Asthma is described as a chronic inflammatory disorder of the respiratory system, and is one of the most common chronic disorders in children (Grover, Armour, Asperen, Moles, & Saini, 2011; Grover, Armour, Van Asperen, Moles, & Saini, 2013; Redzuan, Lee, & Shah, 2014). Despite the proven efficacy of asthma medications, a common theme among asthma patients is the underuse of preventer inhalers and the overuse of reliever inhalers (Grover, Armour, et al., 2013; Young et al., 2012). Community pharmacists have been identified as being in an ideal position to play an important role in the education of patients with poor adherence (Armour et al., 2007; Peterson-Sweeney et al., 2007). Interventions which are based on theory and evidence, and are tailored to specific psychological constructs, have been found to be more effective (Schwarzer, Lippke, & Luszczynska, 2011). The HAPA model suggests that a change in health behaviour can be developed by using planning with patients after an intention has been formed, with the intended result being action.

The current study aimed to compare two rural pharmacy asthma interventions to the HAPA model, and to explore the experiences of the pharmacists who were working with children with asthma and their parents. Relationships and motivations were identified as being the two key components of the delivery of the programmes, and an underlying belief held by pharmacists that they hold the knowledge and therefore the power was suggested. Both pharmacies were meeting over half of the HAPA constructs, however more focus could be paid to the self-efficacy constructs, a gap that was identified as occurring throughout pharmacy interventions.

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Introduction

Asthma is described as a chronic inflammatory disorder of the respiratory system (Redzuan et al., 2014). It is one of the most common chronic disorders in children, and countries such as the USA, Canada, Australia, United Kingdom, and New Zealand have steadily increasing paediatric rates (Grover et al., 2011; Grover, Armour, et al., 2013). Asthma rates in New Zealand are among the highest in the world, with an increased prevalence among Maori and Pacific children (Bryant, Bang, Chew, Sae Hee, & Wisernan, 2013). The most recent New Zealand Health Survey found that 14.5% of children aged 2 to 14 years received medication for asthma, with Maori children being nearly twice as likely to be on asthma medication as non-Maori. as well as a high prevalence of asthma, a large proportion of New Zealand children, 21%, were identified as having an un-met need for primary health care services (Ministry of Health, 2013).

Aim of Study

The aim of the current research project was to evaluate and compare two pharmacy led, community interventions for asthma management. This was an exploratory study with a focus on parents and caregivers of children with asthma, from the perspective of the pharmacists who were involved in their care. The research aimed to compare the interventions being provided, to the constructs of the Health Action Process Approach (HAPA) theory, to see if the service being delivered to patients matched the aspects that the HAPA theory suggests will promote change in health behaviours. The research also aimed to gain insight into the pharmacist's experiences of working with these parents and children, and the barriers they perceive as playing a role in medication adherence. These aims were explored in the context of a small rural community that may present its own unique challenges. Additionally, it is planned to provide both the MidCentral DHB and the pharmacies with valuable information about the services they provide.

Background and Justification of the Study

Adherence to treatment, particularly preventer inhalers, has been reported as being under 50% in children with asthma (Bokhour et al., 2008; McQuaid, 2003). When it comes to children, in general, it is their parents who control and make decisions about their adherence. The majority of decisions that parents make about their child's medication and illness are based on their own perception of what is happening for their child (Klok, Brand, Bomhof-Roordink, Duiverman, & Kaptein, 2011), so it is important that these perceptions are based on the correct information. Community pharmacists

have emerged as an important part of health care teams, and are in an ideal position to be able to identify those patients at risk and play and important role in the education and asthma management of patients (Armour et al., 2011; Naik-Panvelkar, Armour, Rose, & Saini, 2012; Sleath et al., 2014). The strengths of pharmacists is that they have been identified as being accessible, and as having regular and frequent contact with patients (Bereznicki et al., 2013).

Pharmacy A proposed a stepwise approach to helping patients with asthma improve their asthma management. These steps involved identifying at risk patients, providing them with a private education sessions, and two follow-up calls to check on their progress. Pharmacy B also implemented some strategies such as education around inhaler and spacer technique, an in pharmacy reminder to collect prescriptions, and patients were given the Asthma Control Test to do at home. At the time of the initial research request from the MidCentral DHB, the DHB were noticing that the number of hospital admissions for asthma patients was still relatively high, particularly in children. The request came with a desire to get some information about whether or not the programme was beneficial to asthmatics in these areas, and if it was, if there were any improvement to be made.

The MidCentral DHB stretches across the North Island from the west coast to the east coast and covers the following local districts: Horowhenua, Manawatu, Tararua, Palmerston North City, and the Otaki ward of Kapiti Coast. According to the 2013 census it has a population of approximately 158,000 people with around 80,000 of these living in Palmerston North City. Maori make up 17% of the population. MidCentral has one large hospital, Palmerston North Hospital, and two smaller community hospitals, Horowhenua Health Centre and Dannevirke Community Hospital.

The pharmacies both support similar communities that have high incidences of asthma, and may often feel isolated from many of the health services provided in larger towns and cities. It is important that children and families are provided with high levels of support to help manage their asthma and control their symptoms. These support services need to be easy to access and need to be meeting the needs of their patients, and being used to their full capability. The ideal outcome being efficient services being provided to at risk patients, resulting in positive health outcomes for these patients.

Locating Myself within the Study

Prior to taking on the current research project, the researcher had little experience with those who suffered from asthma and a very simple understanding of the severity of asthma. Putting together the literature review allowed the researcher to gain a much richer understanding of what asthma is, how it affects those who have it and their families, and the impact it can have on one's overall health and lifestyle. Several meetings and emails occurred between the researcher and the pharmacists prior to the interviews, so the researcher did come into the interviews with some preconceived notions about what the pharmacists were doing with their asthma patients, and how they were interacting with parents of children with asthma. In saying this, the researcher tried to keep an open mind and let the data tell the story rather than make the data meet the ideas previously held.

Literature Review

Asthma

Asthma is a heterogeneous disease that is defined as an inflammatory disorder of the airways (Redzuan et al., 2014). It is a chronic disorder whose diagnosis is based on a distinguishing pattern of symptoms (Englund, Rydström, & Norberg, 2001). Symptoms include recurrent episodes of wheezing, coughing, shortness of breath and chest tightness, with symptoms being especially prevalent in the evening or first thing in the morning (Redzuan et al., 2014). Symptoms will likely vary over time and in intensity, and while they often first appear in childhood they can affect people of all ages (Global Initiative for Asthma, 2014). The aetiology of asthma is complex and diverse, but some common triggers include exercise, exposure to an allergen or irritant, a change in the weather, or a viral respiratory infection (Global Initiative for Asthma, 2014). Comorbidities include allergic rhinitis (more commonly known as hay fever), eczema, and food allergies (Global Initiative for Asthma, 2014).

Asthma is the most common chronic disease in children and rates are steadily increasing worldwide, with the research focusing on the increases in the USA, Canada, Australia, the United Kingdom, and New Zealand (Grover, Armour, et al., 2013; Mansour, Lanphear, & DeWitt, 2000). Children who belong to an ethnic minority and who come from low income families have higher rates of asthma morbidity and mortality (Otsuki et al., 2009). New Zealand children are particularly at risk as the countries paediatric rates of asthma symptoms is the highest among English speaking countries. Among children aged 2 to 14 years of age, 14.8% of children were reported as having medicated asthma (Gillies, Tomlin, Dovey, & Tilyard, 2013). As reflected in global statistics, children who belong to the ethnic minority group, Maori, have more severe asthma symptoms, and much higher rates of hospitalisation due to asthma, than non-Maori children (Jones, Ingham, Cram, Dean, & Davies, 2013).

Being diagnosed with asthma means not only living with and treating its symptoms, but also living with the adverse effects these symptoms can have on one's life. In regards to patient health, symptoms of asthma are often associated with sleep disturbances, impaired lung function, occurrence of night symptoms, near fatal attacks, and even death (Fiese & Wamboldt, 2003; Grover et al., 2011; Redzuan et al., 2014). Due to their negative health outcomes and possible fatality, asthma symptoms are linked with hospital visits. Asthma is one of the most common reasons for repeated hospital

admissions and emergency room visits, and is the most common reason for children to visit the hospital (Haby, Powell, Oberklaid, Waters, & Robertson, 2002; Mansour et al., 2000). The high incidence of paediatric hospital visits is one factor in the increasing cost of childhood asthma, which is affecting governments and health-care systems globally (Grover et al., 2011). For a child with asthma, health outcomes and hospital visits are only a part of the picture. Asthma symptoms can restrict physical activity and prevent participation in a number of school activities (Grover et al., 2011). Children with asthma are also found to have a higher number of school absences which plays a role in the significant association between asthma and poorer performances in school (Fiese & Wamboldt, 2003; Gillies et al., 2013). Childhood asthma not only affects the child and their world, but also that of their families. Asthma symptoms have been associated with a poorer quality of life for both parents and children, and loss of parental productivity has also been identified as an indirect cost (Grover et al., 2011; Young et al., 2012).

The treatment of asthma currently involves two categories of medication: reliever, and preventer medications. Preventer medications should be used daily and are intended as a maintenance treatment (Global Initiative for Asthma, 2014). They are steroid based and are an anti-inflammatory medication whose role is to decrease airway inflammation, which in the long term helps control symptoms and reduce future risk, however they will not immediately relieve symptoms (Global Initiative for Asthma, 2014; McQuaid, 2003) Preventer medications have proven their effectiveness in both clinical trials and in real-world settings (Yoos et al., 2007). Reliever medications are intended to be used on an as needed basis, during times of worsening asthma or symptom exacerbations. They open up the airways and provide immediate relief from symptoms (Global Initiative for Asthma, 2014). Despite the proven efficacy of these medications, and the knowledge that routine use of preventer medications has many beneficial outcomes, asthma control in children remains suboptimal (Grover, Armour, et al., 2013; McQuaid, 2003). A common theme among asthma patients is the underuse of their preventers, the overuse of their relievers, and the incorrect technique when using their inhaler (Young et al., 2012). According to the Global Initiative for Asthma (2014), the goal of asthma management is to control symptoms, reduce the risk of future exacerbations, obtain good long-term health outcomes, maintain levels of normal activity, and hopefully, in the long-term, eliminate the need for reliever medication.

Chronic Illness

A chronic illness is one that is long-term, results in restrictions to a person's daily living, is rarely completely cured, and whose treatment is both complex and prolonged (Coffey, 2006; Hamall, Heard, Inder, McGill, & Kay-Lambkin, 2014; Janse, Sinnema, Uiterwaal, Kimpen, & Gemke, 2008). Some common childhood chronic illnesses include asthma, diabetes, cancer, and cystic fibrosis. Childhood chronic illness affects the lives of the child, their parents, siblings, and the family unit as a whole. Areas that may be affected include finances, the ability to interact socially and within the community, feelings of isolation and diminished social support, and quality of life (R. T. Brown et al., 2008). Varni, Limbers, and Burwinkle (2007) found that in both patients and parents across a range of chronic illnesses, a significantly lower quality of life, physical health, and psychosocial health were all reported in comparison to healthy peers. The extent to which a chronic illness negatively affects a child and their family is dependent on both the complexity of the disease and its management, and the level of functioning a family had prior to diagnosis (R. T. Brown et al., 2008).

For a child living with a chronic illness life is full of constant stressors, and a common coping mechanism used is to internalise problems, which puts these children at risk of developing mental health issues (Hamall et al., 2014). Children often feel that they have no control over the symptoms they are living with, and the presentation of these symptoms may result in physical and lifestyle restrictions, and peer rejection. Children also struggle to make treatment a part of their day to day lives, and to cope with the effects of the treatment, many of which are somatic (Hamall et al., 2014; Pinquart & Shen, 2011). It has also been reported that children who grow up with a chronic illness reach their developmental milestones later than their healthy peers, possibly due to overprotection of the child and lowered expectations for what they can achieve (Grootenhuis & Bronner, 2009). Chronic illness also has a significant effect on the siblings of an ill child. Siblings can be affected by the extra burden placed on their parents which often leads to them assuming parental responsibilities, and feeling stressed and neglected (Coffey, 2006; O'Brien, Duffy, & Nicholl, 2009). Similar to the child with a chronic illness, siblings have been found to be at risk of emotional and adjustment problems, and psychological distress (O'Brien et al., 2009). There is also evidence that coping with a chronic illness can have positive effects on a sibling, such as having greater compassion (Sharpe & Rossiter, 2002).

Being a parent or caregiver of a child with a chronic illness also comes with many challenges. They are responsible for not only maintaining day to day family life and the development of their children, but also become the primary caregiver for their sick child (R. T. Brown et al., 2008). There can be a large financial burden involved with this responsibility as parents may have difficulty with employment and job loss (R. T. Brown et al., 2008). A meta-synthesis by (Coffey, 2006) identified various themes to explain the experiences of parenting a child with a chronic illness. Worry seemed to be a very consuming activity with its contents being focused on day to day life, the future, maintaining relationships with children and spouses, feeling neglectful of these relationships, and general uncertainty. Many parents felt they were carrying the burden alone and that they had lost their freedom and support systems. Struggle also played a role in regards to a feeling of helplessness, being overwhelmed, guilt, and feeling frustrated towards health professionals. (Coffey, 2006). Difficulties with health care professionals was also identified by parents in a study by George, Vickers, Wilkes, and Barton (2006). These parents felt that there was poor communication on behalf of their health professionals, and that often their opinion was not taken seriously. This is a concern as working with health care professionals is a major part of the caregiving role for these parents (George et al., 2006)

Dealing with and managing these multiple stressors on a day to day basis can have many negative outcomes for parents and caregivers, putting them at a greater risk for emotional and physical distress (George et al., 2006). Depression, anxiety, decreased quality of life, and feelings of loss of control, are some of the key issues identified in the literature (R. T. Brown et al., 2008; Grootenhuis & Bronner, 2009). Due to a lack of time with spouses and increased role strain, there can also be a negative impact on the marital relationship, and these parents are at an increased risk for divorce (R. T. Brown et al., 2008; DiFazio, 2013). Vickers and Parris (2005) explored the stories of women who work full-time and are also the primary caregiver for a child with a chronic illness. These women identified feeling different from others and that not many people really understood what their lives were like. They also felt as if they were expected to do it all and be it all. Not all parents who have a child with a chronic illness will experience these outcomes, some are more at risk than others. Having a low socio-economic status, being a single-parent and therefore having more caregiving demands, and working full time, have all been identified as important risk factors (George et al., 2006; Grootenhuis & Bronner, 2009). Having higher levels of social support, high parental self-esteem, and

positive family functioning prior to diagnosis serve as protective factors against these outcomes. (Grootenhuis & Bronner, 2009). Parents have also experienced positive changes in their lives as a result of their child's diagnosis. Middle-class parents frequently cope with their child's illness by becoming heavily involved in any intervention that aids their child's development, and parents often speak of the increased closeness and support experienced within their marriages when parenting a child with chronic illness (Brazil & Krueger, 2002; DiFazio, 2013).

Living with a chronic illness changes the lives of the child, their parents, and their siblings, making it a family event. When a child is diagnosed with a chronic illness the roles and responsibilities of each individual often change (R. T. Brown et al., 2008). The high levels of stress and increased vigilance can impact a families functioning and exhaust their emotional resources (O'Brien et al., 2009). The level of family functioning is extremely important as it is the most powerful predictor for a child's healthy psychosocial functioning (Coffey, 2006; Geist, Grdisa, & Otley, 2003). Families who had trouble with communication and role distribution prior to diagnosis are more likely to suffer the negative effects of extra stress, whereas families who share the burden of care amongst its members, including extended family members, show more successful family functioning (Coffey, 2006; Geist et al., 2003; Herzer et al., 2010). In the face of these obstacles, families have reported greater feelings of togetherness, trust, and better communication (R. T. Brown et al., 2008).

While the information provided by the body of research is valuable in understanding experiences of families dealing with chronic illness, it is important to note that these studies focus on a range of illnesses, which may vary in mortality and symptom severity, which in turn can affect the levels of stress and activity limitation experienced.

Asthma and the Family

As is with all chronic illnesses, the diagnosis and management of asthma in childhood becomes a family event. These families have extra caregiving tasks, and are responsible for the identification and treatment of a child's asthma symptoms (Dickinson & Dignam, 2002; Svavarsdóttir & Rayens, 2003). These extra tasks and responsibilities, and the time taken to engage in them, may not match up with the lifestyle of the rest of the family (Dimatteo, 2004). Family activities may require extra planning, and family members have to live with last minute changes or cancellations of plans (Barton, Sulaiman, Clarke, & Abramson, 2005; Rand, 2002). These stressors place a significant burden on families, and relationships within the family may be affected, with sibling jealousy being identified as a symptom of this (Jan, Lee, & Cheng, 2014; Rand, 2002).

For the child who has asthma life often revolves around symptoms, treatments, and limitations on daily life. Children have described feeling different and left out from their peers, with some even reporting being bullied due to this difference (Grover, Armour, et al., 2013; van den Bemt et al., 2010). They report apprehension in regards to missing important class time and school activities, and often feel physically restricted and this results in them being not as successful when running or playing sports with their healthy peers (Grover, Armour, et al., 2013; van den Bemt et al., 2010). Not being able to have a pet was also disliked by a number of children with asthma (van den Bemt et al., 2010). This all results in children with asthma reporting a lower quality of life, lower physical and emotional health, higher levels of pain and discomfort and more problems with social functioning (Chong, Davidsson, Moles, & Saini, 2009; Covaciu, Bergström, Lind, Svartengren, & Kull, 2013; Grover et al., 2011). It is not surprising then that childhood asthma patients are at an increased risk of behavioural adjustment issues (McQuaid, Kopel, & Nassau, 2001).

As seen with other chronic illnesses, parents of children with asthma face many daily struggles and are under a great deal of stress. Upon initial diagnosis parents report feelings of concern and worry for the health of their child, and fear that they won't get to live a normal life (Grover, Armour, et al., 2013). In these early days parents can feel out of control and will spend time trying to understand how they can help their child and coming to grips with the changes to their lives (Jerrett & Costello, 1996). Parents will often experience limitations to their own social life, disruptions to their work life, and stress involved with sharing the care of their child with schools or other family members (Barton et al., 2005; Grover, Goel, et al., 2013). Parents report various

strategies they have employed to help them cope, which include: using social supports; turning to spirituality or religion; accepting that this is the way life is now and just getting on with it; seeking as much information as possible; and not being afraid to try out new ways of managing their child's health and family life (Barton et al., 2005; Trollvik & Severinsson, 2004). Parents have also identified that it is important for them to receive support and understanding from healthcare professionals. Parents often feel as if they are not being respected and listened to, and that their opinion is not seen as valid (Trollvik & Severinsson, 2004). As seen in children with asthma, their parents also report lower quality of health, lower physical and emotional health, and more problems with social functioning (Chong et al., 2009; Grover et al., 2011). Parental quality of life is significantly correlated with the severity of a child's asthma, and lower quality of life has been found to be associated with parents perceiving their child's asthma as poorly controlled (Halterman et al., 2004).

Adherence

Adherence describes the extent to which a patient sticks to the treatment instructions they have been prescribed by a health care professional (Spicher et al., 2012). Even though asthma medications have a proven efficacy, low adherence, especially to preventer medication, is one of the main reasons why childhood asthma still has a significant morbidity (Klok et al., 2011). Non-adherence can result in symptoms persisting, poor asthma control, and even trips to the emergency room and hospitalisation (Magdy, Mohammed Ezz El, Engy, & Ashraf, 2010; Rand, 2002). Adherence rates in children are reported as being under 50% (Bokhour et al., 2008; McQuaid, 2003). When it comes to children, in general, it is their parents who control and make decisions about their adherence. The majority of decisions that parents make about their child's medication and illness are based on their own perceptions of what is happening for their child (Klok et al., 2011).

Non-adherence does not have to be a conscious and purposeful decision. Parents may be unaware that they are not adhering to their child's treatment plan, or they may simply find it too difficult. Bokhour et al. (2008) and Rand (2002) both identified three different levels of non-adherence. Although they gave them different names they are in essence the same. The following labels are those used by Bokhour et al. (2008), but instead of the term concordance, non-adherence was used in its place, as was in the labels created by Rand (2002). The first is *unintentional non-adherence* and involves parents who believe they are following the given treatment plan but are in fact not. This type can be attributed to a lack of understanding of the purpose of medications and how to take them correctly. The second type of non-adherence is *unplanned*. Parents often intend to adhere but find it difficult to due to forgetfulness and busy schedules. This results in missed doses and underuse or cessation of preventer use. The third type of non-adherence is *intentional*. Parents make a conscious choice to not give their child some or all of their medication. This could be because of a fear of side-effects, or because their child objects to the aesthetics of the medication.

A broad range of factors have been identified by both researchers and parents as playing a role in the poor adherence of children with asthma to their treatment plans. One key factor is parental knowledge of asthma, which is repeatedly found to be lacking (Bokhour et al., 2008; Saini et al., 2011). Inadequacies in knowledge are found in relation to both the disease itself and the role of medications. In a review of the literature focusing on issues arising when children use asthma medications, Grover et al.

(2011) found that parents and caregivers often do not understand that asthma is a chronic, long-term disease; many are unable to recognise the symptoms of an asthma attack and begin treatment; and parents and caregivers can be unaware of which medication to use and how to administer it correctly. When the research gives voice to these parents and their experiences of raising a child with asthma, they have shared that they are able to identify their child's medications, but are often unsure of their purpose, especially when it comes to preventers. The use of spacer devices in medication administration has also been identified as one of the biggest confusions (Grover, Armour, et al., 2013). Parents admit to only using preventers intermittently or stopping their use altogether once they perceived their child as being well again (Klok et al., 2011). This lack of parental knowledge seems to be partly the responsibility of health care providers. Recent research has found that just over half of families receive some education about their child's asthma upon diagnosis (Sleath et al., 2011), and Australian asthma educators believe there is a lack of information being provided to patients by health care professionals, and that the information they are providing is inconsistent (Chong et al., 2009).

Because parents are lacking in their knowledge of asthma, providing them with education so that they understand the seriousness of their child's condition and the important role that medication plays, is key in promoting adherence (Dimatteo, 2004). Knowledge and health literacy have been connected to improved self-management and adherence (Apter et al., 2013; Saini et al., 2011). Communication between health care professionals and parents is also important. Health care professionals need to be viewed as an ally in the child's care and not an enemy (Dimatteo, 2004). Other elements essential to the promotion of adherence include having good social support for parents and families, and prescribed treatments being as simple as possible (Dimatteo, 2004; Modi & Quittner, 2006).

A second important factor playing a role in poor adherence is negative attitudes that parents and caregivers hold towards preventer steroid medications. A common theme identified in the literature is steroid phobia. Parents have very strong concerns in regards to their children regularly using steroids. Concerns centre around possible side-effects, dependence, tolerance, weight gain, and growth retardation (Magdy et al., 2010; Zhao, Furber, & Bauman, 2002). These concerns have resulted in many parents being resistant to the use of long-term steroid use, as would be the case if the preventer medication was used as prescribed (Klok et al., 2011). In a study focusing on the

identification of parental concerns in regards to asthma medication, Orrell-Valente et al. (2007) found that over a third of parents had expressed a concern about the daily use of medications. Half of these concerns were in relation to immediate side-effects of the medications, and the other half were focused on the long-term side-effects. Many of the negative ideas parents hold about these daily medications are non-specific, and have been proven to have a low likelihood. These negative ideas in regards to steroid medications may be responsible for the increased usage of alternative medications (Grover et al., 2011). If education can result in parents having a positive view of preventer medications, this can lead to good adherence and modelling for children (van Dellen et al., 2008).

Besides parental knowledge and perceptions of steroids, there are a variety of other factors that play a role in poor adherence. One of these is concerns that children have about taking the medications. Parents have often shared that children don't like taking their medication due to its aesthetics, and will often display oppositional behaviour toward preventer medications (Grover, Armour, et al., 2013; Modi & Quittner, 2006). Asthma educators identified that children's resistance to take medication may stem from a desire to maintain an image of a "normal" child in front of their peers (Chong et al., 2009). Parents have identified forgetting to give their child medication as playing a role in poor adherence, with parents in a study conducted by Modi and Quittner (2006) citing forgetting as their number one barrier to adherence. Family dysfunction has also been associated with poor adherence, most commonly in families with high conflict. A child's asthma control can suffer when communication within the family is poor and everyday life is chaotic (Rand, 2002). Lack of resources is another factor associated with poor adherence, in regards to both money and time. (Chong et al., 2009). This is particularly true for single-parents who have to deal with the same demands as two-parent households on less resources. When single parents were asked to share their reasons for not attending medical visits for their children, they cited an inability to take time off work as the only income earner, and difficulties finding alternative childcare for other children (Spicher et al., 2012). Being a part of an ethnic minority, having multiple caregivers, including those outside the family such as teachers, involved with a child's care, and parents having low expectations of treatment have all been found to be associated with poor adherence (Bokhour et al., 2008; McQuaid, 2003; Rand, 2002).

Parental Management

For a child with asthma, their parent or caregiver will hold the key to successful symptom management and control, and positive outcomes (N. Brown, Gallagher, Fowler, & Wales, 2014). Parents are in charge of the management of their child's illness and with this comes the responsibility of monitoring the illness, administering treatment, providing emotional support for their child, whilst also being in charge of their child's overall development (Brazil & Krueger, 2002). Fiese and Wamboldt (2003) identified three different family management styles for dealing with asthma. The first is *reactive management* which involves little use of preventative measures, and action only occurs once symptoms are evident. This management style is associated with low adherence rates, high levels of worry and emergency room visits. The second management style is *coordinated care*. Typically the care is the responsibility of one person who considers the asthma to be manageable. They also believe that better management can be achieved through listening to expert advice. The final type of management is *family partnership*. Multiple family members are a part of the management process and are trusted with the child's care. The family tackle the asthma and its symptoms together, and believe it to be manageable. This type of management manifests in more visits to the doctor (Fiese & Wamboldt, 2003).

An important part of the management of asthma is that parents feel comfortable seeking advice from health care professionals. Unfortunately it seems that many parents are holding back. It has been found that only a third of parents and caregivers who have concerns about medical problems and asthma management actually ask their health care provider about it (Sleath et al., 2014; Sleath et al., 2011). A parent's self-efficacy in regards to their ability to manage their child's asthma is another important component in successful management. Several factors have been identified to increase this self-efficacy: knowledge of asthma, health literacy and social support (N. Brown et al., 2014). Factors that decrease parental self-efficacy are depression and perception of the difficulty of the tasks (N. Brown et al., 2014).

The occurrence of an asthma attack is a crucial time when a parent's asthma management skills are called into action. A study by Dickinson and Dignam (2002) on the experiences of Australian mothers has found that management of a child during an asthma attack has many different components. Working on treatment involves giving children their medication and monitoring how they respond to it, working and negotiating with health care professionals, and constantly adapting to the situation.

Making the call of whether to contact or visit a health care professional involves justification of one's decision and is often a lone responsibility. Watching the child vigilantly during the attack and using advanced observational skills, as well as clinical assessment, is important. A final component involves keeping both the child and themselves calm. This can be complicated by the fact that medication winds up the child, and that both parent and child are scared and worried.

As has already been shown, managing a child's asthma involves many different components and the utilisation of a variety of skills. Parents have been found to have varying levels of confidence when it comes to these different components, and this may be explained by factors such as recency of diagnosis and severity of symptoms. N. Brown et al. (2014), found that parental confidence was linked to the frequency with which they performed each task. Administering medication and taking children to their medical appointments occur regularly, so were identified as tasks that parents were confident in undertaking, whereas making judgements and decisions during an asthma exacerbation occur less frequently so were seen as a more complex tasks by parents. Two different studies had contradictory findings to that of N. Brown et al. (2014). Peterson-Sweeney, McMullen, Yoos, and Kitzman (2003) found that initially there can be resistance from children when it comes to taking their medications, and so some parents identified that medication administration was one of the most difficult areas of asthma management. Because these parents identified child resistance as a problem in the early stages, it is possible that their children had been recently diagnosed, so they'd engaged in this task less frequently, explaining the difference in finding with N. Brown et al. (2014). Haby et al. (2002) found that parents were confident in recognising the signs and symptoms of an asthma attack and dealing with an attack. This difference in findings could be explained by the severity of asthma that the children have. Haby et al. (2002) recruited their participants from hospital emergency rooms, where N. Brown et al. (2014) recruited theirs from outpatient clinics. This could indicate that the former had more severe, and less controlled asthma. If a child's asthma is more severe, and they are having more regular asthma attacks, the frequency with which their parents have to identify and manage these attacks is increased, as well as their confidence. Once confidence builds parents feel able to make adjustments to their child's treatment plans through trial and error, based on their symptom presentation (Peterson-Sweeney et al., 2003). Parents have been found to have a good understanding of asthma when it comes to recognising that their child can live a normal life, that symptoms often worsen at

night time, that asthma is not contagious, that symptoms can be worsened by smoking, and that children with recurrent asthma should have preventative drugs (Zhao et al., 2002). Despite this understanding, knowledge deficits have been found in the areas of medication identification, medication purpose, and prevention (Magdy et al., 2010; Zhao et al., 2002). Parents have also disclosed that they don't use preventer medication and that they hold strong negative ideas about steroid use (Barton et al., 2005; Magdy et al., 2010). Parents need more education so that they can link their understanding that children should have preventive medication, with a better idea of what exactly this medication is and how it works. Lack of education has been identified in the literature, with some parents identifying that they did not receive any education upon their child's diagnosis, and a large proportion of those who did receive education feeling like they needed more information about their child's asthma (Haby et al., 2002; Peterson-Sweeney et al., 2003). Parents describe managing their child's asthma as a harrowing experience (Grover, Goel, et al., 2013).

The context within which a child receives care, is shaped by parental beliefs (Wilson & Kieckhefer, 2000). This effects when and which medications a child is given, and how often they are taken to see a health care professional. Parents have been found to only take their child to see a health care professional when their child's asthma is out of control, and as previously highlighted, parents may administer preventer medication intermittently or not at all based on their negative perceptions (Klok et al., 2011). Parental beliefs based on misinformation can have negative outcomes for the child's health. When parents believe that medication is unsafe, and this is combined with a lack of planning when it comes to judging the severity of an attack, a child is found to make more trips to the emergency room (Wasilewski et al., 1996). A study on urban, African American parents of children with asthma, looked at their perceptions of barriers that affect their ability to control their child's asthma (Mansour et al., 2000). Many didn't see prevention as equalling medication, and wanted a more holistic, non-medical approach to be offered. These parents were unnecessarily restricting their child's physical activity, but mentioned that they had an inadequate asthma education, which would play a large role in knowing when to restrict and when to not restrict activity. One of the largest problems with parent's beliefs of their child's illness and the way it should be treated, is that it rarely matches up with the beliefs of health care professionals (Peterson-Sweeney et al., 2007). Areas of greatest divergence include the identification and interpretation of asthma symptoms, expectations of treatment, and

attitudes towards preventer medications. It has been found that parents view asthma as episodic, unpredictable and not easily controlled, whereas a health care professional would describe it as enduring and easily controlled with the medications currently available (Yoos et al., 2007). Parents identify that they know their child and their asthma best, as they are the ones who take primary responsibility for, and make crucial decisions in the management of their asthma (Peterson-Sweeney et al., 2003). It is important that parents are given proper asthma education so that their belief systems can be more in line with health professionals, allowing a collaborative relationship for the successful care of children with asthma.

Community Interventions

Asthma education for parents is an important part of a child's treatment. As previously discussed, parents need to understand what is happening to their child and why the medications will be effective. Peterson-Sweeney et al. (2007) interviewed over 200 parents of children with asthma, half of which identified as a minority, and half who lived in poverty. Asthma education was reported to significantly improve parent's attitudes towards preventer medications and their knowledge about asthma in general. This study is relevant to the current research because the populations receiving the pharmacy intervention are both over a quarter Maori and Pacific Island, and these minority groups have been found to have a higher prevalence of asthma. Not only is it important for parents to understand why they are giving their child medication, it is also important for them to understand how to correctly administer it. Optimal inhaler technique allows the maximum drug delivery to the lungs, improving the benefits of medication (Takemura et al., 2012). In a sample of 103 New Zealand asthma patients, from 26 different pharmacies, just over half of the participants were found to have good technique, leaving just under half with poor technique (Bryant et al., 2013). Poor technique results in insufficient medication delivery which in turn has a negative effect on symptom control. Interventions focusing on inhaler technique in both adults and children, based in France, Belgium, Netherlands and Japan, have led to significant improvements in inhaler technique, which in turn has led to decreased symptom exacerbations and increased medication adherence (Giraud, Allaert, & Roche, 2011; Mehuys et al., 2008; Ottenbros et al., 2014; Sleath et al., 2012; Takemura et al., 2012)

Community pharmacists have emerged as an important part of health care teams, and are in an ideal position to be able to identify those patients at risk and play an important role in the education and asthma management of patients (Armour et al., 2011; Naik-Panvelkar et al., 2012; Sleath et al., 2014). For those patients with chronic illness, community pharmacists are particularly well suited because they are so accessible, and the care of these patients is ongoing (Bereznicki et al., 2013; L. M. Emmerton et al., 2012). As well as being accessible, pharmacists have regular and frequent contact with patients, often seeing them more than their doctors (Adunlin & Mahdavian, 2012; Bereznicki et al., 2013). Pharmacists are often the last health care professional a patient sees before they make the decision to adhere or not to adhere to their treatment plan (Saini et al., 2011). Because they are experts in the medications patients receive, they have the skills to increase the health literacy of their patients, improving their

understanding of medication and device technique (Cuellar & Fitzsimmons, 2003; Mehuys et al., 2008). Pharmacy databases allow for easy identification of at risk patients, through looking at their medication use (Redzuan et al., 2014). Cuellar and Fitzsimmons (2003) state that if pharmacists are going to be in this education and management role, they need to work within the context of patient's belief system, and make an effort to understand the roles in a family involved with patient care, and what a family expects from treatment. Gade (2008) identified three roles that pharmacists fulfil for their patients. The first is a *traditional role* which involves the dispensing of medication, being responsive to patient enquiries and providing accurate information, and having a wealth of knowledge. The *health care provider role* is an extension of the traditional role, and involves pharmacists being trustworthy and good at listening, which allows patients to feel comfortable to talk about both their medication and their general day to day life. The final role is the *alternative therapy source role*. Patients felt it was important that their pharmacists know what alternatives were out there and be able to talk to their patients about these. These roles occur along a continuum and it is important for pharmacists to be able to identify what each individual requires from them, and be able to adapt and function accordingly (Gade, 2008). Pharmacists also have relationships with their patient's GPs, so GP buy-in for the extension of the pharmacist's role is important. GP's have been found to agree that pharmacists are well placed to be more involved in patient care, and in general support has been found for this idea. However there is still resistance from GPs when it comes to exactly how much input pharmacists should have, and GPs stress the importance of direct communication from pharmacists about their patients (Azmi, N., & Azmi, 2012; Bereznicki et al., 2011).

When Nadaira et al. (2009) asked pharmacists to share their experiences of working with asthma patients and providing interventions, they identified that they are in regular contact with patients, that they play an important role in the management of asthma in their patients, and that there need to be more interventions based in community pharmacies. New Zealand pharmacists have been found to have a good knowledge of their countries health disparities, and an eagerness to learn more about these disparities and cultural competencies, highlighting a desire to learn and provide excellent services to their patients (Aspden, Butler, Moore, & Sheridan, 2011). Australian pharmacists who have been involved with community interventions were interviewed about their experiences of providing community-based asthma interventions, and were found to be

proud of the work they were doing and of the feedback they were receiving from their patients. They also reported high levels of professional satisfaction from their enhanced clinical role (Bereznicki et al., 2011). Pharmacists were also able to identify areas which were crucial to the success of interventions. Having a pharmacist available and a private space for consultations is extremely important, as is having good team relationships within the pharmacy, communication and working collaboratively with GP's (Bereznicki et al., 2011; L. M. Emmerton et al., 2012; Nadaira et al., 2009). A need for more educational aids was identified, and recruitment seems to be the area causing the greatest amount of difficulties (L. M. Emmerton et al., 2012). Pharmacists have also been asked about their perceptions of their patients, and they think that patients are lacking enthusiasm when it comes to their asthma care, and that the use of relievers has become normalised, as opposed to it being viewed as a last resort medication during symptom exacerbation (Bereznicki et al., 2011).

Support for the effectiveness of pharmacist contributions to the care of patients with asthma has been found internationally. Adunlin and Mahdavian (2012) conducted a review of studies in the USA and Canada that focused on community pharmacist interventions aimed at helping patients with asthma and chronic obstructive pulmonary disease (COPD). Saini, Krass, and Armour (2004) implemented a community pharmacy intervention in Australia which was based on a six step plan. These steps included assessment of asthma severity, provision of a written action plan, and regular education and review. Pharmacist's also conducted a needs analysis for each individual patient, and delivered appropriate intervention based on these identified needs. An intervention delivered by Schulz et al. (2001) in Germany was centred on pharmacist's assessing and correcting patient's inhaler technique, and working with patient's to resolve any medication or health issues they were having. The results of this research from around the globe was that reliever use significantly decreased and preventer use significantly increased. Patients perceived a significant increase in their asthma control and knowledge, and involving pharmacists was found to be acceptable as a long-term care option (Adunlin & Mahdavian, 2012; Saini et al., 2004; Schulz et al., 2001). Similar interventions based in Australia, Spain, and England, included the use of a control group. Participants receiving the interventions had the same outcomes as those reported above, as well as greater increases in quality of life and inhaler technique, than the participants in the control group (Armour et al., 2007; Barbanel, Eldridge, & Griffiths, 2003; García-Cárdenas et al., 2013; Saini et al., 2008). The majority of interventions

targeted to asthma patients, carried out in the community pharmacy setting, are focused on adults with asthma.

The perspective of patients when comparing interventions and standard care was more deeply explored in a study by Naik-Panvelkar, Armour, and Saini (2010). They labelled patients who have been involved in an intervention as being experienced, and those who haven't as being naive. Both sets of patients were found to be happy for their pharmacist to take an active role in their asthma care, wanted more advice than they were currently receiving, and were satisfied with the care they were currently being provided with. Private consultation rooms were identified as being important to both groups, and being empathic, friendly, and genuinely interested were viewed as necessary traits of a pharmacist. Naive patients had lower expectations of their pharmacist and experienced patients had greater levels of knowledge and satisfaction. Naïve patients had never had their inhaler technique checked but believed that it was already adequate, whereas experienced patients had had their technique checked, and believed it was greatly beneficial.

Interventions can be conducted in many ways, and of these, face-to-face, and mail, were compared in the Australian pharmacy setting. The face-to-face intervention appeared to have a higher effectiveness than the mail intervention. However, the uptake of the face-to-face intervention by pharmacists was much lower than the mail intervention. Pharmacists were more likely to implement a mail intervention, most likely due to its ease and less time consuming nature, so the mail intervention was found to be efficacious (Bereznicki et al., 2013). A review of patient satisfaction found that the majority of the time, patients were highly satisfied with the intervention provided by their pharmacist. (Naik-Panvelkar, Saini, & Armour, 2009). Method of intervention delivery was not included in the review. A questionnaire aimed at exploring patient preferences in relation to pharmacy based asthma care, identified that a private consultation room, as well as comprehensive advice were important aspects of satisfaction, and not surprisingly, as the cost of interventions increased, the numbers participating decreased (Naik-Panvelkar et al., 2012). Young et al. (2012) explored the ability of a pharmacy asthma intervention to improve asthma control in a rural setting, and found that being involved in a community pharmacy intervention is a positive experience for most patients, and they felt as if their increased education resulted in better self-management which in turn led to greater asthma control.

Only two studies were identified as targeting children with asthma, and only one of these focused on outcomes for parents. Liu and Feekery (2001) evaluated the effectiveness of an education intervention for parents and caregivers of asthmatic children aged 1 to 4 years old. This intervention was run out of an asthma clinic at a hospital in Australia. The intervention had three key education components. The first was providing knowledge about asthma, the second was increasing the parental role in their child's asthma management, and the third was helping the parent develop necessary management skills. There were different methods of delivery, and questionnaires were used to assess outcomes. Parents who were in education groups had an immediate increase in their asthma knowledge, and this increase was sustained, or increased even further, over the following 12 months. Parents who received education through a one-on-one session had even greater increases to their asthma knowledge. Parents in the control group, whose children were patients at a different hospital and were not receiving any extra education, had a very slight increase to their knowledge. In all education groups there was a significant decrease in asthma morbidity scores. De Vries, Van Den Berg, Duiverman, and De Jong-van Den Berg (2010) also compared control to intervention, focusing on children ages 0 to 14, and excluding ages 6 to 8 years. The intervention was based on three recommendations from the Dutch paediatric guidelines. These were that every child with asthma medication should have a reliever, long-acting relievers should only be prescribed in combination with preventers, and that children with asthma should only have one type of inhaler. The control group was made up of children who were patients a non-participating pharmacies, patients who were receiving standard care. The intervention was found to have a significant effect on the use of relievers and preventers.

A large percentage of the research into asthma interventions and community pharmacists is carried out in Australia. Australia and New Zealand have similar cultures, and high levels of migration between the two countries, so a generalisation of results is possible. As the current study is based in a rural setting, it was promising to see that many Australian studies were set in both urban and rural settings, however only a very small number were set only in rural settings, leaving a gap in the research for more knowledge on these communities. Of all the research looked at, only one was found to focus on pharmaceutical care of asthmatic patients in New Zealand (L. Emmerton, Shaw, & Kheir, 2003). L. Emmerton et al. (2003) focused on five rural pharmacies in Otago and Southland, with 100 participants, 35 of which were under the

age of 17, and 9 who identified as Maori. Patients were asked to complete daily diaries, peak flow rate measurements, and symptom assessments. The intervention focus on patient consultation, systematic assessment, care planning, patient education, recommendations and referrals, and monitoring and follow-up. Within 6 months of the intervention, it was estimated that 70% of patients had a quarter to three quarters of their medication issues solved. These medication issues were identified as compliance-related, related to choice of medication or dose, and adverse drug reactions or drug interactions. It was suggested that differences in region and ethnicity could change the presentation and effectiveness of pharmacy interventions. This study had several important similarities to the current research project. These were a focus on rural pharmacies, the inclusion of patients under the age of 17 years old, and the inclusion of Maori patients.

Health Action Process Approach

In order for there to be an increase in parent's adherence to their children's treatment plans, which in turn will result in greater asthma control for their child, the development of an intervention with the necessary components is required. When interventions are based on theory and evidence, and are tailored to specific psychological constructs, they are more effective and allow for more meaningful interpretations of results (Schwarzer et al., 2011). There are a variety of theories which try to explain the components necessary for health behaviour change to choose from, one of the oldest, is the Theory of Reasoned Action. The theory is outlined in Figure 1. Developed by Ajzen and Fishbein (1980b), it's based on the assumption that people are rational beings and that they consider the outcomes of their actions before they decide whether or not to engage in a behaviour. The theory posits that a person's intention to engage in a certain behaviour will directly determine whether action is taken. Intention is developed through two factors. The first is *attitude towards the behaviour*, or a person's positive or negative evaluation of engaging in the behaviour. The second factor is labelled *subjective norm*, which is based on a person's perception of the pressures upon them to engage, or not, in the behaviour, from their social circle. Attitude towards the behaviour is developed through a person's beliefs of the results of engaging in a behaviour, and their evaluation of these results, labelled as *behavioural beliefs*. Subjective norms are developed through *normative beliefs*, which involves both their beliefs of whether other people think they should be engaging in a behaviour, or not, and the individual's motivation to comply with these social pressures. Following this theory, a person will have a greater intention to perform a behaviour if they view it in a positive manner, and if they believe that the people most important to them think they should perform it (Ajzen & Fishbein, 1980b).

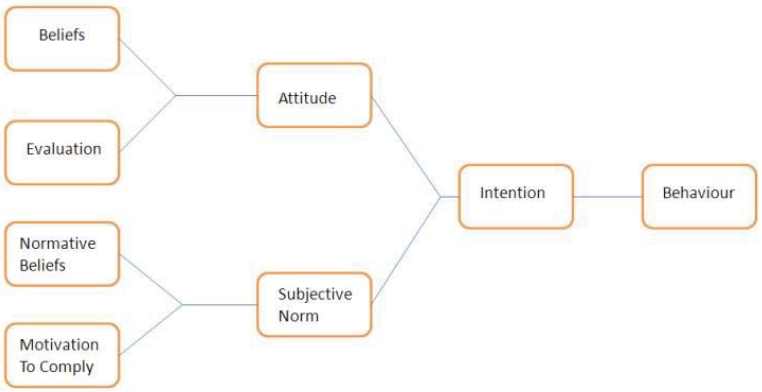


Figure 2. The theory of reasoned action. (Ajzen & Fishbein, 1980a)

Extending upon the Theory of Reasoned Action, Ajzen (2005) developed the Theory of Planned Behaviour, shown in Figure 2. This theory also assumed that humans being are rational, that they use the information available to them to consider the outcomes of their actions, and that accessing a person's intention will allow for an accurate prediction of their behaviour. Like the Theory of Reasoned of Action, intentions are still developed through attitude toward the behaviour and subjective norms, but a third factor has been added to the Theory of Planned Behaviour. *Perceived behavioural control* concerns a person's confidence in their ability to perform the behaviour in question, otherwise known as their self-efficacy. Just as attitude towards behaviour is built on behavioural beliefs, and subjective norm is built on normative beliefs, perceived behavioural control is built on *control beliefs*. These beliefs relate to the power of both situational and internal factors to promote or prevent the performing of the behaviour. Perceived behavioural control can influence behaviour indirectly, through intention, but it is also believed to be able to influence it directly. Ajzen (2005) argues that the inclusion of perceived behavioural control allows one to not only deal with volitional behaviours, but also with behaviours of which a person only has limited volitional control. As an example of limited volitional control, a person may intend to adhere to their medication but have a low income, so their adherence is dependent on the cost of the medication, something that is out of their control. Following the map of the Theory of Planned Behaviour, if a person evaluates a behaviour positively, are experiencing social pressure to perform it, and believe that they have the ability to perform it, they will have a high intention which will lead to action. The Theory of Planned Behaviour has been around for decades and has served as a useful tool in intention prediction, however in recent years it has been under fire, particularly in regards to its validity and utility (Sniehotta, Presseau, & Araújo-Soares, 2014). Concerns about the validity of The Theory of Planned Behaviour arise from the claim that some of its suggestions are demonstrably false. For example, Sniehotta et al. (2014) report that beliefs have often been found to predict a person's behaviour, over and above their intentions, and that there is consistent evidence that a person's age, mental health, physical health, socioeconomic status, and aspects of their environment can predict physical activity when the Theory of Planned Behaviour's constructs are controlled for. The theories' utility is something that has changed over the years. Initially, the Theory of Reasoned Action was introduced it held great utility because it suggested that behaviour was not just a result of attitudes, but decades later, the Theory of Planned Behaviour has lost its utility. Sniehotta et al. (2014) argue that it does not lend itself well to experimental

testing, its explanatory hypothesis doesn't differ in any meaningful way from other popular theories, and it doesn't help practitioners develop helpful interventions. Many practitioners no longer use this theory, but look to extended versions for more relevance. It has been argued that it may be time to let the Theory of Planned Behaviour retire, so that researchers and health care professionals can move forward with new and improved health behaviour change models (Sniehotta et al., 2014).

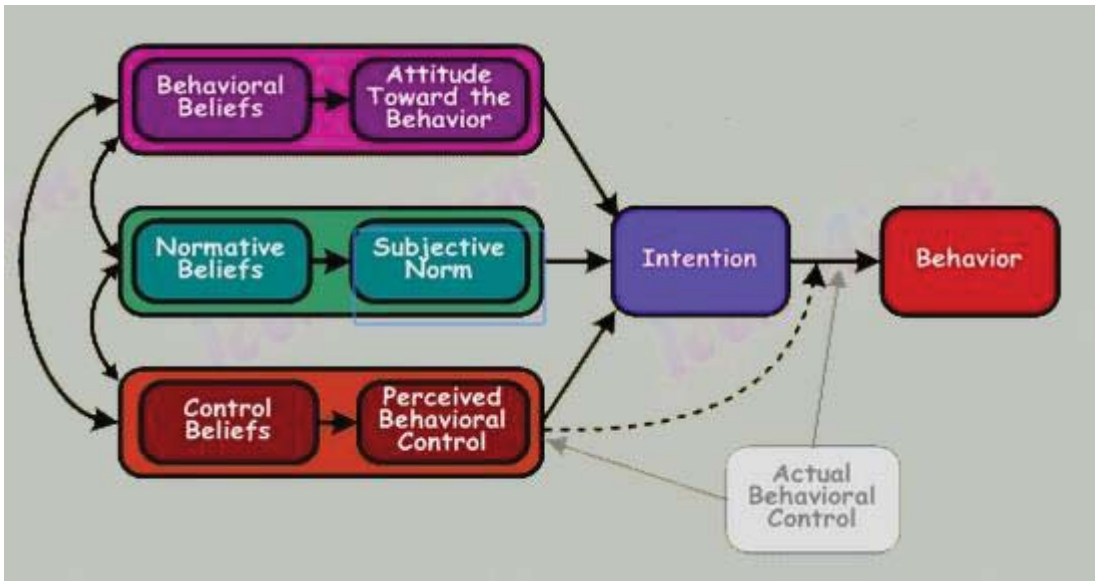


Figure 3. The theory of planned behaviour. (Ajzen, 2006)

The Health Action Process Approach (HAPA), developed by Ralf Schwarzer, is used to look at the changes in health behaviour and the socio-cognitive aspects that play a role in this change (Ripper, Renneberg, Landmann, Weigel, & Germann, 2009). Figure 3 outlines this model. HAPA distinguishes itself from other health behaviour change theories, such as the Theory of Planned Behaviour, by including a mediator to bridge the gap between intention and behaviour. The majority of theories are based on the idea that if we have access to a person's intention to change, we can predict what their behaviour will be, but as Schwarzer (2008b) points out, a person's behaviour does not always align with their intentions. HAPA bridges this intention-behaviour gap with the addition of planning (Clark & Bassett, 2014). It is believed that an individual with a high intention to change will be more likely to engage in action planning, which will in turn make them more likely to engage in the behaviour (Sutton, 2008). The HAPA distinguishes between the intention development and the planning by suggesting a pre-intentional motivational phase, in which a behavioural intention is formed, and a post-intentional volition phase, where these intentions are turned into behaviours (Schwarzer, 2008b). The volitional phase is further broken down into those who perform the desired

health behaviour (*actors*) and those who intend to perform (*intenders*). The theory also proposes that throughout the process of developing and maintaining a health behaviour change, perceived barriers and available resources will also influence development (Chiu, Lynch, Chan, & Berven, 2011). A final key component of the HAPA is perceived self-efficacy, which is believed to be important in all three phases of health behaviour change (Schwarzer, 2008b).

In the *motivational phase*, individuals develop the intention to engage in a behaviour. Intentions are defined as personal goals, which have either been imposed by one's self or by another (Schwarzer, 2008b). Three elements play a role in the development of intentions, *risk perception*, *outcome expectancies*, and *action self-efficacy* (Schwarzer, 2008b). *Risk perception* is seen as the weakest of the three cognitions, and is unable to lead a person to develop an intention. However, it does allow a person to begin the process of contemplation and elaboration of their thoughts surrounding outcomes and their own capabilities (Schwarzer et al., 2011). *Outcome expectancies* are formed when a person balances the positives and negatives of behavioural outcomes. *Action self-efficacy* is an individual's belief in their capability to perform the new behaviour they intend to engage in. The theory is that those who are high in action self-efficacy will be able to imagine their success, and this will make them more likely to act upon their intention (Schwarzer, 2008b).

The first of the two volitional phases involves people who have the intention to engage in the behaviour, but have not yet turned this intention into action. These people are referred to as *intenders*. Engagement in the behaviour is more likely to occur when intentions are coupled with detailed instructions on how to carry out the behaviour, and how to manage any obstacles that may prevent a person from doing this (Schwarzer, 2008b). Because of this, the first volitional phase involves *action planning* and *coping planning*. *Action planning* involves the use of situational cues (i.e. when and where), and a sequence of action (i.e. how), to elicit behaviour. It is thought that it is more difficult to forget an intention when it is paired with these cues (Schwarzer, 2008b). *Coping planning* involves the individual contemplating any possible barriers that may arise in the process of adopting and maintaining the behaviour. Once these barriers have been identified they can create strategies to help them deal with, and work around, these barriers. It is important that an individual's current coping strategies are utilised in this planning process (Clark & Bassett, 2014). The final element in the first of the volitional phases is *coping self-efficacy*, or *maintenance self-efficacy*. This represents an

individual's belief in their own capability to cope with barriers that arise while they are trying to maintain the new behaviour (Schwarzer, 2008b).It is theorised that once the behaviour has been taken up, a person who has high coping self-efficacy will invest themselves more in the behaviour, and persist longer in the face of difficulties. The second of the volitional phases covers those individuals who have initiated the new health behaviour, and are maintaining it. These individuals are called *actors* (Schwarzer, 2008b). *Recovery self-efficacy* is the key element for actors, however, coping self-efficacy is still playing a role. Recovery self-efficacy relates to the experience of failure and how a person recovers and gets back on track after a failure (Schwarzer, 2008b).

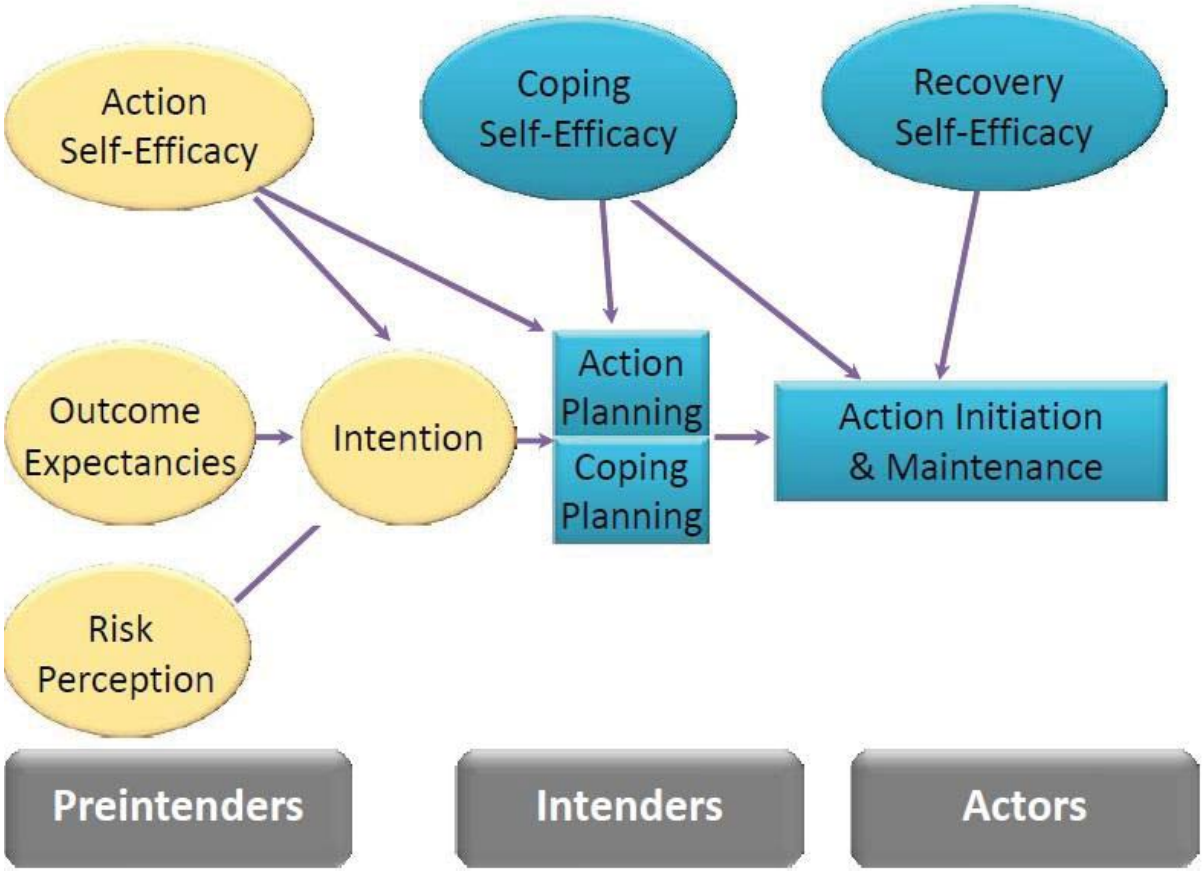


Figure 4. The health action process approach. (Schwarzer, 2008a)

One of the benefits of the HAPA model is its usability when it comes to designing an intervention. Effectiveness is believed to be greater when an intervention is tailored to a specific group (Schwarzer et al., 2011). Lippke, Schwarzer, Ziegelmann, Scholz, and Schüz (2010) examined at which phase a planning intervention would be most effective. When the intervention was applied to those participants labelled as intenders, movement along the HAPA model was significantly greater in comparison to the control group. When the same planning intervention was given to pre-intenders, movement along the

model was not significantly different from the control group, lending support to the tailoring of interventions to each specific phase. Individuals are identified as being pre-intenders, intenders, or actors, and a suitable treatment is provided. Pre-intenders should benefit from confrontation in regards to their outcome expectancies and risk perceptions. This group needs to learn that the new behaviour has positive outcomes, and that their current behaviour has negative outcomes (Schwarzer, 2008b). Intenders should benefit from an intervention that works to turn their intentions into actions by use of planning. Finally, actors do not usually require an intervention, however work can be done to strengthen their ability to prevent relapses. (Schwarzer, 2008b). It is believed that there is a special place in interventions for those variables within the motivational phase. A change in risk perception, outcome expectancy, or action self-efficacy will work its way down the model and produce a change in behaviour (Sutton, 2008). A stage-matched intervention was trialled on patients with obstructive sleep apnea, and it was found that, when compared to standard care, outcome expectancies and self-efficacy were significantly higher, as well as adherence to treatment (Deng, Wang, Sun, & Chen, 2013).

Although the HAPA model is relatively, there is a moderate amount of research into its efficacy. The model has been tested on various populations, including different cultures, the old and young, men and women, students, and rehabilitation patients (Schwarzer, 2008b). It has been validated across a variety of health behaviours including physical exercise, diet, breast examination, dental hygiene habits, seat belt use, and of relevance to the current study, medication adherence (Leventhal & Mora, 2008; Wiener, Mullins, & Pincus, 2015). When the individual elements of the HAPA are broken down there is empirical evidence to support their presence (Schwarzer et al., 2011). The two phases of behaviour implementation, motivation and volition, have been found to be empirically different. Planning has been found to be predominantly beneficial to those in the volitional stage, and different effects were found for both action and coping planning when used in interventions, solidifying the presence of both kinds of planning. And finally, multiple studies have found self-efficacy to play a role throughout the adoption of a new behaviour (Schwarzer et al., 2011).

Many of the studies involving the HAPA model hold similarities to the current research project. Engagement in pressure garment therapy and vaginal dilator use are two health behaviours with low adherence rates, similar to those of asthma (Bakker et al., 2015; Ripper et al., 2009). Unlike the majority of HAPA research that utilises questionnaires

in their data collection, these two studies, as well as the current project, used semi-structured interviews with participants. It is important to note that in these studies the participants were patients, and the current study interviewed health professionals. Individuals who were no longer engaging in pressure garment therapy, were identified as having low self-efficacy, no positive outcome expectancies, and no risk awareness (Ripper et al., 2009). The study by Bakker et al. (2015) on vaginal dilator use also identified processes involved in the motivational and volitional phases, supporting the fit of the HAPA model. Another health behaviour with low adherence is implementation of home exercise programmes prescribed by physiotherapists for patients with shoulder injuries (Clark & Bassett, 2014). This study is also the only research into HAPA that is conducted in New Zealand, the same location as the current project. Moderate to strong correlations between the self-efficacies and intention, intention and adherence behaviours, and adherence behaviours and shoulder function, were reported, as was general support to the satisfactory fit of HAPA to the data. There is also considerable evidence for the individual variables of the HAPA model. Research into flu vaccination behaviour found that risk perception, outcome expectancies, and self-efficacy are significant factors in the development of intention, with self-efficacy being superior to all other variables at all stages of the model (Ernsting, Gellert, Schneider, & Lippke, 2013).

Along with general health behaviours, the HAPA model has also been used in research alongside chronic illnesses. Chiu et al. (2011) evaluated the HAPA as a motivational model for patients with Multiple Sclerosis, working on their physical activity self-management. Overall, the findings from this study supported the HAPA model and the role of self-efficacy, planned behaviour, and the stages of change theories for explaining intention and physical activity behaviour. Although asthma is also a chronic illness, it differs from Multiple Sclerosis in that it is a disease common in children, cure from symptoms is possible, and it doesn't result in fatalities very often. Because of this it is difficult to generalise the research on these chronic illnesses to asthma. HAPA has been used in one published instance with asthma patients, and this also happens to be the only time it has been used with children and adolescents. Milnes, McGowan, Campbell, and Callery (2013a) used the HAPA to develop a pre-consultation guide with the aim of getting young people with asthma involved in asthma review consultations with their practice nurses. It was developed to work at the motivational phase, by enabling their self-efficacy, heightening their risk perception which would aid in the identification of

positive outcome expectancies. Exit interviews were conducted with adolescents and practice nurses who had trialled this guide, and feelings of increased confidence to ask questions during consultations, and an intention to do so in future appointments, was described by the young people (Milnes, McGowan, Campbell, & Callery, 2013b). The guide will be assessed in a subsequent study which has not yet been published. This study is the only published study where HAPA is used with asthma, and it highlights a massive gap in the research pool, specifically in regards to children and their parents when it comes to asthma care.

All of the research on HAPA focuses on the patient themselves. There is no research into those parents and caregivers who are in charge of their child's adherence to treatment, and how the HAPA model may work to develop new health behaviours within this population. Only one study made mention of the patient's family members. Hyde and White (2013) used a HAPA based intervention to increase people's communication of their organ donation wishes with their family members, but family members were not active participants in the study. The final area of importance to the current research project is pharmacies and pharmacists. Wiener et al. (2015) carried out a study with many similarities to the current project, looking at a pharmacist-led intervention, based on the HAPA model, focusing on medication adherence. Unlike the current project whose intervention was targeted at children with asthma, Wiener et al. (2015) wanted to develop an intervention that would be applicable across multiple diseases. Target patients were those who often have gaps in their treatment and care, not unlike the patients targeted in the current asthma intervention. Other similarities are that they used semi-structured interviews and thematic analysis, however it should once again be noted that this study interviewed patients whereas the current study interviewed pharmacists. Patients were able to demonstrate a level of risk awareness, in that their disease could worsen, or fears in regards to a relapse. Factors which motivated them to adhere included improving and staying healthy, and having a health care provider that was easy to access and caring. Positive outcome expectancies were identified as improvement in their condition which would lead to changes in how they felt and their symptoms. Patients believed that their self-efficacy could be improved if their health care provider would spend more time talking to them about their medications and why they were taking them. Factors which work as a barrier to adherence were also identified. Complexity in their regimen and the amount of medication being taking, the cost of medication and health care, and a lack of regular

access to a health care provider all were reported to prevent these patients from adhering to their medication (Wiener et al., 2015). This study provides a good foundation for comparison and extension in regards to the current research project on a pharmacy-led community intervention.

Pharmacy Care Model

The HAPA model creates the theoretical underpinnings for what a health behaviour change intervention should look like, and what the important elements are. However, this model doesn't take into consideration that people are administering these interventions, and within every encounter with a patient or a client there is a relationship. It is important that interventions don't just focus on the "what," but also on the "how." Community pharmacists do not get to spend a lot of time with their patients, so it is important that they are able to communicate effectively, making the patient feel heard and understood, and allowing the patient to be open to the education provided, making the most of the short amount of time available (Gade, 2008). Resistance to pharmacy interventions more often comes from patients than pharmacists, and patients have indicated that they have difficulty remembering the information provided to them (Kaae, Traulsen, & Nørgaard, 2014). One suggested explanation for this is that patients may be interpreting pharmacists attempts to educate and improve health outcomes as politeness rather than anything clinical (Kaae et al., 2014). Trust is essential in the formation and maintenance of pharmacist-patient relationships, and the development of this trust will be reliant on a variety of key factors. It is important to patients that their pharmacists listen to them, that they are compassionate when working to gain their trust, and that they take a caring approach to their work (Mey et al., 2013).

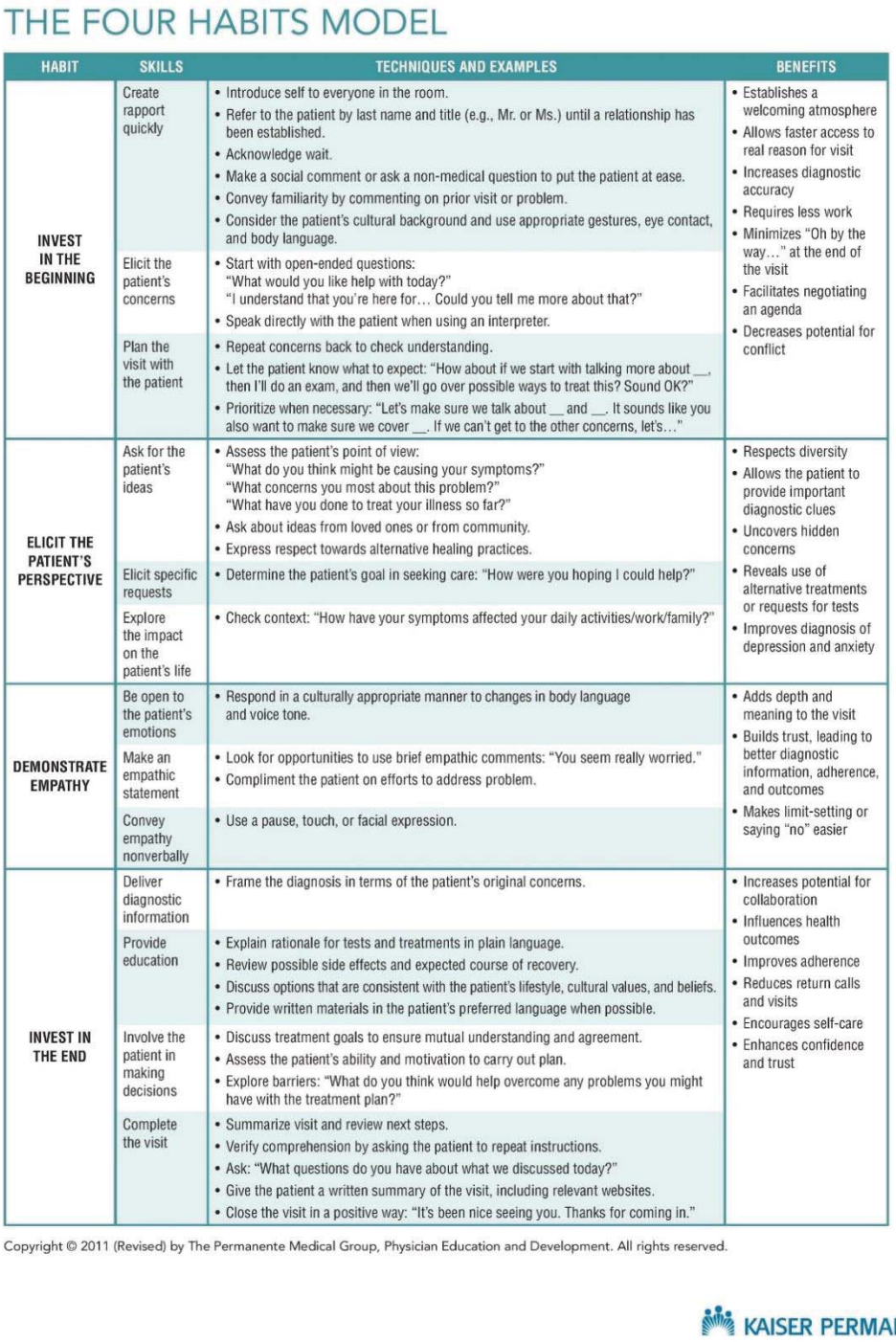
Patients have shared their experiences of the pharmacist-patient relationship, and identified aspects they connected with, and those they didn't (Mey et al., 2013). For the initial formation of relationships, the knowledge of the pharmacist and the ability to be welcoming, were important to patients. Shifting from an initial rapport to a trusting relationship was facilitated by having a safe health care space, and by the pharmacist taking a holistic approach to the patient's care. Although knowledge was appreciated and important in the initial stages, relationships were more likely to form and strengthen if a pharmacist was approachable, sensitive, and willing to go above and beyond for patients. Areas that patients identified as being negative and preventing them from forming a good relationship with their pharmacist included, feeling judged and inappropriately questioned, and a failure to protect their confidentiality (Mey et al., 2013). The way a pharmacists dresses has also been found to play a role in a patients perception when it comes to their confidence and trust in a pharmacist, and their professionalism (Khanfar, Zapantis, Alkhateeb, Clauson, & Beckey, 2013). The literature supports a patient-centred and participatory approach, which allows

improvements in patient satisfaction and their adherence to medication, which in turn leads to better health outcomes (Worley-Louis, Schommer, & Finnegan, 2003).

The Four Habits Model is a patient- and relationship-centred approach which was developed to identify the necessary communication skills for a physician, enabling a successful clinical interview or encounter with a patient (Grice et al., 2013; Krupat, Frankel, Stein, & Irish, 2006). Figure 4 provides a detailed outline of this model. An important underlying premise is that patients aren't concerned with how much you know until they know how much you care (Grice et al., 2013). The four habits of communication are *invest in the beginning*, *elicit the patient's perspective*, *demonstrate empathy*, and *invest in the end*. *Invest in the beginning* involves the health professional quickly developing rapport, involving the patient in the planning of the visit, and prompting for the patient's concerns. *Elicit the patient's perspective* allows the health professional to ask for patient's specific request, their own ideas, and the impact their health is having on their life. *Demonstrate empathy* involves conveying empathy nonverbally and verbally, and being open to the emotions that may come up for a patient. Finally, *invest in the end* is a time to deliver any diagnostic information, provide any necessary education, and include the patient in any decisions that need to be made (Stein, Frankel, & Krupat, 2005). The purpose of integrating these four key habits is that once rapport is established then trust can be quickly built, which leads to an effective exchange of information and demonstrates a health professionals care and concern for their patients, which in turn increases their likelihood of adhering to medication and having positive health outcomes (Stein et al., 2005). Previously, it has been identified that patients connect well to these qualities when forming and maintaining relationships with their pharmacists.

The Four Habits Model was developed in Kaiser Permanente, a health care organisation in the USA, and has been used extensively to teach thousands of their clinicians' communication skills (Krupat et al., 2006). This validated and evidence-based framework has a long history in clinical practice, and its use has been extended beyond that of Kaiser Permanente into other facilities, research, and also for use outside of the USA (Grice et al., 2013; Gulbrandsen et al., 2008; Stein et al., 2005). R. Brown and Bylund (2010) outlined some of the strengths of the Four Habits Model and other similar communication skills models. These models play a valuable role in the implementation of communication skills training, often have an accompanying assessment tool, and have been found to be reliable and valid. R. Brown and Bylund

(2010) also identified that these models have weaknesses, in that they may be too simplistic for fields which are more specialised, and while they provide an approach to the consultation, it is fairly generic and there isn't much of a focus on continuing care. The Four Habits Model has been used in a project that involved pharmacy education, and it was found to improve student pharmacist's abilities to use the four habits of communication and develop relationships with their clients (Grice et al., 2013). This generalisability of the model into pharmacy means that the current project can use the HAPA model as the underpinning of "what" should be included in an asthma management intervention, and the Four Habits Model can be the underpinning of "how" the intervention is delivered to parents of children with asthma, so that good relationships can be formed, information can be effectively shared, and these who have asthma that is not adequately controlled, can work towards having greater adherence and positive health outcomes.



THE FOUR HABITS MODEL

HABIT	SKILLS	TECHNIQUES AND EXAMPLES	BENEFITS
INVEST IN THE BEGINNING	Create rapport quickly	• Introduce self to everyone in the room. • Refer to the patient by last name and title (e.g., Mr. or Ms.) until a relationship has been established. • Acknowledge wait. • Make a social comment or ask a non-medical question to put the patient at ease. • Convey familiarity by commenting on prior visit or problem. • Consider the patient's cultural background and use appropriate gestures, eye contact, and body language.	• Establishes a welcoming atmosphere • Allows faster access to real reason for visit • Increases diagnostic accuracy • Requires less work • Minimizes "Oh by the way…" at the end of the visit • Facilitates negotiating an agenda • Decreases potential for conflict
	Elicit the patient's concerns	• Start with open-ended questions: "What would you like help with today?" "I understand that you're here for… Could you tell me more about that?" • Speak directly with the patient when using an interpreter.	
	Plan the visit with the patient	• Repeat concerns back to check understanding. • Let the patient know what to expect: "How about if we start with talking more about __, then I'll do an exam, and then we'll go over possible ways to treat this? Sound OK?" • Prioritize when necessary: "Let's make sure we talk about __ and __. It sounds like you also want to make sure we cover __. If we can't get to the other concerns, let's…"	
ELICIT THE PATIENT'S PERSPECTIVE	Ask for the patient's ideas	• Assess the patient's point of view: "What do you think might be causing your symptoms?" "What concerns you most about this problem?" "What have you done to treat your illness so far?" • Ask about ideas from loved ones or from community. • Express respect towards alternative healing practices.	• Respects diversity • Allows the patient to provide important diagnostic clues • Uncovers hidden concerns • Reveals use of alternative treatments or requests for tests • Improves diagnosis of depression and anxiety
	Elicit specific requests	• Determine the patient's goal in seeking care: "How were you hoping I could help?"	
	Explore the impact on the patient's life	• Check context: "How have your symptoms affected your daily activities/work/family?"	
DEMONSTRATE EMPATHY	Be open to the patient's emotions	• Respond in a culturally appropriate manner to changes in body language and voice tone.	• Adds depth and meaning to the visit • Builds trust, leading to better diagnostic information, adherence, and outcomes • Makes limit-setting or saying "no" easier
	Make an empathic statement	• Look for opportunities to use brief empathic comments: "You seem really worried." • Compliment the patient on efforts to address problem.	
	Convey empathy nonverbally	• Use a pause, touch, or facial expression.	
INVEST IN THE END	Deliver diagnostic information	• Frame the diagnosis in terms of the patient's original concerns.	• Increases potential for collaboration • Influences health outcomes • Improves adherence • Reduces return calls and visits • Encourages self-care • Enhances confidence and trust
	Provide education	• Explain rationale for tests and treatments in plain language. • Review possible side effects and expected course of recovery. • Discuss options that are consistent with the patient's lifestyle, cultural values, and beliefs. • Provide written materials in the patient's preferred language when possible.	
	Involve the patient in making decisions	• Discuss treatment goals to ensure mutual understanding and agreement. • Assess the patient's ability and motivation to carry out plan. • Explore barriers: "What do you think would help overcome any problems you might have with the treatment plan?"	
	Complete the visit	• Summarize visit and review next steps. • Verify comprehension by asking the patient to repeat instructions. • Ask: "What questions do you have about what we discussed today?" • Give the patient a written summary of the visit, including relevant websites. • Close the visit in a positive way: "It's been nice seeing you. Thanks for coming in."	

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Figure 5. *The four habits model. (The Permanente Medical Group, 2011)*

Summary

Asthma is the most common chronic disease in children and New Zealand has the highest paediatric rates among English speaking countries (Gillies et al., 2013; Mansour et al., 2000). The treatment of asthma currently involves two categories of medications. Reliever medications open up the airways, providing immediate relief from symptoms, and are intended to be used on an as needed basis (Global Initiative for Asthma, 2014). Preventer medications are a maintenance treatment intended for daily use. Their role is to decrease airway inflammation, which in the long term helps control symptoms (Global Initiative for Asthma, 2014). Despite the proven efficacy of these medications, a common theme among asthma patients is underuse of their preventers and overuse of their relievers (Grover, Armour, et al., 2013; Young et al., 2012). Inadequacies in parental asthma knowledge and negative attitudes towards preventer medications have been identified as two key factors preventing adherence to medication in children with asthma (Magdy et al., 2010; Saini et al., 2011).

Asthma education has been found to significantly improve parent's attitudes towards preventer medications and their knowledge of asthma, and community pharmacists have been identified as being in an ideal position to identify those patients at risk and play an important role in their education (Armour et al., 2011; Peterson-Sweeney et al., 2007). Globally, asthma interventions run by community pharmacists have had positive outcomes for asthma patients, including a decrease in reliever use and an increase in preventer use (Adunlin & Mahdavian, 2012; Saini et al., 2004; Schulz et al., 2001). Only two studies were found to focus on pharmacy interventions targeted at children with asthma. These studies found that participation in the intervention led to an increase in parental asthma knowledge and had a significant effect on preventer and reliever use (De Vries et al., 2010; Liu & Feekery, 2001). There is a significant amount of evidence to support the idea that pharmacists can educate the parents of children with asthma and help improve treatment adherence. Interventions which are based on theory and evidence, and are tailored to specific psychological constructs, have been found to be more effective (Schwarzer et al., 2011). The HAPA model suggests that a change in health behaviour can be developed by using planning with patients after an intention has been formed, with the intended result being action.

The original research plan was to carry out an effectiveness evaluation on the education programmes being delivered by the two rural pharmacies. This was to be done by interviewing parents of children with asthma who were patients at the two rural

pharmacies, and hear about their experiences of the programmes, and any changes they believed needed to be made. Each pharmacy was given 60 information sheets to hand out to eligible patients when they came into the pharmacy to collect a prescription. The information sheet had both a free number to call and an email address that parents could use to contact the researcher if they had any interest in the study. After two months the researcher had not had contact from a single participant. Because the research is part of a Master's thesis there were time constraints to consider, and the decision was made to change the focus of the research so that the thesis could be completed. The current research project aimed to compare the two pharmacy education programmes to the constructs of the HAPA model, to see if the service being delivered to patients matched the aspects that the HAPA theory suggests will promote change in health behaviours. This was done by interviewing the pharmacists working within the pharmacies about how they educate parents of children with asthma. The research also aimed to gain insight into the pharmacist's experiences of working with these parents and children, and the barriers they perceive as playing a role in medication adherence. These aims were explored in the context of a small rural community that may present its own unique challenges.

Method

Recruitment

Recruitment of participants took place in the community pharmacies in two rural towns in the Manawatu region in the North Island of New Zealand, Dannevirke and Pahiatua. All of the pharmacists that worked in each pharmacy were invited to participate via a face to face conversation with the researcher, and then an email that was sent to each pharmacy.

Research Setting

The two pharmacies involved in the current study are located in Pahiatua and Dannevirke, which are both small rural towns within the MidCentral DHB. According to the 2013 census *5,043 people live in Dannevirke, with 78% European, 28% Maori and 1.9% Pacific Islanders. 20.5% of the population are under the age of 15 years old. Dannevirke has one pharmacy, a community hospital, a health centre, a solo GP practice, and a drop-in health clinic. All of these services are available Monday to Friday, 8am to 5pm/5.30pm, with the pharmacy also being open for a couple of hours on a Saturday morning. The pharmacy in Dannevirke is a fairly large, has a lot of staff, and is regularly quite busy. As well as providing standard pharmaceutical services it also serves as a gift shop. Dannevirke is 54km, a 45 minute drive from the Palmerston North Hospital.

Pahiatua is smaller than Dannevirke, with a population of 2,412 people according to the 2013 census. 86% of Pahiatua's population is European, 21.5% Maori, and 1.8% Pacific Islanders. 22.1% are under the aged of 15 years old. Pahiatua has one pharmacy and one medical centre, both open Monday to Friday, 8am to 5pm/5.30pm, with one late night at the medical centre and the pharmacy open on Saturday mornings. The pharmacy in Pahiatua is much smaller than Dannevirke, has considerably less staff, and its main purpose is as a pharmacy, with a few cosmetics and gifts also sold. Pahiatua is 43km, a 38 minute drive, from the Palmerston North Hospital.

**The 2013 census break Dannevirke up into Dannevirke East and Dannevirke West. Statistics provided are based on an average of the two.*

Participants

Pharmacy B had two pharmacists, one male and one female, who have owned and worked in the pharmacy together for many years. Pharmacy A had four pharmacists

employed, two female and two male, with one of the male's being the long-time owner. All four of the pharmacists from Pharmacy A agreed to participate in the study, and one from Pharmacy B. All of the pharmacists were involved in the development or delivery of their pharmacies asthma education programme.

Pharmacy Descriptions

Pharmacy A is a large and rather busy place. There can be up to four pharmacists working at one time, as well as pharmacy technicians. Not only do they provide standard pharmacy services, a large proportion of the area is a dedicated to beauty and giftware, with many support staff working in these sections as well. The male pharmacists dress smartly in button up shirts and dress pants, and all female staff, including pharmacists, wear a uniform. In the past year staff turnover among the pharmacists has played a role in restricting the asthma education programme being regularly provided.

Pharmacy B is a smaller shop, much more focused on standard pharmacy services, with a small amount of beauty and gifts available. There are usually two pharmacists working and one or two other staff. All of the staff in this pharmacy dress smartly but there is not a uniform.

Interviews

In agreement with the participants, interviews were held at their pharmacy, within working hours. Interviews took place in a staff break room or in a private consultation room. Prior to the commencement of the interview the participants were provided with an information sheet and a consent form, and were given time to read through both of these and raise any questions or concerns they may have. All of the participants signed the consent form, and two of the participants asked for their transcripts to be returned to them prior to analysis, for a review. Interviews lasted on average around 30 minutes and were conducted in a relatively informal manner. The researcher had met and spoken with all of the participants at least once prior to the interviews, so there was already a level of rapport developed. The interviews began with the participants being asked for an overview of their asthma education programmes, and the desired outcomes for patients. Semi-structured interviews were used to ask around the following themes – a breakdown of the programme and how it has evolved over time; HAPA constructs; perceived parental barriers to medication adherence; and the perceived effectiveness of their education programme. Questioning around the HAPA constructs was not explicit.

For example, to assess for the construct *risk perception*, pharmacists were asked if they believed parents understood the severity of their child's asthma and possible negative health outcomes, and if they addressed this with their patients. Due to the semi-structured nature of the interviews, the format of questions varied slightly between participants, and there were times when a question was not asked because it had already been covered in a previous answer.

All interviews were audio-recorded and were transcribed by the researcher. Within the transcripts the participants are identified by a number (i.e. *P1)* and the research is identified by her initial (i.e. *K).* Any clarifying or extra information is provided in italics.

Ethical Considerations

Evaluation of the risk of this research project was done through Peer Review at Massey University. The project was identified as being low risk and a notification was given to the ethics committee of the University. The main focus of the Low Risk Notification was confidentiality of the information provided by the pharmacists, especially as the programmes are based in small rural towns. These issues were addressed with participants on the information sheet and in person prior to the commencement of the interview. The pharmacists were informed that their interviews would only be heard by the researcher and their supervisors, that identifiers such as names would be omitted from the transcripts, and that the transcripts in full would not be included in the final report. The pharmacists were also given the opportunity to review their transcript and make any changes before analysis took place.

Method of Analysis

The analytic approach was made up of a series of components. The first was to analyse the interviews using Thematic Analysis to explore what the important elements of delivering an asthma intervention is a rural, small community setting. Once these themes had been identified, they were compared to the HAPA model to identify which elements of the theory were being addressed, and which elements could use some further improvement. The third part of the analytic approach was to compare the written proposals for the asthma education programmes to the HAPA theory, to identify which elements of the theory the proposals addressed. The final part of the analysis was to compare what the pharmacies had proposed they were going to provide to their patients, to what they were saying they now actually provide.

Thematic Analysis was chosen as the analysis method for the interviews in the current research project. Thematic Analysis has the ability to address a wide range of qualitative questions, and has many uses in both health and clinical psychology research (Braun, Clarke, & Terry, 2015). This analysis method has been found useful when looking at both experiences, and understanding and perceptions. In particular, when the research question focuses on the lived experience of an individual regarding a health condition/intervention, and also when it is focused on how a particular group view a health condition/intervention (Braun et al., 2015). The current research focused on both of these areas by exploring the experiences of individual pharmacists in administering the asthma education programme, but also looking at the perspective of these pharmacists as a group.

Two of the key advantages of Thematic Analysis is that it is both accessible and flexible in nature (Braun & Clarke, 2006). The accessibility of Thematic Analysis extends to the results that the analysis generates, which can be easily understood by the educated general public (Braun & Clarke, 2006). The results of the research will be given to the MidCentral DHB and the two pharmacies involved, so results needed to be easily understood. Accessibility also means that it does not require the researcher to have a detailed theoretical and technical understanding (Braun & Clarke, 2006), which is beneficial to a researcher in the early stages of their career. The flexibility of the Thematic Analysis is beneficial as elements of this research project are exploratory.

When using Thematic Analysis it is important to have transparency around the decisions that guided the analysis of the interviews. The current analysis was underpinned by the principles of the HAPA theory, resulting in a deductive or theoretical coding process, as the elements of the HAPA theory were looked for within the interviews. Because participants were not explicitly asked about each individual construct of the HAPA, coding was latent, in that underlying ideas and assumptions were identified, not just explicit meanings.

Audit Trail

A detailed description of how the transcription and analysis process was carried out is included to increase transparency, validity, reliability, and make the method replicable by other researchers.

The first step was to become familiar with the data. The researcher did this by conducting all of the interviews themselves, and so went into the analysis with prior

knowledge of the data. The transcription of each interview was carried out in the exact same way. The researcher played each interview and typed them up verbatim and including punctuation. While listening to the interviews, the researcher regularly paused and rewound to check the transcription was accurate. Once this was completed, the transcripts were printed and the researcher listened to the interviews for a second time making any necessary adjustments. The interviews were then listened to a third time, whilst the researcher followed along with the transcript for a final check. Participants who had requested so were then emailed their individual transcript and were given the opportunity to provide any feedback or make any changes. No such requests were made. The decision was made to omit non-essential speech items such as "um" and "ah." Pauses in speech were only mentioned if the researcher thought them to be useful to the analysis process.

Analysis was not approached with a set of codes to apply from the literature, codes were developed through the reading of the interviews. Analysis began with several read-throughs of each transcript to gain an overall picture of the data. Following this, two key concepts were identified. The researcher aimed to tag as many sections as possible so as not to miss any important information. Following this initial tagging, codes and their definitions were developed, creating the codebook. The codebook was constantly altered throughout the process of analysing and writing up the results, ensuring consistency and clarity. Subthemes were identified within each code by grouping information together into specific ideas.

Results

The aim of the current research project was to evaluate and compare two pharmacy led, community interventions for asthma management. This was an exploratory study with a focus on parents and caregivers of children with asthma, from the perspective of the pharmacists who were involved in their care. The research aimed to compare the interventions being provided, to the constructs of the Health Action Process Approach (HAPA) theory, to see if the service being delivered to patients matched the aspects that the HAPA theory suggests will promote change in health behaviours. The research also aimed to gain insight into the pharmacist's experiences of working with these parents and children, and the barriers they perceive as playing a role in medication adherence. These aims were explored in the context of a small rural community that may present its own unique challenges.

In the presentation of findings, please note the following conventions in the presentation of interview quotations:

….. used to link quotes from the same participant

[..] used to indicate that part of the quote was omitted due to confidentiality

( ) used when additional information is required

Relationships

Theme 1: Who are pharmacists developing relationships with?

The starting point for exploring the pharmacist-patient relationship was to identify which relationships were important to the pharmacists in order for them to be able to carry out their education programmes. The two pharmacies took different approaches to this. Pharmacy B made a decision to focus on all of their asthma patients, regardless of asthma severity, or asthma control.

P1: every asthma patient whether they're adult or child we follow the same protocol…..any script that comes through the pharmacy and gets put for collection and it's got an asthma product in it, an inhaler or prednisone antibiotic combination, we clip with an asthma little stickers so that whoever is giving it out knows that it's got an asthma product and the person has asthma and we need to kind of follow them up a bit more carefully

Pharmacy A made the decision to focus on those patients who were non-adherent to preventer medication and whose asthma was not controlled. All four of the pharmacists from Pharmacy A talked about the same three criteria used to identify these patients. The ability of all four pharmacists to identify the same three criteria suggests that there is good communication occurring between the staff involved in the education programme, as they are all on the same page about who they are targeting. Pharmacists have previously identified areas which are crucial to the success of interventions, and one of these was having good team relationships within the pharmacy (Nadaira et al., 2009).

P4: that's what we kind of based it off. I think it was prednisone use, antibiotics, not collecting preventers, excessive use of relievers…..that's how we would identify, if they had asthma symptoms that are uncontrolled.

P5: so there's three criteria's [sic]. One of them is they have to be non-compliant on their, on their inhalers, or they must have been to hospital with regarding to asthma…..and the third criteria is they've been on antibiotics and Prednisone…..so our technicians who enter the script can recognise who can enter the asthma programme. They just refer any of the inhalers onto us and we decide.

The criteria that Pharmacy A have chosen to identify at risk patients is consistent with the most severe negative outcomes that people who are on-compliant with their asthma medication are facing. Despite the fact that asthma medication has a proven efficacy, low adherence, especially to preventer medication is one of the main reasons why child asthma still has a significant morbidity (Klok et al., 2011). Asthma is also the most common reason for children to visit the hospital (Mansour et al., 2000).

A similarity between the two pharmacies is that the identification of patients occurs at the time of medication dispensing, and initial communication with patients happens when they come into the pharmacy to collect their prescriptions.

It is important to note that while Pharmacy A was focusing on those patients whose asthma was not under control, this did not mean that the rest of their asthma patients were being ignored and were not receiving the standard care offered by pharmacies to asthma patients, and they were keen to highlight this point.

P5: but we do counsel every asthmatic, it's just this programme, this education programme we only offer to those three categories

P4: we will ask them (patients adhering to treatment) *if they've got any questions or if they have any problems, but we do try and target the patients that we see with the symptoms that are worse*

Two of the pharmacists from Pharmacy A felt that attempting to provide their education programme to patients who were currently adhering to treatment and had their asthma under control, could jeopardise the already existing relationships pharmacists had with these patients. Pharmacists felt that they would be burdening these patients and that they may become unnecessarily concerned about their health, or get frustrated with their pharmacist. This suggests that the relationships pharmacists have with their patients are important to them, and they will tailor their education accordingly so as not to have any negative effects on these relationships.

P2: you would probably be a wee bit more apologetic if you did everybody, you know what I mean. Because you can't say "Hey look, you're not using your inhaler." They're going….."Look I've used these inhalers for years, what are you telling me all this about." You know, "I probably know more about using my inhaler than you do," that sort of attitude.

P3: it would be futile to really intervene on someone who actually really is good, because you don't want to alarm them or cause a burden when they're actually managing really well

Theme 2: The relationship between a pharmacist and a parent

The relationship between the pharmacist and the parent of a child with asthma is arguably one of the most important relationships involved in the education programme. Because this relationship is so important, it is also has many important components.

<u>Subtheme 1: Authoritative</u>

Two types of relationships were identified as existing between parents and pharmacists. The first of these was an authoritative relationship. The language used by participants 1, 2, and 5 when they talked about their interactions with parents suggested an element of control or power, that the pharmacists hold due to their professional position. In an authoritative relationship parents didn't have as much of an equal position as pharmacists.

When participant 1 talked about the process of reminding parents it was time for them to organise a new prescription for their child's asthma medication from their GP, the

goal of this process seemed to be to remove 'lack of medication' as a rationale that parents could no longer use to explain why their child wasn't receiving their medication.

P1: we just a clip to make sure that they know that they're getting their last repeat, so they need to organise another prescription from the doctor so that they're not running out of medication and that's not the excuse that they ran out

Participant 2 used the phrase "drag them back in again" when talking about patients whose asthma control scores are not improving, who may need a repeat session to reinforce their education. This phrase is reminiscent of a school pupil being taken to the principal's office for punishment. It indicates an unequal relationship between the pharmacist and the parent, with the pharmacist holding most of the power. This participant also appears to believe that the relationship between a pharmacist and a patient shouldn't be too familiar or too friendly.

P2: there'll be the odd one that we may need to drag back in again…..I think when you're doing things, especially in health, you've got to be very careful you don't develop a system which becomes like having a cup of tea with Aunty

Cuellar and Fitzsimmons (2003) state that if pharmacists are going to be in an education role, they need to work within the context of patient's belief system, and make an effort to understand what a family expects from treatment. This suggests that pharmacists should be asking questions and learning about their patients, rather than telling them what to do, or taking control.

Participant 5 doesn't seem to place a great deal of weight in the knowledge held by parents about their own abilities. Once again, there appears to be a power imbalance between the pharmacist and the parent. The pharmacist's power seems to come from the professional knowledge that they hold, which they view as being more important than the knowledge the parent holds.

*P5: because even if they say, "Yeah, I know how to use this," they won't know how to use inhalers…..we completely squash these ideas down (*referring to steroid concerns)

This power imbalance could possibly be influencing a parent's willingness to engage in the programme and to communicate openly with their pharmacist. Parents of children with asthma have previously shared that they often feel as if they are not being

respected and listened to, and that their opinion is not seen as valid by health care professionals (Trollvik & Severinsson, 2004). Participant 5's perspective that the pharmacist's knowledge is more valid than the parent's knowledge does not make it likely that parents will feel respected or heard.

Although the authoritative approach that these pharmacists are taking may not be that effective, Mey et al. (2013) identified that for a patient, an important part of their relationship with their community pharmacist was that their pharmacist was willing to go above and beyond for their patients. All three pharmacists are a part of education programmes which involve them dedicating one-on-one time to their patients, time that was not previously available before the implementation of these programmes.

Subtheme 2: Collaborative

The second relationship that was identified as existing between parents and pharmacists was a collaborative relationship. This involved parents leading the direction of the conversations and pharmacists supporting the needs they were identifying in their patients. In a collaborative relationship, parents were active participants in the discussions involved in the education programme, and both parties were identified as having power. This patient-centred and participatory approach is supported by the literature, and has been linked to increased patient satisfaction and medication adherence, which in turn leads to better health outcomes (Worley-Louis et al., 2003).

Interestingly, both participant 1 and participant 2 were identified as having authoritative relationships with parents, and were also identified as having collaborative ones. This could mean that the relationship between a pharmacist and a patient is fluid, always changing. Or it could be that some pharmacists engage in different types of relationships with different patients. As the pharmacists were never explicit about when they engage in these different types of relationships, it is unclear whether it is a conscious choice they make or something that occurs naturally.

Participant 1 repeatedly talked about being led by the patient and not adhering to a step by step guideline. It seemed important to this pharmacist to recognise and respect the individuality of parents and their children, and the situations they were living. Because of the limited time that pharmacists get to spend with their patients, participant 1 felt it was beneficial to not lecture or to be overbearing when interacting with parents. This could be seen as sitting in direct contrast to participant 1's earlier comments about removing excuses.

P1: well basically it's you're kind of led by the patient really…..because I mean what suits one person doesn't suit another and everyone's children are different, every patient is different…..sometimes you only have a few minutes with the person at the counter so we wanted to make sure it wasn't too formal and not too threatening for people…..it's not really much good if you lecture people

For participant 2 collaboration was important when working around the schedule of parents. This pharmacist was flexible to the needs to patients and was willing to work around them.

P2: whether we get people at the time or get them to call back. It just depends on the patients

Collaboration for participant 3 meant being supportive and encouraging of parents, and being their educator. Although this pharmacist was engaging in collaborative relationships, they still talked about instructing parents to come in and collect their child's medication, indicating that they felt they had a small amount of power over the parent, possibly stemming from their professional position. It is important for pharmacists to stay on the side of encouraging as they need to be viewed as an ally in the child's care and not an enemy (Dimatteo, 2004).

P3: yes, we're just back up. And also more information as it comes to hand or anything new, or dispel anything they're concerned about…..also remind them if they haven't picked things up. "I'll put them through for you and you can pop in and grab them because you're due for these."

P3: you know it's often just having a conversation, we just need to have more conversations with people

Participant 3's view that "it's just about having conversations with people" is in direct contrast to the statement made earlier by participant 2 that "you don't want a system that's too familiar, like having a cup of tea with aunty". As both participant 2 and participant 3 work in the same pharmacy, this contrast indicates that individuals can come at an education programme with two very different beliefs informing the way they interact with patients. It has also been identified that even in a collaborative relationship, pharmacists can often hold more power due to their professional position. Because of this power, it may be naive to believe that an equal conversation can occur between pharmacist and parent. Both collaborative and authoritative relationships

occurred in both Pharmacy A and Pharmacy B. This would suggest that the types of relationships pharmacists develop with their patients is not dictated by where they work, but more by who they are as an individual.

Subtheme 3: Trust

Trust was identified as an important aspect of the relationship between a pharmacist and a parent of a child with asthma. Trust played different roles for different pharmacists. It is not surprising that trust was found to play such an important role in these relationships, as trust is essential in the formation and maintenance of pharmacist-patient relationships (Mey et al., 2013).

Participant 3 talked about how parents receive a lot of information about asthma from multiple sources in their lives. Part of this pharmacist's way of helping parents to manage all of this information was to ask them to ignore the information they receive from their friends and the internet, and just focus on what the pharmacist, the doctor, and their child was telling them. This request requires a large amount of trust on behalf of the parent. The pharmacist is asking them to ignore their social supports and place all of their trust in their health care professionals. Participant 3 is also placing a lot of trust in the success of the education programme by putting themselves on the line, and offering to take the blame if parents are not happy with the outcomes for their child.

P3: just cut to the chase and work with us, and you doctor, and your child, and let me just do this with you and I guarantee you the benefits, otherwise you can come and tell me off…..I'll guarantee you're gonna have benefits, let's just run with this

Asking parents to exclude the advice given to them by those in their social circle and just focus on the advice from their health care professionals may be a difficult request for them to agree to. Parents have reported various strategies to help them cope when they child is diagnosed with asthma, and one of these is relying on their social supports (Barton et al., 2005). It is also important that if parents do choose to exclusively focus on the advice of health care professionals, that they don't stop relying on their social supports. The HAPA theory proposes that throughout the process of developing and maintaining a health behaviour change, available resources will also influence development (Chiu et al., 2011).

The asthma control test (ACT) for children is a short questionnaire with two sections. The first asks the child questions such as "How much of a problem is your asthma when

you run, exercise or play sports?" and "Do you cough because of your asthma?" The second section is for parents and asks about symptom frequency during the last 4 weeks. The test produces a final score which classifies the child's asthma as controlled or uncontrolled. Pharmacy A administers this test during the initial education session, and then again at follow-up to track the progress of their patients. These questionnaires are self-report so for participant 2 the aspect of trust in their relationship with parents involved trusting that parents were giving honest and accurate answers to these questions.

P2: and people give a mark and we have to assume that that's a pretty, that people are giving a pretty accurate return

While it is important for pharmacists to trust the information that they're being given by parents, several of the pharmacists believed that parents often withheld information.

P1 :so you kind of try and pick up on that thing that they're may not telling you that's in the background, the thing that they kind of hint at but don't tell you directly…..pride and embarrassment, asking for help. You know they don't always. They think they should know and a bit frightened to ask. Don't want to admit they need help.

P2: because the last thing people would admit is that they're not doing things right

Participant 5 had also encountered parents who withheld information, but their experience was in relation to parents who had decided to stop giving their child preventer medication and were bypassing their GP and attempting to cancel prescriptions directly with the pharmacist.

P5: they don't let the GP's know, instead they just come in and say "I don't want the red inhaler anymore, just cross it off."

These issues with parents withholding information from the pharmacists are not unique to these two pharmacies or even to pharmacists. Sleath et al. (2011) found that only a third of parents and caregivers who have concerns about medical problems and asthma management actually ask their health care provider about it. These numbers and the above experiences of the pharmacists are concerning. An important part of the management of asthma is that parents feel comfortable seeking advice from health care professionals (Sleath et al., 2014).

It is interesting to note that the three pharmacists who felt as if parents weren't always being honest with their health care professionals are also the three pharmacists who were identified as engaging in authoritative relationships with parents. It could be that parents are withholding information because of the way they are treated by their pharmacist, or pharmacists could be reacting in an authoritative manner due to parents not being honest. The cyclical nature of trust highlights that relationships are established through interactions, and changes in the interactions can result in changes to the relationship.

Subtheme 4: Inclusion of the child

For participants 3 and 4, including the child in the interactions with parents was also an important part of their relationships with parents. It enabled parents to be more flexible about when they could come into their pharmacy, because all of their children were welcome to come along, and it gave the children space to be heard by the pharmacist.

P3: and the kids do come in and you'll talk to them, so it's all kind of personal…..and most of the mothers with children are really happy because, even if they haven't got a heap of time, it doesn't matter if all the kids come in here too that's fine

P4: yeah we've had some really successful cases so I think it's definitely been worth it, especially having the parent and the child present

Getting children to participate when the ACT questionnaire was being answered was also an important part of inclusion. Especially for school aged children, participant 3 believed that parents couldn't know everything that was going on at school so it was important to include children to find out how their asthma symptoms were influencing their day to day lives.

P3: we try and get the slightly older kids to try and help answer, instead of just mum. Especially when they're at school and sport, Mum doesn't always really notice play running [sic]

Pharmacists have already identified that they hold a lot of the knowledge when it comes to asthma, but by including children they are recognising that these children who are living with asthma also hold important knowledge about their health. Inclusion of children could also mean that pharmacists are acknowledging that these children are

going to be their patients in the future, and are working to develop strong collaborative relationships with them early on.

Subtheme 5: Strengthening relationships

For participant 1, the relationship with parents was not just an element of the education programme, but also something that had been strengthened as a result of their education programme. There is a sense that parents have more confidence in their pharmacists as a result of their participation in the programme, and this confidence has increased the communication levels between pharmacist and parent. As well as gaining confidence in their pharmacist, parents could be gaining more confidence in themselves, making them more confident to come in ask questions. Participant 1 talked about parents seeking out their advice more often which suggests that parents know that pharmacists are there for them when they need help and that the pharmacist's advice is worth asking for.

P1: I guess people just get a bit more confident and you know will just come in and ask things…..feel like you're there as a community health professional…..like one little girl came in [..] I mean this kid was just (wheezing sound)…..so I suppose things like that they know they can come here and we'll give them a bit of advice

Parent's willingness to come into the pharmacy and ask their pharmacist questions when they needed help could also indicate that pharmacists have built up a good rapport with their patients, and that trust has been established.

An important underlying premise of the Four Habits Model is that patients aren't concerned with what you know until they know how much you care (Grice et al., 2013). Participant 1's experience is the perfect illustration of this concept. This pharmacist has been in the community for a long time and has always held a wealth of knowledge. But their focus on asthma patients has shown their patients that they care about them, making their patients more likely to access the knowledge held by the pharmacists.

Theme 3: Elements that enable these relationships

Both Pharmacy A and Pharmacy B identified a combination of elements that allow them to successfully develop the relationships with their patients that allow them to carry out their education programme.

The first key element is the accessibility of the pharmacy and the education programme. For all five of the participants, having the ability to provide a free service to their patients was key to the success of their education programmes. Unlike going to see a

GP, parents don't need to make an appointment, they can just walk in off the street anytime the pharmacy is open and ask the pharmacist their questions. This accessibility is part of what makes pharmacists so well suited to work with people with asthma, as the care and management of patients with chronic illnesses is ongoing (L. M. Emmerton et al., 2012).

P1: we're easy to access and we're free which is another thing. Because I mean anyone can walk in off the street to a pharmacy

P3: it's free, and confidential, and personal, and quick…..and I think, because we've got the information and it's all at hand

P4: we're free, and we're offering information, sometimes advice that they're not going to get anywhere else for free

The second element, which is more relevant to Pharmacy A, involved the ability to identify patients whose asthma was not under control or patients who were not adhering to their treatment. The computer system used by pharmacies allows pharmacists to see a patient's prescription history and which of these prescriptions are being collected, and if these prescriptions are coming from a GP or from the hospital. This technology allows pharmacists to easily monitor their patients and identify who may need some extra attention and education. These pharmacy databases have been identified as a strength of pharmacies and are one of the key points used when arguing for a greater role for pharmacists in health care teams. These databases are seen as important because they allow for easy identification of at risk patients (Redzuan et al., 2014).

P4: I suppose first of all pharmacists are in a great spot because we can identify them….we're in the perfect spot because we can see, they're only getting the Ventolin (reliever inhaler)*, they're only getting the Redipred, or they're on antibiotics for a chest infection*

For participant 2, this technology also allowed parents to understand the position of the pharmacist and their goals for their child's health. Pharmacists can show parents their prescription history, helping them to understand why pharmacists are concerned for their child, and the difference adherence to treatment could make to their child's quality of life.

P2: personally I think it's just the ability to you know bring up people's history. And show them, actually just reinforce, it tells the parents where we are coming from

Having multiple pharmacists working at one time has allowed Pharmacy A the flexibility to be able to have someone focusing on those patients that they've identified as being in need. Previously, when staff numbers have dropped, the programme has come to a halt. So the number of staff plays a key role in allowing pharmacists the time to connect with parents.

P4: when we've had the staff we've been flexible enough to be able to undergo the programme, when we haven't had staff that's been a major issue…..so at the moment we've got (the right amount of staff) [..] *and that's allowed us to be able to actually run the programme*

Pharmacy A and Pharmacy B are both located in small rural towns. The closeness of the communities that they are serving means that they know their patients well, and have existing relationships with them.

P1: I suppose we know our customers reasonably well around here which is a bonus

Two pharmacists from Pharmacy A suggested that this relationship with their communities makes parents more receptive to the care being provided by the pharmacists, because the pharmacists are familiar to parents.

P3: of course we see them regularly because we're a small town…..it's more like a family environment for them. It's not like you're a number anymore

P4: because we're a close knit community, people are quite friendly and open anyway

Participant 3 identified that being a part of a close knit community has meant that their education programme is promoted by word of mouth, as people in the community are talking about the positive outcomes they are seeing in the children involved in the programme.

P3: and I mean its small communities, everyone does talk…..they just have a chat about the improvement they see, so you know that's a good reflection too, and it's positive as well

While being a part of a small community may mean that pharmacists already have existing relationships with their patients and a sense of familiarity, these aspects

(combined with word of mouth) may provide rural pharmacies with extra challenges when it comes to the confidentiality of their patients. It may make it more difficult for them to keep the identity of those families involved in their programme confidential.

Theme 4: Elements that prevent these relationships

Elements which could hinder the development of relationships between pharmacists and parents were also identified. Participant 1 did not make mention of any of these elements, so while it is possible that Pharmacy B shares the same issues, this theme relates only to Pharmacy A.

The availability of time for both the pharmacy and for parents was the main component which was preventing pharmacists from developing relationships with parents, one that was regularly brought up by the pharmacists from Pharmacy A. While the pharmacies have identified that they are very accessible for parents, there are going to be times when the pharmacists are busy and don't have time for a lengthy conversation. Participant 2 and participant 4 both talked about time being a factor for parents as well.

P2: it might be that, look it might be that we are extra busy at that time and can't actually do it one the spot. Or the person's got something else to do

Contact with parents was also limited by the fact that during the week the pharmacy is open 8.00am-5.30pm, which means that a lot of parents will be working and children will be at school, leaving little time to visit the pharmacy.

P4: time for us and for the patients as well. We're open during working hours and it's hard to get in contact with say, kids at school…..if someone's got a cranky kid who's unwell, they don't particularly want to be hanging around the pharmacy, they just want to go home. So that's where the phone calls have been a big thing. Yes we have had some resistance but we've been able to work around them

The pharmacy is open on Saturday mornings, however participant 5 felt that families wanted to be enjoying their weekends, and not coming into the pharmacy.

P5: because there's lack of time. You know they come back from work, they've only got a few hours to put the kids to bed, there's not enough time to see the pharmacy. The weekends…..you know they want to spend time, not running around doing chores

It is interesting that participant 5 chooses the word ‘chores’ when talking about parents coming into the pharmacy to talk about their child’s health and wellbeing, and making improvements in these areas.

Time, or lack thereof, is a challenge faced by all pharmacists. Even when staff and patients are both available, community pharmacists do not get to spend a lot of time with their patients, so it is important that they are making the most of this limited time and both parties are communicating effectively (Gade, 2008).

Participant 4 talked about a patient who was resistant to talk about the health of their family member in the pharmacy, due to a perceived lack of privacy. Pharmacy A does have a private consultation room that they use for the education programme, so it is possible that this patient didn’t know about this room, or that trust in their pharmacy did not exist. As has already been discussed, being a part of a small rural community may make bring challenges to confidentiality. It is possible this patient did not want other people in their town to know about their family’s health and that they were struggling to manage it. The privacy and confidentiality of a patient’s health is always important for pharmacist’s to consider, and Nadaira et al. (2009) found that a having a private space for consultations was extremely important for pharmacists.

P4: I think also approaching people in the shop, we have had one person who didn’t want to discuss their family member’s illness in the store because of privacy

Theme 5: A parent’s right to choose

Regardless of the relationship formed between a pharmacist and a parent, it is a parent’s right to make their own choices, which will likely decide whether or not they adhere to treatment. In the end, parents have the right to decide what is best for their child. The pharmacist can only provide them with the education needed and encourage them to adhere to treatment, but they can’t force their patients to do this. Parents need to come to this decision by themselves.

Participant 2 recalled a patient whose ACT scores declined, meaning their asthma control got worse, and this was because the patient had made the decision to stop taking their asthma medication. Despite the education and check-ups this patient had received, they still made the choice to stop taking their medication, as is their right. The positive side is that this was the only instance they had encountered when a patient had decided to stop taking their medication once they were a part of the education programme.

Previously, pharmacists were identified as engaging in authoritative relationships, where they believed they held the power because of their professional knowledge, and this power allowed them to tell parents what to do. Participant 2 was one of the pharmacists engaging in these relationships, but has also identified that the power of the pharmacist is not absolute.

P2: we had one [..] who went the other way, but [..] decided to stop taking their medication…..but that's the reality of people in the health system. And they have a right to, you know what I mean, make their own choices.

Participant 3 highlighted that it is not as simple as providing parents with education and it's immediately a part of the way they view their child's asthma. Parents need to process and make sense of the information themselves.

P3: but you can't put your thoughts into them, they have to go through the process

When it comes to a child's adherence to asthma treatment, the majority of decisions are made by their parents, and these decisions are made based on the parent's perceptions of what is happening for their child (Klok et al., 2011). Pharmacists can provide parents with a great deal of information, but unless it is making an impact on the way they view their child and their asthma, they will continue to make the same choices about adhering to treatment.

Participant 5 had encountered parents who weren't willing to participate in the programme because they felt they knew everything they needed to know about their child's health, and they were not open to receiving any guidance from their pharmacists. Once again, this is an example of parents using their power and deciding that they know best, which is in contrast to the views held by pharmacists that they hold the knowledge.

P5: and then we get a few parents, I remember saying, "No I know all about my child's asthma," you know, "I don't want to be a part of this programme."

Theme 6: Parents and their children

The relationship between a parent and their child was also identified as being a part of the education programme. Some parents were over-estimating the abilities of their children and were allowing them to be in charge on their own medication. Participant 1 felt that while these children were probably capable of this for a short time, it wasn't a sustainable option for maintaining treatment adherence. It is important to remember that

being a parent of a child with asthma and managing that asthma is a complex job. The responsibilities of managing a child's asthma include monitoring the illness, administering treatment, and providing emotional support for their child. These parents are also responsible, as are all parents, for their child's overall development, and any the development of any other children they may have (Brazil & Krueger, 2002). It is possible that parents don't understand what responsibilities are appropriate for their child's developmental stage.

P1: leaving children to do it themselves, so not enough supervision. Like they say "Here's you inhalers, you can look after yourself" kind of thing. Children do it for a while but then they slide off

This is not to say that parent's will be in charge of their child's treatment forever. As children transition through the developmental stages, and reach adolescence, they will likely become more responsible for their treatment. Participant 2 felt that there needed to be good relationships between parents and children, as adolescents will still need reinforcement and encouragement to adhere to treatment as they transition from one developmental stage to another.

P2: once the kids get to a certain age they'll take ownership of the thing themselves. But they probably still need good parenting to keep them on track

Participant 4 acknowledged the importance of the relationship between a parent and a child with asthma, and the knowledge that a parent has about their child's health as a result of this relationship. Parents often identify that they know their child and their child's asthma best, as they are the person taking primary responsibility for their care (Peterson-Sweeney et al., 2003). It is encouraging that participant 4 is respecting the relationship between a parent and a child, and the importance of this relationship.

P4: sometimes it's just going through it with either an adult or the child's adult, and just kind of speaking about. Parents know when their kids getting sick

Theme 7: Parents and other caregivers

The relationship between a child's primary caregiver and other adults in the child's life who also play a caregiving role, was identified as being of great importance to the success of treatment adherence. As identified by pharmacists from both Pharmacy A and Pharmacy B, if this relationship was dysfunctional or lacking in communication, the child's adherence was put at risk. This seems to be particularly a problem when parents

have separated and the children are moving from one house to another. Inhalers get lost in the transition between houses, or one parent forgets to send the inhaler with the child. When the parents aren't communicating it makes it more difficult for these issues to be resolved, and pharmacists often have to be creative. Participant 3 talked about trying to get a second set of inhalers for Dad's home, limiting the risk of losing or forgetting inhalers in the future. Other family members such as 'nanas' and 'aunties' were also identified as playing a caregiving role in children's lives, and these family members too were having to cope with missing inhalers and a lack of communication.

P1: losing inhalers, that's quite a common one. Especially split families. They go and stay at Dads and Dad doesn't return the inhalers, or goes to Aunties and she doesn't don't take the inhalers

P3: as I've said all the family lifestyle can be hard. I believe, I do notice with blended families and separated families [..] they'll come in and poor Dad's got the child, or two or them for the weekend, and there's now inhalers. Someone's wheezing all night…..sometimes try and issue two lots of inhalers, one for the new home, the old home…..because Mum's in charge but it's all fallen to bits so no one's communicating…..

P3: and sometimes it's nana too. We've got one who gets [..] the kids every holidays [..]. It's hard for her too because she doesn't want to hassle him (children's Dad)

Sharing the care of a child with schools and other family members, having multiple caregivers, has been associated with increased parental stress and poor adherence (Rand, 2002; Spicher et al., 2012). Increased parental stress has also been associated with being a single-parent, due in part to a lack of resources. Single parents have to deal with the same demands as two-parent households on less resources (Spicher et al., 2012). For the families whose parents have separated, they may be dealing with both of these situations. Essentially both parents exist as single-parents, and because they are no longer communicating with their spouse, there may be a lack a trust, and the parents are likely no longer working as a team. When the caregivers are other family members, they may be seeing the stress these single-parents are under, and may not wish to bother them when something goes wrong with the children.

Often pharmacists talk about adherence as if it is directly related to knowledge – the notion that if parents knew more, they would be more adherent. However, this current

theme highlights that in fact pharmacists are viewing their patients from a systemic point of view, and are acknowledging that often when it comes to adherence, there is sometimes much more to it than just education. The specific examples given by pharmacists about the personal struggles their patients are facing, also indicate that a part of working in a small rural community is the wealth of knowledge pharmacist's gain about their patients. It is likely that an urban pharmacist would not know these details about their patients' lives, and this might make it more difficult for them to take a systemic view when dealing with parents.

Fiese and Wamboldt (2003) identified three different family management styles for dealing with asthma. Reactive management involves little use of preventive measures and action only occurs once symptoms are evident. Coordinated care involves the management of asthma bring the responsibility of one person. The third type of management is family partnership. Multiple family members are a part of the management process and are trusted with the child's care. The family tackles the asthma and its symptoms together, and believe it to be manageable. These families who have multiple caregivers looking after their children, have great potential to engage in family partnership, if they could communicate with each other and be supportive. Making the lives of all these caregivers less stressful, and decreasing the risk of their child not adhering to treatment.

Theme 8: Pharmacists and other health care professionals

All five of the pharmacists interviewed talked about the relationships they had with other health care professionals in the community, and their ability to use these relationships to further help their patients if they felt it was necessary.

It is possible that for participant 1 this relationship wasn't well established, or didn't hold much importance to the pharmacist. While they did identify that they had the option to refer patients on to a respiratory nurse, this was not an option they had chosen to use as of yet.

P1: I mean I haven't referred anyone to the respiratory nurse but we do have that capability

The pharmacists from Pharmacy A identified a variety of health care professionals that they worked alongside with to help improve the lives of their asthma patients. The relationships that the pharmacists have with these health care professionals' means that

patients are likely receiving the same messages over and over again. Chong et al. (2009) interviewed Australian asthma educators and found that they believe there is a lack of information being provided to patients by health care professionals, and that the information that they do provide is inconsistent.

P2: it's just about really, the GP does it, the pharmacy is sort of in the position to check in the compliance and can reinforce those messages and monitor. And then of course you've got the other, you know the Maori health or the asthma educator as well. It's getting reinforcement of those messages from everywhere they go, you know what I mean. They go to the doctor they get the message, they go to the pharmacy, they get the same message.

P5: recording the asthma control test, and putting it on the GP's system…..we start leaving notes to the GP's computer…..we assure them that it's a conjunct programme running between both practices, and anyone that's not doing well we refer them to the GP,

It is encouraging to see that the GP is mentioned in the list of those health care professionals they are working with. Working collaboratively with GPs has been identified as an important part of pharmacy interventions (Nadaira et al., 2009). This relationship is also important because GP buy-in is essential if the role of the pharmacist is going to extend, and GP support is reliant on direct communication from the pharmacists about their patients (Azmi et al., 2012; Bereznicki et al., 2011).

The engagement of other health care professionals also means that parents are being shown other ways, in conjunction with treatment adherence, to decrease the frequency and severity of their child's asthma symptoms.

P4: there are heaps of services available. I've worked quite closely with [..], she's an asthma educator. I've referred everyone that we've had on this service to her…..she's also great because she's encouraging people to go down other pathways as well, like looking into insulation and heating for houses

The inclusion of other health care professionals and the reinforcement of messages from these individuals once again highlights the belief that being in a professional position means that the knowledge you hold is the 'correct' knowledge – the theme that the health professionals know best. Pharmacists aren't including family and friends or

support groups in their lists of education sources, suggesting that they don't view these sources of knowledge as holding the best or perhaps the most valid knowledge.

Theme 9: Pharmacists and their DHB contract

One final relationship was that between the pharmacist and the contract they had with the DHB. Although participant 2 did talk about it, this relationship was particularly important for participant 5. Throughout the interview, the contract and adhering to the rules of this contract were continually brought up by participant 5.

P2: as far as the contract for us you know is they have to meet the criteria

P5: we follow the contract accordingly. The contract says we only need to see the most vulnerable patient…..I've got a folder, that's got the contract, on the left of the services that we need to provide. So I'll run through all of them accordingly

The contract not only shaped the interview and who Pharmacy A were targeting in their education programme, but it was also shaping the interactions that participant 5 was having with their patients. It seemed like a priority to this pharmacist to make sure they were ticking the boxes of the contract and only then providing space for parents to ask questions

P5: so we want to make sure that everything is legal and kosher, and then we just allow them to ask, as many questions as they can.....but we always do ask them because of protocol

Participants 3, and 4 made no mention of contracts in their interviews. Participant 5 and participant 2 could be the pharmacists who are writing reports for the DHB and are in charge of the programme, so for them this is more at the front of their minds, than for participants 3 and 4.

Motivations

Theme 1: What motivated pharmacists to start?

Two factors were identified as motivating pharmacists to implement their asthma education programmes. Pharmacists wanted their patients to be fully educated about their medications, and to see improved outcomes when it came to the health of these patients. Once again highlighting that to the pharmacists, knowledge equals power and adherence for parents.

Pharmacy B has been driven by a desire for all patients to be knowledgeable about the medications they were taking, since they opened their doors to the community. When Pharmacy A started work on their asthma education programme, Pharmacy B was motivated to focus this long standing desire on their asthma patients and be comparable to Pharmacy A, providing the best service possible to their patients. It is evident that all of the pharmacists interviewed care about their patients and have a desire to help and support them successfully manage asthma.

P1: so one of the things that we said when we bought the business was no one's going to leave the door without knowing what their medication was for. So we've kind of that kind of been our philosophy all along…..when they decided they'd do this asthma project I guess we stepped up a little bit for the asthma. So we've sort of concentrated and made a bit more of an effort on the asthma so that those people get that extra help they need

Medication education for asthma patients was also identified by participant 5 as being a motivator behind their education programme. This focus on education highlights the already identified belief of pharmacists that non-adherence to treatment in children is due to ignorance or lack of education in parents. This focus also supports the idea that knowledge is power. The pharmacists hold the knowledge and by sharing this knowledge with parents, parents will become more capable at managing their child's asthma.

P5: the purpose of this, the programme, ultimately is to educate the people about asthma, and about their medication, and about the importance of their medication, and the health condition

All the pharmacists from Pharmacy A identified that there was a population of their asthma patients who were struggling to manage their asthma. The pharmacists were motivated by the belief that they were in a position to be able to help patients make changes in their lives, and these changes would result in quality health outcomes.

P2: well the purpose was to actually sort of get quality patient outcomes…..it became quite obvious that there, people with asthma and continuing to suffer with asthma symptoms when you know, proper compliance with the treatment could prevent it…..I guess it was really the fact that these people needed to have some time spent with them

Pharmacist 3 was not only motivated to see patient's health improve, but they also had the desire that patients would learn the skills to be able to take control of their asthma management without the guidance of their pharmacist. Participant 3's desire for parents to take ownership of their child's asthma is also supportive of a collaborative relationship between pharmacist and patient.

P3: we identified poor compliance issues, we'd identified hospitalisation…..we just felt there was an absolute flashing light over the asthma patients…..we felt, as pharmacists, we're at the cold face. It's for us, it would be great to do it…..we just want to see patients with better health issues…..we like them to be in ownership of their own asthma control and health

Pharmacist 4 was specific in regards to the health outcomes they were motivated to see in their patients, all of which were a reversal of the criteria that led patient's to being identified by pharmacist's in the first place.

P4: we'd like to see the patients that we've selected have reduced admissions to hospital, less course of prednisone, antibiotics….less use of their reliever medications as well, and more regular pick-ups for preventers

Theme 2: What continues to motivate pharmacists?

A final theme of motivation was ways in which pharmacists continue to be motivated to provide their asthma education programmes to the community.

Subtheme 1: Improvements

Pharmacists from Pharmacy A were encouraged by the improvements their patients had shown since being a part of their education programme. For some pharmacists these improvement were clinical, whereas for other the improvements were those that were affecting the day to day lives of their patients. The outcomes talked about by the participants were very similar to those focused upon in the literature, especially the clinical outcomes.

For participant 2, choosing to work with those patients they'd identified as being at risk was a positive for the experience of pharmacists. This pharmacist felt that because of the situation these patients were in they were guaranteed to show changes, and this is encouraging for pharmacists that work with these patients.

P2: in some ways, the fact that you're treating the people that have definitely, are definitely going to get improvements and will experience improvement, on a psychological basis, is a better way to do it

Participant 2 came at the results from a scientific angle and so believed that the only way to tell if the asthma control of patients was improving was to assess them using the ACT score. If the scored had improved, there was the assumption that this improvement was directly related to the programme.

P2: looking at numbers, and that's the only, that's the only assessment we can get…..so you have to assume that they haven't got better, or haven't had an improved score for, by chance

Participants 4 and 5 also used the ACT score to judge their patient's progress, as well as prescription pick-ups, hospital visits, and antibiotic use. As outlined by participant 5, the vast majority of patients participating in Pharmacy A's education programme were showing improvements. These improvements let pharmacists know that what they are doing is working, which in turn motivates them to continue providing the programme.

P4: just improvements in asthma control tests…..and also just seeing people pick up preventers more regularly and not need relievers. Less hospital admissions, for some patients.

P5: so out of the 55 we've had about two people who've had a reduced asthma control test score…..you can see a reduction in their Ventolin (reliever) *usage. And the red inhalers* (preventer) *or the purple inhalers* (preventer) *stay the same…..I've seen a reduction in some people with their antibiotics as well.*

Pharmacists were also motivated by the feedback they received from their patients, and changes that were evident in their lives. Participant 3 did not mention clinical outcomes like the other pharmacists from Pharmacy A, but gave a number of specific examples of the changes in their patient's lives. This seemed to be a much more motivating factor for participant 3, who identified their own positive feelings in response to this feedback.

P3: everyone always say to me "Thank you so much for ringing," you know. And it's really neat because you feel "Oh that was good," you know, "That was really what we should be doing."

P3: we've had one quite low socio family…..all the children seem to suffer…..the children have not…..there hasn't been the hospitalisation…..so that was nice…..I really thought that was a really great outcome for her

P3: one little chap is able to complete a game of rugby now, without really gasping…..he's actually improved with his running sport, running around

This example shared by participant 3 is an encouraging results of the programme. Children with asthma have identified that they often feel physically restricted and that this results in them being not as successful when running or playing sports with their healthy peers (Grover, Armour, et al., 2013). It is a positive step that this common experience can be managed allowing children to run and play with their peers.

Participant 4 also illustrated feelings of success when patients were telling them about decreases in symptoms which were resulting in a better quality of life.

P4: so when someone says "I'm not waking up at night coughing," that's pretty big

The satisfaction these participants are expressing is a positive outcome for pharmacists carrying out asthma interventions, and one that can be translated to other programmes. Australian pharmacists who have been involved with community intervention were proud of the work they were doing and the feedback they were receiving from their patients (Bereznicki et al., 2011).

Subtheme 2: The future of the programme

Pharmacists were not only motivated to continue the existing programme, but to expand it in the future. Professional recognition was a motivating factor for participants 2 and 5. Pharmacists seem to have a desire to gain not only personal professional recognition, but recognition from their community and from their community of health care professionals. Participant 2 felt that pharmacists were under-appreciated and under-used and this programme had the ability to prove that pharmacists had a role to play beyond handing out medication.

P2: pharmacists as such have been underutilised heaps of times…..the thing is that the pharmacist's role should be more about medicines and medicine management with the patients, rather than just sticking labels on things and handing them out

Participant 5 was motivated by the possibility of expansions into other pharmacies, and the recognition that would coincide with this expansion.

P5: I'd hope for it to expand to other pharmacies and have a nationally consistent programme. And I'd hope we'd get more awareness of it.

The same Australian pharmacists who proud of the work they were doing also reported high levels of professional satisfaction from their enhanced clinical role (Bereznicki et al., 2011)

Pharmacists were also motivated by the possibility that they could continue to help patients make positive changes to their health, focusing on other areas of chronic illness.

P2: but there's no doubt about it that if we've got the same issues that apply here with adherence and that type of thing, it'll apply to other parts…..if you had other assessment tools, whether you could do it with diabetes or hypertension or that they of thing

P3: I think it should remain but perhaps expand into COPD patients…..so yeah, and keep on keeping on. Keep identifying, keep going with it. We don't do COPD but that is definitely out there. It may be that this could help…..yeah I think it just needs to keep going

P5: and we would hope that we'd get more programmes like this, concerning other areas. Like smoking's a big thing and heart disease is another big thing…..so we'd just hope we'd get other things in the pharmacy, and just leave the GP with the complex patients

Theme 3: What motivates parents?

Before health care professionals can get parents of children with asthma to engage in their education programmes, it is important for them to understand what motivates parents to want to make changes to the way manage their child's asthma.

Pharmacists from both Pharmacy A and Pharmacy B identified that a key motivating factor for parents was that they just wanted their kids to 'get better.' When it came to 'getting better,' the goal for parents seems to relate to a decrease in symptoms and the frequency of asthma attacks. Pharmacists have very similar goals, with the addition of adherence to treatment. For parents, watching their children suffer and miss out on

things that other children are doing is distressing, and seems to create anxiety in these parents.

P1: you know they don't like, well who wants to listen to their child wheezing, it's not very nice…..it's pretty scary when your child is having an asthma attack

P2: because at the end of the day they want their kids to be healthier….I think most, you know most parents care about their children

P3: you know they don't want their kids to be missing school sport, they don't want to be up all night worried

Once parents made the decision to participate in the education programme, it was this same desire to see their child's health improve that continued to motive them. For participant 2 this motivation was facilitated by the fact that the symptoms of asthma are obvious, so when parents follow the instructions given to them by the pharmacist and a decrease in symptoms occurs, the new behaviours the parents have chosen to include in their child's asthma management are identified as being successful. This success motivates parents to continue.

P2: the thing is with asthma, you've got symptoms that are stressful and obvious, and people want to improve on that…..with the asthma, if you're taking something right and you've got an improvement, you know it's working

Participant 3 felt that simply seeing improvements in their child's quality of life was enough to continue to motivate parents.

P3: I mean it's nice when your child no longer has to sit out, or be unwell

Parents had been open with pharmacists about the positive changes they'd seen in their children since they'd been participating in the programme, and that these changes had decreased their distress. When parents are able to notice changes to both their child's and their own quality of life, this reinforces that what they are doing and the pharmacy are doing is working, making them more likely to continue down that path of successful asthma management.

P5: they're really happy about the results. Once you call them up after three months and the results have changed, they just say "Yeah I'm feeling much better than before." And so, just seeing change in them I, you know, that's why they're happy with the programme

As well as the improvement parents had seen to their child's wellbeing, parents were also encouraged by the education they'd received from pharmacists. Education is an important component for many parents, who have identified seeking out as much information as possible as a coping strategy when they have a child with asthma (Trollvik & Severinsson, 2004). Participant 1 recalled a mother who found the ACT card useful when her child had had an asthma attack. Instead of having to talk, the child was able to point to the face on the card to allow them to express how they were feeling. This parent had been empowered by the tool provided to her by the pharmacy, and would possibly be more likely to return to the pharmacy for advice now that they had learnt that what they were receiving was useful. This empowerment again reinforces the idea that knowledge is power. This parent had the tools to be able to communicate with her child, making her more in control of the situation.

P1: I had one mum tell me it was really useful. Her child had to be go in the ambulance and he didn't have to talk he could point to the ambulance officer how he was feeling. And she thought they were really good

For participant 4, educating parents about the important role the preventer played in the long-term treatment of their child's asthma, motivated them to be more adherent to this important medication. This focus on education suggests a relationship that involves a student and a pupil. It also assumes that the pharmacist holds the knowledge and is passing this knowledge on to the parent through teaching.

P4: Once we've educated a parent they seem to be more inclined to want to use them…..once parents understand that, they're normally quite enthusiastic on using it

Theme 4: What prevents parents from developing the motivation to adhere to treatment?

Subtheme 1: The healthy child

As already identified, parents are motivated to see their child healthy. However, what constitutes a healthy child to a parent is not always the same as what a pharmacist would call a healthy child. This discordance in values can prevent parents from developing the motivation to adhere to their child's asthma treatment plan. For pharmacists, a healthy child with asthma is one whose symptoms are under control, who is regularly using their preventer and not relying on their reliever, and a child who is not making trips to the hospital for their asthma. As was identified in the interviews with

the pharmacists, a healthy child can mean something completely different to parents of children with asthma.

As previously noted, parents want to see their child's symptoms decrease, and they feel encouraged when this happens. Pharmacists from both Pharmacy A and Pharmacy B identified that asthma symptoms tend to decrease in the summer naturally. This decline in symptoms is reinforcing to parents, who will often choose to stop giving their child their preventer inhaler, because they hold the belief that their child is no longer sick. For pharmacists, it is important that preventer medication is taken daily, year round. This is a common issue faced by pharmacists working with parents of children with asthma, as parents admit to only using preventers intermittently or stopping their use altogether once they perceived their child as being well again (Klok et al., 2011).

P1: and then sometimes the child gets well and they don't think they need the medication…..you know in summer they think "Oh Johnny's not wheezing today you know we don't need to bother," kind of thing. Whereas they sometimes don't always recognise that preventative medicine is an every day

P3: some mothers say "I only use it in winter."

P5: there's some that are unintentional, because you know, "He's been fine for summer so we're not going to, you know, we're not going to take, we're not going to give him anything."

Although parents want to see their child's asthma symptoms decrease, there are those parents who do not believe that this is possible, and who have accepted that their child's quality of life will always be a little lower than that of their healthy peers. Pharmacists identified that there is a lack of understanding in these parents that the regular use of preventer medication can make a huge difference in their child's quality of life and wellbeing, and in the long term, completely eradicate symptoms. There is an element of learned helplessness for these families, a belief that they have no control over the situation, and so this is the way life is always going to be.

P2: I think there's no doubt that some people accept it's the dice that's been tossed to them…..and don't appreciate that yes you can actually make a significant difference

P4: parents come in and they think, "Oh my kid's got asthma so they're always going to have symptoms and they're always going to be coughing."

Often this belief that asthma and the regular occurrence of its symptoms will just be normal life for their children, is based on experiences with other family members who have also struggled with asthma and lived their lives with regular symptoms and asthma attacks. This highlights the importance of where people gain their knowledge from. People do not only gain knowledge from health care professionals, but also from their own lived experiences and those of their family and friends. It has been identified several times that knowledge can be power, but it is crucial that the knowledge people have is in line with current medical knowledge.

P3: I think that it's "Oh Great Pop had it and he got to 85, you father gets a bit," you know.....the old school that you have asthma and that's just how it is. You're going to have wheeze and miss school and you're not going to be able to cure it, but they don't realise it can be managed to nothing.

P5: some parents think it's very normal in winter. And some parents because they've had it throughout their families they just think "Oh yeah, that's just how they are."

The argument could be made that parents who do not expect their child's asthma to improve or go away completely, will have little faith in the ability of treatment to make any changes. This is a risk for their children a low parental expectations of treatment have been associated with poor adherence (Bokhour et al., 2008). Parents accepting that this is the way life is going to be now for child has been identified as a strategy employed by parents to help them cope (Barton et al., 2005). Because of this, it may be difficult for pharmacists to be able to change this belief, which is a serving a clear purpose.

Another belief held by many parents is that a healthy child is a child who doesn't take any steroid based medications, or a child who is only being treated with natural medicines. The use of steroids holds many negative connotations for parents, and many have strong concerns in regards to their children regularly using steroids. In the literature, parental concerns centre on possible side-effects, both short- and long-term, dependence, tolerance, weight gain, and growth retardation (Magdy et al., 2010; Zhao et al., 2002). Preventer medications are steroid based and so this fear, directly impacts a parent's motivation to adhere to preventer medication. Even though preventer medications have proven their effectiveness in both clinical trials and in real-world settings, and many of the negative ideas parents hold about these medications have been

proven to have a low likelihood (Orrell-Valente et al., 2007; Yoos et al., 2007), pharmacists are finding that patients are seeking out alternative and natural treatments, or requesting them from their pharmacists. This is not a surprising outcome of this fear of steroids, as parents have previously identified that they didn't see prevention as equalling medication, and wanted a more holistic, non-medical approach to be offered (Mansour et al., 2000). Grover et al. (2011) also suggested that the negative ideas held in regards to steroid medications may be responsible for the increased usage of alternative medications.

P2: you do have people that think you know we have to do things that are natural because it's got to be good for you

P3: yeah I think it's all the steroid hype thing that the child might be short or who knows…..I've had the odd one. "Actually I'm really concerned and I'm not going to use a steroid unless I really have to. You know we're going to try him on Vitamin C. I saw this thing on the internet and it was to clear your airways."…..we do actually have the odd mother who, some of them, that are a little bit homeopathic type people. You know more trying to get a natural cure

P4: steroids, the classic. Thinking it's a body builder steroid not a steroid that's going to help their immune response

Bokhour et al. (2008) and Rand (2002) identified three different types of non-adherence that parents engage in. The first two are unintentional and unplanned non-adherence. The third type is intentional non-adherence, which occurs when parents make a conscious choice to not give their child some or all of their medication. Those parents who pharmacists have identified as not giving preventer medication to their children because of a fear of steroid side-effects, or because of a decrease in their child's symptoms, are engaging in intentional non-adherence. Although their decision may be based off a lack of or incorrect information, these parents are choosing to not adhere to their child's asthma treatment plan. It is important to note that these parents are still motivated by the idea of a healthy child.

This discordance of goals and values is not something new. Parental beliefs about their child's asthma and the way it should be treated rarely match up with the beliefs of health care professionals (Peterson-Sweeney et al., 2007). Areas of greatest divergence include the interpretation of asthma symptoms, expectations of treatment, and attitudes towards preventer medicines (Yoos et al., 2007), it has been found that parents view

asthma as episodic, unpredictable, and not easily controlled, whereas a health care professional would describe it as enduring and easily controlled with the medications currently available (Yoos et al., 2007)

Subtheme 2: Information

The information parents receive about their child's asthma has also been found to prevent them developing a motivation to adhere to treatment. For participant 1, it was the inconsistent information coming from multiple health care professionals that was getting in the way of motivation. Parents can get overwhelmed by the conflicting messages and struggle to understand what exactly adhering to treatment looks like.

P1: and mixed messages from health professionals. Like if they go to different doctors or different nurses or pharmacy, we've all got to be telling them the same thing otherwise it's pretty confusing for people. If one person's telling them have so much and then we're telling them, "No, you should do it this way," and some else is telling them "Oh no you only give the asthma treatment when such and such."

An overload of information was also identified by participant 3 as preventing parents from developing the motivation to adhere to treatment. Because asthma is a common childhood disease most people will have encountered someone who has asthma, and parents will be likely be offered many opinions on asthma and how to treat it, from people they interact with in their everyday life. Participant 3 felt that when parents became overwhelmed with all this information, this often resulted in parents just giving up because it was too difficult to filter all of the information. For a parent who is distressed and anxious about their child's health, this overload of information may be very difficult to sort through and manage.

P3: and they don't understand the aetiology of asthma, you know, how can they, because they haven't studied it. So and some of it is very confusing for them. Then you have all of the hearsay things from other friends and other kids and family, so it can be a bit of a minefield for parents because you get almost too much information…..I think that's where it tips over a bit, almost gets an overload. And it's like, "I can't do this, I can't be bothered."

The way in which health care professionals delivered the necessary information about their child's asthma to parents, was viewed by participant 2 as preventing motivation. This pharmacist felt that parents don't always understand the medical and technical

language that pharmacists use to describe treatment plans, and that this prevented parents from fully understanding all of the information. If parents don't understand what the medications are or how exactly they are going to help their child, it would seem less likely that they'd be motivated to engage in these treatments.

P2: I think the other thing too is any medication, for health professionals the names they just slip off the end of your tongue. You mention an antihistamine or something to somebody and they're trying to think, some people will be, "What's that?" And they'll miss everything else you say because they're still trying to think…..I think some of the information that's given to people…..because of the technical jargon…..some of the information it doesn't sink in

Patients have identified that they have difficulty remembering the information provided to them (Kaae et al., 2014), which could be another factor for the parents involved in the two education programmes. Due to the incorrect, inconsistent, and overwhelming amount of information received, parents may end up being unintentional non-adherers. This involves parents who believe that they are following their child's treatment plan but are in fact not (Bokhour et al., 2008; Rand, 2002).

Theme 5: Tools for creating motivation

Pharmacists identified two ways in which they motivated parents to engage in their education programmes, and to adhere to their child's asthma treatment plans. These were by creating negative and positive expectations of the programme and of treatment outcomes. Creating negative expectations could also be seen as developing fear in parents. Fear of the outcomes if they do not change their current behaviours. Pharmacists employed several different tools to develop these expectations in parents of children with asthma.

<u>Subtheme 1: Creating positive expectations</u>

The accessibility of their education programme was a focus for pharmacists from Pharmacy A when trying to encourage parents to participate in their programme. Participant 3 highlighted to parents that their participation in this programme would not require a lot of resources, either time or money, removing the obstacles that could potentially prevent parents from being able to participate. Cost has always played an important role in parental participation of asthma interventions. Naik-Panvelkar et al.

(2012) found that as the cost of interventions increased, the numbers participating decreased.

P3: I just simply say "Look, we're running an asthma programme here, it involves us monitoring you, it's a free programme, it's to help with you know your asthma."....."Have you got time for a few quick questions? It's confidential and it's privately run in our consult room.....it's just to help you with your asthma."

Participant 5 chose to sell the accessibility of the programme to parents by highlighting the money they were saving and the access to services, such a prescription reminders, that other patients were not receiving. This could motivate parents to join the programme by making them feel special, and the programme feel exclusive. Parents also may have felt that the pharmacist had gone out of their way for them by including them in their programme, and felt motivated to return the favour by working hard and following the pharmacist's guidance.

P5: so usually we just mention to them that this usually would cost $150 but for you guys it's fully funded.....we say "Look we can call you before your repeats expire."".....but I mean it's, we just tell them, "It's just the first time we sit down with you. The rest of the time it's only going to be the two phone calls, and it's going to be really friendly phone calls."

Pharmacists also identified that parents developed a positive expectation in their own ability to successfully manage their child's asthma. For participant 1, this confidence would develop from parents being educated and knowing the steps to take to manage their child's asthma. This idea is one that is supported by the literature. Parental confidence has been identified as an important component of successful management of a child's asthma, and asthma knowledge and health literacy have been identified as increasing this confidence (N. Brown et al., 2014). Participant 1 also held the positive expectation that all of their patients were capable of managing asthma if they just had confidence in themselves and the proper education.

P1: I think confidence comes from knowing what to do. I think anyone is capable of treating asthma. I don't think there's anyone who can't do it. But they just need to be show how and they need to feel confident

Pharmacist 3 repeatedly talked about encouraging parents and continuing to motivate them even when faced with set-backs. It was important for pharmacist 3 that parents

understood that they weren't going to be able to control everything in their child's environment, but that they continued to be motivated. This involved parents not always focusing on the outcomes, but focusing on the process, and recognising that they were doing good work with their child and sticking to the treatment plan.

P3: and hey it's good to say to them "You're doing a good job,".....you know, "Feel pleased with what's happened, you're doing a good job."…..I mean you just have to reaffirm that to people, that they're doing fine you know. And you can't beat everything, the odd cold and stuff, school. Day-care's quite difficult for people…..it's just to reinforce that they're good and doing well. Keep going it's all good

Working with parents to develop confidence in themselves when it comes to managing their child's asthma, may prove to be a difficult task for pharmacists. Parental quality of life has been found to be significantly correlated with the severity of the child's asthma (Halterman et al., 2004). Because Pharmacy A focuses on asthma patients who are identified as being at risk, it can be assumed that the parents in their programme have a lower quality of life. Lower quality of life has been found to be associated with parents perceiving their child's asthma as poorly controlled (Halterman et al., 2004). Even when progress is made in their child's symptom control, parents may not be able to notice these changes, which could prevent them from feeling confident. Participant's 3 method of continually encouraging parents and pointing out the small gains is constantly working to change parental perceptions.

Empathy was a tool employed by participant 3 to help parents to see the positive side of preventer medication. When parents voiced their concerns about steroid medications and their desire to go down a natural path, participant 3 used their own role as a parent to help their patients feel like they knew what they were going through, and to help them understand the pharmacists point of view about this medication.

P3: I say "Well it's really good that you're looking into different things and that you're so aware."….I just say to them "But initially you need to get control."…..I'm a (parent) *[..] and I use that ploy that I've had kids and I know what it's like, and you do the best you can. But I mean, for me personally if it was my child I wouldn't hesitate because they need to get it under control. I do understand that that you know the natural side is also good to pursue, but I don't think you can risk at this stage*

P3: Try and help them along with the and just say "Yes I know, it's crazy."

Participant 3's choice to praise the parent as well as agree with their opinion that alternative medicines can play a role, rather than just telling them they're wrong, allows the parents to be heard and feel that like they have a say, which will be important in the development of rapport. Parents have identified that is it important for them to receive support and understanding from their healthcare professionals (Trollvik & Severinsson, 2004). The speedy development of rapport and eliciting the patient's own ideas are key elements in the Four Habits Model, which identifies the necessary communication skills for a successful encounter with a patient (Stein et al., 2005).

All five of the participants talked about the use of asthma plans with their patients. This usually involved going over the plan already provided to them. As identified by pharmacist 1 and pharmacist 3, the asthma plan works as a guideline for parents to managing their child's asthma. It's something parents can always refer back to, which will hopefully work to maintain their motivation.

P1: I think an asthma plan. You know well, knowing what to do isn't it? Whether you've got it written down or it's in your head it doesn't matter, but you know what to do in the circumstances

P3: when people are all on track with it, the management plan is really just to ensure that you know you're taking your doses, you're taking a preventer, that you're picking up your repeats, that you're getting everything on track, and continually running with how it's to be

Educating parents about their child's inhalers was the final tool identified as being important to pharmacists when developing positive expectations in their patients. All five of the pharmacists interviewed made at least one reference to this in their interviews. A common way of enhancing this education was the use of props or visual aids. L. M. Emmerton et al. (2012) identified that community pharmacists have a need for more educational aids, which seems in contrast to the current study in which participants described a variety of different aids available. For participant 1 it was the availability of a practice inhaler for parents and children to practice on, and participant 5 used a slide-show about asthma, and a model of the lung to allow parents to fully understand what was going on inside their child's body. Spacers were also given to parents to aid in a more effective delivery of asthma medication.

P5: so we counsel all of them on the inhaler use, we show them a model of the lung and what it looks like to have asthma…..we give them a spacer if need be, we run

them through a slide show, kind of a mini slide show about their inhalers and how important it is to use

For participant 1, asthma education was focused around the "how" of asthma use. Both participant 1 and 5 have talked about giving their patients spacers but have not mentioned whether any education is provided regarding this device. The use of spacer devices in medication administrations has been identified as one of the biggest confusions for parents (Grover, Armour, et al., 2013).

P1: one of the first things we usually ask them is do they have a spacer, if they've got an appropriate inhaler, do they know how to use their inhalers properly…..check that they know how to use the inhalers properly and demonstrate if required. We've got little demonstration accuhaler devices so they can have a play with those

Inhaler technique is such an important component of a child's asthma treatment, as it allows maximum drug delivery to the lungs, improving the benefits of medication (Takemura et al., 2012). In the past, interventions which have focused on inhaler technique in both adults and children, have led to significant improvements in inhaler technique, which in turn has led to decreased symptom exacerbations and increased medication adherence (Giraud et al., 2011; Mehuys et al., 2008; Ottenbros et al., 2014; Sleath et al., 2012; Takemura et al., 2012).

Participant 2 identified the difficulty of maintaining parental motivation to use preventer medication, due to the fact that consequences of taking this medication are only noticeable in the long-term, meaning that reinforcement is delayed. There is no short-term reinforcement, which can make it difficult for parents to understand the importance of the preventer. For this pharmacist, inhaler education was about the continual reinforcement of the importance of long-term preventer use.

P2: the thing is there's a psychological, psychological issue there and that is the preventer does not give immediate relief. So the people have an expectation that, you know, a few quick puffs and it should be done. And it's about reinforcing the value of that long term preventer treatment to eventually stop the overuse of relievers

As has already been identified, the fear of steroids that parents have in relation to preventer medication can get in the way of parents developing the motivation to adhere to treatment. To counteract these expectations, pharmacists work to eliminate the

negative expectations, and work to create positive expectations about the use of steroid based preventers.

P4: I mean we have a basic thing that we go through on how the inhalers work, how to use them, side-effects…..educating and making a focus on how the preventer works and how it's actually affecting the lungs, and that your child can live without symptoms

P5: and then we just mention to them that "Look, it will not cause any harm to your children…..It's completely harmless."…..then we need to explain that there's nothing wrong with long term steroid inhalers. Because they not much, a miniscule, miniscule amount get in your blood stream. They see all these things on the internet

Subtheme 2: Creating negative expectations

The development of negative expectations was exclusively talked about by pharmacists from Pharmacy A. Two methods were used to accomplish this.

Asthma control tests have previously been described, and are a key component of the education programme provided by Pharmacy A. Patients are given the test at the beginning of the programme, and then again at follow-up. Because Pharmacy A is targeting those patients who are not adhering to their treatment plans and whose asthma appears to be under controlled, there is an assumption that their ACT scores will be low. Pharmacists use this initial ACT score to demonstrate to parents just how under controlled their child's asthma is, and to hopefully create a negative belief about I's severity. It is hoped that the development of this negative belief will motivate parents to make a change to the way they manage their child's asthma.

P3: yes that's right we do the paper asthma control test

P4: initially we would have done an asthma control test and then hopefully we follow that up with a follow-up

P5: we do the asthma control test for adults and for children

Pharmacists also use the same technology that allows them to identify patients at risk, to develop negative expectations in parents in regards to their lack of compliance to treatment. Pharmacists have the ability to sit parents down in front of the computer and bring up their prescription history, which will often show the regular collection of

reliever inhalers, and the infrequent collection of preventer inhalers, which is the opposite of pharmacists are hoping to see

P2: as soon as you sit them down in front of the computer screen…..you throw up the history, and they can't argue with the fact that they haven't been picking them up on a regular schedule. So you get a buy in from there…..where there is an issue, and you can illustrate it to them, well you've got them on the back foot. Well you've got them in the position that they actually have to acknowledge…..I think the beauty is able to illustrate to them their non-compliance

P3: and then of course we check on the system, what they're having, the compliance

It is encouraging that pharmacists are not just focusing on creating positive expectations to motivate parents to adhere to their child's asthma medication. Helping parents understand the seriousness of their child's condition, creating negative expectations beliefs, and the important role of medication, creating positive beliefs, are both in the promotion of adherence (Dimatteo, 2004).

Theme 6: What prevents motivation turning into action?

A common occurrence is that parents will be motivated to engage in the programme and to adhere to their child's treatment plan, but there will be obstacles that prevent this motivation translating into action. This theme acknowledges that it is often not as simple as education equals adherence. Pharmacists are once again looking at the big picture for their patients and recognising that the complexity of people's lives means that their path towards treatment adherence will also often times be complex.

<u>Subtheme 1: Regime</u>

Pharmacists identified that the inhaler regime can cause difficulties for parents and children, which can lead to them choosing to stop taking medication, or unknowingly not administering it correctly. When parents made a conscious decision to no longer give their child medication, pharmacists 1 and 3 identified the complexity of the regime and side-effects of particular inhalers as being the cause.

P1: if the regime is too complicated for them, like they don't understand what they're meant to do. So simpler, the least number of inhalers to deal with is best

Complexity has been found to effect both treatment compliance and parental confidence. It is essential when promoting adherence, that the treatment is as simple as possible (Modi & Quittner, 2006). It is also an important aspect when developing a parent's confidence, as their perception of the difficult of tasks involved with treatment has been identified as a factor that decreases parental self-efficacy (N. Brown et al., 2014).

P3: you know it could be very simple like, you know one particular inhaler doesn't suit them or they find that one gives them a lot more oral thrust and they just don't like it

A common difficulty identified by pharmacists when it came to inhaler use, was that parents often didn't understand the correct way to give their child medication. Inhaler should be puffed once and inhaled immediately, but as illustrated by the pharmacists from Pharmacy A, many parents do not understand this important concept. These parents think that are giving their child their medication, when in fact most of it is not making it to the child's lungs.

P2: when someone uses a spacer, it's one puff in the spacer each time. You know it may say use six puffs via spacer, they've been told to do that. Now six puffs, 1, 2, 3, 4, 5, 6, and then inhale, or one at a time

P3: you know some people sort of thought two puffs twice a day, well it's, with your spacer it's not boom boom

P5: even if they've had them for 20 years or so, the amount of people that aren't aware pf how to use an inhaler is phenomenal…..for some they press their inhaler and then they like, they lose some out and then they puff it after a bit

Subtheme 2: Cost

A second obstacle preventing parents from turning their motivation into action is the cost of healthcare. This could be the cost of going to the doctor, or the cost of paying for the prescription. The key to treating asthma lies in taking the medication. If a family is unable to afford these costs, it is going to become almost impossible for them to effectively treat their child's asthma. Lack of resources, in regards to both time and money, has been associated with poor adherence (Chong et al., 2009).

P1: so the first one is financial…..it's not always out costs, it's the cost of going to the doctor…..sometimes financial problems are an issue

P2: we get the odd ones that have fronted up to the doctor but they are still struggling to pay for the chemist

P5: I'd have to say around here…..that they would not want to pay for the costs…..so there's a cost to the pharmacy and a cost to the medical centre

Interestingly, participants 1, 2, 4, and 5, all identified that cost was an issue for some of their patients, however participant 3 didn't feel like this was an issue for any of the patients they'd interacted with.

K: do you notice cost being an issue much?
P3: not particularly

Costs can further become a barrier to adherence when parents are having to take time off work or decrease their hours in order to be able to care for their child when they get sick. Parents will often experience disruptions to their work life, and loss of parental productivity has been identified as an indirect cost of asthma. (Barton et al., 2005; Grover et al., 2011)

Subtheme 3: Busy lives

Although the focus of the pharmacies asthma programmes is on the child's asthma, the lives of these children and their parents, and their families cannot revolve around asthma 24/7. People have busy lives and pharmacists felt that occasionally asthma was not the number priority, which resulted in parents forgetting to give their children medication. Parents have identified forgetting to give their child medication as playing a role in poor adherence, with parents in a study conducted by Modi and Quittner (2006) citing forgetting as their number one barrier to adherence.

P1: busy lives, they get busy they rush out the door in the morning, "Whoops I didn't give Johnny his medicine before I went to school."…..and you know children running late for school

P3: kids are doing a gazillion things, they don't have any day to think they've got nothing to do. So I think it's all the hassle of "Have you done your inhaler Johnny you done it right?"

P5: I mean some of them you know have lots of things, they've got work and things like that, and with kids and stuff like that it might be hard to keep track…..others

have just, they've been through a hard time, or they've been busy with school and exams

These parents who are struggling to always make their child's asthma are priority are identified as unplanned non-adherers (Bokhour et al., 2008; Rand, 2002). This type of non-adherence involves parents who intend to adhere but find it difficult to due to forgetfulness and busy schedules, often resulting in missed doses and underuse or cessation of preventer use.

HAPA Model

The following section compares the programme outlines provided by both Pharmacy A and Pharmacy B, as well as the interviews with the five pharmacists, to the HAPA constructs. Information from the programme outlines is presented in italics. Information from the interviews is presented underneath.

A detailed description of the HAPA model constructs begins on page 27 of the literature review.

Pharmacy B

The programme outline provided by Pharmacy B, as well as the interview with participant 1 provided evidence that this pharmacy was using the following constructs in their asthma education programme.

Risk perception

Give people asthma control tests to fill in and return to the Medical Centre to be scanned into their notes. Useful for patients at home to monitor their asthma. Good for children to explain how they are feeling.

Participant 1 did identify that parents were given the ACT test forms, however this pharmacist did not talk about encouraging patients to fill the forms in and take them to the medical centre, or talk about any follow-up to see if this had occurred. Because of this, it is unclear whether these parents were using these forms, which have the job of allowing parents to understand the severity of their child's asthma, and develop a risk perception. Participant 1 did provide the example of the parent whose child was able to use the ACT form when they were having an asthma attack, to communicate how they were feeling.

Action self-efficacy

This construct was not identified in the programme outline provided by Pharmacy B, however it was a part of the interview with participant 1. Participant 1 identified that the relationship between the pharmacist and the patient had strengthened over the course of their education programme. Parents were coming in more often to ask the pharmacist's questions when they needed more information about their child's asthma. Not only were parents gaining confidence in their pharmacists, but they were also developing their action self-efficacy. Participant 1 also felt that parents developed this self-efficacy when they were shown how to treat asthma and provided with the tools allowing them to know what to do.

Action planning

Check people know how to use the MDI (inhaler) *and that they have a spacer and/or mask. Encourage all MDIs to be used with a spacer. Demonstrate if required*

All inhaler labels include additional instructions. Use as a reliever or use as a preventer and rinse mouth after use. Make sure people are using a preventer regularly and not relying on relievers only.

When it came to action planning for Pharmacy B, the first component of the programme outline was fairly consistent with the interview. Participant 1 talked about providing education around the proper use of inhalers and spacers, making sure parents had a spacer, and providing them with demonstration inhalers so children and parents could practice their technique. The labels on the inhalers were not mentioned, however it is hard to imagine that medication would be leaving the pharmacy without being properly labelled, so it is likely that this is happening. Participant 1 also did not mention making sure that parents were using their preventers regularly and not their relievers, which is a departure from the programme outline. In addition to the above criteria, participant 1 talked about the importance of action plans, however it was unclear if these action plans were created in the pharmacy or even read through, or if the pharmacist just identified their importance.

Coping planning

Clip a reminder for repeats to the script so they keep a constant supply of medication

Tell people if they are collecting their last repeat. Remind them to get another script so they don't run out of medication.

Participant 1 talked about clipping reminders of repeats onto the prescription, and telling parents this was their last repeat when they came into the pharmacy. This was done with the hope that parents would be encouraged to organise a new prescription for their child, which would remove a barrier to adherence.

Outcome expectancies, coping self-efficacy, and recovery self-efficacy were the HAPA constructs that were not mentioned in either the programme outline or the interview with the pharmacist from Pharmacy B.

Several aspects of the programme outline were not included in the results as they did not relate to the health behaviour of adherence to the treatment plan. These included education around smoking cessation and antibiotic use. The outline provided evidence for the inclusion of the following constructs.

Pharmacy A

The programme outline provided by Pharmacy B, as well as the interview with participant 1 provided evidence that this pharmacy was using the following constructs in their asthma education programme.

<u>Risk perception</u>

Asthma control test

Review of compliance/adherence to therapy

Repeat asthma control test (3mth)

As noted in their programme outline, Pharmacy A create risk perception in parents through two different methods. The first is by using the ACT test and subsequent score. Because this pharmacy is targeting children whose asthma is uncontrolled, they are expected to get a low score on the ACT. Pharmacists use this score to illustrate to parents the severity of their child's asthma, and the lack of control. Pharmacists talked about parents who had accepted that their child's asthma symptoms were normal, which could indicate that they aren't aware of the true severity of their child's asthma. ACT was also used at follow-up, to allow pharmacists and parents to see any progress made. Pharmacists also talk about presenting parents with their child's prescription history,

allowing to physically see their non-compliance to preventer medication. Both of these aspects are consistent with the programme outline.

Outcome expectancies

Outcome expectancies were not identified in this pharmacies programme outline, but were identified in the interviews with its pharmacists. Outcome expectancies involve a balancing act of both positive and negative. Pharmacists identified that many parents hold negative outcome expectancies in regards to steroid use, and preventer medication is a steroid based inhaler. In particular, some parents believe that their child will suffer negative side-effects if they take steroid medications. Because preventer inhalers are steroid based, this negative outcome expectancy can prevent parents from adhering to treatment. Pharmacists talked about changing this negative outcome expectancy into a positive one. Elimination of the negative involved helping parents understand that small doses of steroids, as is in preventer inhalers, are harmless to their children. Pharmacists aimed to develop a positive outcome expectancy for preventer inhalers by providing education around how the medication works and affects the child's body, and highlighting the long-term consequences of preventer use, in particular the elimination of symptoms. Participant 2 identified that this positive outcome expectancy can be difficult to maintain because the effects of the preventer inhaler are only noticeable over the long-term, there is no immediate reinforcement. Pharmacists also identified that some parents held positive outcome expectancies about the use of natural or alternative treatments. In order to maintain the balance that would lead to the development of an intention to adhere, pharmacist 3 did not try to eliminate this outcome expectancy, but instead tried to prioritise the newly developed positive outcome expectancy related to preventer inhalers.

Action self-efficacy

Action self-efficacy is another HAPA construct which was not identified in the programme outline for Pharmacy A, but was identified in the interviews with their pharmacists. Action self-efficacy was not something that pharmacists overtly worked on with parents, but rather something they identified developing as a consequence of the positive changes they could see in their child, and the education they were receiving from pharmacists. Pharmacists receiving positive feedback from parents about these aspects.

Action planning

Explanation of reliever/preventer medication using educational props

Asthma management plan – i.e. what to do when things go wrong, when to seek medical help

Demonstration of correct inhaler technique and maintenance

Demonstration of correct spacer technique and maintenance

Refresher education around correct use of medications/devices (3mth)

Action planning was identified as being a key component of the education programme for Pharmacy A. A large proportion of their programme outline focused on this area, and it was a construct that all of the pharmacists interviewed talked about. Pharmacists identified a slide-show and a model of the lung as some of their educational props used when talking to parents of children with asthma. All of the pharmacists interviewed from Pharmacy A talked about the use of asthma management plans with their patients, and this was in regards to plans that had already been developed. The programme outline is unclear as to whether the pharmacist should be creating plans with the parents, or if they should be going over an existing plan with them. Pharmacists also talked about providing education around how inhalers worked and how to use them, and making sure their patients had spacers when necessary. However, maintenance of spacers and inhalers was never mentioned by the pharmacists, and it was unclear whether or not parents were given a demonstration of how to use a spacer, or if they were just provided with one. Providing a refresher around medication education at follow-up was also never mentioned by the pharmacists.

Coping planning

Common trigger factors and how to decrease exacerbation risk

None of the pharmacists from Pharmacy A talked about providing education to parents around the common trigger factors and how to decrease exacerbation risk. However, coping planning was identified when pharmacists talked about the services they provide to their patients. One of these is ringing patients before their prescription repeat expires, so that they have time to get a new one, and don't run out of asthma medication.

Coping self-efficacy

Coping self-efficacy was another construct that was not a part of the programme outline provided, but was talked about in the interviews. Participant 3 was the only pharmacist to mention this construct. This pharmacists talked about encouraging parents through the set-backs and regularly reminding them that they were doing a good job and that they couldn't control everything in the environment. This was about getting parents to focus less on the outcomes, and more on the process of adhering to treatment, something they were doing well at.

Recovery self-efficacy was the only HAPA construct that was not identified in the programme outline or the interviews for Pharmacy A. As with Pharmacy B's, the outline included education around smoking cessation which was not included in the results as it doesn't relate to treatment adherence. The outline also included a detailed description of how patients would be categorised based on their ACT scores. The pharmacy never implemented this aspect of the programme as they felt it was unnecessary.

Both Pharmacy A and Pharmacy B were identified as making attempts at developing over half of the HAPA constructs with parents of children with asthma in their education programmes. Pharmacy A were identified as using two methods, ACT scores and prescription history, which may help parents develop a risk perception. Pharmacy B were also identified as using the ACT, however it was unclear if parents were using the tests, and the score from these tests if the important factor which could possibly aid in the development of risk perception. Although risk perception has been identified as the weakest of the three constructs involved in the development of an intention, bringing awareness to the severity of a condition is theorised to allow patients and parents to begin the process of contemplating the possible outcomes and their own ability to manage their child's care (Schwarzer et al., 2011). Outcome expectancies, another construct involved with the development of an intention, are formed when an individual balances and positives and negatives of behavioural outcomes (Schwarzer, 2008b). Pharmacy A were found to be working to change negative beliefs held about steroid medications, i.e. preventer inhalers, into positive beliefs, and by decreasing the importance of the positive beliefs held about natural and alternative medications for treating asthma. They are engaging in the balancing act of outcome expectancies. Pharmacy B was not found to do any work around outcome expectancies with parents. Outcome expectancies are important because those individuals who are pre-intenders

need to learn that their current level or lack of adherence to their child's treatment plan has negative outcomes, and that learning and implementing the new behaviour will have positive outcomes for their child's health (Schwarzer, 2008b). This knowledge is believed to be a significant factor in the development of an intention (Ernsting et al., 2013). Action self-efficacy was identified in the interviews with pharmacists from both Pharmacy A and Pharmacy B. In both cases, action self-efficacy was not something that pharmacists were overtly developing with parents, but more of an outcome of the education and support provided, that pharmacists had identified in parents. Action self-efficacy plays an extremely important role in the development of a new behaviour. The theory is that if parents are not able to believe in their ability to perform the new behaviour, adhering to treatment, they will not be able to imagine having any success and the likelihood of an intention developing will be low (Schwarzer, 2008b). Risk perception, outcome expectancies, and action self-efficacy are the three HAPA constructs identified as being important in the development of an intention. Pharmacy A was found to be working to develop two of these constructs, with the third, action self-efficacy, being identified as naturally occurring. Pharmacy B was possibly developing risk perception, and had also identified that action self-efficacy was developing naturally.

Action planning was identified as an important construct to both Pharmacy A and Pharmacy B. Through the use of inhaler education and asthma management plans, both pharmacies were found to be providing parents with the situational cues (i.e. when), and the sequence of action (i.e. how), necessary to treat their child's asthma. Action planning is important in helping individuals make the shift from intention to behaviour, as it is thought that it is more difficult for these individuals to forget the already developed intention if it is paired with the above cues (Schwarzer, 2008b). This focus on action planning is one which is common among pharmacy interventions. For Takemura et al. (2012), Bryant et al. (2013), and Giraud et al. (2011), providing instruction and demonstration on the correct inhaler technique was the core component of their interventions. The development of asthma management plans does have a role in a handful of interventions (Saini et al., 2008; Saini et al., 2004) but fairly consistently throughout the interventions, even when other components are involved, the assessment and correction of inhaler techniques is always present (Barbanel et al., 2003; García-Cárdenas et al., 2013; Schulz et al., 2001; Young et al., 2012). Both pharmacies were also found to be providing coping planning parents in the same manner, by reminding

them when they were picking up their last prescription repeat, giving them time to organise a new one so they did not run out of medication for their child. Most of the talk around coping planning involved pharmacists identifying the barriers and providing parents with a suitable method to cope. According to the HAPOA model, coping planning should involve parents considering the barriers that they will encounter in the process of adopting and maintaining the new behaviour, and using their own coping skills to manage these barriers (Clark & Bassett, 2014; Schwarzer, 2008b). It would seem important for parents to develop these strategies and skills, so that they can continue to successfully manage their child's asthma once they've left the pharmacy education programme. The way in which both of the pharmacies approached coping planning with their patients, seems to be fairly consistent with the methods chosen by other pharmacy interventions in the literature. Coping planning was not an element that many of the interventions included. Those interventions that did use coping planning usually focused on educating patients about the trigger factors involved with asthma and how to avoid these (Armour et al., 2007; Barbanel et al., 2003). The intervention by Barbanel et al. (2003) also included education around the worsening symptoms of asthma and the appropriate action to take. Consistent with the approaches taken by the pharmacies in the current study, identification and strategy planning appear to be led by the pharmacist and not by the patient. Coping self-efficacy is the third construct important when moving intention into behaviour, and only one of the pharmacist's interviews, participant 3 from Pharmacy A, was identified as working to develop this construct. This participant regularly talked about encouraging parents to keep going, even in the face of barriers, and to focus on the process rather than the outcome. Coping self-efficacy represents an individual's belief in their own capability to cope with barriers that arise while they are trying to maintain the new behaviour (Schwarzer, 2008b). It is theorised that once the behaviour has been taken up, an individual with high coping self-efficacy will invest themselves more in the behaviour, and persist longer in the face of difficulties. Recovery self-efficacy is the final construct of the HAPA model, and the only construct that neither pharmacy were identified as developing. Recovery self-efficacy is a key construct for those who are identified as actors, individuals who have initiated the new health behaviour, and are maintain it (Schwarzer, 2008b). Because of this, it is not surprising that neither pharmacy were found to be doing work in this area, as most of their focus appears to be on patients who are non-adherent, or are struggling to control their asthma.

Action self-efficacy and coping self-efficacy were the least attended to of all the constructs by both education programmes, and recovery self-efficacy was not mentioned once. This is a large gap in both of these programmes, and one that seems to be shared by most community asthma interventions. Liu and Feekery (2001) focused on families dealing with asthma, and had three educational components that were emphasised during sessions with parents. One of these was enhancing a parent's role in asthma management, which was been interpreted as increasing their self-efficacy. This intervention was not carried out by a pharmacist, but by paediatricians. A second intervention described by Young et al. (2012) is the only intervention that was carried out by pharmacists and involves the use of a self-efficacy theory. However this theory was not used as a part of patient education, but was the basis of the training provided to pharmacists before they interacted with patients. These two are the only interventions that make any mention of self-efficacy, indicating that, particularly for pharmacies, this area is not seen of one of importance when working with asthma patients and their families.

Self-efficacy is an extremely important component of the HAPA model. Not only does it play a role throughout the adoption of a new behaviour, so is crucial at all stages, but it has been found superior to all other variable in the prediction of intention (Lippke, Ziegelmann, & Schwarzer, 2005; Schwarzer et al., 2011). Ripper et al. (2009), when focusing on the implantation of regular use of pressure garment therapy, found that those individuals who did not engage in this behaviour has lower levels of self-efficacy than those who did engage.

Conclusions

The aim of the current research project was to evaluate and compare two pharmacy led, community interventions for asthma management. This was an exploratory study with a focus on parents and caregivers of children with asthma, from the perspective of the pharmacists who were involved in their care. The research aimed to compare the interventions being provided, to the constructs of the Health Action Process Approach (HAPA) theory, to see if the service being delivered to patients matched the aspects that the HAPA theory suggests will promote change in health behaviours. The research also aimed to gain insight into the pharmacist's experiences of working with these parents and children, and the barriers they perceive as playing a role in medication adherence. These aims were explored in the context of a small rural community that may present its own unique challenges.

The following outlines the key aspects and highlights of the study, and the implications of these findings. The limitations and strengths of the research are explored, as well as ideas for future research. Finally, the process of researching and writing is reflected upon.

The analysis of the interviews found that relationships and motivations are the two key components that make up the delivery of the education programmes.

Relationships

Both pharmacies had a clear vision for which of their patients they wanted to form relationships with. Pharmacy A chose to focus on patients who were non-adherent to their treatment plans and who had uncontrolled asthma symptoms. All four of the pharmacists from this pharmacy were consistent in their descriptions of target patients, which suggests there is good communication within the pharmacy. Pharmacy B, in contrast to Pharmacy A, had chosen to target all asthma patients, regardless of asthma severity or level of adherence. Pharmacy A's decision to target those patients they identified as being at risk may result in more successful outcomes than Pharmacy B's programme which was for all asthma patients. Effectiveness is believed to be greater when an intervention is tailored to a specific group (Schwarzer et al., 2011). Two of the pharmacists from Pharmacy A felt that trying to intervene with patients whose asthma was controlled was counterproductive and could harm the already established relationships held with these patients. This suggests that the relationships pharmacists

have with their patients are important to them, and they will tailor their education accordingly so as not to have any negative effects on these relationships.

Pharmacists were identified as engaging in two different types of relationships, authoritative and collaborative. Several of the pharmacists used language that indicated a belief that, because of their professional position, they had some power over parents of children with asthma. The power pharmacists felt they held was linked to the knowledge they hold, which they believed parents do not hold. This perceived power imbalance was identified as an authoritative relationship. This type of relationship is in contrast to the literature which states that if pharmacists are going to be in an education role, they need to work within the context of patient's belief systems, and make an effort to understand what a family expects from treatment (Cuellar & Fitzsimmons, 2003). The authoritative relationship suggests that the goals and beliefs of the pharmacist should take preference, because of their professional position, whereas the literature suggests that the goals and beliefs of the patient are equally, if not more, important. The second type of relationship, the collaborative, assumed that pharmacists and parents both held knowledge about the child and their asthma, and so the power was more balanced and parents had more of a participatory role. Throughout the literature, it is evident that parents want to be an active participant in their child's care and not a spectator observing what the health care professionals are doing (Dimatteo, 2004; Trollvik & Severinsson, 2004) Parents want to be heard and respected, which is in line with a collaborative relationship. The types of relationships between parents and pharmacists were not exclusive to any particular pharmacist or to any pharmacy, suggesting that these relationships are fluid and constantly changing, and that it is not the workplace which dictates the relationship, but the individuals involved. Pharmacists also made no indication that engagement in these different relationships was a choice, or even that they were aware of the differences in their practice. Pharmacists from both pharmacies may find that some personal reflection, and being conscious of the way they interact with parents, and the types of relationships they form, may be helpful for their future practice as a health care professional.

Trust was identified as being an important part of the relationship between the pharmacist and the parent. Pharmacists need to be able to trust that the information their patients were giving them was truthful and that they weren't missing anything out. Some of the pharmacists felt as though parents often withheld a lot of information. The same pharmacists who were engaging in authoritative relationships with parents were

also the pharmacists who didn't trust that parents were providing them with all of the necessary information. It was unclear whether the relationship resulted in this lack of trust, or the lack of trust made pharmacists feel as though they needed to be more authoritative with parents. It does highlight the cyclical nature of relationships and of trust. For participant 3, it was important that parents trusted the pharmacist they were working with. This pharmacist was asking parents to ignore all of their outside sources of information and trust that their health care professionals will provide them with the necessary and medically accurate information to successfully treat their child's asthma. This request required parents to discount the information they received from their social circle, which highlights this belief held by pharmacists that the only knowledge parents should be acting on is the education they receive from their health care professionals.

Two of the pharmacists from Pharmacy A acknowledged that the inclusion of the child was an important part of the relationships with parents. Not only did the freedom to bring children along make the pharmacy more accessible, but it suggested that the pharmacists were acknowledging the knowledge that these children held in regards to their own health. This acknowledgement is a shift from the belief that pharmacists hold all of the knowledge. The literature has identified that poor treatment adherence can be the result of concerns held by the child, so the inclusion of the child could work to alleviate some of these concerns (Grover, Armour, et al., 2013; Modi & Quittner, 2006). The inclusion of these children may also be beneficial to their health in the future. These children will grow into adolescents and adults with asthma, and having an already developed relationship with their pharmacist may have a positive effect on their adherence. A final element of the relationships between pharmacists and parents, was that for the pharmacist from Pharmacy B, this relationship was something that had strengthened over the course of the programme, with parents becoming more confident in themselves and in the knowledge and abilities of their pharmacist.

Several elements were identified by pharmacists as facilitating the development and maintenance of the relationships between pharmacists and parents of children with asthma. The first of these was the accessibility of the pharmacists and their programme, particularly because the programmes were both free and parents don't need to schedule a time to see a pharmacist, they can just drop in. For Pharmacy A, a second element was the pharmacy database that allowed pharmacists to easily identify those patients whose asthma was not controlled or who weren't adhering to their treatment plan. The accessibility of pharmacies and the frequency with which they see their patients, plays a

large role in their suitability to work with patients with chronic illnesses (Adunlin & Mahdavian, 2012; Bereznicki et al., 2013; L. M. Emmerton et al., 2012). The location of both pharmacies, in small rural communities, was identified by pharmacists as playing a positive role in the development of relationships with parents. Pharmacists felt that the nature of small communities meant that they had already existing relationships with most of their patients and a degree of familiarity. This familiarity highlights the dual role that rural pharmacists engage in. On the one hand they are trying to maintain their professional role, and for some pharmacists, the power that they perceive as being a part of this role. On the one hand, these pharmacists are still a part of a very small community and work to use this to their advantage. They are trying to strike a balance between professional and personable. Of the literature on community pharmacy interventions based in Australia and New Zealand, only a very small number were set exclusively in rural settings. So this relationship that is unique to small towns has not been explored in the asthma research. Part of being in a small rural community may also create extra challenges for pharmacists when it comes to the confidentiality of their patients, as pharmacists did identify that people in the community are talking about the education programmes, and the health of others. If parents feel that pharmacists are failing to protect their confidentiality, this may prevent them from developing a good relationship (Mey et al., 2013). Moving forward, pharmacists may need to be aware of this issue, and that it may be a concern for some of their patients, and may even discourage them from participating in the programme.

Elements which could hinder the development of relationships between pharmacists and parents were also identified. Only Pharmacy A talked about these elements, but this does not mean they don't apply to Pharmacy B. Time was the main hindrance for both parents and pharmacists. Although pharmacists were identified as being accessible, there are going to be times when they are unavailable, just as there will be times when parents don't have the available time to engage in lengthy conversations with their pharmacist. Pharmacy opening hours also restricted the amount of time available to develop relationships, because these open hours are similar to the hours many parents work. One pharmacist felt that even when parents did have some spare time, they may not wish to spend this time coming into the pharmacy to talk to the pharmacist. A lack of time is not a problem that can be solved, but rather pharmacists and parents need to be understanding of the restrictions that each have on the availability of their time. One pharmacist had encountered a patient who didn't wish to talk about their family

member's health in the pharmacy, which may have been due to a perception that confidentiality was difficult to achieve in a small town.

Pharmacists acknowledged that regardless of relationships and education, ultimately, parents have the right to choose what is best for their child. This ability of parents to make the ultimate choice highlights that no matter how authoritative the relationship, and no matter how much knowledge a pharmacist has, parents are never completely powerless and will always have the ability to decide that in fact they know best, and ignore what their pharmacist is telling them to do. There is a limit to the power that pharmacists believe they hold. This is supported by the literature which found that children receive care within the context of the beliefs their parents hold, and that when these beliefs are shaped by incorrect information, this can have negative consequences for the child (Klok et al., 2011; Wilson & Kieckhefer, 2000). It is important for pharmacists to develop strong relationships with parents, which will hopefully increase the likelihood of parents choosing to connect with the information their pharmacist provides them. This could be complicated by the possibility that not all parents respond to or expect the same relationship with their pharmacist, so pharmacists need to be flexible to the needs of each individual.

Several other relationships were identified as playing an important role in the delivery of the education programme and in a parent's progress towards adherence. The relationship between the child with asthma and their parent is important. Some pharmacists felt that parents could over-estimate the abilities of their child and give them the responsibility of adhering to their treatment plan, something they were not capable of managing. In the future of the programme, both parents and pharmacists may benefit from education around the development stages of children and what responsibilities they might be capable of managing at each stage. Pharmacists did acknowledge that parents would not be in charge of their child's asthma forever, and that often by adolescence the child would take the majority of responsibility with guidance and support from their parent. Participant 4 acknowledged the importance of the relationship between a parent and a child with asthma, and the knowledge that a parent has about their child's health as a result of this relationship. This pharmacist is also acknowledging that sometimes parents know their kids best, which is a view held by parents (Peterson-Sweeney et al., 2003). This is a contrasting view to the pharmacists who were identified as engaging in authoritative relationships with the belief that they held the knowledge, and therefore they knew best. This contrast once

again highlights that the delivery of the education programme will be shaped by the individuals who are involved in each interaction, making each interaction and relationship different.

Another important relationship is between a child's primary caregiver and other adults in the child's life who also play a caregiving role. This relationship was identified as being problematic when it involved two parents who were no longer living together, and who had limited communication, which resulted in lost or forgotten inhalers, making adherence difficult. This awareness by the pharmacists that the personal lives of parents have an effect on adherence, indicates that while pharmacists believe that knowledge is power and that education will lead to adherence, they have the ability and insight to recognise that people are complex. The pharmacists are taking a systemic view when looking for reasons why parents may have trouble adhering to their child's treatment plan.

The relationship between the pharmacists and other health care professionals in the community was also identified as playing an important role. Pharmacists identified that they have the ability to work collaboratively with and refer patients to these health care professionals, which allows parents to receive the same education from multiple sources, reinforcing the importance of adherence to the treatment plan. It also reinforces the belief that those who are in a professional position hold the knowledge. These collaborative relationships that the pharmacists from Pharmacy A are describing could be a real strength of their programme. Their patients are receiving a wealth of information, and it is assumed that the information is consistent, regardless of the source. This collaborative relationship will be valued by these health care professionals. The literature identified that the buy in of GPs to these pharmacy led programmes is reliant on communication between the two parties (Azmi et al., 2012; Bereznicki et al., 2011). Participant 1 identified that they had not referred any of their patients on to other health care professionals but that they had the capability to do so. In the future, Pharmacy B may wish to make more of a focus on working collaboratively with other health care professionals and referring their patients, which could increase the likelihood that patients will engage with the education being provided.

The final relationship which played an important role in the delivery of the education programme was that between the pharmacist and the contract with the DHB contract. This relationship was solely identified in Pharmacy A, and only two of their pharmacists talked about it. This contract was found to navigate the way pharmacists

not only carried out the programme but also the way they talked about it. Participant 5 made frequent mention of the contract and kept highlighting that they were following the rules of the contract and ticking the necessary boxes.

Motivations

The initial motivation for pharmacists to develop their education programmes came from a desire for their asthma patients to be properly educated about their medication, and for patients to have improved health outcomes. The identification that education was an important motivator for pharmacists once again highlighted their belief that knowledge equals power and adherence. The motivation to continue to provide the education programmes was reinforced by the improvements in patients. For some of the pharmacists, these improvements were clinical, such as improved ACT scores, a decrease in hospital visits, and the regular collection of preventer inhalers. For participant 3, motivation was reinforced by the positive feedback they received from patients about the improvements in their day to day lives. The success of asthma patients resulted in professional satisfaction for the pharmacists. For the pharmacists from Pharmacy A, the motivation to expand the programme to other pharmacies and other health conditions was driven by a desire for professional recognition and by the feeling that these pharmacists had the ability to do more and help more people. Professional recognition and personal satisfaction have been identified as motivating factors for pharmacists involved in other interventions (Aspden et al., 2011; Nadaira et al., 2009).

Pharmacists believed that parents of children with asthma were motivated to engage in their programmes by a desire to see their child get better. For parents of children with asthma, 'getting better' was related to a decrease in symptoms and in the frequency of asthma attacks. These goals held by parents were found to be similar to those of pharmacists, with pharmacists having the addition of adherence. The symptoms of asthma were found to be distressing for parents, and pharmacists felt that when parents could see a move towards their goals being met, and the quality of life for their child improving, their motivation to continue in the programme was reinforced. Pharmacists also identified that parents were motivated by the educational tools they received, which were empowering parents and giving them some control in a situation which was often out of their control and distressing.

Pharmacists from both pharmacies identified barriers which they believed prevented parents from developing the motivation to adhere to their child's treatment plan. The first of these was the discordance between parents and pharmacists about what constituted a healthy child. For pharmacists a healthy child with asthma is a child who is adherent to their treatment plan, and whose symptoms are controlled. Parents held a variety of other ideas about what makes a healthy child. As previously identified, a goal for many parents is to see a decrease in their child's symptoms, so a healthy child is one who is experiencing an absence or decrease in symptoms, something that often occurs naturally in the summer. Pharmacists identified that because these parents were now viewing their children as healthy, they stopped giving them their medication, because they believed they no longer needed it. Another idea held by parents is that a healthy child is one who doesn't take steroid medication, or who is only on natural or alternative treatments. Preventer inhalers are steroid based so this idea about a healthy idea discounts the use of preventer inhalers, which are an important part of asthma treatment. A third component of the healthy child involves families who decided that life with asthma and its symptoms is going to be normalcy for their child, and their standards for what makes a healthy child are lowered. Because of this parents might be less willing to engage in treatment, as they believe that improvements cannot be made.

A second barrier identified by pharmacists that can prevent parents from developing the motivation to adhere to their child's treatment plan is information parents are receiving. Participant 1 felt that parents were sometimes given inconsistent information from the different health care providers they were dealing with, which could result in confusion. Similarly, participant 3 felt that parents received a lot of information from a lot of different sources in both the medical and social parts of their lives. This pharmacist felt that the overload of information often led to parents just giving up because it was all too much to manage. Participant 2 identified that the way information is delivered to parents is also important. This pharmacist felt that the technical language used by health care professionals often made it difficult for parents to understand, which would have a negative effect of adherence. Knowledge deficits have been found in the areas of medication identification, medication purpose, and prevention (Magdy et al., 2010; Zhao et al., 2002), however the literature rarely goes into the reasons why these knowledge deficits occur. The insights provided by these pharmacists are an important addition to the already existing body of research. The ability of all of the pharmacists to identify those barriers that may prevent their patients from developing the motivation to

adhere to treatment is a real strength of both pharmacies. The pharmacists are acknowledging that the road to adherence is not simple, and that each family is individual and will face their own unique set of barriers.

The insight that these pharmacists have into the lives of their patients and the barriers they face, is a real advantage to their programmes, and could be a unique element of the rural pharmacy. Pharmacists have already identified that they have pre-existing relationships and a level of familiarity with their patients, which may result in good relationships, rapport, and trust developing quickly. When pharmacists have strong relationships with their patients, this may facilitate open communication between parents and pharmacists. These types of relationships and communication may not be possible in an urban pharmacy, which could mean that urban pharmacists do not have the same level of insight into their patient's lives as a rural pharmacist.

Pharmacists identified that they worked with parents to develop the motivation to engage in education programmes and to adhere to their child's asthma treatment plan. This was done by developing positive and negative expectations for the programme and its outcomes. A variety of methods were used to create these expectations. The accessibility of the programme, in regards to both time and money, was highlighted by pharmacists to encourage parents to join. Participant 3 employed empathy when dealing with parents who had a negative perception of preventer medication and a positive perception of natural and alternative medications. Using empathy and then education allowed this pharmacist to create a positive expectation of preventer medication, and balance this against the already held positive expectation of natural treatments, with the goal of making preventer medication a priority. Education was an extremely prevalent method, and was used as a way to make parents feel more positive about adherence to treatment. Pharmacists talked about the use of asthma management plans, using educational tools, and teaching and demonstrating inhaler technique, all with the goal of parents learning the necessary skills to be able to adhere to their child's treatment plan. These strategies all regularly occur throughout the literature focusing on pharmacy interventions for asthma, highlighting that a focus on importance of education and medically correct knowledge is common within the pharmacist community (L. Emmerton et al., 2003; Liu & Feekery, 2001; Saini et al., 2004; Schulz et al., 2001).

The pharmacists from Pharmacy A also talked about the development of negative expectations in regards to the outcomes if non-adherence was continued. The pharmacist from Pharmacy B did not talk about this, suggesting that the creating of

negative beliefs is not a focus for this pharmacy. Pharmacists presented parents with their child's ACT scores and their dispensing history to illustrate the child's asthma severity and how this was related to a lack of adherence to preventer medication. Creating negative expectations could also be called creating fear in parents, to motivate them to engage in the programme and make changes. Just as pharmacists have to find a balance between professionalism and relatability in their relationships with parents, they also have to find a relationship in the development of positive and negative expectations. Parents have already been identified as distressed and anxious because of their child's asthma, so creating too much fear in these parents could inhibit their ability to manage their child's asthma and adhere to the treatment plan. When the pharmacists talk about the different methods they use to develop both positive and negative expectations, they are taking their acknowledgement that the progression to adherence is not easy or simple, and are putting this into action by having a variety of tools to employ. Having multiple tools to use indicates that pharmacists are seeing parents as individuals and are recognising that they will have different needs and will respond to different methods of education.

Once parents had developed the motivation to engage in the education programme and to adhere to treatment, pharmacists identified that there could still be barriers preventing this motivation turning into action. The treatment regime was a big factor preventing this shift from motivation to action. Pharmacists identified that the complexity of the regime was important, with parents being more likely to understand a simpler regime that involved less steps. Pharmacists also found that many parents believed they were adhering to their treatment plan, but were in fact misusing the inhalers, preventing a large proportion of the medication from making it to their child's lungs. Pharmacists are not in a position to change the treatment plan prescribed to a patient, however, for those parents who are managing a complicated treatment plan, it is possible that the time pharmacists spend with parents educating with them and answering their questions, will help parents feel more confident in their ability to manage the regime. The cost of going to the doctor and paying for prescriptions was also a factor for some families, as well as the busyness of people's lives which occasionally meant that their child's asthma treatment fell to the back of parent's minds, and treatment was sometimes forgotten.

HAPA Model

The second part of the analysis was to compare the programme outlines and interviews from each pharmacy to the HAPA model. The programme outlines from both

pharmacies were found to contain elements of the following HAPA constructs – risk perception, action planning, and coping planning. In the case of both pharmacies, these same constructs were identified in their interviews as well. The interesting part of this analysis was that both pharmacies are meeting their programme outlines but were doing so much more. Pharmacy B extended on their programme outline with the inclusion of action self-efficacy, which participant 1 identified as being a consequence of the education provided to parents and the extra time spent with them. Gaps in the programme of Pharmacy B were found in relation to outcome expectancies, coping self-efficacy, and recovery self-efficacy. In the future, this pharmacy may wish to work to develop these construct with their patients, as the HAPA model theorises that the combination of all of the constructs will lead to a successful health behaviour change.

Pharmacy A extended upon their programme outline with the inclusion of outcome expectancies, action self-efficacy, and coping self-efficacy. The only construct identified as missing from their programme was recovery self-efficacy. This construct is important for patients who have already made a health behaviour change, which is not who Pharmacy A targeted in their programme, making it a minor exclusion. Some of the constructs, such as coping self-efficacy, were only identified as being developed by one pharmacist, so in the future this pharmacy may also like to work to fully develop all the constructs in their patients, with the hopes of increasing the likelihood that they will make a health behaviour change.

Action planning was identified as a key construct in both programmes, whereas the constructs related to self-efficacy were all found to be lacking. Self-efficacy is an extremely important component of the HAPA model. Not only does it play a role throughout the adoption of a new behaviour, but it has been found superior to all other variable in the prediction of intention (Lippke et al., 2005; Schwarzer et al., 2011). This is a common theme throughout the literature that focuses on pharmacy asthma interventions. Improving the knowledge of asthma patients and their parents is a common goal in the interventions which targeted children with asthma, or were based in New Zealand (De Vries et al., 2010; L. Emmerton et al., 2003; Liu & Feekery, 2001). Both pharmacies would likely benefit from the addition of an education component focused on parental self-efficacy.

The discrepancy between the programme outlines and the interviews highlights a key strength of both pharmacies education programmes. All of the pharmacists have the ability to take a theoretical idea and extend it to meet the individual needs of their

patients. This ability is likely developed through the relationships formed with patients which allows pharmacists to better understand the motivations of parents and the barriers to adherence that they are facing. The rural context that these pharmacies are set in makes this whole process of developing relationships and tailoring the programme unique because of insight that these pharmacists often have into their patient's lives, which is likely not the case in an urban pharmacy.

Key Findings

At their face value, the education programmes provided by Pharmacy A and Pharmacy B, are based on a belief system that knowledge is power, and that knowledge will result in adherence. For pharmacists, knowledge is the medically accurate education they have received through their training, which they need to share with parents of children with asthma so they can adhere to their child's treatment plan, suggesting that pharmacists have the power to tell parents what to do. For parents, knowledge can also be gained through their own experiences of raising a child with asthma, through the experiences of their family and friends, and the experiences of their own child. Even though the programmes and their outlines are based on this belief system, when pharmacists talk about the individual interactions that occur in their programme, they view people in a systemic way that allows the individual's context and barriers to be recognised. Pharmacists appear to be insightful and driven to make positive changes in their patient's lives.

The delivery of an education programme in a rural pharmacy setting also involves a constant balancing act. Pharmacists have a strong desire to help people, but also a concern about negatively impacting their relationships if they try to intervene with a patient who doesn't need it. They also need to be aware that in their request for parents to acknowledge that the pharmacist's knowledge is enough, that they aren't also asking parents so disconnect from the support provided to them from their social circle, if they choose to ignore the knowledge these people are offering. Part of the nature of a rural pharmacy is the pre-existing relationships that exist. Pharmacists have to balance their roles of being a professional who holds the knowledge and the power, with being a personable member of a small community. The time available to all involved in the programme also involves a balancing act, as both parents and pharmacists have been identified as having limitations on their time and availability. The most crucial balancing act is the pharmacist's recognition of who hold the important and useful knowledge. Although it has been repeatedly identified that pharmacists believe they

hold the knowledge, it has also been identified that there are benefits to acknowledging that parents and children also have important knowledge to contribute.

Future Research

As was the original goal of the current research project, future research focusing on the experiences of the parents of children with asthma would be beneficial to add to the body of knowledge of rural pharmacy asthma interventions. It would be interesting to explore the perspectives of parents when it comes to motivations and relationships, and to compare these to beliefs held by pharmacists about what parent's goals and beliefs are when it comes to their child's asthma. This insight into the experiences of parents could be extremely useful for pharmacists and the future development of their programmes. It would also be interesting to explore whether the HAPA constructs the education programmes were identified as targeting, have been developing in parents, and whether there has been a shift from no intention, to intention, to action. As suggested in the current research, some of these experiences identified may be unique to rural pharmacists. Future research could explore the experiences of urban pharmacists and compare these to those of rural pharmacists.

Strengths

A strength of the current study was in the recruitment of participants. 100% of the pharmacists who work in pharmacy A, and 50% of the pharmacists who work in pharmacy B agreed to be interviewed for the study. This means that almost all possible participants were interviewed. A second strength lies in the novelty of this study. As previously stated there is minimal research in the literature focusing solely on the

Limitations

A limitation of the current study was that the researcher had to apply a psychological lens, and psychological constructs to a pharmacy led programme and the perspectives of pharmacists. Pharmacists usually approach health and people from a pharmacological point of view, rather than a psychological one. Another limitation of the study is the limited generalisability of the results, because of the unique rural locations of both pharmacies. However, the aim of the study was to explore the experiences of these rural pharmacists, so generalisability was never a goal of this research. A final limitation is due to the inexperience of the researcher. Because the project is for a Master's thesis, this was the researchers first time engaging in a project of this nature and scope. Lack of

experience could mean that important information may have been missed in the interviews and in the analyses.

Reflections

As has been previously outlined, the original aim of the study was to interview parents of children with asthma who had participated in the pharmacies education programmes, and to explore their experiences. After several months of recruitment, the researcher was unable to recruit a single participant from either pharmacy. Upon reflection, there may have been several reasons why recruitment was so difficult. Consideration of these should be made in any further research. The first possible explanation is that recruitment took place in late summer and early autumn. Pharmacists identified that often children's asthma symptoms naturally decrease in the summer. If there child wasn't symptomatic parents may not have been coming into the pharmacy very often, which was the location for recruitment. Another possibility is that parents could have perceived the researcher as being part of the pharmacy or part of the DHB, and may have felt uncomfortable providing feedback , and worried that these people and organisations might know if they said anything negative about it. This could be made worse by the nature of small towns and confidentiality which was explored in the research.

Once the decision was made to change the focus of the research, the researcher was at an advantage as they had already established relationships and rapport with the pharmacists working in the pharmacy. This likely is the reason for the high recruitment percentage of participants. This relationship possibly had the potential to work against the researcher as well, as participants may not have been as descriptive when talking about their programmes, as many of these discussions had already occurred between the researcher and the pharmacists at an earlier time when the study was being planned. There is also a concern that because the researcher was asked to this study by the DHB, that pharmacists may have been cautious of what they said to the researcher and who this information was going to, as the DHB are in charge of contracts and funding for the pharmacies. The analysis of the results may also have been affected by the relationship between the researcher and the pharmacists, as the researcher held ideas about each pharmacist as individuals and the work they did with their patients. In order to minimise this affect the results were constantly re-read, and the researcher's supervisors provided impartial feedback.

This research project has been an extremely worthwhile experience for the researcher, who has learnt so much about themselves, and asthma, and the amazing work that pharmacists are doing for their patients.

Appendices

Appendix A: Information Sheet

My name is Kate and I am interested in the services provided by pharmacists to families of children with asthma, from the perspective of the pharmacists. This research is a part of my Masters in Psychology degree.

What is the research about and why do I need your help?

The purpose of my research is to find out more about the important work you do with parents of children with asthma. I would like to talk to you about how the service you provide these parents has developed over time and the feedback you receive from parents in regards to these services. I would also like to hear your perception of the barriers that parents are facing in regards to adhering to their child's medication plan.

If you agree to participate in the study we will meet and have a conversation about the work you do with parents. These conversations should take no longer than one hour and will be recorded for later transcription and analysis.

What will happen to your information?

The tape recordings will be safely stored and will only be heard by myself and my supervisors. I will write up our conversation and you will be able to have a look at it so that you can make sure I have understood what you were trying to share correctly. The write ups of our conversation and any other information from the study will be stored in Massey University's official archive.

A final report will be available to all participants once it is completed. The report will keep participants identities completely anonymous, with no way of identifying who said what.

A summary of this report will also be given to Mid-Central DHB and both of the pharmacies involved.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study before June 30th 2015;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used in the transcripts or final report
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview

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This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Appendix B: Participant Consent Form

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I **agree/do not agree** to the interview being sound recorded.

I **wish/do not wish** to have my recording transcripts returned to me.

I **wish/do not wish** to have data placed in an official archive.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... **Date:** .....

Full Name - printed .....

Appendix C: Transcript Release Forms

Authority for the Release of Transcripts

I confirm that I have had the opportunity to read and amend the transcript of the interview(s) conducted with me.

I understand that all information from the transcripts used in the final report will be anonymised so that parents and children are not identifiable.

I agree that the edited transcript and extracts from this may be used in reports and publications arising from the research.

Signature: ..... **Date:** .....

Full Name - printed .....

Appendix D: Interview Schedule

The interviews will be semi-structured, using the following format and points as a guide:

Overview

- Purpose and desired outcome
- Target population
- Patient selection and recruitment

Breakdown

- Step by step, what exactly do you do
- What are the differences between then and now
- Why have you made these changes
- Do you find that different patients need different things, or one size fits all?
- HAPA constructs

Barriers to adherence

- Reasons parents aren't adhering to medication
- Reasons parents aren't engaging to extra support

Effectiveness evaluation

- Positive effect on lives of parents? Evidence
- What aspects of the education do you think work and why
- From the feedback you've received, what isn't as effective
- Future of the programme

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