‘I THOUGHT IT WAS JUST A PIMPLE’
A STUDY EXAMINING THE PARENTS OF PACIFIC CHILDREN’S UNDERSTANDING AND MANAGEMENT OF SKIN INFECTIONS IN THE HOME

by

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A thesis submitted to the Victoria University of Wellington
in partial fulfilment of the
requirements for the degree of
Masters of Arts (Applied)
in Nursing

Victoria University of Wellington
2009

ABSTRACT

Hospital admissions of young children due to serious skin infections have increased throughout the Greater Wellington Region over the years. Pacific children make up a high proportion of these hospital admissions. While the literature suggests that these admissions are highly preventable through proper care and management of skin sores at home, little is known about parents' knowledge and practices at home when a child is known to have a skin sore.

This descriptive exploratory study explored the management of skin sores and wound care in the homes of 11 Pacific children from the Greater Wellington region prior to being admitted with skin infections. Mothers of 11 children who were aged between three months and 15 years were interviewed using a semi-structure interview schedule that was designed to understand parents' knowledge, understanding and perceptions of wound care, how the early signs of infections were recognised and where and when to seek medical help. The availability of first aid kits and their utilisation by families in their homes as simple preventative measures were also explored. The interviews were transcribed and a descriptive qualitative content analysis process undertaken.

Overall the study found that parents engaged in active roles in an effort to maintain and sustain the wellbeing of their children once the signs and symptoms of skin infections were identified. The key findings are categorised under four main themes, 1) Parents in action; 2) The search for healing and cure; 3) Household activities; and 4) Health information for parents. Implications and recommendations for health professionals centre on the need for improved information for parents and for a review of practice surrounding skin infections in primary health care settings. Relevant information on skin infections on children to be addressed in the Well Child Tamariki Ora booklet is also recommended.

Key words:
Pacific children, skin infections, cellulitis management of skin sores, impetigo.

ACKNOWLEDGEMENT

I wish to express my sincere appreciation to a number of people who have contributed to this work in various ways.

First and foremost, my sincere thank you to the mothers, the participants of this study, who willingly volunteered their time and allowed me to share their children's experiences and their stories in this thesis.
Malo aupito, Fakafetai, Mitaki, Thank you, and Faafetai tele lava

To Dr Katherine Nelson, my thesis supervisor, my sincere and special thank you for your professional guidance and invaluable support, Thank You.

A special thank you to Dr Margaret Southwick for your valuable comments in this work and your support throughout my postgraduate studies.

Thank you to nurse Siloma Masina, the Pacific Advisor for Hutt Valley District Health Board (HVDHB). To my nursing colleagues Otila Tufono and Sene Tala who had volunteered their time to assist in the study recruitment.

Thank you to the Charge Nurses and the Paeditaric Nursing staff of Capital and Coast District Health Board (C&CDHB) and Hutt Valley District Health Board.

A special thank you to nurse Tricia Martin (Ward 19) C&CDHB for your continual assistance with the recruitment.

A very special thank you to Lani for her ongoing collegial support and assistance in the translation.

To my current employer, Whitireia Community Polytechnic, the Faculty of Health in particular in acknowledgement of the time allowed to complete this work. To the Team Leader, Wendy Scott and my nursing colleagues in the Bachelor of Nursing Pacific program, thank you for your support and encouragement.

Thank you to John Mason for his assistance in the formatting of this document.

To my friends and my extended family, the Rasch family and the Ete family - thank you for your ongoing support.

A special acknowledgement of my family in Samoa.
To my parents, Palepoi and Lanuola Ete, thank you for your support and prayers.

To my husband Raymond and my children Jolivette, Hynie and Amanda.
Thank you for your support, your patience and understanding.

A very special acknowledgement of my uncle, Reverend Risatisone Ete and his lovely wife Fereni Ete. We feel blessed being part of the congregation (EFKS Newtown) under your Exceptional Leadership.
Thank you for everything! Your Sunday sermons and your presence will be missed.

I would also like to acknowledge the financial support from the Health Research Council of New Zealand (Pacific Health Masters Award) and the Ministry of Health through the Primary Health Care Nursing Scholarship.

MY SOURCE OF STRENGTH

But those who trust in the LORD will find new strength; they will soar high on wings like eagles; they will run and not grow weary; they will walk and not faint. (Isaiah, 40:31)

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CHAPTER ONE: Introduction

Introduction

The focus of this study is the experiences of Pacific parents and their children within the context of New Zealand Aotearoa. Children are regarded precious and valuable in many cultures and societies. Pacific people who consider themselves Christians often hold high regard of their children as precious gifts from God. There is a Samoan saying that goes, *'O le ioimata o matua o fanau'* in English it means, *a child is the centre* [referring to the pupil of the eye] *of one's eye.* This analogy places the child in a very delicate but valued and protected area of one's body therefore a child must be valued, cherished and protected from harm and danger. Despite this normative value, the health status of Pacific children within the New Zealand context does not align in parallel with these desires. Statistics reveal, Pacific children are highly represented in hospitals for conditions that are known to be avoidable and preventable (Hunt, 2004; Ministry of Health, 2004). Serious skin infection is one of them.

Hospital admissions from skin infections should be preventable if the home management of minor cuts, grazes and insect bites and where necessary the use of antibiotics (topical and oral) prescribed at a primary health care setting is adopted. This thesis reports on a study that sought to understand how Pacific parents manage and treat children's skin sores in their homes before the sores becomes seriously infected requiring hospitalisation.

Throughout this thesis, the words 'mothers' and 'parents' are referred to interchangeably where necessary. The study intended to recruit both parents, however as the study developed, only mothers decided to take part in the interviews. This is further clarified in Chapter Five.

This chapter outlines the demographic profile of Pacific children, provides the background and justification to the study, introduces the researcher and gives an overview of the thesis.

Demographic profile of Pacific children in New Zealand

Pacific people in New Zealand are a culturally and ethnically diverse group made up of Melanesian, Micronesian and Polynesian races (Ministry of Health, 1998a). There were 265,974 Pacific people living in New Zealand at the time of the census 2006 (Statistics New Zealand, 2006). This number accounts for 7.2% of the total population making this group the 5th largest ethnic group in the New Zealand population. Pacific people are one of the fastest growing populations in New Zealand with a 15% increase since the 2001 census and 29% increase since the 1991 census. The six largest Pacific groups in New Zealand are Samoan (16, 083 people, a 14 % increase since the 2001 Census), followed by Cook Islands Maori (58,011), Tongan (50,478), Niue (22,476), Fijian (9864), Tokelauan (6,822), and Tuvalu (2,625) (Statistics New Zealand, 2006). The 2006 Census shows that Pacific people are a youthful population with a median age of 21.1 years compared to the median age (35.9 years) of the New Zealand population overall (Statistics New Zealand, 2006). Pacific children made up 7% of the population and it was projected that by the year 2031 Pacific children will increase by 11% (New Zealand Statistics, 1996). At the 2006 Census, Pacific children under the age of 10 years of age made up 12% (68, 448 children) of the total population and those of 10 to 19 years of age made up 10% of the total population age group (59, 589 children). For the population of New Zealand children and youth under the age of 25 years, Pacific children made up 51.4% compared to 29.7% of the European population (Statistics New Zealand, 2006). Amongst the Pacific population, Pacific children aged 15 years and under made up 38% (100,344) of the total population in 2006. These figures show that Pacific children are amongst the fastest growing groups in New Zealand.

The ethnic make up of Pacific children is becoming increasingly diverse. This diversity is evident in the figures produced in the most recent report *The Health of Pacific Children and Young People in New Zealand* which showed the numbers of babies born in New Zealand in the years 2002-2006 who identified with one or more Pacific groups or with other ethnic groups such as European, Maori and Asian (Craig, Taufa, Jackson & Han, 2008). The rapid growth of the Pacific children population is expected to have a significant impact on the future make up of the New Zealand population. Sitaleki and Tukuitonga (1999) stated that the increase in the Pacific population 'will influence the demographic patterns, sociocultural characteristics, and the overall health status of New Zealand' (p. 139).

A decision to explore a health issue on Pacific children as a group for this study was not an easy one given the diverse nature of this population. While the literature acknowledges this diversity, New Zealand children with Pacific ethnic origins continue to be categorised under the term Pacific children. This approach can lead to difficulties in identifying specific health needs for these children given they are raised within different cultural values and beliefs. Only recently the government has acknowledged the importance of collecting accurate and high quality ethnicity data for better understanding of the health care needs of all ethnicities including the Pacific population (Ministry of Health, 2004). The decision to use the pan Pacific approach in this study is aligned with the available data on Pacific children's health.

Background to the study

Health disparities among Pacific children and other New Zealand children are well documented (Barwick, 2000; Capital & Coast District Health Board, 2004; Ministry of Health, 1998; Ministry of Pacific Island Affairs, 1999). The statistics on the significant number of preventable hospital admissions of Pacific children both at a local and a national level highlight these disparities. The high rate of preventable hospitalisations from serious skin infections among Pacific children in the Greater

Wellington Region compared to other ethnic groups contributes to the inequalities amongst the health of New Zealand children (Hunt, 2004). Hospitalisation rates for skin infection in 2002/2003 for Pacific were three times higher than non-Pacific and two times higher compared to the rates for Maori children (Hunt, 2004).

Hospital admissions from skin infections should be preventable if the appropriate interventions like the home management of minor cuts, grazes and insect bites and where necessary the use of antibiotics (topical and oral) prescribed at a primary health care setting takes place in a timely manner. Unfortunately, untreated or undertreated skin infections are known to result in some serious health consequences like septicaemia, osteomyelitis, septic arthritis, and acute glomerulonephritis. Skin conditions and their treatments are discussed in Chapters Two and Three. It is important that the health of children is protected from these unfortunate circumstances.

While the document on *Assessing and Reducing the Burden of Serious Skin Infections in Children and Young People in the Greater Wellington Region* by Dr Hunt (2004) highlights the burden of skin infection in Pacific children, little is known about the management and preventative measures of skin sores in the homes and the communities. Understanding the management of skin sores and wound care at home by parents will give some ideas of the gaps in care and should help inform better interventions. Reducing skin infections which start from a scratch or a simple graze or cut in young children is currently on the health agenda as the key aim of the joint venture between the Capital and Coast District Health Board, Hutt Valley District Health Board and Regional Public Health. This project was initiated in 2004 to address the issue of the high prevalence of skin infections in young children in the greater Wellington region as revealed in the report by Hunt. Several recommendations in the report included the need for further research in the community in different areas such as the epidemiology of skin infections, risk factors involved, the level of hygiene and first aid knowledge in the community, and the

frequency of health visits in the community (Hunt, 2004). Further research in the community on skin infections should provide guidance and assistance on how future health interventions should be carried out.

Justification of the study

In order to achieve positive changes on the health of Pacific children, accurate and quality evidence based information through research should assist in planning and provision of appropriate health services that can best meet the health needs of this population. The report entitled *Child Health Strategy* by the Ministry of Health (1998b) outlined the need to undertake more research in the area of child health at an 'ethnic-specific level'. This information should help in determining child health priorities and assist in health planning. The *Pacific Health and Disability Action Plan* (Ministry of Health, 2002) 'sets out strategic directions for seeking better health outcomes for Pacific peoples and bridge the gap between health inequalities between Pacific and non-Pacific peoples' (p. 1). Reducing the high incidence of infectious diseases in Pacific children by raising awareness and health education for parents and families is one of the health goals and objectives of this document. Therefore, it is crucial that skin infections of Pacific children are explored further with a particular focus on the home management and interventions and the events that lead to children's hospitalizations.

Personal and professional interest in the research

I am a Samoan, having been born in Samoa and moving to New Zealand in the mid 1990s. I became registered in Samoa as a Registered General and Obstetric Nurse in the late 1980s. After becoming a Registered Nurse (RN) in New Zealand in 1996, I decided to undertake a one year program for the Bachelor of Nursing for RNs. A year later, I trained and worked as a Child Health Nurse or Plunket nurse before I moved on to work for a Pacific primary health provider in Wellington when it was first established in the year 2000. Currently I am teaching at Whitireia Community Polytechnic in the Bachelor of Nursing Pacific Program.

Prior to undertaking the Plunket course, I worked in the casual pool for nurses at Wellington Hospital as it suited my family circumstances at the time. It also gave me the opportunity to come face-to-face with Samoan people who were admitted in the hospital. Samoan people whom I met in the hospital appeared to have very poor knowledge of their health and health conditions. They gave the impression that they lacked the level of information they needed to take care of their health. I remember feeling very concerned about Samoan patients being discharged from the hospital with limited knowledge and understanding of their health in general.

My experience with Pacific children while working as a Plunket nurse was unsatisfactory at times as the access to the families was very poor despite the best effort from the nursing team. The 'did not attend' to clinics and the 'not at home' on home visits were very high for Pacific children and were often the common remarks noted on the children's files at the end of the day. The failure to reach these children and their families for health checks was an unusual experience for me. I had just arrived from Samoa where mothers were the key organisers of health clinics in villages in collaboration with district nurses. On the day of the clinic, mothers with babies or with children under six years of age were gathered in the 'fale komiti'[1] awaiting the arrival of the nurse. Mothers were enthusiastic to be part of the clinic and were looking forward to find out how much their children had thrived in the past weeks or months. This successful experience of easy access to children and their families in Samoa was the total opposite of what I discovered in my initial nursing experiences when I first arrived in New Zealand. I found out from the nursing team that the failure to reach these children and their families has been an ongoing issue. These experiences gave me the desire to work for a health provider that allowed the flexibility to provide for the health needs of Samoan people including other ethnic minority communities such as Tonga, Cook Islands, Fiji, Tokelau and Tuvalu who were collectively known as Pacific people in New Zealand. I found out that all ethnic

[1] Village Women's Committee meeting house often used to run health clinics in the community.

minority communities from the Pacific islands were identified as 'Pacific communities. The term 'Pacific' was a new identity I had to get use to when addressing people in the community including myself. It was an issue I had to grapple with while deciding on the population group for this study. This is further discussed in Chapter Four. However, working in a Pacific provider gave me the opportunity to work closely with Samoan people and familiarise myself with other Pacific ethnic groups in the communities.

The motivation to focus my nursing career on child health in the primary health care area developed when I first undertook a one year placement in the community as a newly graduate nurse back in Samoa in the early 1990s. The placement was compulsory. Working in the community never crossed my mind during my nursing training therefore I couldn't wait for the 12 months to finish so I could go back to the main hospital and focus on surgical nursing which was my area of interest during training. The one year placement in the community turned into a four years work experience because I never returned to the main hospital to work. I decided to stay and work in the community as I found the work senior nurses carried out in the community fascinating. During this experience, I had witnessed that nurses can make a difference to health outcomes of families in the communities and I wanted to be part of this work. Nursing services in the community was delivered in a variety of settings such as school visits, home visits, through women's committees or in Health Centres. Family health and particularly mothers' and children's health were the main focus for women's committees monthly sessions. Nurses can make a difference to people's lives from a primary care level. Unnecessary hospital admissions can be minimized or prevented though better and quality primary health care services.

Structure of thesis

This first chapter introduces the thesis and its main focus to the readers and provides the demographic profile of the participants. The chapter also provides the background and the justification for this study to be undertaken. The introductory

section closes with an introduction to the researcher's nursing background and her personal and professional interests into the research topic.

Chapter 2 provides a review of the literature on skin infections covering both international and New Zealand literature with the focus on Pacific children. This is followed by a brief mention of different types of skin infections and their management in Chapter 3. The research methodology, the method and design are discussed in Chapter 4. Data analysis with a rationale on the rigour or 'goodness' of the study is also covered in this chapter.

The findings of the study are presented in Chapter 5. These include the characteristics of the participants as well as the main themes that emerged from the data. Chapter 6 contains a discussion on the key findings of the study in light of the current literature. It also discusses implications and recommendations for future work with a concluding statement to the thesis.

CHAPTER TWO: Literature Review

Introduction

The literature on the health status of Pacific children and the prevalence of skin infections in this population group are reviewed and presented in this chapter. The literature on skin infections is numerous and varied, however this review is focused on bacterial infections of the skin common in young children, for example, cellulitis, impetigo, scabies, pyoderma, boils and abscesses. The review explores both New Zealand and international literature including the available studies from the Pacific islands. In order to ascertain and establish the health issue related to the research topic, special focus was directed at the New Zealand literature.

Search strategy

Multiple database searches of ProQuest, Pubmed, and ISI Web of Knowledge were conducted to identify relevant publications. Search terms included were skin infections and Pacific children, cellulitis, impetigo and search limiters were children. While the search terms was limited to the most recent, five years old publications related to 'skin infections', there was no date limit put on documents about Pacific children's health generally as there is a dearth of information on the health of Pacific children. All identified documents were examined by reading available abstracts or browsing the articles and those that were relevant were retrieved electronically or manually for inclusion in the review. A couple of articles were requested through inter-loan service as these were not available locally. Reference lists of the retrieved documents were hand searched to identify any further publications. Internet information and government documents on the health of Pacific children were also sought. New Zealand government and health related websites searched included the Ministry of Health in New Zealand, World Health Organisation (WHO), and the Ministry of Pacific Island Affairs. As with research articles, some information were retrieved electronically and some documents were retrieved manually.

The review starts with a brief introduction on skin infections on young children. A brief description of the health status of Pacific children in New Zealand is discussed followed by an extensive review on the prevalence of skin infections on Pacific children in New Zealand. The review then takes a brief look at skin infections in developing countries including available studies from the Pacific islands. Skin infections presentations to primary healthcare services are also explored towards the end of the review. Gaps are identified and summarised at the end of the chapter.

Skin infections in young children

Skin infection is a global health problem which affects all age groups but it is extremely common in young children (Sladden & Johnston, 2004). Skin infection is a broad term that refers to a wide range of infections of the skin caused by the presence and growth of microorganisms, such as virus, fungus, mites, and bacteria causing damage to the affected soft tissues (Gorbach, 2004). Bacterial skin infections are common in children and are generally the most serious ones that caused hospital admissions in young children in New Zealand (Hunt, 2004; Leversha, & Aho, 2001) and other parts of the world (Allen, Patel, & Endom, 2004; Oyedeji et al., 2006; Tanir, Tonbul, Tuygun, Aydemir, & Ertan, 2006). It is the 28th most common diagnosis for hospitalisations for the general population in community hospitals in the United States (Elixhauser & Steiner cited in Stulberg, Penrod, & Blatny, 2002). Bacterial skin infections often develop as primary infections of the skin such as impetigo or secondary infections which are preceded by a break in the skin as a result of scratch, graze, friction, insect bites including scabies, minor cut or burn (Hay et al., 2006). Sometimes, the infections may present either as abscesses with a collection of pus surrounded by an area of erythema or as diffuse spreading infection as in cellulitis or erysipelas (Gorbach). Chapter 3 provides detailed coverage of different types of bacterial skin infections relevant in this study.

The high incidence of skin infections in developing countries is known to be highly associated with poor sanitary conditions and poverty. The literature also reveals the

rise of skin infections in developed countries like Australia, United States of America (USA), Hawaii and New Zealand where there is sufficient clean water supply and a good standard of living. Children from lower socioeconomic backgrounds and economically deprived areas are the most affected in these countries (Currie & Carapetis, 2000; Gracey, Williams, & Houston, 1997; Hunt, 2004). As Pacific children in New Zealand are the children most affected with serious skin infections, background knowledge on the health status of this population is important and is worth exploring for the purpose of this study. A preview of Pacific children's health status in general is discussed next.

The health status of Pacific children in New Zealand

The poor health status of Pacific children is widely recognised in the literature (Craig, Taufa, Jackson, & Han, 2008; Donaldson, 2003; Jamieson & Koopu, 2007; Ministry of Health and Ministry of Pacific Island Affairs, 2004; Ministry of Health, 1998; National Health Advisory Committee, 1998; Ministry of Health, 1997). The high prevalence of preventable childhood diseases and injuries amongst Pacific children that lead to a high number of avoidable hospital admissions are indications of health inequality amongst this population group (Ministry of Health, 2004).

The *Pacific Health and Disability Action Plan* (Ministry of Health, 2002) highlights some of the key areas of health disparity amongst Pacific children of 1-14years of age in New Zealand. This plan illustrates the burden of ill health experienced by Pacific children for a number of years. For example, infant mortality rate for Pacific was higher than the national average, Pacific children had higher admission rates for respiratory conditions (rate of 1523 compared with 590 per 100,000), and rheumatic fever rate of 21.8 compared to 8.6 per 100,000. Other key health areas highlighted were low uptake of immunisations and primary health care services. Pacific children's incidence rate for the 1997 measles epidemic was 10 times the rate of European children and five times the rate of Maori children.

A comprehensive report titled *The health of Pacific children and young people in New Zealand* compiled by the New Zealand Child and Youth Epidemiology Service (Craig et al., 2008) provides a comprehensive and an up-to-date analysis of the health status of Pacific children. This report reveals that while there has been some improvement in the health of New Zealand children in the past few decades, Pacific children's health remains a concern in all areas of health. Skin infection was the leading infectious diseases for New Zealand children's hospitalisations for the year 2002-2006 and admissions were significantly higher for Pacific children (Craig et al.). In this report Percival (2008) states that 'the burden for Pacific children is much higher than that of all other New Zealand children' (p. 167), particularly in the areas of infectious and respiratory diseases. Childhood vaccine preventable illnesses, skin health, oral and ear health, unintentional injuries are also shown to disproportionately affecting the health of Pacific children.

Poor health is highly associated with socioeconomic status (Howden-Chapman, 2006; Ministry of Pacific Island Affairs, 1999) and increasingly, socioeconomic is recognized to have a profound impact on child health (Flores, Abreu, Chaisson, & Sun, 2003; Spencer, 2000). The report by the National Health Committee (1998) highlighted socio-economic factors such as housing, income, culture, and education as important determinants of health. Poor housing, overcrowding, culture, unemployment and low income, low educational achievements are considered risk factors which are known to have a negative impact on children's health. New Zealand children who live in poverty are at increased risk of poor health (Poulton et al., 2002; St John & Wynd, 2008). Pacific children and their families are over represented at the bottom end of the socioeconomic scale compared with other New Zealand families (Ministry of Pacific Island Affairs, 2002). The latest information on the birth distributions of babies for the year 2002-2006 reveals that Pacific children are more likely to be born into the most deprived (NZDep Decile 10[2]) areas (Craig et al., 2008). The percentage

[2] NZ Deprivation decile areas: Decile 1 representing the least deprived 10% of small areas and decile 10 representing the most deprived 10% of small areas.

of Pacific babies who were born into the decile 10 area ranged between 40% and 52% compared to 23% for Maori and below 10% for European, Asians and Indians (Ministry of Health, 2004).

Health professionals, particularly Pacific staff who are confronted with health issues presented by Pacific children both in the community and in hospitals believe that the poor health experienced by Pacific children is complex and multifaceted and therefore requires a team approach from different government sectors. Several health initiatives are being put in placed to assist in improving the health of New Zealand children. However, the appropriateness of the implementation and the delivery of these strategies to meet the health needs of Pacific children and their families have not been thoroughly looked at (Ministry of Health, 2008b). It is proposed that in order to reduce health inequalities amongst New Zealand children, interventions and strong commitment from all government sectors are required (Ministry of Health, 2008a; Percival, 2008).

Skin infections of Pacific children in New Zealand

A clearer picture of the 'burden of skin diseases' amongst children was revealed in a report by Hunt (2004). The report was of the findings of a regional survey conducted to assess and describe the extent of serious skin infections in the Central Wellington and Hutt Valley area after concerns raised by a Wellington Paediatric surgeon, Mr Brendon Bowkett regarding the high number of hospital admissions for serious skin infections in children (Hunt). While there were previous surveys reporting on skin infections in other parts of New Zealand (Lawes, 1998; Lennan, 2005; Morgan, Selak, & Bullen, 2004) Hunt's research was the first comprehensive survey conducted to look at the issue of skin infections in young children nationally. The survey found that skin infections are a significant and a growing health problem in children both locally and nationally.

Hospitalisations for childhood skin infections in New Zealand have increased by 61% in recent years and are currently double those of Australia and the United States of America (Hunt, 2004). While the overall hospital admissions for skin infections for all New Zealand children are high, hospitalisation rates for Maori and Pacific children are even higher compared to the rest of New Zealand children. In the year 2000-2003, hospitalisation rates for Maori were two times higher and Pacific children were three times higher than other children (Hunt). During the years 2002-2006, skin infections were one of the leading causes for acute hospital admissions of Pacific children (Craig et al., 2008). Hospital admissions can be traumatic and costly for children and families as parents tend to take time off from work when a child is unwell. Hospital admissions for skin infections are also very costly for taxpayers. Hunt's report illustrated some of the financial expenses on hospital admissions for skin infections. Estimated cost for an 'average' skin infection admission at the C&CDHB hospital in the year 2002/2003 was just above $2000.00 per case and the cost spent on an admission with complications was estimated at around $40,000.

A recent New Zealand study also provides significant statistics on childhood skin infections (Finger et al., 2004). Out of 91 children who were admitted with soft-tissue infections, 'Polynesian children' had an incidence rate of 137.7 per 100,000 compared to 35.4 per 100,000 in European children. The ethnicity of Pacific and Maori children were collectively known as 'Polynesian children' in this study, which makes it difficult to ascertain the accurate result for Pacific children alone. Despite this shortfall in the study, this literature review acknowledges that both Maori and Pacific children are known to experience poor health in New Zealand (Ministry of Health, 1998) and skin infection is no exception.

In addition to the general information on skin conditions, information was also available on specific skin condition such as cellulitis. Cellulitis is a diffuse, spreading inflammatory acute infection of the dermis and subcutaneous tissue characterised most commonly by local heat, redness, pain, and swelling un-demarcated borders and

occasionally accompanied by fever, malaise, chills, and headache (Harris, Nagy, & Vardix, 2006; Stulberg, 2002). This condition usually occurs in young children as a result of infections following superficial abrasions of the skin (Stulberg). The report by Lawes (1998) describing paediatric cellulitis hospital discharges in the Auckland Hospital reveals an increase in hospital admissions for cellulitis since 1995 and the rates has doubled since then. Cellulitis is reported as the third commonest reason for admissions to Starship Children's Hospital in this report. It is stated that no other Australasian paediatric hospital ranked cellulitis in the top 20 Diagnostic Related Groups (Leversha & Aho, 2001). Pacific children made up over one third of these discharges which made this population 3 to 4.5 times more likely to be admitted with cellulitis than European children. Over 50% of those admitted required some form of surgery during their admission. An audit in Middlemore Hospital also revealed that Pacific and Maori children were disproportionately represented with cellulitis (Percival, 2000 cited in Hunt, 2004).

Two studies were found on New Zealand children focusing on skin infections admissions caused by staphylococcus aureus (Hill et al., 2001; Miles, Voss, Segedin, & Anderson, 2005). Staphylococcus aureus is one of the most frequent organisms responsible for skin infections in young children (Denniston, 2006; Finger et al., 2004). Hill and colleagues' prospective study was conducted to look at the incidence and pattern of staphylococcus aureus bacteremia in children. One hundred and twenty five children under the age of 16 years old were included, with 113 (90%) from Auckland and 12 from Christchurch. The overall findings in their study revealed that Pacific children were 2.5 times as likely as 'white children' to acquire staphylococcus bacteremia. Pacific children under the age of one year old were found to have the highest incidence rate of staphylococcus aureus bacteremia (105 cases/100 000 children per year). Sources of infection included skin and soft tissue infections, bone and joint infection, lung infection, and some were unknown. An alarming figure of 98% of staphylococcus aureus bacteremia cases were identified as community acquired in children older than one month of age (Hill et al.). Community

acquired infections is defined as 'an infection contracted outside a health care setting' (Harris, Nagy, & Vardix, 2006, p. 408). Community acquired infection is distinguished from a hospital acquired infection by the length of time someone comes in contact with the infection and the organisms involved. In which case 'hospital acquired infections are healthcare setting related infections acquired at least 72 hours after hospitalisation' (Harris et al., p. 1200).

There were four children reported to have died in the study by Hill and colleagues (2001). Three of these were Pacific children under the age of one year. This information illuminates the vulnerability and the risks faced with Pacific children and their exposure to infections.

Results from a retrospective study on staphylococcus aureus sepsis (SAS) in a paediatric intensive care unit in Auckland (Miles et al., 2005) mirror the results for Pacific children from the earlier study by Hill and colleagues (2001). There were 58 confirmed cases in the study and Maori and Pacific children accounted for 47 (81%) children with SAS from a paediatric population where they make up 21.6%. Sources of infections were difficult to identify in most cases, a problem that was also identified by Hill and colleagues. However, the majority of children presented with musculoskeletal diseases which involved septic arthritis, oesteomyelitis and soft tissue infections, with 82% of these children underwent surgery incision and debridement (Miles et al., 2005). A very high number of community acquired SAS was also found in children in the study by Miles and colleagues which support findings by Hill et al. Fifty five out of 58 children had community acquired SAS while only three had hospital acquired SAS. A 10 year retrospective review conducted in Birmingham (United Kingdom) to explore the presentation, management and outcome of staphylococcus aureus in neonates and children revealed similar results in which 80% of the cases were community acquired, while 10% were hospital acquired (Denniston & Riordan, 2006). The reason for a high number of community acquired compared to hospital acquired infections in these studies were not known.

Staphylococcus aureus was also found to be the predominant pathogen in a study of bone and joint infections by Hill, Wong and Lang (1999). Pacific children were overrepresented in the study. Three patients died during the course of the study however participants' age and ethnicities were not identified.

While a high number of hospitalisations from serious skin infections in Pacific children are revealed in the literature, very little is known about the outcomes of these infections and how they affect the quality of life for these children and their families. Miles et al. (2005) provide results and outcomes pertaining to individual cases where twenty surviving children lived with complications of SAS. Two children were paraplegic as results of epidural abscess, three children required dialysis others had multisystem organ failure while others had respiratory diseases with an ongoing requirement of oxygen at three month follow up. Five children died, two were Maori and three were Pacific, between the age of 9 months and 11 years old. The mortality rates for this study was high 8.6% (95% CI 1.4 -15%) compare with the overall mortality of the Paediatric Intensive Care Unit of 6% (95% CI 5.3-6.7%). Although published studies on skin infections of Pacific children is scarce, the available information highlights the intensity of the problem faced by this population group. Overall, Pacific children make up the majority of deaths, six out of nine children, from staphylococcus aureus sepsis in the available studies (Hills et al., 2001; Miles et al., 2005).

Despite the serious burden of skin infections experienced by young children, skin infections have not been regarded as a health priority in the development of public health policies in most countries (Hay et al., 2006; WHO, 2005). In New Zealand for example, information on children's skin health for parents' awareness and understanding is not included in the *Well Child - Tamarki Ora Health Book*[3] (Ministry

[3] The Well Child Tamariki Ora Health Book is provided for the parent(s) of all new born babies in New Zealand. The book not only records the child's development in the first five years of life but also provides the parent(s) with information necessary for caring for the child in the early stages of life.

of Health, 2008). And despite the consistency in the high number of hospital admissions from skin infections in the past years, until recently very little attention from the funding level has been directed into this area. The significance of the problem may have been underestimated due to the general assumption that skin infection is not a life threatening situation and most skin sores heal naturally on their own without further medical interventions (Owen, 2007; WHO, 2005). While this assumption is true for some, recent local and overseas literature revealed children have spent days in hospitals for intravenous antibiotic therapies or have undergone extensive surgical treatments as consequences of complications from infections of the skin that could have been prevented from early and proper management in the community (Hunt, 2004; Tanir, Tonbul, Tuygun, Aydemir, & Ertan, 2006). Even worse, New Zealand studies reported fatalities amongst participants (Hill et al., 2001; Miles et al., 2006).

Skin infections in developing countries including the Pacific Islands

A comprehensive medical review on global prevalence of skin infections of the general population since 1970 in developing countries was compiled by the World Health Organisation (WHO) in 2005. The review was based on 18 research studies that were conducted in countries like Africa (Ethiopia, sub-Saharan, Kenya), South America (Columbia & Brazil) Taiwan, Indonesia, United Republic of Tanzania, Pakistan, Australia (Aboriginal children) and islands of the Pacific such as Papua New Guinea and Vanuatu. A high prevalence of skin infections amongst children in these countries was consistent throughout the review, with skin infections such as pyoderma, insect bites and fungal infections being the commonest in children. Children in the Aboriginal communities from Australia and the Pacific islands were reported to expose particularly high prevalence figures for scabies and pyoderma (WHO, 2005).

Research studies conducted in the Pacific islands such as Vanuatu (Harris et al., 1992), Solomon Islands (Lawrence et al., 2005), Papua New Guinea (Montgomery,

1985), and Samoa (Steer, Adams, Carlin, Nolan, & Shann, 1999) have shown that Pacific children are highly susceptible to skin infections. Children's age in these studies range from 1 to 15 years of age. The studies were conducted in community settings highlighting the extensive of the problem in these communities. The study conducted in Vanuatu included 90% of the population of Tana, 18,223 out of 20,200 people (Harris et al.). Skin infections were one of the most common presentations to outpatient clinics in Vanuatu from 1987-1988 with rates of 459 and 327 per 1000, respectively (Harris & Taga, 1988 cited in Harris et al., 1992). The most common types of skin infections found were scabies, impetigo, abscess, furuncles, and cellulitis. Scabies was found to be the most common skin infections in children in the Solomon Islands (Lawrence et al.), and Papua New Guinea (Montgomery, 1985). Other skin sores probably from impetigo were also found to be present on children in the Solomon Islands study. Lawrence and colleagues suggested that the presence of Group A streptococci (GAS) in almost one third of children who had finger swabs tested suggested the high exposure of children to the organism. The available information on skin infections of Samoan children reveals a high prevalence (43.6%) of the disease amongst Samoan children (Steer et al.). While the studies mentioned above did not discuss the seriousness of the presentations to the outpatient clinics or discuss the link of skin infections and hospital admissions, Harris and colleagues (1992) mentioned that hospitalisation rates for the general population of Vanuatu in 1987 were between 3.0 per 1000 and 3.3 per 1000 in the year 1988. The high incidence of skin infections in children in developing countries highlighted above is known to be highly associated with poor sanitary conditions and poverty. The warm humid climate was also suggested to play a major role in the high occurrences of skin infections in the tropical countries (Lawrence et al.).

Skin infections in developed countries

The literature reveals that skin infections are also on the rise in developed countries like Australia, United States of America (USA), Hawaii, and New Zealand where there is sufficient clean water supply and good quality of living. Children from lower

socioeconomic backgrounds and economically deprived areas are particularly vulnerable in these countries. Studies conducted in Australia show that Aboriginal children are particularly vulnerable and susceptible to skin infections with prevalence of up to 50% in the Central and Northern Australia (Bailie et al., 2005; Currie & Carapetis, 2000).

The prevalence of skin infections on children in disadvantaged communities in the USA were reported elsewhere (Leversha & Aho, 2001). Allen and colleagues (2004) from Texas Children's Hospital in Houston, commented on skin infection being a problem in their hospital stating that skin infections ranging from simple infections, such as impetigo and cellulitis to exotic infections like anthrax cutaneous infections are increasing and demanding more of their time. A retrospective study conducted to determine the trends and characteristics of community associated methicillin resistant staphylococcus aureus (CA-MRSA) Oahu and Kauai in Hawaii, reported that skin and soft tissue infections were the most clinical presentation of CA-MRSA and Pacific people especially children were found to be disproportionately affected in comparison with other populations in Hawaii (Estivariz et al., 2007).

Skin infections presentations to primary healthcare services

While Pacific children are reported to make up a high proportion of those admitted to the hospital for skin infections, the severity and the management of these infections prior to hospital admissions are not known. Primary health care services may have a crucial role in minimizing these avoidable hospitalisations, however very little information is available about the causes of clinical presentations of Pacific children to primary health care services in New Zealand and the number of skin infections in these presentations. Information found was around the population in general. Only one report was found documenting the causes of visits to the Auckland GPs (Aish, Didsbury, Cressey, Grigor, & Gribben, 2003). In this report, cellulitis was found to top the list of the presenting problems to the GPs and skin infections number 11th out of 31 conditions.

An evaluation of the Mana Health Clinic in Auckland, a nurse-led clinic, reported that skin infection was predominantly the reason (37%) for a visit to the nurse (Clendon, 2003). This clinic was established in 2000, to provide services for three primary schools in the area. The clinic catered for all ethnic groups with Pacific people being the largest consumers (60% of the 1,800 patients) of the service. The article did not elaborate on the types of skin infections and their severity as this was not the main focus of the article. However, this data provides evidence on the high number of children in the community experiencing skin problems.

A survey of presentations to GPs conducted at the Waikato Medical Care between 1991 and 1992 revealed that skin related conditions accounted for 15% of GP visits and soft tissue infections accounted for approximately 10% of these skin related visits (McAvoy, Davis, Davis, Raymont, & Gribben, 1994). The information on the demographics and the severity of these skin infections on presentations were not available.

Parents' involvement in the care of children's skin sores at home

Numerous studies have been undertaken in the area of child health worldwide exploring parents' involvement in the care of the child in the hospital, community, or family settings. Some examples of these studies found were in the areas of immunisation (Niederhauser & Markowitz, 2007), nutrition and obesity (Jackson, Mannix, Faga, & McDonald, 2005), and parents' involvement in hospital care (Ygge, 2007). Another major area where child health research has been concentrated on is children with chronic health conditions such as respiratory or asthma (Smeeton, Rona, Gregory, White, & Morgan, 2007). Serious skin infections are often considered acute in nature. Limited studies have been conducted around the area of acute childhood illnesses in the homes 'despite the fact that the vast majority of childhood illnesses at home is acute in nature' (Neil, 2000, p. 821). The only study found on children's skin infections that has an association with parental factors was conducted in Nigeria Africa (Oyedeji et al., 2007). The aim of the study was to determine how

parental factors can influence the prevalence and infestations of skin sores among primary school children. The results show that poor parental education attainment and low occupational group were associated with a high prevalence of skin infections. Children from lower social classes were shown to make up a high number of skin infections compare to the children from higher social classes.

There were no New Zealand studies found in relation to parental management and care of skin sores in the community except for projects that were conducted from a prevention and health promotion approach at a population level. These projects include the Glen Innes Serious Skin Infection Prevention Project (Lennan, 2005; Morgan, Selak, & Bullen, 2004), and the Serious Skin Infections Project by the Regional Public Health and Capital & Coast District Health Board in Wellington (Fawthorpe, 2007).

Conclusion

The review reveals that the majority of the writings and studies on skin infections focused around the epidemiology of skin infections where the prevalence and incidence of the disease are reported. The central focus of many articles written is on clinical diagnosis, the types of infections, the organisms responsible and the treatments of sores with the appropriate antibiotics. Other areas where the literature also focused on was surgical procedures employed in the hospital settings when children are admitted. Some of the key findings in this review is that hospital admissions from serious skin infection is costly to the taxpayers and even more traumatic, skin infections can have long term health effects and sometimes fatal consequences. While the evidence points to the high number of hospitalisations for skin infections in children, Pacific children in particular, the role of the parents in the management of minor skin infections in the homes and how the sores become seriously infected requiring hospitalisation is not well understood. Therefore an exploration at a personal level of how parents manage their children's skin sores at

home, more importantly their understanding and awareness of skin infections needs to be looked at.

This review also reveals that research studies on skin infections of Pacific children are scarce. However, the limited evidence available on the prevalence of skin infection in Pacific children highlights the magnitude of the problem and that skin infection is a major health concern which can have serious consequences for this population group. Infectious diseases in Pacific children is considered a health priority area, therefore a study on Pacific children's skin infections with the focus on parents management and home interventions as stressed in the above paragraph is worth exploring.

Two important relevant gaps were identified in this review. Firstly, while skin infection is viewed as a preventable health condition, there have been no known studies to explore the events around skin infections of children in the community which led to hospital admissions. Secondly, the significant aspect of care for children's skin sores at home by their parents or caregivers has not been investigated. This evidence justifies the need to explore the events leading to skin infections of children and how parents are managing the sores at home prior to becoming infected.

The common types of bacterial skin infections affecting young children as identified in this review are discussed in the following chapter with suggested preventative measures as a way of assisting in reducing the high incidence of skin infections in the community setting.

CHAPTER THREE: Types of Skin Infections and Management

Introduction

This chapter focuses on the different types of bacterial skin infections commonly affecting young children. The types discussed here are impetigo, cellulitis, orbital cellulitis and the bacteria responsible. Prior to discussing these, the basic anatomy and structure of the skin is outlined. Guidelines on how to manage a simple sore at home and suggestions for hygiene practices in the homes are provided in the final section of the chapter.

Bacterial skin infections are common in young children particularly in developing countries (Hay et al., 2006). However the prevalence of skin infections is also noticed to be on the increase in children in wealthy countries like Australia, United States of America, and New Zealand. Bacterial skin infections that are common in children are cellulitis, impetigo, furuncles and carbuncles simply known as abscess or boils, scabies, and infected insect bites. These infections are mainly caused by the presence and growth of microorganisms causing damage to the affected soft tissues. There are several types of bacteria responsible for skin infections, but the two main ones that are highly responsible are Staphylococcus aureus (S. aureus) and group A beta-haemolytic streptococci (GABHS) or Streptococcus pyogenes (Strep. pyogenes) (Bamberger & Boyd, 2005; DermNet NZ, 2008; Hay et al., 2006; Stulberg, Penrod, & Blatny, 2002; Tomson & Sterling, 2007).

Bacterial infections of the skin often develop as primary infections of the skin such as impetigo or secondary infections which are preceded by a break in the skin as a result of scratch, graze, friction, insect bites including scabies, minor cut or burn (Hay et al., 2006). The microorganisms responsible are known to colonize and cause damage to the healthy skin.

Anatomy and structure of the skin

To have an understanding of the skin and its exposure to infections it is helpful to take a look at the anatomy and structures of the skin. Overall, the skin serves several functions to the human body and one that is of relevance for discussion in this study is protection. The skin is the most vulnerable organ system of the body that is highly exposed to trauma and invasion by harmful bacteria and chemicals due to its superficial location (Lee & Bishop, 2006). It protects the human body from its environment by acting as a physical barrier against the harmful microorganisms entering the body and invading the underlying tissues (Lee & Bishop; Marieb & Hoehn, 2007; Martini, 2004). The skin is composed of three different layers, the epidermis, dermis, and hypodermis also known as subcutaneous tissue. According to Feingold and Hirschmann (2004) one or more layers are affected by a specific type of skin infections. For example, impetigo is restricted to the most superficial layer or epidermis, where as folliculitis and cellulitis affect both the dermis and the subcutaneous layers of the skin.

The presence of microorganisms on the surface and deeper layers of the skin is called normal flora. Most microorganisms that colonise or reside on the skin are harmless and generally do not cause disease (Lee & Bishop, 2006). In fact, the skin's normal flora plays a protective role by hindering the growth and multiplication of other microorganisms that are harmful to our body (Chiller, Selkin, & Murakawa, 2001). However, once the skin defence mechanism is altered, or the skin barrier is broken the person is placed at risk of developing infections of the skin. Factors that can destroy the defence mechanism of the skin include open injuries to the skin like abrasions and cuts, wounds, bites, and burns (Lee & Bishop).

Common Skin Infections in Children

Impetigo

Impetigo or school sores is a skin problem that is known to affect any age group but is most common in young children throughout the world (Sladden & Johnston, 2004;

Watkins, 2005). Children living in economically disadvantaged communities in tropical and subtropical countries are mostly affected (Koning et al., 2006; Sladden & Johnston, 2004; Stevens et al., 2005). Children from wealthy developed countries are also known to be affected as well as those in northern countries during hot summer period (Allen, Patel, & Endom, 2004; Hunt, 2004; Leversha, 2001). Impetigo is known to be highly contagious and can be transmitted through direct person to person contact (Gorbach, 2004). The condition can rapidly spread through places where children congregate for example children's day care centers, schools, and families (Oakley, n. d.). Impetigo can develop in healthy skin or initiated from a minor trauma to the skin, such as a scratch or graze (Oakley). Impetigo is a superficial skin infection and parts of the body mostly affected are the face, trunk and extremities (Drummond & Shook, 1996; Watkins, 2005).

Non-bullous and bullous impetigo

The condition is classified as non-bullous or bullous impetigo. Both forms of impetigo are highly contagious (Chiller, Selkin, & Murakawa, 2001; Roberts & Lang, 2000). Non-bullous impetigo is the most common type of impetigo (Koning et al., 2003). A paper by Allen and colleagues (2004) at the children's hospital in Houston Texas stated that non-bullous impetigo accounts for 70% of pediatric impetigo. It can be caused by either Staphylococcus aureus or Streptococcus pyogenes (Oakley, 2009). The literature provides different versions of which type of bacteria predominates in the non-bullous impetigo. However, an extensive review on impetigo conducted by Koning and colleagues (2003) revealed that Staphylococcus aureus is considered to be the main bacteria responsible for non-bullous impetigo. This review also reported that staphylococcal impetigo is more common in moderate climates and the streptococcal form is more common in warmer and humid climates.

Initially non-bullous impetigo presents with erythematous maculopapules that develop into small clusters of erosions or vesicles and pustules over a period of two to three weeks. These pustules then rupture to form the classic thick and adherent or

oozing honey-yellow crust usually less that 2cm in diameter (Allen, 2004). Parts of the body commonly affected by these lesions are the face, trunk, and limbs (Finger, Rossaak, Umstaetter, Reulbach, & Pitto, 2004; Stevens et al., 2005; Watkins, 2005). Non-bullous impetigo is more frequent in summer periods (Drummond & Shook, 1996).

The bullous form of impetigo appear as large thin-walled bulla lesions containing serous yellow fluid that rupture easily which can persist for several days (Chiller et al., 2001). When ruptured, it leaves a complete or partial denuded area with a ring or arch of remaining bulla (Drummond & Shook, 1996; Stulberg, Penrod, & Blatny, 2002). Staphylococcus aureus is the main causative agent for bullous impetigo affecting the trunk more frequently than non-bullous impetigo (Koning et al., 2003; Roberts & Lang, 2000).

In the past both types of impetigo were understood to be caused by both staphylococcus aureus and GABHS or streptococcus pyogenes either together or separately. However, recent studies have indicated that Staphylococcus aureus is the primary cause of both forms of impetigo (Gorbach, 2004; Stulberg et al., 2002) with streptococcus pyogenes being commonly found in the nonbullous form (Stevens et al, 2005; Stulberg et al.). Impetigo lesions are usually asymptomatic and children affected usually remain well but occasionally complain of pain and itchy (Tomson & Sterling, 2007). Untreated impetigo often resolves in two to three weeks (Watkins, 2005). However, the onset of fever in some children is an indication of systematic infection due to the presence of staphylococcus and a sign of complication such as cellulitis is developing (Tomson & Sterling, 2007).

Treatment for impetigo at the early stages includes general hygiene practices, cleansing with disinfectants and application of topical ointments. Early and effective interventions can prevent serious infections and complications such as cellulitis and septicaemia which requires hospitalizations. Serious infections require more

intensive systematic treatment such as intravenous antibiotics (Bamberger & Boyd, 2005; Stulberg et al., 2002).

Cellulitis

Cellulitis is a diffuse, spreading inflammatory acute infection of the dermis and subcutaneous tissue characterised most commonly by local heat, redness, pain, and swelling un-dermacated borders and occasionally by fever, malaise, chills, and headache (Harris et al., 2006; Stulberg et al., 2002). Organisms responsible for cellulitis are Staphylococcus aureus, GABHS and Haemophilus influenza (Bhumbra & McCullough, 2003; Stevens et al., 2005). Haemophilus influenza was very common in the pre-vaccinated era causing buccal cellulitis (relating to the cheek or the mouth), but since the introducing of the *Haemophilus influenzae* type B vaccine this type of cellulitis has reduced in numbers and has been nearly eliminated (Allen, Patel & Endom, 2004; Bhumbra & McCullough, 2003). While this is the case, *Haemophilus influenzae* is a considered diagnostic. The child with cellulitis caused by *Haemophilus influenzae* can be very unwell, usually presented with a high temperature and toxic appearance (Bhumbra & McCullough, 2003; Drummond & Shook, 1996).

The most common cause for cellulitis is a local wound infection which occurs as a result of an infected laceration, infected insect bites, or infected sores. Cellulitis sometimes may not be preceded by a traumatic break in the skin but can be caused by other underlying cases such as oesteomyelitis (Bhumbra & McCullough, 2003). It involves the extremities in most cases (up to 84%) and face (Allen et al., 2004; Drummond & Shook, 1996). Cellulitis often requires systematic treatment with antibiotics (Bamberger & Boyd, 2005).

Furuncles and carbuncles

Furuncles and carbuncles are infections of the skin that can develop from infected hair follicles. Furuncle is a deep inflammatory nodule characterized by tenderness, erythematous, firm or fluctuant mass of purulent material arising from an infected hair follicle (Robert & Lang, 2000; Stulberg et al., 2002). Furuncles are often known

as a boils. These boils can develop on any part of the body but are more commonly occur in skin areas subject to frictions and perspiration and containing hair follicles (Roberts & Lang; Stulberg et al.). Furuncles can develop into carbuncles which are collections of infected hair follicles that form painful masses that open and drain through multiple tracts or abscesses. High temperature is often associated with carbuncle. Minor surgeries are often recommended for drainage and incision. In severe cases, parenteral antibiotics are required.

Peri-orbital and orbital cellulitis

Periorbital cellulitis is an infection of the tissues surrounding the eye but not affecting the actual orbit (Bhumbra & McCullough, 2003). The surrounding area of the eye becomes erythematous, swollen and tender. This type of infection is seen most commonly amongst children (Sorin & Ward, 2006). Periorbital cellulitis is often secondary to nearby facial wounds caused by insect bites, lacerations, and impetigo (Rimon, Hoffer, Prais, Harel, & Amir, 2008). Sorin and Ward's review of the literature revealed other common causes of periorbital cellulitis are prolonged untreated sinusitis, upper respiratory tract infections, local cutaneous trauma, and conjunctivitis. Orbital cellulitis presents with more serious symptoms, with swollen, erythematous eye accompanied by fever and lethargic. Patient often appears to be in toxic state. Haemophilus influenza type B (HIB) was once the most common cause of orbital cellulitis but has decline since the introduction of HIB vaccine in the 1990 (Rimon et al.). Staphylococcus aureus or and streptococcus pyogenes are the predominant causative organisms (Bhumbra & McCullough, 2003; Rimon et al.).

Complications of skin infections

Some of the serious skin infections for children in the community are initiated from simple open scratch or skin sores and as indicated above, these simple sores are easy to manage and treated. However, when left untreated or undertreated these infections can develop into serious complications such as glomerulonephritis, osteomyelitis, bacteremia or septicaemia (Bamberger & Boyd, 2005; Koning et al., 2003). Bacteremia or septicaemia may lead to other complications such as infective

endocarditis (Fowler et al., 2003, cited in Bamberger & Boyd). While complications arising from serious skin infections are rare, the previous chapter revealed that children can die from these complications. Complications that can occur from orbital and preorbital cellulitis include abscess formation, retinal vein thrombosis, and optic neuritis (Bhumbra & McCullough, 2003). Preventing these complications from occurring by early and effective treatment of minor skin sores is imperative. The next section outlines home interventions that can be used as basic guidelines in treating simple and minor sores to promote healing and prevent infections.

Home interventions for skin sores

Best practice guideline for skin infections

The following guideline was adapted from the *Skin Health: A set of Public Health Resources on Skin Infections and Head Lice* by the New Zealand Ministry of Health (no date). This best practice guideline for managing skin sore was initially developed with schools and preschools in the Auckland region to prevent the occurrence of skin infections in schools, families and communities.

General hygiene measures to prevent the children from getting sores include hand washing, clean and short fingernails, avoid scratching of the skin and keep skin clean and moisturized. Avoid the sharing of beddings and towels amongst the household members. Other measures that needs considering are the use of insects repellent for outdoors. Families who take children to the Pacific islands should be reminded to use insect repellents and the use of mosquito nets as children often come back from holidays to the Pacific islands with infected mosquito bites.

House cleaning such as regular vacuuming of the house is advisable to keep the home environment clean and tidy. When there is evidence of fleas in the house, people should consider the use of flea bombs to remove the mites. Help to access these services can be sought from Public health authorities.

The main steps people can take are the management of minor cuts, injuries and grazes utilising simple first aid supplies. It is important that every household especially those with children as they are prone to scratches and injuries, keep a first aid kit in the home. However maintaining a first aid kit can be expensive for some families therefore the use of clean cloths and home made cleaning solutions are also advisable. The following steps summarise the treatment of minor sores recommended by the Ministry of Health from when they first occur to prevent further spread of infections to other family members or further systematic infections to the child.

1. Wash hands using soap and clean water.
2. Clean the sores or wound with a disinfectant solution from the pharmacy or a homemade solution and a clean thin piece of cloth. Use a piece of clean thin cloth if dressing gauze is not available. The home made solution can be made from half teaspoon of salt diluted in one cup of boiled warm water.
3. Clean and dry the sore with a piece of clean cloth and the disinfectant solution and dispose the dirty cloth safely in the rubbish.
4. Cover the sore with a proper clean dressing.
5. Change the dressing two times a day until sores are healed.
6. Always wash hands after changing dressing.
7. Avoid scratching of skin. Fingernails should be kept clean and short.
8. See family doctor if sores become painful, red, or yellowish discharge.

In addition to providing general advice for managing minor skin sores, specific advice or guideline on how to manage impetigo the commonest skin infection in children is also provided. However, it is important to know that while the underlying causes may differ, the treatment and prevention principles are the same (Ministry of Health, no date).

Home care advice for treating impetigo

The following guideline is adapted from Koning and colleagues (2003). According to these authors the aim of treatment is to resolve soreness, unsightly appearance and prevent recurrence of infection from spreading to other people. Given that the literature on skin infections is predominantly medical based, guidelines often do not mention cleansing as part of the treatment but focused the treatment on antibiotics. Koning and colleagues state that the main concern is to prevent the spread of infections to other children.

Clinicians have different ideas on managing the impetigo crusts. Some suggest to leave the crusts on sore while many suggest to remove the crusts. The belief of the latter is that the bacteria live under the crust and therefore removing the crusts will help with better, quicker and effective treatment (Koning et al., 2003).

The first option for treating impetigo in home settings is not to give treatment but wait for the sores to heal naturally. This natural healing relies very much on hygiene measures such as the ones included in the *Skin Health Resources* for skin infections by the Ministry of Health discussed above. The second option involves daily dressing using topical disinfectants or the use of saline or home made solutions. The third option involves daily dressing and most importantly the application of topical antibiotics prescribed by family doctor. It is critical to teach parents and made them aware of the expected course of healing and the signs and symptoms of infections and what to do when these signs appear. These signs include redness, pain, swelling and discharge from wound. The child may experience a high fever. Parents and caregivers are highly advised to seek medical help if these symptoms persist.

Conclusion

The common skin infections in children and their basic management was the main focus of this chapter. These skin conditions were bullous and non bullous impetigo, cellulitis, furuncles and carbuncles and orbital and periorbital cellulitis.

Staphylococcus aureus and Streptococcus pyogenes or Group A beta-haemolytic streptococci were found to be the most dominant organisms in causing skin infections. The structure of the skin and one of its main functions relevant to this study which is *protection* was also outlined with the different skin layers affected by specific infections. Finally guidelines on the general management of skin sores or scratches in the home as well as the specific management of impetigo to promote healing and prevent infection are described.

The following chapter presents the research methodology and design employed in this thesis including how the data was collected and analysed. Ethical issues applied are also discussed.

CHAPTER FOUR: Research Methodology

Introduction

In this study, the aim was to describe and explore Pacific parents' knowledge and understanding of managing simple skin sores at home prior to the wound getting secondary infection which required a hospital admission. The following objectives were set out to address the aims:

1. To identify knowledge and understanding of skin care by Pacific parents or guardians of children who are hospitalised with skin infections.

2. To describe first aid resources available in the homes and the first aid methods and the home treatments practiced by families of Pacific children.

3. To inform the development of appropriate resources or other health education materials to enhance Pacific families' understanding of proper skin care.

Decisions about the best approach to achieve these objectives involved evaluating the appropriateness of western methodologies including that of emerging Pacific theoretical frameworks to achieve the research objectives. Pacific cultural values and beliefs underpinning this study are discussed. A summary of this evaluation and why a decision was made to utilise a descriptive exploratory design is also provided below.

The Pacific approach

When undertaking research with Pacific people, it is vital that cultural values and beliefs of Pacific participants are considered and acknowledged throughout the research process. As a Samoan, I uphold my values which have strongly influenced the way I approached this study. The sets of core values in the fa'asamoa are well known to the Samoans as *alofa* (love), *faaaloalo* (respect, polite), and *agamalu*,

(humility). It is a common understanding amongst Samoan people that these values transcend and bind all other values and is the foundation of healthy and vibrant relationships amongst its people. It is understood that these values and beliefs are common practices amongst the Pacific people (Health Research Council New Zealand (HRC), 2004). These values were central to my relationships and my connections to the participants.

The *Guidelines on Pacific Health Research* by the HRC (2004) emphasised 'relationships' as fundamental and vital to all ethical conduct. As stated, 'It is within the context of relationships that all significant ethical decisions, actions and practices occur' (p. 2-3). The HRC sets out guiding principles that reflect Pacific views which develop and maintain ethical research relationships with Pacific people. These principles are respect, cultural competency, meaningful engagement, reciprocity, utility, rights, balance, protection, and participation. These principles guided my approach and my thinking throughout this research in how I relate, communicate and engage with the participants.

In addition, the knowledge that I have acquired from working with Pacific people in the community also influenced my thinking on how the study objectives should be addressed. In my role as a 'Pacific nurse', I believe the common values that are shared amongst the Pacific people create a special bond and relationships and that these could easily formed between myself and the Pacific people I have encountered in this role. These relationships had enabled productive and successful health interventions with individuals, families and church groups.

Being a nurse gives me the golden opportunity to meet with different people in the community including the Pacific community. While my role as a *nurse* is the main purpose of my contacts with Pacific people, in my experience, who I am as a Samoan woman would be at the forefront and a catalyst for a meaningful engagement to occur. Because of this, it is crucial that I was aware of my limitations as a Samoan

when I am in the midst of not only the Samoan people but the Pacific the community as a group. I am always aware that while my self identity as a Samoan woman and a nurse provides a privileged access to Samoan and 'Pacific' communities, I am careful and mindful not to make unjustifiable assumptions about my relationships with those communities.

Although I have had the privilege of working closely with Pacific families and groups in the community as a 'Pacific nurse', this does not qualify me to be an expert on health issues of Pacific people in general or Pacific children and their families for this matter. However, having an understanding of how Pacific people operate in the community assist my thinking around the most appropriate approach to take in addressing the study objectives. It also enables me to analyse and consider the findings in the light of an 'insider' to the cultural experience of the participants. As a Samoan living in New Zealand, my true identity *o le Samoa* is often concealed within the term 'Pacific people'. Therefore, I was well aware of the misinterpretations surrounding the term 'Pacific people' and the need to take into account the diversity amongst the Pacific participants from the outset of this study.

The accounts provided by Southwick (2005) and Anae and colleagues (2001) in their effort to help illuminate the perplexity or misinterpretations surrounding the term 'Pacific people' are useful to consider here in order to provide clarity around the term Pacific people in this study. In the *Pasefika Education Research Guidelines* document, Anae and colleagues caution researchers to use the term Pacific people with care to ensure the diversity amongst Pacific people is well defined in the research process. They state that,

> *There is no generic 'Pacific community' but rather Pacific peoples who align themselves variously, and at different times along ethnic, geographic, church, family, school, age/gender-based, youth/elders, island-born/NZ-born, occupational lines, or a mix of these. Therefore it is important that these various contexts of 'Pacific*

> *communities' are clearly defined and demarcated in the research process.* (p. 7)

Southwick (2005) further clarifies the issue by stating that the term 'Pacific people' is a 'label of convenience' used to differentiate people originated from Polynesians and Melanesians races in the South Pacific islands from other ethnic groups in New Zealand (p. 100). This 'label of convenience' Southwick argues 'risks blurring the very real differences and diversity that are encompassed within the term 'Pacific people', and it would be a mistake to believe the term describes a homogenous group' (p. 100).

Being fully aware of this controversy a decision to explore a health issue on 'Pacific children' as a group for this study was not an easy one. However, the decision was in line with the report on skin infections of New Zealand children by Hunt (2004). In addition, the term 'Pacific children' is used consistently in the literature referring to children from different Pacific communities in New Zealand (Ministry of Health 1998a, 1998b). Given the use of the pan-Pacific approach in this study, it was crucial that attention and consideration was given to acknowledging and honouring the ethnic-specific differences of the participants throughout the research process.

Pacific research frameworks

Included in some of the few emerging Pacific research frameworks are the *Fa'afaletui* (Samoa) by Tamasese, Peteru, Waldegrave, and Bush (2005) and the '*Metaphor of Kakala'* (Tongan) by Helu-Thaman (1992) and as Pacific research frameworks. These frameworks were considered appropriate and relevant because they reflect and provide meaningful understanding of the research process within a Pacific context. These Pacific research frameworks are used in conjunction with the commonly used western methods of qualitative research to inform the research design, data analysis, and dissemination of results. To my knowledge, other Pacific researchers who had adapted these Pacific frameworks to guide their studies include Koloto (2005) and Cowley-Malcolm (2005).

This study takes into account the importance of the 'three different perspectives' used in the Fa'afaletui framework. The Samoan people consider these perspectives when important knowledge and understanding about a phenomenon are to be sought (Tuiatua Tupua Tamasese Efi, 1997, cited by Tamasese, Peteru, Waldegrave, & Bush, 2005). The analogy explains that the 'three different perspectives' guide the Samoan fishermen (Tautai) when they are out fishing to ensure they arrive to a plentiful school of fish. First, there is the view from the top of the mountain to signal the distance and travel of the school of fish. Second is the view from the tree tops on the shore to monitor the distance of the fishing boats. Third is the view of the fisherman on the boat catching the fish. All three perspectives are equally important. This analogy captures the importance of the different views from three different levels in this study. These are the participants' views that are closer to the school of fish (data). The person from the tree tops on the shore can be referred to me as the researcher and my views on how the study is conducted. The views or perspectives from the top of the mountain are referred to my supervisor and mentors' views and their expertise and knowledge and guidance throughout this study.

The metaphor describes above can be reinforced by the following Samoan saying, *'E le sua se lolo i se popo se tasi'* meaning, one coconut is not sufficient to produce oil for the lolo (*lolo is the process of making the Samoan oil which requires sufficient amount of coconuts*). What this means for this study is that, the completion of this thesis was not possible with one person's effort.

The 'Metaphor of Kakala' by Konai Helu Thaman (1992) was used to inform the data analysis of the research. The three elements associated in the making of the Kakala as proposed by Thaman are similar to the process involved in the data collection and analysing of research data. These are *toli* (gather), *tui* (weave), and *luva* (presenting). In Kakala making, *toli* refers to the gathering, collection and the selection of the flowers. In this study, *toli* refers to the collection of the data through the interviews and the selection and analysing of the data into themes. *Tui* refers to the actual

making or weaving of the Kakala using the selected flowers. In this study, *tui* refers to the selection and the analysis of the data into themes. *Luva* is the final process which is the giving away of the Kakala to its designated receivers. In this study, the final process involves the submission of this thesis to the University, report to the participants, community and the scholarship funders. Final reports will also be submitted to the financial sponsors. And it is with the hope that in the *luva* process that the new knowledge gained from this study is worthy of sharing with the Pacific community, parents and my nursing colleagues to assist or help improve the health of Pacific children who allegedly endured unnecessary suffering from avoidable conditions.

Qualitative research approach

Despite the lengthy and extensive discussion in the literature regarding the relative virtues of qualitative research and its facility to produce 'true knowledge' compare to quantitative research as the preferred scientific research method (Denzin & Lincoln, 2000; Holloway & Wheeler, 2000) it has been argued that 'neither approach is superior' (Schalk-Thomas, 1990, p. 128). Denzin and Lincoln provide the five significant differences between the two approaches. One example of these differences is that 'qualitative researchers believe that rich descriptions of the social world are valuable whereas quantitative researchers do not value such detail as it interrupts the process of developing generalisation' (Denzin & Lincoln, p. 10). Schalk-Thomas strongly supports the notion that the two different research approaches complement each other and both serve different purposes in an inquiry.

The acceptance of qualitative research methods amongst nurses has increased over the years (Holloway & Wheller, 1996; Sandelowski, 1986; Schneider, Whitehead, & Elliot, 2007; Taylor, Kermode, & Roberts, 2007). This popularity is due to the appropriateness and congruency of this research paradigm with 'nursing philosophy of holistic and humanistic caring' (Gillis & Jackson, 2002, p. 221). In qualitative research the focus is on the 'lived experiences' of people which is regarded as the

'subjective reality that is experienced differently by each individual' (Ryan, Coughlan, & Cronin, 2007, p. 738). Qualitative studies often seek to enhance understanding about human beings' experiences and beliefs (Holloway & Wheeler) which is the element that is disregarded in the quantitative research approach. Qualitative research involves 'human consciousness and subjectivity' and human beings experiences and beliefs are highly acknowledged and valued in the research process (Taylor et al., 2007).

The objectives of this study would be best answered by using a qualitative approach as the general aim was to seek better understanding about the participants' experiences. Understanding parents' experiences in managing their children's skin sores in the homes which led to hospitalisations are best understood by allowing them to explain and describe their real experiences. Qualitative method serves the purpose of this study as 'the goal of qualitative inquiry is not the mere accumulation of information, but rather the transformation of understanding' (Jardine, 1992, cited in Sandelowski, 1997, p. 128). The following accounts further support my decision in choosing qualitative approach and how it is congruent with the perspectives and goals of nursing.

According to Holloway and Wheeler (1996) the qualitative approach is attractive to many nurses undertaking research as it adopts a 'person-centred and holistic perspective' (p. 17). LoBiondo-Wood and Haber (1998) support this view by stating that qualitative research fits nursing inquiry as its focus is to 'study the human experience of health, a central concern of nursing science' (p. 220). By doing this, nurses gain rich knowledge and insights of human experiences which can lead to better understanding of human experiences that is crucial for enhancing and improving nursing care (Holloway & Wheeler, 2004). Qualitative methods are harmonious with the nursing's philosophy of 'holistic and humanistic caring' (Gillis & Jackson, 2002, p. 221). Leininger sees the strength of qualitative research is its facility

to seize the entirety of institutions, human environments and life contexts such as human values and beliefs (Leininger 1992 cited in Holloway et al., 1996, p. 17).

In this study, I wanted to gain better understanding on how the minor skin sores of Pacific children are treated and managed at home prior to hospitalisations. This information is crucial as it will provide nurses with better understanding of ways to better assist parents in caring for their children in the community to avoid unnecessary hospitalisations in the best way possible. This understanding will only come from participants by using a naturalistic qualitative approach as the goal of this approach is to 'understand the subjective dimensions of human experiences....and seeing the world from the eyes of the participants being study' (Gillis & Jackson, 2002 p. 178).

Qualitative design consideration

Under the umbrella of qualitative, some of the most common research methodologies utilised in nursing research include phenomenology, hermeneutics, grounded theory, and ethnography (Gillis & Jackson, 2002; Taylor et al., 2007; Thorne et al., 1997). The objectives of this study could be answered by using one of the above methodologies however, the main objective of this study is to describe and understand the management of skin sores of Pacific children prior hospital admissions. The review of the relevant literature revealed that no previous research was located about the management of skin sores of Pacific children at home. Therefore it is fitting and proper to employ a design that will give accurate descriptions and provide new knowledge about this topic. Qualitative descriptive design is discussed below as the most appropriate research design to answer the question posed in this study.

Qualitative descriptive approach

Description is one of the four 'qualitative modes of inquiry' identified by Artinian (1988) as the one that precedes the other three which are intervention mode, discovery mode, and the emergent fit mode. They each serve different purposes in a qualitative research with the intention of adding to nursing knowledge. Through

descriptive mode a 'point of view of the subjects can be understood' by describing 'detailed descriptions' of a situation or subjects (p. 138). Descriptive research design is most suitable for this study as descriptive research searches for 'accurate information' or has as its 'objective the actual portrayal of the characteristics of particular subjects, groups, or situations, particularly when little is known about the subject' (Lobiondo-Wood & Haber, 2006; Polit et al., 2001). Kramer (1985) and Wood and Ross-Kerr (2006) consider this type of research design as the initial step in the development of new knowledge. The aim or purpose of descriptive research study in Kramer's view is 'exploration: to gain familiarity with a phenomenon or to achieve new insights' (2005, p. 41).

While the literature provides evidence on a high number of hospital admissions for preventable skin infections in children, little is known about the events leading up to these admissions and how parents are managing the sores at home before they become infected, requiring hospitalisations. Descriptions of events or interventions leading up to hospitalisations demonstrate parents understanding on how to care for minor skin sores at homes.

Sandelwoski (2000) refers to the descriptive design as being understated by nurse researchers in their publications. However, Lobo (2005) refers to descriptive research as the 'bench science of nursing' in which accurate descriptions of the phenomenon is crucial as it forms the foundation on which effective nursing interventions can be built. Lobo argued that it would be 'difficult, if not impossible, to develop nursing interventions without doing the basic research to describe the phenomenon of interest' (p. 5) and 'the only way we will understand people's beliefs and values is to describe them' (p. 6).

The perception challenged by Sandelowski on quantitative descriptive research as a 'frail and less attractive' research method (Thorne, Kirkham, & MacDonald-Emes, 1997) has influenced those conducting qualitative research to shy away from

claiming descriptive design as the actual design used in the research. In Sandelwoski's (2000) writing to remind researchers about descriptive research design as a 'valuable and distinctive component of qualitative research' (p. 339), she states that 'no method is weak nor strong, but rather [a method is] more or less useful or appropriate in relation to certain purposes' (p. 335). Sandelwoski's view of descriptive research is consistent with the previous author's views of descriptive research where qualitative descriptive studies provide 'straight descriptions of a phenomenon' which present the 'facts' of such phenomenon in 'everyday terms of those events (p. 334). Denzin and Lincoln (2000) claimed that qualitative research as a set of activities 'privileges no single methodological practice over another' (p. 6). Instead, different research methodologies under the umbrella of qualitative approach claim to 'provide important insights and knowledge' (Nelson et al., 1992 cited in Denzin & Lincoln, 2000, p. 6).

Limitations of the methodology

Qualitative descriptive design has its limitations. First, the information collected can be 'superficial' (LoBiondo-Wood, 1998, p. 198) as it does not necessarily seek answers as to why things happen the way they do. A descriptive study does not attempt to establish or determine causal connection of the phenomenon under investigation (Polit et al., 2001, p. 180). It simply describes.

Other major limitations of this design are its lack in generalisability and the potential for multiple interpretations (Dunlock, 1993; Field & Morse, 1985). According to Ryan and colleagues (2007), the significance of this paradigm lies in the exploration of individuals' experiences and the development of new theory. This study however, does not claim to be representative of all Pacific children in New Zealand given its size and scope. Field and Morse also warned researchers that generalisability must be 'treated with care' as this is not the purpose of qualitative research. Its purpose is 'rather to elicit meaning in a given situation' (p. 122).

Nevertheless, I decided to use descriptive exploratory design in this study, as the primary focus of this study was a reality description of Pacific parents' knowledge and experiences in caring for the children's skin sores at home. While the information gained by using this design is superficial according to LoBiondo-Wood (1998), it is important to seek conceptual understandings from people's meaningful experiences. Unless these experiences are explored and understood, any further attempt in nursing interventions with Pacific families experiencing similar health issues are likely to be 'ineffective and unproductive' as Lobo (2005) contended. It is hoped that results of this study will be utilised for subsequent and future research to further explore issues and bring about positive changes about the health problem of skin sores of Pacific children.

Study Procedure

Sampling

Purposeful sampling was used for this study. Participants were sought from parents of 15 to 20 Pacific children admitted and discharged with serious skin infections. Although there are no rigid rules concerning sample size in qualitative research and one cannot predict the required size (Holloway & Wheeler, 2004), the 'depth' and the 'richness' of the data obtained is far more important than the number of participants (Holloway & Wheeler; Gillis & Jackson, 2002; LoBiondo-Wood & Haber, 1998; Ryan, Coughlan, & Cronin, 2007; Schneider, Whitehead, Elliot, LoBiondo-Wood, & Haber, 2007). Accessing participants who hold the rich information pertaining to the purposes of the study is the 'ultimate goal' of purposive sampling (Sandelwoski, 2000, p. 338). The study sought to recruit children who were admitted and discharged between the period of January 2006 and October 2007. The rationale for this time frame was to enable accurate recall of the events. However, during the course of the study, this time frame was extended to January 2008 as there were insufficient participants by October 2007.

Given the vast extent of the term skin infection, the inclusion criteria was limited to those children who had been admitted for cellulitis, infected boils, and infected sores and insect bites. The ages between 1 to 14 years were chosen as this was consistent with the report on skin infection of Pacific children by Hunt (2004). However, during the recruitment process nurses referred some parents whose children were over one year of age at the time of the interviews but who had been in hospital as infants. As these parents were keen to be interviewed they were included in the research. Children who were admitted with infected eczema were excluded from this study for the following reason. Caring for children with eczema can be a very complicated task for some mothers or caregivers as I have witnessed while working with Pacific families in the community. These children were always at high risk of developing skin infections if not managed effectively. The exclusion criteria also covered any family who might have experienced a death of a child during hospitalisation from skin infection. Fortunately, no such cases were encountered during the course of this study.

The depth and the richness of the data for this study rely on the purposeful sampling of participants. In this case, parents of Pacific children who had been admitted with skin infections are the ones who can provide rich descriptions of the phenomenon under study as they are the ones who have experienced this phenomenon.

In qualitative research, predetermined sample number is not highly recommended (Holloway & Wheeler, 2004). However, Patton (2002) states that sample size can be determined on the study's rationale and purpose. The predetermined sample in this study was to allow for a diverse spread of participants from the different Pacific ethnic population under study. As discussed earlier, the Pacific population in this study is not considered a homogenous group but a collective group composed of unique and diverse culture. Holloway and Wheeler (2004, p. 128) cite Kuzel (1999) who provides an example of sampling sizes for qualitative research which states that 6-8 participants is sufficient when a sample consists of homogenous group while 12–

20 suffice for a heterogeneous population. There was no fixed number of participants set for specific Pacific groups. The main groups were Samoa, Tonga, Cook Island, Tokelau, Niue and Fiji.

The two locality organisations chosen for the study were Capital and Coast District Health Board (CC&DHB) Hospital in Wellington and Hutt Valley District Health Board (HVDHB) in Lower Hutt. These are the two main hospitals in Wellington.

Recruitment procedures

The recruitment process for the study started in August 2007 after approval was granted from the local Ethics Committee (Appendix 1). Approval for both locality organisations C&CDHB and HVDHB (Appendix 2) were sought as part of the ethics application. In planning the recruitment process, it was important that Pacific Units within these hospitals were informed and their full support of the study was obtained. Both Pacific units were very supportive particularly my Pacific nursing colleagues as they were the key links in accessing the potential participants for the study.

Methods of recruitment included meetings with nursing staff members and advertisements through the use of flyers (Appendix 3). Flyers were advertised in children's Wards in both hospitals, some Aoga Amata (Samoan preschools), and GP services or Health Centres in Wellington and Porirua. The Health Services and Aoga Amata I have chosen are the ones with a high enrolment of Pacific children and families. Plans were made for advertisements on Pacific radio stations but did not eventuate due to unforeseen circumstances.

Separate meetings were held with charge nurses and clinical nurse educators of the two paediatric wards at C&CDHB in Wellington and the charge nurse of Children's Ward at HVDHB. Meetings were also held with Pacific nurses employed in the Pacific units located in these hospitals. Prior to the meetings, e-mail correspondence and

phone calls about the study was held. The purpose of these meetings was to inform nursing staff about the study and to seek their support in the recruitment of the participants. Nursing staff were very supportive and had kindly agreed to be the first point of contact for potential participants.

It was important that parents' permissions were sought before I made any form of contact with them. A form for the 'recruitment of potential participants' (Appendix 4) was created for this purpose. These forms were distributed in the wards by the nurses to those parents who fit the study criteria. The forms allowed parents who were willing to take part in the study to give their written consent for the researcher to contact them for further explanation before committing themselves to take part in the study. Verbal consents were also taken into consideration. A list of participants who gave their permissions to be contacted was forwarded to me by the nurses through emails. The lists included children and parents' names, telephone contact details, the admitting diagnosis, and sometimes their home addresses. These emails were followed up by phone calls between nurses and myself to confirm the details on the lists.

My first contacts with the parent(s) were all done through telephone calls. Potential participants were briefed about the study over the phone and the opportunity was offered for the Information Sheet (Appendix 5) to be sent to their home addresses. However, only two mothers took up the offer for the information sheet to be viewed before they made up their mind whether to take part or not, but the remainders were happy to make time to meet with me face-to-face for an interview. One of the mothers who wished to view the information sheet before she made up her mind was happy to take part but with difficulties in arranging a mutual time for an interview she was excluded from the study. Of the parents who were willing to take part in the study when I first spoke to them on the phone, at least two further phone calls were required to finalise a negotiated time for an interview.

Interviews schedule

Face-to-face semi structure interviews using a mix of closed and open ended questions were used to elicit data. Prior to commencing the interviews I went over the information sheets with the participants to ensure they fully understood what they were about to embark on and allow them to ask any question they had before signing the consent form (Appendix 6) to formally give their permission that they agree to partake in the study. The information in the consent form was also discussed line by line with the participant to ensure clarity.

Interviews took place in mutually agreed settings. Of the 11 interviews carried out, 10 interviews took place in participants' homes, and one at a participant's work place with each interview lasting from 45 minutes to 1.5 hours. The interviews were carried out over a four month period between November 2007 and February 2008. Every participant undertook one interview. All interviews were tape recorded. The combination of the semi-structure and open-ended questions interview technique was appropriate for this study as it allowed for 'richer and fuller information' required from the participants (Polit et al., 2001). According to Field and Morse (1985), 'the open-ended interview may be directed by the participants' responses into areas .... unanticipated by the researcher' (p. 65). However, it was my responsibility as the researcher to make sure the vital information was captured during the interviews and that the dialogue with the participants was aligned with the study objectives at all times. Denzin and Lincoln (2000) stated that 'the use of open-ended interview apparently offers the opportunity for an authentic gaze into the soul of another …. or a dialogue in which a researcher and researched offer mutually understanding and support' (p. 823).

The interview schedule was developed to capture actual events and details of who people were, their relationship to the child, their knowledge and understandings of skin infections as well as to facilitate interviewees to talk about events that led to their child's admission to hospital for a skin infection that was unsuccessfully

managed at home. The interview schedule was divided into nine sections, however, it was not expected that the sections needed to be answered sequentially. Figure 1 presents a summary of the schedule and Appendix 7 includes the full schedule.

Section one of the interview schedule was developed not only to establish rapport with the participants but also to ascertain the demographic profile of the child and the participant's relationship with the child. Obtaining information on the frequency and timing of hospital admissions was important to learn from the outset of the interview as this was necessary to determine and guide the questions that followed.

In section two, events that led to hospital admissions were explored including the general health of the child and how the sores or injuries happened. It was also important to ascertain at what stage parents decided to seek urgent medical help and why. Prompts used to clarify responses from the participants were; *was child seen by family GP before hospital admission? was the ambulance called? what made you decide your child needed medical help? number of days sore first noticed to day of admission? noticed any difference in wound appearance and understand what it meant? did the child have high temperature if so why, for how many days?*

Section three was designed to find out how the sores were first treated at home and the kind of remedies used and who was responsible for the ongoing care of the wound. Prompts used to clarify participants responses were*: body part(s) affected? what measures taken, by whom, and how often? what solutions used to clean wound? importance of hand washing during and after care, (when and how often applied?) how often plaster/dressing changed, any ongoing interventions?*

In section four, contacts with primary health providers were explored. I wanted to know why parents decided to take the child to the GP and if these families were given health information in regards to the care of the infected sore before the child was hospitalised including administration of medications.

Summary of Interview Schedule
1. Relationship to hospitalised child
a. Interviewee's relationship with child b. Demographics profile of child and details regarding timing of hospital admission **c.** Child's previous admissions to hospital
2. Events leading to hospital admission
a. Events including general health of child **b.** How the injury or infection started
3. Injuries/sores and home remedies
a. Initial treatment applied at home **b.** How often applied
4. Contacts with primary health care services
a. Health care sought and received by child prior to hospital admission **c.** Role of primary health care providers
5. First aid interventions at home
a. General first aid practices including traditional methods in relation to skin injuries b. Details of first aid available in the homes
6. Use of towels and hot water/warm water for shower and washing
a. Knowledge regarding bathing for skin care b. Difficulties or barriers such as hot water for bathing and washing clothes
7. Hand washing practices at home
a. Child's hand washing practices b. What family use for hand washing
8. Education and training
a. Details of any training received on how to care for minor skin sores at home b. Recommendations on trainings in the future on this topic
9. Demographics
a. Number of children in the household under the age of 16 b. Other family members with skin sores c. Interviewee's Age, gender, place of birth, ethnicity d. Employment status and average working hours of the main caregiver per week e. Average family income per week

Figure 1 - Summary of Interview Schedule

I also wanted to find out if parents had experienced difficulties or barriers in accessing health services. Prompts used were: *why was child seen by medical staff? medications prescribed, affordability and administration.*

In section five, the focus was on the types of first aid equipments available in people's homes to treat minor sores. If first aid equipments were not available what other alternatives families used in their homes. Prompts used were, *what use to cover and clean wound if first aid kit not available, the use of traditional remedies.*

Since hand washing and clean water play a major role in skin infection, it was important to ask about the children's hand washing practices and families access to hot water for washing clothes and bathing. These items were explored in sections six and seven.

Education and training was discussed in section eight. I wanted to find out how well informed parents were in regards to skin care of their children both before and after admission. Parents were asked for their recommendations for future training regarding skin infections. Finally in section nine demographics of the interviewee were sought including ethnicity, place of birth, age and gender. The number of siblings in the household under the age of 16 was also explored alongside any history of skin sores in the family.

Data collection

A mix of closed and open ended questions was used in a form of a face-to-face semi structure interviews were undertaken to elicit data for this study. Most interviews took place in mutually agreed settings with the majority at participants' homes and one interview at a participant's office with each interview lasting from 45 minutes to 1.5 hours. All interviews were tape recorded. All participants undertook one interview. Interviews ranged from 13-32 minutes with a median time of 26 minutes. Seven interviews were fully conducted in English, three interviews were conducted in

Samoan, and one in English with very little Tongan translation. Two of the 11 interviews were conducted in the presence of young children which caused minor interruptions. While there were interruptions and background noises it had no significant impact during the interview process or problems with retrieving the data.

Participants are the primary source or the central focus of data collection in qualitative research (Holloway & Wheeler, 1996) therefore face-to-face interview with the participant was the most appropriate method of collecting data in this study. In my view, face-to-face dialogue is important in establishing an effective relationship or a meaningful engagement with the participant. Meaningful engagement is highlighted as one of the ethical principles of Pacific health research guideline (Health Research Council of New Zealand, 2004).

The use of semi-structured interviews and open ended questionnaire were appropriate as these methods allowed the participant to speak freely about his or her beliefs, values, and experiences (Schalk-Thomas, 1990) without boundaries. Allowing the participants the freedom to speak freely not only allows a greater variety of responses (Beanland & Schneider, 1999) but it also gives the participants the rights and freedom to share their experiences and participate in the research without boundaries. Again this approach is consistent with the ethical principles of Pacific research that guide this study.

While the interview was organised around a set of predetermined questions, the sequencing of questions was not the same for every participants. Questions were asked depending on how the interview process was approached from the beginning and according to the responses of the participants (Beanland & Schneider, 1999; Holloway & Wheeler, 2004). The questions were kept as brief as possible without loosing the purpose of what the study was set out to explore. Probes and prompting were used for elaboration and/or to gain further clarity from the participants' responses.

Data analysis

The element of 'Tui'

Morse and Field (2005) referred to the analysis process in research as 'sifting' of the data and putting pieces together in order for the data to become meaningful and useful. This notion aligns with one of the key elements *Tui* of the metaphor of Kakala (garland of flowers) I had referred to on earlier in the Pacific approach for this study. *Tui* refers to the actual making or weaving of the Kakala (garland of flowers) using the carefully selected flowers that were picked or chosen for the special occasion. In this study, *tui* refers to the careful selection and analysis of the data in order for the mothers' descriptions of the management of their children's skin sores in the homes to become meaningful.

Outcomes and results of qualitative studies are often in narrative form (Holloway & Wheeler, 2004; Taylor et al., 2007). According to Schalk-Thomas (1990) the aim of content analysis in qualitative research is to organise a mass of information into meaningful classes generally with some degree of quantification.

Qualitative content analysis

Analysing qualitative data is conducted in many different forms and different approaches (Hansen, 2006; Holloway & Wheeler, 2004; Morse & Field, 1995; Polit et al., 2001). While there are a variety of methods to choose from when analysing qualitative data, it is very important that the goals and aims of the research are highly considered when deciding on a particular analytical approach (Crabtree & Miller, 1992).

Qualitative content analysis (QCA) is used to analyse data in this study. QCA is the most appropriate analysis strategy of choice as it is congruent and fitting with the goals and objectives of this study. According to Sandelowski (2000) QCA brings out the best descriptions of events or phenomenon in a qualitative descriptive study. Primarily the content analysis was focused on mothers' descriptions of their

experiences and the events that took place. In order to give accurate descriptions of how children's skin sores were managed at home, the transcripts were analysed in the context of their uses. For example, the descriptions of signs and symptoms of skin infections as observed by the mothers and experienced by their children are in lay person's language as mothers described them. The transcripts on mothers' descriptions of the events were reviewed for the purpose of identifying categories and code patterns. Comparative analysis was also incorporated to highlight the basic differences and similarities between the participants' experiences in managing the children's skin sores at home.

Historically, content analysis is not a common technique in qualitative and is often referred to in the literature as the form of quantitative research (Morgan, 1993; Taylor et al., 2007). Nevertheless, Morgan discusses the qualitative analytical features of content analysis and contends its place in analysing textual data. The usefulness of content analysis in analysing textual data is also depicted in writings by Schalk-Thomas (1990), Strauss and Corbin (1990), Miles and Huberman (1994), and Kripendorff (2004). Morgan highlighted one of the main significant features of QCA in that it 'places ... emphasis on understanding the new contexts that are revealed by the coding and counting process' (p. 115). According to Morgan, QCA is most appropriate when a description of patterns in the data is essential and interprets why these patterns exist.

While Morgan puts forward QCA as the most appropriate method in analysing descriptive study, he did not provide a step-by-step guide on how to conduct such analysis. In this analysis, the researcher took up the analysis technique of analysing qualitative data in general while paying close attention to the key features of QCA as described by Morgan.

As a general characteristic of qualitative research, data analysis and data collection happened simultaneously in this study. Data analysis commenced immediately after

the first interview by listening carefully to the tape recorded interviews after each interview. The researcher familiarised herself with the data through this process. All interviews were transcribed verbatim. Eight tape recorded interviews that were conducted in English were transcribed by experienced transcribers. These transcripts were double checked by the researcher for corrections. Minor corrections were made in three transcripts. The three interviews conducted in Samoan were transcribed and translated by the researcher. All 11 transcripts were stored on the computer. All transcripts were read repeatedly over several weeks not only to become more familiar with the data but to gain a better understanding of the data. Through this process, identification of codes and categorisations were achieved.

A set of preliminary coding system was established from the interview schedule which was modified in the analysis process to suit the 'specifics of the data' (Morgan, 1993, p. 115). For example, questions from the interview schedule were merged to link substantial pieces of data. After all, semi-structure interview were used to collect data where questions were not asked in sequence as mothers described the events as they happened without waiting for the questions to be asked. Data was reduced and segmented as they fit codes and categories. Coding and categorising of patterns were manually done by using the cut and paste technique. Potential patterns that emerged during data analysis were identified through this process. Responses to the participants' characteristics and demographics were reviewed and tabulated.

One rule for analysing qualitative descriptive studies according to Sandelowski (2000) is that, 'it does not require researchers to move as far from or into their data' (p. 335). In other words, while the researchers stay closer to their data (like in any other qualitative data), researchers in qualitative descriptive studies should make no attempt to interpret the context of the data. Therefore the data in this study was read with cautiousness and prudent in that no deeper interpretations were made but to stay to the 'surface of words' provided in the transcripts (Sandelowski, p. 336). Nonetheless, Sandelowski also stated that no analysis is free of interpretation.

Strauss and Corbin (1990) pointed out that reducing the data for analysis is a representation of interpretations. Morgan also highlighted that a significant crucial step in the analysis process in QCA is interpreting the patterns that emerge from the data and understand why those patterns are there. In this study, interpreting these patterns resulted in constructing themes. These themes illuminated the condensed descriptions of events mothers described in the interviews.

It is important however to remind the readers that while the analysis process in this study involved interpretation where data reduction and understanding of patterns occurred which resulted in the emergence of themes, these themes were pure descriptions taken directly from the data. As discussed in the methodology section, the purpose of descriptive approach is to provide a 'comprehensive summary of events in the everyday terms of those events' (Sandeloski, 2000, p. 33). Therefore, while the data was organised according to themes, the emphasise was not to develop a theoretical stance and no attempt was made to conceptualise mother's subjective experiences but to 'simply describe' mothers understanding of how they managed and care for their children's skin sores at home before the children were admitted to the hospital.

Goodness (Rigour) of the study

The knowledge gained from research has to be of highly trustworthy and reliable (Roberts & Taylor, 2002). Therefore the researcher is obligated to demonstrate how the knowledge was obtained using a transparent, systematic and robust process, which is what I am going to demonstrate under this section. This study acknowledges that there are several accepted ways of testing rigour in qualitative research (Lincoln & Guba, 1985; Sandelowski, 1986). However, a vigorous debate continues as to which of these methods is the most appropriate or the best way of establishing rigour in qualitative research (Tobin & Begley, 2004).

Lincoln and Guba (1985) first introduced the ideas of the 'trustworthiness' as a way of exploring the reliability and the rigour in qualitative or naturalistic studies. A set of criteria were developed, these were credibility, transferability, dependability, and confirmability. These criteria are commonly used by naturalistic researchers to justify the trustworthiness in their studies. The popularity in the use of these criteria sparked a debate and a disagreement on the appropriateness of the terms amongst scholars and therefore a decision on establishing a consensus remains undecided amongst qualitative researchers (Tobin & Begley, 2004). According to Lincoln (1995) 'consensus may not be necessary but recognition of the emerging criteria in the qualitative paradigm' (cited in Tobin & Begley, p. 389).

Given that there is no agreed framework or set of criteria to assess rigour in qualitative research I chose to draw upon the emerging criteria, *goodness*, proposed by Arminio and Hultgren (2002) to demonstrate the quality of research findings obtained in this research. Roberts and Taylor (2002) suggest that the 'researcher must use the most appropriate means of assessing 'rigour' in qualitative projects, to reflect the methodological assumptions of the project (p. 379). According to Arminio and Hultgren, goodness is a new language offered for 'judging qualitative research' (p. 446) 'as an alternative to empirical positivistic criteria (reliability and validity) that more appropriately addresses the epistemological grounding of qualitative research' (p. 447). Tobin and Begley (2004) advocate and suggest the usefulness of goodness in 'assuring quality of the entire study' (p. 388). Authors such as Smith (1993) and Denzin and Lincoln (2000) as cited by Tobin and Begley suggest the appropriateness of goodness as one way of claiming rigour in research.

Six elements were recommended by Arminio and Hultgren (2002) as the key dimensions in which to judge research goodness. These elements are 1) Epistemology and theory: The foundation; 2) Methodology: The approach; 3) Method: The collection of data; 4) Researcher and participants as multi-cultural subjects: The

representation of voice; 5) Presentation: The art of meaning making; and 6) Presentation: The art of meaning making

According to Arminio and Hultgren, it is critical that all of the six elements must be reflected throughout the entire study. The meanings of these elements and how they are applied in this study are presented below.

1. *Epistemology and Theory: The Foundation*

This element provides the philosophical position and gives context to and informs the study. Sandelowski (2000) argues that qualitative descriptive studies are the 'least "theoretical" of the spectrum of qualitative approaches' (p. 337) in comparison to phenomenology, hermeneutics, grounded theory, and narrative researches. This is because qualitative descriptive studies do not weigh heavily on philosophical and theoretical assumptions but draw from the generic beliefs of naturalistic inquiry (Sandelowski). I have provided a thorough explicit discussion on qualitative approach as a naturalistic enquiry and how it should inform the study.

2. *Methodology: The Approach*

This element gives specific grounding to a study's logic and criteria. In this study, the logic and criteria were followed through in ensuring that the most appropriate methodologies were used in order to achieve the study objectives. The naturalistic inquiry (qualitative) with a Pacific framework informs the use of qualitative descriptive design which was the most appropriate and fitting design. As discussed in Chapter 4, very little knowledge is available on the skin infections of Pacific children therefore it was proper and fitting that this study employed a design that gives accurate descriptions of the phenomenon under study and these descriptions are from people with first hand experience of the phenomenon. A qualitative descriptive approach was the best design for this study as this methodology is bench science of nursing (Lobo 2005).

3. *Method: The Collection of Data*

This element describes the procedures of collecting data. Steps taken to ensure the clarity of how the data were collected are thoroughly discussed. A mixed of closed and open ended questions were used in a face-to-face semi structure interview to collect data. This method is congruent with the methodology used. Explanations about the participants, how and where they were recruited including the rationale for choosing the participants are clarified in the text. The rationale of choosing a semi-structure interview was to allow people to speak freely about their experiences.

4. *Researcher and Participants as multicultural subjects: The representation of voice.*

In this fourth element the researchers reflect on their relationship with the participants and the phenomenon under study. Given the nature of descriptive studies is to describe participants' voices, these were utilised extensively throughout the findings. To provide context to the quotations the age description of the child is presented alongside the quotation. The researcher also provided an introduction to herself in relation to the topic and to Pacific people. Finally a reflection on this is provided in the discussion.

5. *Presentation: The Art of Meaning Making*

In this element, new insight is gained: Interpretation only happens during data analysis when data was coded and categorised into themes and patterns, otherwise the majority of the data is represented as they were told or described. Themes were created to not only to illuminate the condensed descriptions mothers gave during the interviews but to give these descriptions more meaningful account. The process of establishing the themes are discussed in the analysis chapter.

6. *Recommendations: The Implications for Professional Practice*

Based on the study findings, the researcher puts forward recommendations that may be of value in the fight to reduce skin infections on Pacific children.

Recommendations are provided in ways that may bring changes and improvement to families of children who suffer from skin infections as well as nursing practice. An example is a recommendation to include information on skin infections in the Well Child Tamariki Ora booklet for parents.

Conclusion

A description of the research methodology, the method and design employed to address the study objectives is detailed in this chapter. Qualitative descriptive design in conjunction with Pacific frameworks was chosen as the most appropriate methodology underpinning this study. Limitations of using this approach were discussed. Participants' recruitment procedures and methods for data collection were discussed with consideration of ethical implications. Description and justification of qualitative content analysis as the best method analysing data for this study is detailed. Finally, the rationale for the choice made to ensure goodness or rigour in this study is explained.

The findings of the study are presented in the following chapter describing participants characteristics and the use of themes to highlight mothers' descriptions of events that took place prior to children's hospital admissions.

CHAPTER FIVE: Findings of the Study

Introduction

This chapter presents the findings of the study. The number of participants recruited is outlined followed by a brief collective profile of the participants. Eleven mothers of 11 Pacific children who had agreed to take part in the study were the active participants of the study or those who took part in the interviews. The children and mothers' profiles are illustrated in tables for easy visibility. One focal point of this chapter is the presentation of mothers' descriptions of events that took place prior to the children's hospitalisations. Mothers' descriptions of these events are presented in themes emerged from the data analysis.

Participant recruitment

Parents of 23 children who fit the study criteria were first contacted by the nurses in the hospitals. Of the 23 parents who were contacted by the nurses, 20 parents agreed to be contacted by the researcher. The researcher was provided with parents' contact details including children's names, date of birth, reason for hospitalisation, and dates admitted and discharged. Eleven of 20 agreed to take part in the study. The reasons for nine people not participating are that five did not return phone calls and four had difficulty in negotiating an agreeable time.

The invitation to participate in the study was open to both parents. However at the times of the interviews only mothers were available to take part. The decision of who was to take part in the interview was entirely up to the parents. For example, fathers were in the houses during three separate interviews however these couples decided that the fathers would mind the children so the mothers could give me their undivided attention and stay focused on the interviews. Although fathers did not take part in the interviews, the results reveal that some fathers played active roles in caring for their children's skin sores in the homes.

Mothers' characteristics

Participants consisted of 11 mothers of 11 Pacific children who were admitted with skin infections from the period of January 2006 to January 2008. These mothers talked about their children's ordeal and their experiences in managing the skin sores at home prior to the hospital admissions. Mothers' ethnicities were collected during the interviews. All 11 mothers lived in New Zealand. They self-identified as Samoan (5); Cook Island (1); Cook Island Maori (1); Tonga (1); Tokelau (1); and European (2). The mean age of the mothers was 33.36 years. The ethnicity of the children determined the participants for this study. While two participants (mothers) identified as European, their children were identified as Pacific while in the hospital. Six of these mothers were born and raised in New Zealand and five were born in the Pacific Islands.

Table 1: Mothers age ethnicity and place of birth

Mother	Age	Ethnicity	Place of birth
Mother #1	25yrs	Cook Island Maori	New Zealand
Mother #2	41yrs	Tongan	Tonga
Mother #3	30yrs	European	New Zealand
Mother #4	39yrs	Samoan	Samoa
Mother #5	29yrs	Tokelauan	New Zealand
Mother #6	34yrs	Samoan	Samoa
Mother #7	28yrs	Samoan	New Zealand
Mother #8	39yrs	Samoan	Samoa
Mother #9	31yrs	Cook Island	New Zealand
Mother #10	31yrs	European	New Zealand
Mother #11	40yrs	Samoan	Samoa

Out of the five mothers who were born in the Islands, one was raised in New Zealand since she was young and four came to New Zealand as adults. Of the 11 participants, seven spoke English as their first language while four had English as their second language. Three mothers were employed full time, six worked part time hours which range from 14 to 30 hours per week and two mothers were not in paid employed. Table 2 provides the mothers' profiles including their age, ethnicities (self identified) and place of birth.

Children's characteristics

Eleven children from different Pacific ethnic groups aged between three months to 15 years old who were admitted with skin infections between the period of January 2006 and January 2008 took part in this study through their mothers sharing their ordeals. Of the 11 children, five were females and six were males. Ten of the children were born in New Zealand and one was born in Australia.

The children were identified as 'Pacific' during hospitalisation. Children's parents' ethnicities were self identified during the interviews. Children in the study were born to parents from the same Pacific ethnic group or from parents of different Pacific ethnic background including European. Of the 11 children, five children identified as having parents of being both Samoans and one child was identified as having parents of being both Tongans. Parents of the further five children were mix marriages between different Pacific ethnic groups and/or European.

All of the 11 children were living with their parents; two lived in a household of three people, while the rest were in a household of between four to seven people. While some live in small households, the data reveal that children have regular contacts with other family members and friends. Two of the four children under five years old attended Kohanga Reo (Maori language nest). The other two were cared for by their grandparents while the parents were at work. The two teenagers attended college and the remainder attended primary schools.

Health status of children and previous hospital admissions

Children in the study were admitted for a range of skin infections which are outlined below, see also Table 2. Out of 11 children, 10 children had been admitted to the hospital for skin infections for the first time. Three children had previous hospital admissions due to other health problems unrelated to skin infection like injury, convulsions (query cause) and high blood sugar. One of these, three children had recently been diagnosed with Type 1 Diabetes.

Of the 11 children, one child was born prematurely but according to the mother this had no ongoing effect on the child's health and development. Two were reported by the mothers to have a history of eczema. Of these two children, one had previous and ongoing hospital admissions as results of convulsions, skin problem, and other unknown causes while the second child had never been admitted in the hospital before. Eczema was not identified by mothers as the cause of the recent hospitalisations nor did the information provided on recruitment suggest that. Infected eczema was one of the exclusion criteria for the study. One child was diagnosed with chickenpox while at home which may have an association with the infection that led to the hospital admission. This was the only child with a repeat admission in the study. The rest of the children fully recovered and managed well at home after being discharged from the first admission. Although some children have had some ongoing health problems as mentioned above, overall the general well being of the 11 children before admissions were satisfied according to the mothers.

The following accounts summarise the pre-hospitalisation events related to infected skin sores encountered by children that were unsuccessfully managed in the community. This summary is to present the reader with a brief overview of clinical symptoms presented with the individual children on admission and how these symptoms were identified by mothers. Details on the events that took place will be discussed later in this chapter.

Child #1 was admitted for orbital cellulitis from what started with a 'spot' on his back which mother thought was a 'pimple' which later spread to the rest of his body and severely affected his right eye. The 'spot' or 'pimple' as first noted by mother was pointed out by a Kohanga Reo teacher as the beginning of a chickenpox. Child #1 was discharged but readmitted days later for an unresolved eye infection.

Child #2 was admitted due to infected insect bites. The insect bites started when child was on a holiday with the family in the Islands. According to the mother although her child had the insect bites while in the islands it did not affect him as 'he was not ill'. Child was admitted three weeks after arrival from the Island.

Child #3 was admitted with cellulitis of calf which mother thought it started from an insect bite. Mother thinks her daughter is allergic to insects. The child had previous hospital admissions for different health problems, some of them were skin related.

Child #4 was admitted for an infected toe. The mother believed that the injured toe was healing and responded well to the home remedies until a friend stood on it by accident. The toe became inflamed and infected. Child #4 had been recently diagnosed with Type 1 Diabetes and had previous hospital admissions from poor controlled diabetes. During the course of infection, Child #4's diabetes got out of control which led to an emergency visit to the Accident and Emergency department.

Child #5 was admitted for what appeared to the parents as 'small spots or blisters' on the baby's nappy area. The mother described these spots as heat rash and did not think much of it until child showed symptoms of being seriously unwell one evening. During a nappy change the mother found that the rash were turning into 'big blisters' and was spreading. Staphylococcus was found to be present.

Child #6 was admitted for cellulitis of the periorbital. The mother claimed that she first noticed a little pus in her child's eye and she did not take much notice of it until

the eye swell up to a stage where child could not open it. Medical help was sought when mother saw immediate danger to her daughter's health. The mother could not explain how it got to this stage but she suspected the eye got infected as the child kept rubbing her eye.

Child #7 was admitted with cellulitis of the lower extremity. Streptopyogenes were present. The mother noticed a bite on the itchy spot, it was like a dot and it swelled up later in the day and got worse that night.

Child #8 was admitted for an abscess on her left groin. The mother first noticed a red spot on her skin (groin area). She applied thumb pressure hoping it will stop the boil from growing but child ended up in the hospital having minor surgery. Staphaureus was present. Child was seen by both medical doctor and traditional healer in the community.

Child #9 was admitted for bullous impetigo which started with what looked like flea bites. These flea bites got worse over a couple of days and affected his whole body. According to the mother, child had a bad history of skin reactions to insect bites. This time it got out of control which led to his admission to the hospital.

Child #10 was admitted with a boil on the perineal area. Child alerted her mother of the unusual change she was experiencing. At first the young girl thought it was a pimple but her mother picked up it was a boil and immediately sought help from a friend at a chemist. With a friend's help a dressing material was applied with the mother's intention to draw out the pus but was unsuccessful. The boil grew overnight and Child #10 ended up having a minor surgery.

Child #11 was admitted with orbital cellulitis. The mother had first noticed her child's eye became red with minor swelling which got worse throughout the week. Mother tried other traditional practices at home but did not work. Child #11 was

seen at the family doctor and was referred to the hospital urgently for a specialist care.

Table 2 reveals that the 11 children were admitted with a variety of skin problems, seven of whom were diagnosed with cellulitis. Of these seven, three were admitted with cellulitis of the eye (2 orbital and 1 periorbital), and four were admitted with cellulitis of the lower extremities including the buttock. This table indicates that younger children had different types of skin infections from older children. Three out of the four infants were diagnosed with cellulitis of the eyes, orbital and periorbital cellulitis.

Table 2: Children's gender, age, and diagnosis

	Gender	Age	Admitting Diagnosis *
Child #1	Male	Infant	Orbital Cellulitis (chickenpox)
Child #2	Male	Teenage	Insects bites
Child #3	Female	Preschool	Cellulitis Calf
Child #4	Female	Teenage	Cellulitis Toe (Diabetes type 1)
Child #5	Male	Infant	Infected nappy region Staphlococcus
Child #6	Female	Infant	Periorbital Cellulitis
Child #7	Male	Toddler	Cellulitis Leg Streppyogenes
Child #8	Female	Toddler	Groin abscess Staphaureus
Child #9	Male	Toddler	Bollous Impetigo
Child #10	Female	Preschool	Cellulitis Buttock
Child #11	Male	Infant	Cellulitis Orbital

*Diagnosis for each child was included with the information given to the researcher.

A range of activities that took place before the children were admitted are summarised in Table 3. These include the visits to the family doctors, home interventions received by each child, and whether families kept a first aid kit. Nine out 11 children were seen by their family doctor before admissions. Who referred the children to the hospital is also highlighted in this table. Eight out of 11 children were referred by their parents while three were referred by the health centres. This is one of the indications of parents taking the initiative and responsibilities in the care of their children throughout the children's unfortunate skin infection events that led to their hospitalisations. These will be discussed in detail in the following sections where mothers' accounts of events and activities that took place will be discussed.

Table 3: Range of care children received before hospitalisation admissions

Child	GP Visit	Who referred to hospital	Home Interventions	First Aid Kit
1	Referred on 2nd visit	Health centre	Bath with pine-tarsal; calamine lotion applied	No
2	Seen and sent home	Parents	Herbal leaves, sea bath & cream (while in the Islands)	No
3	Seen and sent home	Parents	Bath with solutions	No
4	Seen and sent home	Parents	Wound cleaned with salty water (home made solution) & covered	No
5	No	Parents	Vaseline	No
6	No	Parents	Applied mild pressure with thumb to the affected eye	No
7	Seen and sent home	Parents	Ointment & bath	No
8	Seen and sent home	Parents	Ointment and pamol, traditional herbs	Yes
9	Referred on 1st visit	Health centre	Bath cleaning, mother attempted to clean and burst blister	Yes
10	Seen and sent home	Parents	Dressing material from chemist	Yes
11	Referred on 1st visit	Health Centre	Drop of breast milk Eye cleansed with warm flannel Mild pressure applied on affected eye	No

Events leading to the children's hospitalisations

Mothers were asked to describe the events their children encountered which led to their hospitalisations for serious skin infections. Mothers described how these events unfolded from the time the unusual changes on the skin were noticed up to the time the children were admitted to the hospital. These events included parents' actions and interventions that took place once these skin changes were recognised on the children. From the participants' descriptions of the events encountered, four main themes emerged. These are (1) Parents in action; (2) The search for healing and cure (3) Household activities and (4) Health information for parents.

Parents in action

Prior to the hospitalisations of the 11 children from serious skin infections, all mothers reported during the interviews they responded by taking actions in an effort to maintain and sustain the wellbeing of their children, despite their uncertainty on how the changes on the children's skin occurred. These actions included recognising and monitoring the unusual appearances and changes of the skin, providing some form of therapy, and seeking medical help in the community which eventually led to hospital admissions. Parents responded in a variety of ways guided by their understanding and beliefs on what they thought would work better for the children. Subthemes emerged under *Parents in action* theme were: *Recognising and monitoring the signs and symptoms* and *Parents' initial responses to the signs and symptoms.*

Recognising and monitoring the signs and symptoms

Ten parents were first alerted to their children's illnesses by the unusual changes or appearances of the children's skin while one child's misfortune was a result of an infected injured toe. Of the 11 children, nine parents referred to the unusual changes on the skin as a rash, a red spot, or a pimple. When asked how the first symptoms were recognised or how the skin infections started, the most common response from the mothers included innocent explanations, for example was the use of the words or phrases such as '*I thought it was just a pimple'* or *'I thought it was just a bite'.* Mothers

gave descriptions of the skin changes with some uncertainty on how these skin changes occurred. The following excerpts highlight some of these initial responses.

> *Initially I noticed the **red spot** on her skin* [thigh]. (Mother #8: Toddler)

> *I'd say Sunday I noticed a spot on his back and **I thought it was just a pimple** and I took him to Kohanga on the Monday and he had more spots, like he got a few more.* (Mother, #1: Infant)

> *Yes, **it started with two pimples**, two or three small … I think there's a word for it,* [mother was referring to the word blisters] *it's like small pimples so I thought they were just heat rash.* (Mother #5: Infant)

While some mothers were unable to provide precise information on what caused the 'rashes' or the 'spot' on their children's skin, four mothers were adamant that their children's skin infections started from insect bites. One mother was certain that her child was bitten by sand-flies while playing in the sandpit at the Day Care Centre. Skin itchiness and blisters were some of the symptoms commonly experienced by children infected with insect bites.

> *In the summer when it gets like really hot he likes playing outside in the Day Care and it all started from when he went to Day Care because he played in the sandpit, yeah and he was like bitten, so he was getting itchy. He must have got itchy every time he came back from school he had bites, like sand fly bites, you know.* (Mother #7: Toddler)

> *It was like an insect bite or something …* [They] *come up in big lumps, and then she just scratches and just leave some water* [blisters] *there and then of course she gets real* [itchy] *she just scratches and scratches of course she can't help it. And then the whole* [skin] *swells all up and then like yeah half the time like when on her tummy, on her back and her shoulders. It's not only her legs and her arms it's everywhere.* (Mother #3: Preschool)

Mother #9 referred to insect bites as the cause of the unusual appearances on her child's skin however, she was not convinced that this was the cause of the skin infection for her child. Child was conscious of the changes on his skin and was able to alert the parents.

> [He] *came up with what looked like flea bites, we initially thought they were flea bites and in the morning he showed us he'd been bitten all up his left arm and they were quite red, they looked like angry rashes and so we basically did what we should do ... One in particular at the back of his right leg started to bubble like a little bubble and he had bites on his left foot, well I call them bites because that's what I thought they were at the time.* (Mother #9, Toddler)

Some children's skin changes were accompanied by a high temperature. While some mothers reported their children experiencing a high temperature later in the course of the illness, Mother #8 reported that her child had a high temperature on the second day from when she first noticed the changes on the skin.

> *The first day I noticed the red spot and the next day she developed a fever, the redness was more noticeable on the second day, it was getting bigger as if it was spreading.* (Mother #8: Toddler)

Three children were admitted with infections of the eyes. Two were admitted with orbital cellulitis and one child with periorbital cellulitis. The mothers of these children gave limited descriptions of how and when the children came into contact with the infections. Similar to the mothers of the children who had suspected insect's bites, mothers of the children with cellulitis of the eyes responded innocently by thinking that things will improve naturally.

> *It started off with a little, I don't know what you call it, a little white pus but she kept rubbing her eye and got an eye infection and then so I just left it because I didn't think much of it, but like as the days went on it started getting bigger and bigger.* (Mother #6: Infant)

> *It was her eye. The eye was swollen over the weekend.* [I] *don't know if it was accidentally stroked by one of the children's fingernails without my knowing.* [It started] *on Thursday, I saw that it started to get sore, the swelling was getting bigger on Friday, Saturday, and Sunday.* (Mother #11: Infant)

The first child with orbital cellulitis had been nursed by the mother at home for chicken pox prior to his admission to the hospital. The spots Mother #1 was referring to here were signs and symptoms of chicken pox her child was experiencing at the time. The mother had suspected that her child's eye infection was associated with chicken pox. As the mother states,

> *Thursday he got a spot by his left eye and the day went on, on the Thursday it was growing like a lump and then the lump grew bigger and bigger and by Thursday night it had made his eyelid swell up a little and then by Friday morning, when we woke up Friday morning his eyelids were shut he couldn't open* [his eye] *and they were huge.* (Mother #1: Infant)

The rapid increase of the swellings of the eyes was evident in all three children mentioned above. It was obvious in all three mothers' accounts that it was the increase in the size of the lump that had alerted them to take the symptoms seriously.

Overall, the changes to the skin of younger children were first noticed by the parents while the older children alerted their parents of the problem. The older children were able to verbally communicate with their parents and were aware of some abnormal changes happening to their skin. For the younger children, parents had to pick up cues like persistent crying in order for them to know that something was not right. Parents referred to this persistent crying as 'an unusual behaviour' for the child.

> *The boil was in a really funny place … she told me that she had a pimple down there.* (Mother #10: Preschool)

> *He kept crying and* [he] *looked like he was in pain. We reached out because* [he] *was little ... he couldn't really say what was wrong, and then we pulled the blanket off and we saw his leg.* (Mother #4: Teenager)

While most parents did not think much of the unusual changes on the children's skin when the signs and symptoms were first identified, the data revealed that parents continued to monitor the children's situations. The process of monitoring was obvious in some of the excerpts highlighted above. This process was critical in the course of the children's illnesses as parents were able to identify critical changes to the child's condition.

The following accounts highlight two mothers' claims of their children's situations from the time the skin changes were first recognised up to the time the child's condition deteriorated. These claims highlight the importance of the monitoring process underwent by mothers or both parents as during this process they were able to assess and identify the changes in the children's conditions and responded accordingly. Mother #7 claimed the bites on her child's skin did not affect him at first as he was still able to attend to his daily activities like attending Day Care. While the child showed normal behaviour during the day, the symptoms deteriorated rapidly during the night time.

> *Well he was alright … what happened was he was itchy and there was one bite in the morning. It was like a little dot and it did swell up so we put some cream on it* [and] *he was fine. He wasn't sick or anything he was fine. And then he went to school and came back and it was a little bit, it was like about a five cent piece then. So we took him to the doctors and then … the doctor gave him some antibiotics and that and then at night … it got bigger, it was really fast. It was all pussie and his leg was all red because it was itching down the bottom of his leg, but his leg was all red and then we took him, he kept crying that night. This is all like in the afternoon he went to the doctors and then about three in the morning he*

was admitted into hospital because it had gone big really fast. Yes so he didn't really, because he wasn't crying, so we never thought anything of it. He wasn't in pain or anything. It wasn't until three in the morning when we turned the light on and that five cent piece [lump] *had gone …. swollen and pussie.* (Mother #7: Toddler)

The child's expression of some unusual behaviour like constant crying and not being able to sleep at night made the parents to suspect that something was seriously wrong with the child. The worsening of the physical signs and symptoms like redness, swelling and presence of pus on the affected area heightened parents concern.

The rapid deterioration of signs and symptoms on children was also noticed by other mothers in the study including the mother of Child #9. Skin problem was not a new experience to Child #9 except that hospitalisation was not required for the previous skin problems. According to Mother #9 her son's previous experiences with skin problems warranted close monitoring.

But we did keep an eye on it because he has a history of having bad reactions to bites and they get quite swollen and so I was conscious of that and just kept a close eye on the bites and the next day he came up with more, and the bites had become a lot more swollen and we were really quite concerned. (Mother #9: Toddler)

Parents initial responses to the signs and symptoms

Parents' initial response to the children's signs and symptoms took a variety of forms. These included ordinary tasks such as cleaning and tidying up children's beddings, applying first aid treatment such as soaking the wound in salty water, applying wound care aids bought from the chemist, or home baths using antiseptic solutions. Some mothers sought both conventional and traditional medicine practices on top of their home therapies. For some, the symptoms were initially ignored or left alone until parents saw that it was necessary to take action from their perspectives.

Home bath treatment was a common home remedy amongst the children in the study. The following mothers talked about giving home baths using what was available in the homes and the assistance from family members. A combination of traditional oil and creams from the doctor were used in the children's baths.

> *I kind of treat it, I try to treat it at home .... Well sometimes I give her that, kind of pinetarsal in the bath, I just put her in the bath at night or she gets bathed by my mother-in-law or my sister-in-law they give her you know all the oil stuff, Samoan oil and savlon.* (Mother #3: Preschooler)

> *I was bathing him with pinetarsal and rub him down with the calamine ... to keep it moist.* (Mother #1: Preschooler)

> *when he comes back home* [from the Day Care] *we always shower him and put his cream on ... he's got the cream because we went and saw the doctor and we* [applied the] *cream to stop itching, so it wouldn't get infected.* (Mother #7: Toddler)

Simple home solutions were initially applied to one child's injury as described below.

> *Once she sustained the injury, the wound was soaked with warm salty water.* (Mother #4: Teenage)

Similarly, when Mother #9 noticed the problem on her child's skin, she immediately started with the very basic preventative measures in the homes such as washing and cleaning to ensure her children were prevented from further infection. The mother also acted in a way to ensure her second sibling was not affected and was protected from getting infected from the older brother.

> *We stripped the bed, cleaned all his linen, in and around the bedroom and the clothes that he'd been wearing. We also did the same for his baby brother because they sleep, they share the room together and just applied calamine lotion and kept an eye on it really.* (Mother #9: Toddler)

The mother of the child who developed sores while in the Islands mentioned the use of herbs combined with conventional medicine as a backup. On top of herbal medicines the mother also referred to another healing method commonly practiced in the islands to assist with the healing process.

> *I remember that I gave him leaf called borabora .... So we gave him that to start with but then it did not settle. When it did not settle that day we took him to the chemist.* (Mother #2: Teenager)

> *Well, I told him to go and swim you know, 'cause the salt water will make it better.* (Mother #2: Teenager)

One mother sought help through a friend who works at a pharmacy.

> *So I knew straight away that it wouldn't be a pimple and my girlfriend is a pharmacist so I went down to the pharmacy and there's a thing you can buy like a, it's like a plaster and it draws it out. I tried that but it didn't draw it out.* (Mother #10: Preschooler)

Participants did not mention family members having a direct influence on their decisions in caring for their children, however, contacts with other community members like Kohanga Reo teachers was helpful for one mother. A Kohanga Reo teacher helped identified the symptoms experienced by Child #1 as symptoms of chickenpox. This had prompted Mother #1 to seek help from the family doctor prior to the child becoming seriously unwell.

> *One of the teachers at the Kohanga Reo said he's got the chickenpox. We went to the GP before the eye was swollen. I think we went on Monday or Tuesday and like the chickenpox hadn't come into full effect by then but they gave me the medicine anyway.* (Mother #1: Infant)

The search for healing and cure

All children in the study were registered with a family doctor or general practitioner (GP) where most of them received medical attention in the community before they were presented to the hospital. The data revealed that doctors were the main health

professional visited by the children for medical consultations in the community before they were referred to the hospital. Other services in the community utilised by the parents in seeking healing for their children included a traditional healer and the chemist. Teachers at the Kohanga Reo were reported by three mothers during their interviews as of assistance during the process in identifying the signs and symptoms of their children's illnesses (chicken pox, skin bites and boil) which prompted a visit to the doctor for these children. While there was very little mention of nursing contact during a child's visit with a doctor, there was no mention of any contacts made with the nurses in the community regarding preventative care in the homes prior to the children's hospitalisations.

Going back and forth

The findings reveal that most parents were obliged to seek help for the children's skin problems. Some sought help when they first recognised the changes on the children's skin while others took the 'wait and see' approach and sought help when the physical symptoms appeared to be worsening. A visit to the GP was the last resort for some when home remedies did not produce satisfactory outcomes. While for others it was the opposite. Some mothers opted for traditional medicine when the medicine from their GP did not provide relief for the children's sores. The data revealed that the majority of the children had medical consultations with their family doctors before they were admitted (Table 3). Five children presented more than once to their family doctors and four visited once before the admissions. Two of these four children were referred and admitted on their first visit. Two other children did not see their family doctor but were admitted when they first presented to the Accident and Emergency department.

Parents sought medical help as they saw the need arise. The visits to the family doctor gave some parents some form of relief and reassurance that the children's situation would improve but unfortunately this was not the case for all of them as all children ended up in the hospital. Parents also talked about the visits between

medical doctors and traditional healers simultaneously. Mother #8 described the reason of going between two different practitioners as the medicine prescribed by their family doctor did not seem to work.

> *The first day I noticed the red spot,* [and] *the redness was more noticeable on the second day, it was getting bigger as well, as if it was spreading. Then I took her to the family doctor but only pamol and a cream were given to help take the pain away. I have applied them for two days but no change, so I took her to the fofo Samoa.*
>
> *Yes, the temperature subsided but there was no change with the actual boil. But the reason why I took her to the fofo was to see if there was something to draw the discharge out, in case we take her in* [to the hospital] *and that will make her very sick, incise the boil and make her very sick, the high fever was gone but the boil was still there …. there was no change.* (Mother #8: Toddler)

Mother #7 applied ointment from the first visit to the doctor on child's skin but she had noticed that some sores were getting infected therefore a second visit to the doctor was necessary. Mother #7 felt reassured after taking her child to the doctor (for the second time) and oral antibiotics were prescribed. However, this might have come too late to save the child from becoming seriously unwell.

> *So we took him to the doctors and then you know the doctor gave him some antibiotics and … then at night it just, it got bigger, it was really fast. He* [the doctor] *gave him some* [antibiotic], *he said oh yeah it looks* [like] *it's getting infected I'm glad you brought him in while it* [has not] *get* [any] *worse. And we were like okay so we thought oh yes he's going to be fine, give him a couple of days. But that same day that we got that oral antibiotic, he took the first lot and then you know it was three o'clock* [in the morning] *by then his fever was just right up there.* (Mother #7: Toddler)

Similar to those mothers who sought both traditional and modern medicine one New Zealand born mother accessed help for her child by using services in the community such as the chemist before seeking doctor's advice.

> *So I knew straight away that it wouldn't be a pimple and my girlfriend is a pharmacist so I went down to the pharmacy and there's a thing you can buy like a … it's like a plaster and it draws it* [the pus] *out. I tried that but it didn't draw it out. It didn't work and we took her to day care the next day and they rang me from day care and say you need to take her to A & E. So I took her to* [A & E] *and they gave me antibiotics and sent her home and said if it grew take her back to A & E.* (Mother #10: Preschool)

After trying all other treatments such as sea water (child was told to go swim in the sea), herbal medicine, and ointment from the chemist on Child #2 while he was in the Islands, nothing seemed to work. On arrival to New Zealand, the sores resurfaced and mother decided to take her son to see the doctor.

> *Yes, after three days or four days, we arrived and that thing on his skin came back again it was getting worse …. we wanted him to see the GP. He gave us antibiotics and some cream to put on him.* (Mother #2: Teenage)

In search for healing and cure for the children one parent had to be very assertive and demanded an appointment for his child. This child was admitted immediately on this visit. While one mother decided to take her child straight to the hospital after ringing up for an appointment but no luck. The difficulties in accessing appointments in these Medical Centres were due to shortage of doctors.

> *So the next day his father …. rang the local clinic and tried to make an appointment but was told that they couldn't get in because they didn't have many doctors and it would take about two weeks and he didn't accept that. So, we went down and he demanded to see a nurse at least or someone who could see our son's bites.* (Mother #9: Toddler)

Because we're at ____ Medical Health Centre, I mean they're usually good but sometimes they've got one doctor on or there's no doctor or so I just, I try to do something myself. I take her straight to the hospital whether I can get in there or not. (Mother #3: Preschooler)

Children's health deteriorated rapidly

Parents were caught by surprises. The decisions to seek urgent medical help were determined by the outcome of the parents' assessment of the child's condition. As mentioned earlier, parents' commitment in monitoring and assessing the children's conditions from the time the sores first appeared aided them in their decision making. For example, the uncharacteristic behaviour and the worsening physical signs and symptoms presented with each child alerted the parents that something was not right with the child.

The obvious physical changes in the size of the 'pimple' or the 'spot' and the growth of the spot from a size of a pimple into a lump overnight was the main sign that alerted some parents the child was experiencing something more serious than what they initially thought. This child was admitted during his first visit to the doctor.

But … the day before he was admitted, his arm had become quite swollen and we were alarmed, we were pretty alarmed because we'd seen his arm reacted quite badly to bites in the past but never this bad and we were quite concerned because the second batch of bites that he woke up with the next night, not the first time but the second time, it didn't look like bites like it didn't have a head on them and they just looked like raised hives or rashes and they were on his body and on his other arm and on his back …. the hives were quite swollen they started to blister or bubble. (Mother #9: Toddler)

The mother went on to say,

His left arm was very out of shape, his right arm was relatively normal. But the swelling was so bad like with the various bites in and around it

that you could see it obviously and the blistering also on the top of the rashes and also the ones in and around his leg that the new ones ... that came up on his tummy and it was like the size of a golf ball just protruding out of his tummy. It was like very, very big. (Mother #9: Toddler)

The excerpts below give a description of how the parents of Child #7 dealt with their child's ordeal. When Child #7 felt very unwell, the parents did not make a connection between the small lump on his leg and his general health, given that the child was seen by the doctor during the day. It was only when the major changes on the child's leg were evident in the early hours of the morning, the parents realised it was the infection of the leg that had caused their son to behave in a way that was out of character for him. The parents could not believe how fast the infection spread in less than 12 hours and how it seriously affected the child. Symptoms such as high fever, vomiting and dehydration were also present. The mother said

We gave him Pamol, I thought oh he's just feeling unwell, but before that like during the day it was like you know a little five cent piece …. I thought he was just unwell, I didn't think it was anything to do with his leg. It wasn't until he kept crying then at three o'clock [in the morning] by this time I turned the light on, like because we only have the hallway light on. I turned the light on to give him his Pamol and you know he keeps crying and touching his leg and I pulled the blanket off and I looked and it was all pus and I thought oh my God look at his leg. It happened very fast. Like in the morning he was fine you know he was fine, he didn't show any symptoms of being unwell. It wasn't until three in the morning when we turned the light on and that five cent piece had gone [and the leg] *was all swollen and* [full of pus].

He kept crying and you know and [he] *looked like he was in pain. We reached out because* [he] *was little as well he couldn't really say what was wrong, and then we pulled the blanket off and we saw his leg. I said to my*

husband oh it might be his leg you know, because we took him to the doctors for that in the morning anyway. And then when we saw that oh my gosh, we were freaking out. We'd never seen that before so we didn't know what it was.

It was like about that much of it and it was all, it was like this big bubble on his leg, down here, it was a big bubble on his leg and he was crying and all around it was all red and he was crying and then he had a fever with it so we took him straight to A & E straight away and they admitted him and they said that oral antibiotics is not going to work. So he has to get a drip. He wouldn't eat and it we couldn't give him his antibiotics, he started vomiting as well. Like he was vomiting with it and he was all hot. Wouldn't drink anything, he wouldn't eat. So yeah that's when we took him, we could just tell he was dehydrating as well, really unwell. (Mother #7: Toddler)

Similar to the case of Child #7 the mother of Child #5 did not realise how serious her child's condition was until the child showed some unusual behaviour like constant, persistent crying and the deterioration in the appearance of the rash.

I thought they were just heat rash so I put vaseline on and then oh at night time I changed him again and then there were more of those, more spots, they were starting to get yellow and white. I thought pimples on his skin. So and then I just, I ignored it and so I thought it was just you know maybe he was scratching or something and then I ignored the rash for two days. It was just around the nappy area, you know. Then the next day I took my baby to my mom and then when I came back to pick him up my mom said to take baby to the hospital, but I haven't changed him at the time so, and then we got here [the family house] *we finished dinner and he kept crying and crying. I changed him ready to go to sleep and I saw like the whole here* [pointing to the nappy area], *you know all the pimples and like red and its like, all red, Yeah it was swollen.* (Mother #5: Infant)

The excerpt below is from a mother who did everything to ensure her child is being looked after. She used traditional herbs, sea water for bath, and ointment and creams from the chemist. When all these failed, she took her son to see the doctor and antibiotics were prescribed. According to the mother, the medications were taken as prescribed. But after a week being on antibiotics, the mother had noticed that things had deteriorated for her son. This is what she had to say,

> *Oh he was really, really, he's got a fever. And his body was all red and he* [was] *really hot, he can't even lie down. Just take off his clothes you know he wasn't comfortable so that's why made me feel like we rush him to the hospital.* (Mother #2: Teenager)

Mother #10's experience was similar to other mothers, as she acted with the intention to keep her child well and ensure the boil does not grow but she was surprised by how fast the boil grew in size. Child #10 went to preschool as usual and by midmorning things changed.

> *I went to the doctor, well I'd already been to the chemist and bought the stuff that you put on, it's like a plaster and then that didn't do anything. So then I took her to the doctor for antibiotics and they said if it grew any more to take her straight to A & E and it did overnight. It like tripled in size.* (Mother #10: Preschool)

> *I think it was like 10 o'clock, it was before midday, by 10 o'clock in the morning the day school said you know she's crying all the time so it hurt to sit down, it hurt to walk*. (Mother #10: Preschool)

Household activities

The study also endeavoured to find out the types of home remedies used by the families to aid and foster the healing of children's open skin sores in the homes. The availability of the first aid kits and their utilisation in the households were explored including the possibility of having other family members infected with skin sores. Three families kept first aid kits in the house while the other eight did not (Table 3).

The mothers who had first aid kits in the house did not mention the use of this resource when treating children's sores. However, what mothers used for treating children's sores and the rationale behind their decisions was an interesting finding. Exploring contacts children made with other family members who were infected with skin sores was important in order to ascertain any spread of infections in the household.

Family history of skin infection

Mothers were asked if there were other family members who had experienced skin infections who had close contacts with the children. Of the 11 families, six were reported to have family members with skin infections which range from one to two people per household. The relationships of the family members to the children were either they were cousins, a sibling, a friends, or a grandparent. Some of these relatives live with the children while others live elsewhere but have regular contacts. Of the six families, relatives from two families required hospital admissions. One was a teenager and the other was a grandfather in his 60s. The relatives from the other four families although had experienced recurrent skin infections they were not sick enough to get admitted.

Some mothers had some awareness that the infection had the ability to spread from one person to another. Mother #6 had suspicions that her daughter picked up the infection from the grandfather who was hospitalised with skin infections.

> *I thought that she had got it from my dad because my dad got an eye infection just before she did. I thought it was contagious. I thought because my Dad had the same thing she had and she'd been playing around him you know. So I thought she might have caught it from him but they* [staff at the hospital] *said she might have they don't know . . . . he was admitted to Wellington* [hospital] *because it was getting worse and a few weeks after that or I'd say three or four weeks then my daughter*

caught it so I thought it was contagious from my Dad. (Mother # 6: Infant)

Not long after, another family member of Child #6 also experienced an eye infection but this did not eventuate to anything serious. The infection was cleared within a day or two without medical interventions.

Child #11, the third child diagnosed with orbital cellulitis was also exposed to relatives with skin infections. Two teenage brothers had ongoing problems with recurrent boils but none of them was unwell enough to be admitted to the hospital. Mother #11 stated that one of her sons picked up the skin infection (boils) from a friend which later spread to the older brother.

Yes, one of my boys was staying with another family, [friend's family] *during Christmas time... and came back with boils and it all started from there.* (Mother #11: Infant)

For these boys, medications helped clear the boils but only temporarily. As Mother #11 stated '*they all healed* [after taking medications] *but then come back all of a sudden.*

Mother #11 did not associate the boils experienced by the older siblings and her daughter's eye infection. Except she put it down to something like, the child's eye was being stroked or hit by one of the siblings' fingernails by accident without her knowledge.

Child #5 who was admitted with nappy rash (staphylococcus positive) was also reported to have regular contacts with other cousins who have (query) flea bites. Child #5 was placed at the auntie's place during the day to be looked after by the grandmother while his parents were at work. This was where he made contacts with the cousins. Child #5 has an older sibling but somehow he was not affected.

> *I don't know because my sister's kids* [has skin rash] *it's a different kind of rash, small spots like very itchy you know, I'm not sure if there are fleas in the house, I'm not sure because but my niece, she has them.* (Mother #5: Infant)

Mother #8 also reported that her children had not experienced skin problems before but she had noticed that her nieces and nephews had skin problems like flea bites. While these cousins live in a separate household, they were regular visitors of the family. One of them was admitted with skin infections a couple of months before the interview took place. In contrast, Child #3, a preschooler, was always at home but her eight year old half-sister who travels back and forth to the father's place also experienced skin health problems.

> *My God, my eldest daughter, [she] gets them too, the flea bites or whatever they are, and they just spread all over, every part you can think of she gets them, especially when she comes back from her dad's house, she comes back there and she's covered in bites or something and they just kind, she will have one and then the next day there's five or six in the same area and the next day you know there's more. They come up in big huge, across her stomach, her legs, across her stomach, her legs, her arms, she ends up with scars all over.* (Mother #3, Infant)

Obviously the sibling of Child #3 had been suffering from recurrent skin infections like the siblings of Child #11 but he or she was also not sick enough to be hospitalised. For Child #2, none of the family members had skin infections prior to his hospital admissions, but his younger brother was later infected and successfully treated at the family doctor. Mother #2 did not mention if the younger sibling received the skin infections while in the Islands like Child #2.

Child #4 was the only participant who sustained an injury which later became infected. While there was no mention of a family member with skin infections from

bites or fleas, mother reported that the older brothers were seen at the hospital with injuries due to sports and domestic issues.

The impact of mothers' beliefs on children's treatment

Home remedies received by children in the study included forms of traditional practices and those prescribed by doctors. A difference in decision making whether to engage in traditional medicine or western medicine was evident amongst New Zealand born parents and those parents who were born and raised in the Pacific Islands. The transcripts revealed that New Zealand born parents engaged in conventional medicines only while Pacific Islands born parents practised a combination of traditional and conventional medicines.

Four mothers who were born in the islands used traditional methods and practices they were familiar with on their children before seeking medical help. Included in this four was one mother who was born in the island but raised in New Zealand as a child. The use of sea water, herbal leaves, applying finger pressure on boils, and the use of breast milk were some of the methods used by the mothers who were born in the islands. Mothers' decisions to apply these methods were based on their beliefs and what they understood worked from past experiences. As some of the mothers described, it is a practice they were familiar with.

Despite their tendency towards the use of traditional practices, mothers and the traditional healer identified the need to seek medical help when they realised the children's situation were not improving. In one case, it was the traditional healer who recommended the child to be taken to the hospital the next day to clean out the wound but the child's condition deteriorated in the evening and was immediately taken to the hospital.

Two Samoan mothers who were raised in Samoa provided traditional treatments for their children. One mother opted for this option when the medicine from the doctor

did not work, while the second mom started with the traditional method before she sought medical help. This mother tried what she thought was the usual practice and effective way of treating boils in the island by pressing or squeezing the boil with her thumb.

> *I tried to press it* [with thumb] *like they say if you do it, it will go away, but I've been doing it but it just got worse and the eye of the boil appeared. I took her to the Samoan fofo* [Samoan healer] *hoping to draw the pus out by using the Samoan medicine. It was a leaf of a plant . . . . I don't remember the name* [of the plant]. . . . *we just covered the boil overnight with it, that helped draw the pus out, but* [child] *didn't take herbs orally.* (Mother #3: Preschool)

While the New Zealand European born mother was aware of this practice, she did not support it given the advice she received which was a complete opposite from what the mother who was born in the Islands mentioned.

> *They said the more that you touch it* [the boil] *the bigger it would get so I didn't touch it and she wouldn't let me near it, it was so sore for her.* (Mother #10: Preschool)

Two children who had similar problems (eye infections) received different treatment from their Samoan mothers, one of whom was raised in Samoa and the other in New Zealand. The mother who was raised in New Zealand ignored the problem and did not provide any sort of treatment but monitored child's condition closely and sought medical help when the child's eye got worse. The mother who was raised in Samoa thought her child's eye was infected and attempted to do something about it hoping it will improve the situation.

> *I just washed it with a warm flannel, then instilled drops of my breast milk thinking she's got an eye infection*. (Mother #11: Infant)

Health information for parents

One of the focal points of this study was to find out how much information on skin infections parents had accessed while caring for their children at home. The final interview question I asked the mothers was if they had received any form of health education or informal training sessions in relation to skin infections during the course of their child's skin infection ordeal. Ten of the mothers made it clear that they did not receive any information specific to the care of simple skin sores in the homes. However, two of the 10 mothers mentioned that the importance of hand washing was discussed with them while their children were in the hospital. One mother did not discuss this topic during the interview.

Limited access to skin infection information

'No' was the direct straight forward answer from the mothers who stated they did not receive any form of trainings on skin infections while caring for their children in the homes. Despite the contacts made with health professionals in primary health care settings, mothers had very little recollection of health information on skin infection being offered to them. Similarly, mothers had the same experiences in the hospital settings. Child #3 had previous admissions to the hospital and the mother was adamant that she was not provided with the information necessary for the ongoing care of her daughter. This is what she had to say,

> *No. Never. I mean they tell you certain stuff at the hospital. But then they don't give you the information, no nothing. See you later. You know, that's the end of it.* (Mother #3: Preschool)

One mother did not recall health professionals giving her information on how to care for or prevent skin infections instead they were more interested to find out what happened she said, *'they only asked me why it happened'.*

While one mother mentioned that she was given some sort of information, she could not recall what information was given to her. English was her second language.

Oh well yes, they gave me information about that and I forgot what they told me. They told me about that, but I forgot what it is called. (Mother #2: Teenager)

Mother #4 had some recollection of previous conversations with the nurses and doctors when her daughter was previously admitted for diabetes. Health professionals emphasised the importance of seeking medical help earlier once daughter receives injuries to her skin.

About two days [after sustaining the injury] *when she felt the pain, she said its better to go to the hospital, because the nurses/doctors told us any problem with the skin, even if it's just a minor scratch*, *we should bring her to the hospital* [referring to the GP service]. *They* [doctors and nurses] *said she should have come in on the first day she got injured. We have to be very cautious with her diabetes.* (Mother #4: Teenager)

Two parents recalled health professionals had discussed the importance of hygiene and hand washing when their children were in the hospital. However, Mother #6 mentioned the difficulty in trying to teach her two year old daughter all the time, and for Mother #8 she recalled the messages on hygiene around the house and the use of proper clothing and linen types on children.

They told me to always wash her hands, you know wash her hands. Well I try but she just has to be taught all the time. [If] *I tell her to go wash her hands, she's terrible. If she's playing out side or go to the loo I have to tell her all the time to wash her hands, but if I'm not here I don't know if she ever washes her hands you know she's that kind, very grumpy and just walks away.* (Mother #6, Infant)

Ahhh, Yes, the doctors and nurses spoke to us about the hygiene thing . . . . when they go outside, play, eat, wash, anytime you touch food, you should

always wash your hands, and plus the types of soap . . . . plus linen, [and] *clothes, some children are allergic.* (Mother #8: Toddler)

Mothers want to know more

The data revealed that the mothers in the study wanted information on skin infections. Mother #1 was one of the mothers who took her child to the doctor more than once before he was admitted to the hospital. According to her accounts, she bathed her child as directed using cream prescribed. However, her child still ended up in the hospital. She was asked how she would prefer the information on skin infections to be delivered in order for it to be of good use to herself and other mothers in the future, this is what she had to say,

Well I'd like more information really . . . . more information . . . . like keeping them in the loop and then teaching them how to deal with it, and when and why there's certain precautions of doing what you've got to do the way you've got to do it, yeah, really letting them know. (Mother #1: Infant)

Well I like to learn more about skin, the wounds and skin and how to treat it before it gets worse, you know. (Mother #6: Infant)

Mother #3 also stressed the importance of giving mothers more relevant information and she suggested that mothers should be more actively involved in the care. When children are in the hospital, the mother questioned the effectiveness of giving mothers just a piece of paper, referring to pamphlets, without giving proper directions on a one-to-one basis for the mothers to follow.

To be practically involved and for them to show us how to do it, I mean, if somebody is given a piece of paper, [the parent should be shown] *this is what you do to your child. If somebody will then shown you practically, you know, just show you how to do it on your child. You know your own child and then you know what you're doing and you make sure they give you all the relevant information you need. Because there's no point in giving a parent a*

> *little bit of information and then they have to make of it what they can. I think it's important to get all the details on how to fix it.* (Mother #3: Infant)

In support of her statement above, Mother #3 went on to say that,

> *I just think that . . . . when they give parents things like these . . . . they* [parents] *should be more involved,* [know] *how infections occurred, not just give them something, you know, see you later you can go home now, I will see you next time thanks for that. They should try and prevent it from getting to that stage, those are* [the] *things that are lacking. They should educate the parents.* (Mother #3: Infant)

Mother #4 talked about her lack of knowledge on skin infection and how the traditional knowledge she acquired while growing up in the Islands gave her the confidence to nurse her child's sores at home. However, she would have welcomed new knowledge on how to care for skin sores. When she was asked whether information from the nurses on skin infections would have helped her cared for her child at home, this was her response,

> *Yes I think so, yes. I don't know anything about skin infections. But I thought about it at the time while I was treating him I thought you know this is how I treated him in Tonga it will make it a bit better but in the future time I'd rather learn more about skin infection.* (Mother #4, Teenage)

In retrospect, two mothers discussed the knowledge and understanding they acquired from the ordeal. While the experience could have been traumatic they have turned it into a learning experience and this has prepared them for future encounters with skin infections.

> *Yes, I guess the admission to the hospital has taught me these things so I know what to do if it happens next time.* (Mother #8, p. 8)

The excerpts below from Mother #5 highlight the difference in her understanding of caring for her child before admission and after discharge and after receiving health information from health professionals in the hospital. Before admission, mother witnessed the rash on baby's skin for a day or two but it did not matter until child became very unwell. Mother was shocked to find out that the little pimples on child's skin which she ignored had made her child very sick. When baby became unwell, it was difficult for the mother to comprehend how it all happened. She claimed that the incidence almost cost her baby's life. The information she had received during baby's admission had made her more aware of the importance of attending to the little details while caring for baby, for example the importance of hand washing and clean short nails. Mother was more cautious in caring for her baby to avoid any repeat of the incidence.

On admission:

> *They told me that rashes like this happen to wee ones and I ask if it* [was] *something I ate . . . . because at the time I was still breastfeeding and then, yeah I just wanted to know what's the cause? They couldn't come up with an answer. They said it maybe heat rash, it may be when baby are born their skin are really sensitive to the new world.* (Mother #5: Infant)

After discharge:

> *I keep checking his body for blisters and then like one or two* [and I] *make sure my hands and my nails are clean, or wear cloves, cut them before they grow and then wash hands* [and I] *make sure it's very clean and don't make the nappy too tight* (Mother #5: Infant).

Conclusion

This chapter reveals the findings of the study. The characteristics of 11 mothers and 11 children are identified. Mothers being the main participants shared the experiences they and their children encountered during serious skin infections that led to children's hospital admissions. The mothers main characteristics included were

their age, ethnicity, place of birth and employment status. A brief outline of the children's health condition and the events that led to the hospital admissions were also provided. Tables illustrating these profiles are included. Children's clinical diagnosis and aetiological were discussed which ranged from infected insect bites to orbital and preorbital cellulitis and staphylococcus aureus and streptococcus pyogenes being the dominant bacteria responsible. Main themes that have emerged from the key findings of the events that led to the children's hospitalisation are 1) *Parents in action*; 2) *The search for healing and cure*; 3) *Household activities*; and 4) *Health information for parents*. Discussion on the findings with respect to the study objectives is presented in the next chapter including the limitations of the study.

CHAPTER SIX: Discussion

Introduction

The findings of this study give insights into the ways parents sought to manage their children's skin infections in their homes and the activities that took place before the children required hospitalisations. While there is evidence of high numbers of Pacific children admitted with skin infections, how these infections are managed at home by the parents is poorly understood. This is the first known study that has captured mothers' accounts describing their understanding of managing children's skin infections in the community. These findings present and inform the reader with a better understanding of the parents' and children's general experiences with skin infections in the primary health care settings that resulted in hospital admissions. These findings also enhance the existing knowledge around relevant topics on the health of Pacific children. This chapter will discuss the key findings and the significant issues that stood out from these findings.

This chapter concludes with a closure to the thesis by discussing implications for nursing practice as well as recommending future work and research in areas that need further understanding.

Exposure to known risk factors

It is known that children's exposure to factors such as immunodeficiency conditions, unhygienic environment, overcrowding household, poor standard of living, can put them at risk of poor skin health (Bailie et al., 2005; Currie & Carapetis, 2000). The results reveal that children in this study were not exposed to some of these conditions. For example, all children except two did not have chronic or ongoing health problems that could increase their tendency to developing skin infections. Before the children developed the infections that led to the hospital admissions their health and general well being was in good status. Children were also observed to live in non overcrowding homes and their homes were clean and tidy. Children's homes were neatly presented and were well kept both inside and outside. These findings are

consistent with findings from a study conducted overseas which suggests that socioeconomic status has no association with the incidence rate of skin infections (Koning, Mohammedamin, van der Wouden, van Suijlekom-Smit, Schellevis, & Thomas, 2006).

While the study shows this positive trend for the children, the results also show that children had regular contacts with other family members who had previously suffered from skin infections. The regular and close family contacts may have put the children at risk by exposing them to the infections. Some children ended up in the hospital with boils and cellulitis from unknown causes as the child did not appear to have an open skin sore prior to developing the infection. Mothers claim these infections came out of nowhere. This information is important as while the key messages on skin infections focus on the individuals self care, the messages on the possibility of the spread of skin infections from other family members need to be highlighted.

Importantly, mothers had a very good understanding of the importance of maintaining hygiene practices in relation to the child's skin health. Mothers' accounts reveal the commitment and the effort most parents put in the hygiene care of the child to ensure the child's optimal health was maintained. This may explain some of the mothers' disbeliefs and confusion as to how the children came into contact with the infections and how they became seriously unwell all of a sudden.

Hygiene is the key health message in the prevention of skin infections and it is important to continue preaching this message. However, the findings reveal children who live in clean environment are also susceptible to skin infections. As noted above, mothers have a good understanding of hygiene practices in the homes. Therefore while it is important to stress the importance of promoting hygiene, it is also vital to take a look beyond hygiene and socioeconomic factors and see what other issues might contribute to the high rate of skin infections in Pacific children. For example,

the effectiveness of treatments children receive when they first visited their family doctor and the compliancy with medications prescribed. Koning et al. (2006) comment on the increased antibiotic resistance in the treatment of impetigo hence the importance of evidence-based knowledge on the choice of treatment. While medications compliancy is considered important on children's skin infection it was not thoroughly discussed with the mothers due to the accurate recollection of the information. It is understood that a standardised treatment guideline for skin infections is in the pipeline (Fawthorpe, 2007). Evidence-based guideline should assist health workers to provide children with the most effective treatment available.

Mothers' understanding of skin infections

The first main theme which emerged from this study is 'parents in action' indicating parents had recognised and monitored their child's symptoms and how they responded. Phrases such as *I thought it was just a pimple* or *I thought it was just a rash* sum up the mothers' initial perceptions on skin infections as something minor and harmless to the children's health. These perceptions displayed by the mothers are not surprising as in my experience skin sores are viewed by many as something minor that will clear up on their own in time. The literature acknowledge that this widely held misconception is often misleading due to the fact that the majority of skin infections require medical treatment to prevent the development of complications (Chambers, Moellering, & Kamitsuka, 2008; Hunt, 2004; Owen 2007). Children in this study are evidence of this as they were admitted for serious skin infections which started from an insect bite or a minor sore which parents thought was just a pimple that will eventually go away on its own. Parents' perceptions and views of the pre-existing symptoms of skin infection as something minor and harmless are critical as they can determine parents' initial responses and education regarding this is important.

Despite parents being sceptical about the pre-existing symptoms of skin infections and how they occurred, the majority took specific actions while others decided to

wait and see. The 'wait and see' approach taken by parents in this study is consistent with the results of an overseas study by Spencer (1984) which reveal strong evidence of parents taking the 'wait and see' approach without taking specific actions. Parents' interpretation and understanding of children's symptoms in the current study varied.

Cunningham-Burley and Maclean's (1987) acknowledge children's illnesses symptoms as often being 'context-bound [and] subjective' in nature. The meanings of serious and minor symptoms are opened to interpretation and many symptoms are only regarded 'as serious in retrospect either by lay people or professionals' (Cunningham-Burley & Macleans, p. 249). This may explain the rationale behind the mothers' decisions to wait and see and not take specific actions. According to these mothers, while the children presented with symptoms they were normal and fine so there was no urgency to act. However, the mothers were quick to act when the children's situations changed. The findings reveal the majority of the visits to the hospital were instigated by the parents. Although mothers had different interpretations of the children's symptoms they all acknowledged when the children needed urgent help and acted immediately.

The 'wait and see' approach undertaken by mothers in this study would be considered a 'laid back' approach by some health professionals. This is noted in a New Zealand study by Buetow et al. (2002) where health professionals view Pacific parents as taking a laid back approach and unwilling to understand. The general assumption is that Pacific parents have a 'relaxed attitude towards things' as they think things will improve on their own or what is termed as 'unhealthy optimism' by Buetow and colleagues.

The majority of parents in this study did not display a 'relaxed attitude' but took actions immediately. Parents in this study were forthcoming with the information and overall the results reveal that interventions in the community did not make a difference to the children's health outcome as all children ended up in the hospital.

While children were generally well and healthy prior to being infected, mother's accounts revealed children's conditions were serious and acute on admissions. Most of the children were acutely admitted to the hospital for the purposes of administering intravenous antibiotics and/or performing minor surgeries. These are extremely costly ways of dealing with the health issue. Not only is the cost to the health care system, but the trauma children allegedly endured in the ordeal. There is also the cost to the families and endless GP visits, waiting hours in the A&E in the early hours of the morning, and days spent in the hospital for each admission.

As alluded to earlier in the previous chapters, Pacific children make up a high number of avoidable hospital admissions however the understanding of those responsible for the children's care in the homes are not being explored. This study brings out the voices of those parents who cared for their children in the homes with the intention to keep them well but were not successful. It is crucial that the voices of these parents are heard and their experiences are acknowledged for future planning and preventative interventions. Parents should be considered by health professionals as a valuable resource in understanding and managing children's illnesses (Hopia, Paavilainen, & Astedt-Kurki, 2004). Mothers' cultural and traditional beliefs played a major role in the treatment of children's sores. Mothers relied on this knowledge to guide them through the ordeal. Utilising traditional medicine for ailments is a practice that is popular with Pacific people. Pacific families will continue to use traditional medicines for healing and cure (Finau, Tipene-Leach, & Finau, 2004) when it is considered necessary.

First aid kits were not considered in the care of children's sores. The mothers who kept first aid kits in their homes did not mention the use of these resources for when caring for children's sores. Acknowledging existing knowledge and beliefs is important as this contributes to the success in the process of educating parents (Yoo et al., 2007).

Parents' awareness of their responsibilities

The willingness and the determination of the parents to protect their children from harm when the sores were first identified were remarkable findings in this study. The majority of parents were found to be highly motivated and remained committed throughout the course of the children's illnesses by intervening and pursuing treatments once the symptoms were first recognised. Despite their innocuous perceptions and uncertainty on how the skin changes occurred, parents took actions which they thought were appropriate at the time to ensure children's optimal health was maintained. In addition, the parents continued to closely monitor the children's conditions which led to urgent visits to the hospitals.

'The search for healing and cure' was the second theme that emerged from the data which further demonstrated parents' active roles in this study. Parents were actively seeking help in the community before a child's admission to the hospital. These findings are consistent with the findings from previous studies on Pacific children (Young, 2001) and Maori children (Bolitho, 2004) where children were seen by their family doctors more than once before admissions.

Delayed presentations and poor utilisation of primary health care services are suggested to be the main reasons for Pacific children's acute presentations to the hospitals. The issue of delay in seeking medical help for Pacific children as stressed in the literature was dismissed by Young (2001). Some children in Young's study not only visited the doctors more than once but were also seeing more than one doctor in the community. Maori children in Bolitho's (2004) study had the same experiences for a number of reasons. Findings produced from both studies revealed that parents of Maori and Pacific children were able to act and accessed health services for their children as soon as they were able. Similarly, although the parents in this study initially had doubts about the occurrence of the skin sores, they were well equipped in recognising and acted on the children's symptoms as they first became apparent.

However, despite parents best effort to provide some sort of interventions at home, all the children in the study ended up in the hospital.

Having the confident to advocate for their child was a significant finding for one couple. After being told that there was no appointment available but the dad insisted and took the child to the health centre to be seen. Parents persistence paid off as child was admitted immediately. Not all parents have the confident to advocate for their children. This Pacific couple had the benefit of speaking English as their first language and were able to communicate and articulate their child's needs very well although did not show sign and symptoms of being unwell. Some parents may not have the confident to advocate for their children which can lead to further delay in seeking treatment therefore unfortunate circumstances for the children may arise.

Primary health care nursing

The apparent lack of primary health care nursing contact with parents and children is evident in the study. For example there was no mention of health contacts with Plunket nurses for children under five years old or Public health nurses visits for school age children. These nursing services are free of charge to all New Zealand children. The absence of a Well-Child Provider for all the mothers with children under 5 years old is remarkable. While this was not explored in depth as this was not the purpose of this study, none of the mothers with infants could recall the last time their child was visited by a Well Child Provider. It seems all parents were concerned about their children's wellbeing but all remained singularly uninformed due to the lack of health contacts from health providers. Child health has been identified as one of the priority areas in the New Zealand health system (Ministry of Health, 1998) and Pacific children's health was a priority area in the plan to improve the health of Pacific people (Ministry of Health, 2002). Improving access of children to primary health care services and reducing the incidence of infectious diseases were highlighted as some of the key objectives (Ministry of Health).

Access to primary health services is seen as opportunity to prevent children from being hospitalised unnecessarily. The high number of cellulitis admissions for Pacific children has been viewed as an indication that access to primary healthcare is particularly poor for Pacific children (Donaldson, 2003). This view is not supported by the findings of this study as the majority of children were able to access and had utilised primary health care services before hospital care was required. The majority of children visited the doctor more than once and parents were obligated to self-refer to the hospital as children's health deteriorated. Some were admitted on their first visit to the GP as the conditions were acute on presentations despite the home interventions and previous GP visits that took place.

Health information

There was not much to discuss when the mothers were asked about the health information they had received while caring for their children in the community. The data revealed that none of the mothers appear to have received any clear preventive health education. For those who gave comments on the matter, the information they received was short and brief and often lacked direction. Two mothers mentioned hand washing being discussed with them while in the hospital however one mother admitted the difficulty with the practical side of it in ensuring her daughter practices the hand washing everyday. In one case, the mother did not understand the information given to her while in the hospital as English was her second language. While two mothers were fortunate to be reminded of the hygiene and hand washing practices, the information on how to care for the actual sores in the homes was not provided. It was clear from the mothers' responses that the majority of them did not access the appropriate information and the support that was required in order to care for the children's sores at home.

One remarkable finding in this study is that the Well Child Tamariki Ora booklet does not include preventative health information on skin infections. It is one indication that skin infections remain a low priority for New Zealand compare to other child

health issues such as child health immunisation. Given that skin infection is a growing health problem for children, this information should be included in this child health resource.

Understandably, there is a wide variety of health resource on skin infections available in the community. The purpose of the Skin Infection Project currently running is to help reduce the high incidence of skin infections in New Zealand. The project is successful in producing rich resources including a website on skin infection. The fact that the mothers did not mention these resources opens up questions about the accessibility, the utilisation and the effectiveness of these resources for Pacific families. Pacific children continue to make up the highest number of skin infections (Fawthorpe, 2007). There is no question about the usefulness of the current available resources to the wider population. However, it is important to ensure that the specific needs of those highly affected with a specific health problem are taken into consideration when producing health resources. A survey conducted overseas by Keatinge (2006) reveals that some parents prefer for the information about the health care of their children to be discussed with them rather than a printed source. In my experience working with Pacific people, their preference is similar and some parents would welcome a face-to-face health talk with health workers.

Study limitations

Pacific mothers and children in this study reflect the population of Pacific children and their families in New Zealand in relation to their races and ethnicities. However, the interpretation and the generalisability of the results must be treated with caution given its limited sample size. Nevertheless, the researcher would like to point out that despite the study's limited sample size its findings are congruent with findings from previous studies in relation to parents' awareness of their responsibilities and children's access to primary health care services as discussed above.

As acknowledge in the Chapter Four the methodology chosen also has its limitations. These include the information being collected is very superficial as the study did not attempt to ask why things happen the way they do. It simply describes a phenomenon which was the main objective of this study.

Implications for nursing practice

The issue of poor health for Pacific children has been documented for sometime and has been given priority in improving health outcomes for Pacific people. Skin infections for Pacific children have shown an increase in number despite the work currently in place. This is a challenge for Pacific nurses and those nurses who work in the Primary health care. The positive findings were that parents were determined, alert and active and have used their knowledge in the care of their children. This is encouraging and it is important that these parents are supported by providing the extra support in areas where parents need them. The limited qualify Pacific nursing workforce requires nurses who work in the community to establish good relationships and be well prepared to work with Pacific families.

Practice nurses in General Practices, should be more vigilant in their assessment and the follow up of children when present with minor skin sores by using a clinical guideline in the practices. A close working relationship with a small number of Pacific nurses in the community for close follow ups of children whether they are under the same PHOs or not is important to avoid unnecessary hospital admissions. The same applies for nurses in the wards where children are admitted. A more coordinated referral system when a child is discharged for appropriate follow up is important to continue the support and health education as necessary.

With the high number of avoidable admissions in Pacific children, more Pacific nurses should be encouraged to work in the areas of Public health and primary health care where preventative work takes place.

Recommendations for future work and research

Further studies are needed for better understanding in the following areas. The recommendations arise from the data analysis and subsequent discussion supported by the literature. This study recommends the inclusion of preventative information and the management of minor skin infections in the Well Child Tamariki Ora booklet, for the purpose of all parents with young children to have access to this information.

Further studies are needed for better understanding in the following areas.

- To investigate the effectiveness of the treatments children receive when visiting the family doctor. More research is necessary to further examine the types of treatment prescribed by different doctors in health centres and the effectiveness of these treatments.

- To investigate the follow up for those children presented to the family doctors with minor sores and the role of nurses in the continuation of the children's care.
- The need to establish the effectiveness of the available health resources for Pacific families would be valuable.

Conclusion

This section brings this thesis to close. The findings of the study have shed light into one area of health concerns of Pacific children in which very little is understood. The central themes that have emerged have illuminated mothers understanding of managing their children's skin infections in the homes and have shown that parents have been actively involved in the care of the children. The methodology used was the most appropriate one to address the study objectives as the phenomenon under study did not necessarily need in depth information but the simple descriptions of how parents manage their children's sores in the homes.

Mothers in this study have shown their determination and willingness to understand and wanting to know the most appropriate way of dealing with skin infections to ensure their children's health is maintained. With the lack of access or interactions with nursing services while children were developing the infections, mothers were unable to gain the health information. Although children were seen by their family doctors, I believe close contact and on-going monitoring by the nurses in the community could make a difference to the outcome of the skin infections in children. The knowledge gained from this study should help those involved in the care of Pacific children particularly nursing to help bridge the gap for future improvement in health care delivery in the community.

The general perception around skin infections in children as a benign condition has to change. People need to approach skin infection with a more serious attitude as skin infections continue to spread amongst the communities which lead to unnecessary hospitalisations of the young children and often result in complications such as septicaemia and osteomyelitis, glomerulonephritis and even death. It is important that the health of Pacific children is protected from these unfortunate circumstances through adequate Primary health care interventions and closer working relationships with the parents.

APPENDIX 1: Ethics Approval

Health and Disability Ethics Committees

Central Regional Ethics Committee
Ministry of Health
Level 2, 1-3 The Terrace
PO Box 5013
Wellington
Phone (04) 496 2405
Fax (04) 496 2191

16 August 2007

Elaine Ete-Rasch
Whitireia Community Polytechnic
6 Dallas Court
Miramar
Wellington

Dear Elaine

CEN/07/06/039 - Skin and wound management in the homes of Pacific children hospitalised with skin infection
Elaine Ete-Rasch
Whitireia Community Polytechnic

The above study has been given ethical approval by the **Central Regional** Ethics Committee.

Approved Documents
Information sheet and consent form version 2, dated August 2007

Accreditation
The Committee involved in the approval of this study is accredited by the Health Research Council and is constituted and operates in accordance with the Operational Standard for Ethics Committees, April 2006.

Progress Reports
The study is approved until **December 2008**. The Committee will review the approved application annually and notify the Principal Investigator if it withdraws approval. It is the Principal Investigator's responsibility to forward a progress report covering all sites prior to ethical review of the project in **August 2008.** The report form is available on http://www.newhealth.govt.nz/ethicscommittees. Please note that failure to provide a progress report may result in the withdrawal of ethical approval. A final report is also required at the conclusion of the study.

Amendments
It is also a condition of approval that the Committee is advised of any adverse events, if the study does not commence, or the study is altered in any way, including all documentation eg advertisements, letters to prospective participants.

Please quote the above ethics committee reference number in all correspondence.

It should be noted that Ethics Committee approval does not imply any resource commitment or administrative facilitation by any healthcare provider within whose facility the research is to be carried out. Where applicable, authority for this must be obtained separately from the appropriate manager within the organisation.

Yours sincerely

Claire Yendoll

Claire Yendoll
Central Ethics Committee Administrator

Email: claire_yendoll@moh.govt.nz

APPENDIX 2: Locality Organisation Approval

HUTT VALLEY DHB

30 July 2007

Ms Elaine Ete-Rasch
6 Dallas Court
Miramar
WELLINGTON

Elaine.ete-rasch@whitireia.ac.nz

Dear Elaine

re Research Application: Skin and wound management in the homes of Pacific children hospitalised with skin infection

Thank you for forwarding your research application for completion of the Hutt Valley DHB's internal approval process for clinical research.

I am pleased to advise that approval has been granted – documentation is attached. On completion of this study please forward a copy of the final report for inclusion in an annual report to be developed of all clinical research activities undertaken throughout the year in Hutt Valley DHB.

Yours sincerely

Helen Smith
Service Manager, Quality
Hutt Valley District Health Board

Hutt Valley District Health Board
High Street Private Bag 31907
Lower Hutt New Zealand
Telephone +64-4-566 6999
Fax +64-4-570 9228
Fax Hospital +64-4-570 9001

APPENDIX 3: Recruitment Flyer

SKIN SORES OF PACIFIC CHILDREN

Talofa lava, Kia-Orana, Malo e lelei, Malo ni, Fakaalofa lahi atu, Ni Sa Bula Vinaka, Warm Pacific greetings

I am seeking Pacific parents who live in the Hutt Valley, Porirua and Wellington area, whose children had been admitted to Wellington, Kenepuru and Hutt Hospital for skin infections, to take part in a research study.

Findings from this study will inform the development of appropriate health education programs and health services for Pacific children.

Please contact Elaine Ete-Rasch for more information

Work Ph: 2373100 Mobile: 0210623096 After Hrs: 04 3881951

APPENDIX 4: Participation Request Form

Skin Infection of Pacific Children Study
Participation Request Form

Talofa lava, Kia-Orana, Malo e lelei, Fakaalofa lahi atu, , Malo ni, Nisa Bula Vinaka, Warm Pacific Greetings

This form will give you, the potential participant for the above study, the opportunity to provide the researcher, Elaine Ete-Rasch with your contact information so that she could contact you. It is important that you make a fully informed decision to participate in this study, therefore you will be provided with detailed information about the study before making a decision to participate.

Do you agree to be contacted by Elaine Ete-Rasch regarding the above study?

Yes ☐ No ☐

Please write your name and your preferred contact details here

Name:_____

Home phone number:_____ Work phone number:_____

Mobile phone:_____ Email address: _____

Otherwise you could contact Elaine Ete-Rasch on the following:

After hrs: 04 3881951

Mobile: 0210623096

Email: Elaine.Ete-Rasch@whitireia.ac.nz

Thank you for completing this form. Please return in the stamped addressed envelope attached.

APPENDIX 5: Participant Information Sheet

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

PARTICIPANTS INFORMATION SHEET

RESEARCH TITLE: Skin and wound management of Pacific children

Talofa lava, Kia Orana, Malo e lelei, Fakaalofa lahi atu, Malo Ni, Nisa Bula Vinaka
Warm Pacific greetings.

My name is Elaine Ete-Rasch. I am a Samoan nurse and I am working as a nurse lecturer at Whitireia Polytechnic Porirua, in the Bachelor of Nursing Pacific Program. I am conducting this research study to fulfill a Masters of Art (Applied) in Nursing degree through the Graduate School of Nursing Midwifery & Health (GSNMH) at Victoria University of Wellington.

Background information and purpose of study
While skin infections are highly preventable, they are known to result in some serious health problems in children if not treated early and effectively. A regional survey was conducted in 2004 in the Central Wellington and Hutt Valley area found that skin infections are a significant and a growing health problem amongst New Zealand children. Pacific and Maori children affected the most compare to other New Zealand children. Overall, more Pacific children are admitted to the hospital with infected skin sores than Maori and European children. High number of hospital admissions of Pacific children in this area is one of the reasons for choosing this topic.

The purpose of this study is to understand how minor sores of Pacific children are being treated in their homes before admissions to the hospital. The study will look at how and what resources are used to treat children's sores before they become infected.

Your involvement in the study
Taking part in this study is completely voluntary. If you decide to take part in this study, information will be obtained from you in a form of interviews. There will be 1 to 2 interviews with each interview lasting between 40 to 60 minutes. These interviews will be tape recorded with your permission. This is to ensure accurate recording of the information. You may refuse to answer any questions during the interview and you may stop the interview at any time. You have the option of keeping these tapes at the end of the study. You may withdraw from the study at any time you like and you have the option of removing your data from the study.

GRADUATE SCHOOL OF NURSING, MIDWIFERY & HEALTH
PO Box 600, Wellington, New Zealand
Phone +64-4-463 5363 / 0800 108 005 Fax +64-4-463 5442 Email nmh@vuw.ac.nz
Website www.victoria.ac.nz/nmh

Benefits of the study for the participants
This study cannot promise any personal benefits for you. However, the information gained will be useful in helping health workers understand what our Pacific families need in order to maintain healthy skin for our children in their homes and help keep them away from the hospital.

Costs involved
There is no charge involved if you decide to participate in this study. However, if you end up travelling for interview purposes, you will be given a petrol voucher.

Participants will not get paid for participating in this study. A small gift or meaalofa will be presented at the end of the study in appreciation of your time and your valuable contribution.

Accessing an interpreter
Interpreters are trained people who can help you with the language if English is a problem for you. You have the right to ask for an interpreter in other Pacific languages. The interpreter will be paid by the researcher. The researcher is Samoan and she speaks fluent Samoa language. Therefore you don't necessarily need an interpreter if you are Samoan. However you may have a family member, a friend or a support person to help you understand the risks/benefits of this study and any other information you may require.

Privacy & Confidentiality
All personal information about you such as your name, date of birth, will not be revealed in this study. This information will be kept in a secured locked file. This information will only be accessed by the researcher, academic supervisors, and the person who will help with transcribing the data. The findings will be presented as a group data.

No material which could personally identify you and /or your child will be used in any reports on this study. However, quotations from interviews will be used in the final written work of the study.

Information storage
All information about this study will be kept in a locked place at the Graduate School of Nursing and Midwifery & Health (GSNMH) at Victoria University of Wellington and Whitireia Community Polytechnic

If you have any questions regarding your rights as a participant in this study you may wish to contact an independent Health and Disability Advocate by telephone 0800 423 638. You can access a Pacific advocator through these contact details,
Free fax (NZ wide) 0800 2787 7678 (0800 2 SUPPORT) Email advocacy@hdc.org.nz

This study has been approved by the Central Regional Ethics Committee
If you have further questions about the study please feel free to contact me at home in the evenings on phone number 3881951 or during the day on 2373100 ext 3124 or on the mobile phone 0210623096.

You may also contact either of my supervisors who are: Dr Katherine (Kathy) Nelson on 463 6138 at Victoria University of Wellington or Dr Karen McBride-Henry on 3855999 ext 4813.

Or my Pacific/Academic mentor who is Dr Margaret Southwick during working hours on telephone 2373100 ext 8190

Faafetai tele lava,

Elaine Ete-Rasch

APPENDIX 6: Participant Consent Form

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

PARTICIPANTS CONSENT FORM

Research Title: Skin and wound management of Pacific children.

Name of Principal investigator: Elaine Ete-Rasch
Position: Nursing Student Master of Arts (Applied) at Victoria University of Wellington
Supervisors: Dr Katherine Nelson & Dr Karen McBride-Henry.

I _____(full name) give my permission to participate in the research study mentioned above.

In giving my permission I acknowledge that,

1. I have read the Participants Information Sheet for the above study and have been given the opportunity to discuss the information and my involvement in the research with the principal investigator, Elaine Ete-Rasch.
2. The procedures and time involved in the study have been explained to me by _____and questions that I have about the project have been fully explained to my satisfaction.
3. I am aware I have the option of allowing my interview to be tape recorded to ensure an accurate recording of my responses.
4. I am aware that phrases from the interviews may be included in the thesis and or publications from this research study. These quotations will remain anonymous.
5. I understand that my involvement is strictly confidential and no information about me will be used in any ways that can reveal my identity throughout the study.
6. I understand that I can withdraw from the study at any time prior to the beginning of data analysis by advising the principal investigator as named above.
7. I will be provided with an interpreter, as indicated in the box below, paid for by researcher if I need one.
8. I fully agree to participate in this study with full knowledge of its nature and my involvement as a participant.

   ☐YES ☐NO

9. I agree for my interview to be tape recorded.

   ☐YES ☐NO

GRADUATE SCHOOL OF NURSING, MIDWIFERY & HEALTH
PO Box 600, Wellington, New Zealand
Phone +64-4-463 5363 / 0800 108 005 Fax +64-4-463 5442 Email nmh@vuw.ac.nz
Website www.victoria.ac.nz/nmh

10 I agree that my child's GP can be informed about our involvement in this study

☐YES ☐NO

11 I am happy to take part in this study

☐YES ☐NO

REQUEST FOR AN INTERPRETER

Please tick which language you wish to use during the interview and seek the help of an interpreter

English	I wish to have an interpreter.	Yes	No
Cook Island	Ka inangaro au i tetai tangata uri reo.	Ae	Kare
Fijian	Au gadreva me dua e vakadewa vosa vei au	Io	Sega
Niuean	Fia manako au ke fakaaoga e taha tagata fakahokohoko kupu.	E	Nakai
Samoan	Ou te mana'o ia i ai se fa'amatala upu.	Ioe	Leai
Tokelau n	Ko au e fofou ki he tino ke fakaliliu te gagana Peletania ki na gagana o na motu o te Pahefika	Ioe	Leai
Tongan	Oku ou fiema'u ha fakatonulea.	Io	Ikai
	Other languages to be added following consultation with relevant communities.		

This research study has been reviewed by and received approval through the Central Regional Ethics Committee. I understand that if I have any comments or concerns as a participants in this study I may contact 0800 423 638

Participant's Name: _____

Participant's Signature:_____Date:_____

Researcher's Name:_____

Researcher's Signature:_____Date:_____

APPENDIX 7: Interview Schedule

Interview Schedule
Study on Skin Infection of Pacific children

1. **Introduction**
   Self introductions
   Discuss aims and objectives of the study with participant and number of interviews need and why
   Go over the consents and confidentiality of information collected and use of audio tape.
   Type of questions that will be asked and why
   Timing and breaks during the interview

2. **Relationship to hospitalised child**
   a. What is your relationship to _____ (name of the child)
   b. How old is he/she?
   c. What date or time of the year was _____ (name of child) admitted
   d. What was the reason for _____ (name of child) hospital admission?
   e. How many days _____(child's name) spent in hospital?
   f. Is this the first time your child had been admitted with skin infection?

   Yes ☐ No ☐
   If NO, how many times?

3. **Events leading up to admission**
   I would like to ask you about your child's current/recent admission to the hospital and how it all started.
   a. Can you take me through the events leading up to your child's hospital admission?

   Probe: was child seen by family GP before hospital admission?
   was ambulance called and admitted through Emergency Department
   what made you decide your child needed medical help?
   number of days sore first noticed to day of admission
   noticed difference in wound appearance and understand what it meant
   did child have high temperature/ for how many days?

4. **Injury/skin sore and immediate care**
   a. Can you explain how the injury happened and what was your first reaction?

Probes: what caused the open skin wound?
who first noticed sore/wound? How long it's been there
body part(s) affected
what measures taken, how often and by whom?
first aids and solutions used to clean wound?

5. Ongoing skin sore interventions

a. Can you please talk about the ongoing care of your child's skin sore(s)? Who was responsible for ensuring the sore was clean and healing?

Probes: how often wound was cleansed,
covered with what type of dressing
practice of hand washing during and after care, (when and how often applied?), attention to child's fingernails

6. Contacts with primary health care services

a. Please discuss any health care or advice received by you and child before child was admitted
b. If child was not seen by your family doctor, can you give reasons why?

Probe: If child was seen by medical staff, who initiated visit and why?
medications prescribed, affordability & administration

7. **First aids in the home**

a. Is there a first aid kit in the house? YES □ NO □
b. What's inside the first aid kit? (look if interview is held in the participant's house)
c. If No, what's normally used to clean and cover minor sores in the household?
d. Does family rely on the use of traditional remedies for cure? What are they?

8. Use of towels and hot/warm water for shower and washing

Daily bath or shower in warm water is important to keep the children's skin clean.

a. Does your household access sufficient hot water for children's shower/bath daily?
b. Do you access sufficient hot water for washing children's clothes, linen and towels?
c. Does _____ (child's name) share beddings or towels with other members of the household while he had the sore(s)?
d. Does he/she (child's name) have daily bath/shower?

9. Hand wash practices at home

a. Please discuss hand washing practices by your son/daughter in the house.

Probe: how often, what time, before and after eating/toilet/play
what solutions available for hand washing in the household

what to do if he/she scratches

10. Education and Training

a. Have you received training on how to care for minor skin sores at home?
   YES □ NO □

Probe: in what form
By whom
Was training helpful to you and your family?

b. If you would recommend trainings in the future on this topic, how would you prefer it run to be of more useful to yourself and your family?

11. Demographics

Now I would like to ask you some questions about yourself and your household if it is ok with you?

a. How many children do you have under the age of 16?
b. Does anyone else in the family experience skin problems?
c. How often?
d. What is your gender? (noted face to face interview)
e. Where were you born?
f. How old are you?
g. What Pacific ethnic group do you identify with?
   (To clarify what ethnicity is if necessary , eg: Tongan, Samoa etc …)
h. Can you please tell me your employment status and your average working hours during the week?
i. What is your average family income per week?
j. How many people in your household?
k. How many bedrooms in your house?

Male/Female Age:_____	Born in the Island or New Zealand
Ethnicity_____	Employment status:_____
Average income per week: $_____	Renting/Paying mortgage:
Bedrooms:_____	Number of people in the household _____

Do you have questions or comments that you would like to add?

Thank you very much for your time.

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