Oral Health Knowledge, Perceptions and Practices of Parents in relation to Early Childhood Caries among Children Aged 1 to 5 years at Sharpeville Clinic (Sharpeville Community Health Centre), South Africa

By

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DECLARATION

I, Dimakatso Esther Ntombela, student number: 210470000 hereby declare that the work on which this dissertation is based, is original (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree at this or any other university or tertiary education institution or examining body.

.................................................. day of..........................20.............

Dr D.E Ntombela                                                        Student No 210470000
DEDICATION

This piece of work is dedicated to my Great grand Mother Mrs Esther Magagula. Thank you for raising me with nothing but unconditional love and sacrifice and for dedicating your whole life to making sure that I get the best foundation in life. Laid to rest at the age of 89 years, May your noble soul rest in perfect peace.
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First and foremost I would like to thank the Lord God Almighty for the strength and courage to undertake this Masters degree and complete it in record time. “Indeed I can do all things through Christ who strengthens me”, Phillipians 4v13.

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ABSTRACT

Background

The daily statistics produced by the Sharpeville Community Health Centre (SCHC) indicate an increase in the number of patients as young as 1 year old. Children visit Sharpeville Dental Clinic in the company of their parents or caregivers on a daily basis for dental extractions as a result of early childhood caries (ECC). ECC is a significantly serious public health concern and certain segments of society such as the socially disadvantaged carry the highest burden of the disease in both developed and developing countries (Vargas and Ronzio, 2006). Yet it remains unexplored and poorly defined in many developing countries, including Sub-Saharan Africa. Left untreated, ECC impacts on the quality of life of the individual to an extent that is similar to other systemic diseases and which may lead to dental pain, avoidance of certain types of food and may interfere adversely with the child's nutritional status, socializing, self-esteem and learning abilities (Feitosa et al. 2005).

Objectives

The main objective of this study was to determine the knowledge, perceptions and practices of parents with regard to early childhood caries (ECC) affecting their children aged between 1 and 5 years old at the Sharpeville Community Health Centre (SCHC).

Materials and Methods

This was a cross-sectional descriptive study conducted at the Sharpeville Community Health Center (SCHC) Participants were recruited from both the Immunization Clinic and the Dental Clinic at SCHC. Sharpeville is a township situated between two large industrial cities namely; Vanderbijlpark and Vereeniging, in the southern Gauteng region. The sample population consisted of both parents and their children, aged between 1 and 5 years old. A parent and their child were counted as one sample
Results

A total number of 299 parents participated in the study, 97% (n=290) were the biological parent of the child and 98% (n=293) lived with the child. More than two-thirds 74% (n=221) of the parents said that they live with one child. Ninety seven percent (n=290) of the parents were female and 42% (n=125) were in the age group 30-39 years. The mean age of the parents was 28.7±11.0 years, ranging from 14 to 63 years of age. Seventy three percent (n=218) of the parents were single and 27% (n=82) were married. Most 63% (n=188) of the participants were unemployed. Ninety one percent (n=272) of the participants had completed their primary education.

A total of 179 (60%) of children in this study had a dental caries. The prevalence of caries was higher in girls than in boys, however, the difference was statistically not significant (64% vs 56%, p>0.05).

A large proportion of parents with a caries-free child compared to the group whose children had caries knew that: sugar consumption and other cariogenic foods increase caries development (8% vs 1%, p<0.05); milk teeth are important in a child’s mouth (3% vs 1%, p<0.05); and that brushing a child’s teeth is important for maintaining good oral health and to prevent caries development (7% vs 1%, p<0.05).

Conclusion

The findings of this study have revealed that there is a significant relationship between parent’s knowledge, perceptions and practices in relation to early childhood caries development in their children. Parents who lacked oral health knowledge, had poor practice and poor perceptions when it comes to taking care of their children teeth and their children presented high caries prevalence. The high prevalence of ECC in this sample suggests the need for oral health promotion strategies that include a more supportive and practical advice for parents and caregivers of preschool children emphasizing the importance of parental involvement when it comes to improving their oral health knowledge, changing their perceptions when it comes to their children’s
oral health as well as strengthening their practices in early childhood prevention, along with improved access to dental care, to enable primary prevention and management of ECC.
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ACRONYMS

ECC    Early Childhood Caries
WHO   World Health Organization
AAPD  American Academy of Pediatric Dentistry
MOU   Maternity Out patients Unit
PHC   Primary Health Care
SCHC  Sharpeville Community Health Centre
SA    South Africa
CHAPTER 1

INTRODUCTION AND DEFINITION

1.1 INTRODUCTION

Dental caries is a common but neglected public health challenge worldwide, especially amongst young children. It is a rapidly progressing disease which has an impact on the quality of life of people to the same extent that other systemic diseases have and which might lead to dental pain and avoidance of certain types of food. Dental caries may also interfere adversely with anthropometrics, the nutritional status, socialising, self-esteem and learning abilities (Masumo et al. 2012). Dental caries is a disease that affects people of all ages globally and it remains a major public health problem universally. It is a disease that can never be eradicated because of the complex interaction of cultural, social, behavioural, nutritional and biological risk factors that are associated with its development and progression (Ismail et al. 1997)

Early childhood caries (ECC) is defined by the American Academy of Pediatric Dentistry (AAPD) as any form of caries occurring in the primary dentition of children aged 71 months and younger. ECC is a serious oral health problem that has remained unexplored in many developing countries including Sub-Saharan Africa, especially amongst the disadvantaged populations of the region (Masumo et al. 2012). Left untreated, early childhood caries leads to dental pain, dental abscesses, anxiety, sleepless nights and premature extraction of primary teeth, which affects the growth and maturity of the secondary teeth, leading to orthodontic problems such as dental crowding (Isong et al. 2011).

About 99% of parents in a study conducted in Malaysia knew the types of food that can cause dental caries; yet, 45% of parents gave their children sweetened liquid in the bottle (Mani et al. 2012). In addition, about 49% of parents disagreed that night time bottle or breastfeeding can cause dental caries, while 64% did not think that frequent
daytime bottle or breastfeeding caused dental caries. ECC is preventable and manageable with the right information and skills (Zafar et al. 2011). The National Oral Health Survey that was conducted here in South Africa (SA) in 2000 revealed that 39.7% of children under 6 years old were caries-free, which is far below the goal of 50% that was set by the National Department of Health in SA in 2000 (Van Wyk and Van Wyk, 2004).

1.2 PROBLEM STATEMENT

The daily statistics produced by the SCHC indicate an increase in the number of patients as young as 1 year old. Children visit SCHC in the company of their parents or caregivers on a daily basis for dental extractions as a result of early childhood caries (ECC).

The development of caries at an early age leads to early loss of the deciduous teeth which are removed, either under local anaesthetic or under general anaesthetic in cases where multiple extractions are indicated. When left untreated, early childhood caries cause dental pain, dental abscesses, anxiety, sleepless nights and premature extraction of primary teeth, which affects the growth and maturity of the secondary teeth (Acs et al. 1998) This leads to orthodontic problems such as dental crowding, open bite occlusion as well as disturbed and delayed speech and may result in low self-esteem, especially in female children (Low et al 1999).

Early exposure to dental extractions may also result in psychological disturbances where the children grow up developing dental phobia which can lead to more oral health problems, such as neglecting their oral health. In order to reduce the number of early dental extractions due to early childhood caries, the success of prevention measures depends upon the parent’s knowledge, understanding, socio-economic background, behavior and attitude towards the prevention of early childhood caries.
1.3 SIGNIFICANCE OF THE STUDY

Improvement in the oral health-related knowledge of parent and caregivers is an essential prerequisite for improving oral health in a community. Lack of awareness amongst parents on preventing and treating dental caries has resulted in a very high prevalence of dental caries amongst preschool children (Perera et al. 2014).

The body of research is growing within Oral Health Knowledge, Perceptions and Practices of Parents in relation to Early Childhood Caries cite previous studies and their findings to substantiate your problem statement and the significance of your study.

A limited number of studies have been conducted in the area of assessing the relationship between oral health-related knowledge, perceptions and practices of parents and the prevalence of early childhood caries in their children here in South Africa, let alone the Vaal triangle region. To date, most research has focused on the association between caries and socio-demographic and feeding factors with few studies exploring parents’ attributes, attitudes, knowledge and beliefs, and none exploring possible pathways between the multiple layers of influences potentially accounting for how determinants of ECC operate and traverse individual, familial, community, and socio-cultural contexts (Hooley et al. 2012). Therefore this study seeks to investigate the relationship between parent’s knowledge, perceptions and practices in relation to ECC development in their children the transmission of oral health education from mother to child the Sedibeng District.

1.4 RESEARCH QUESTIONS

- What are the socio demographic statues of parents and children attending the SCHC
- What is the oral health knowledge of parents regarding ECC developed by their children attending the Sharpeville Community Health Centre?
• What is the oral health knowledge of parents regarding the causes and prevention of ECC in children attending the Sharpeville Community Health Centre (SCHC)?

• What are the perceptions of parents regarding ECC developed by their children attending the Sharpeville Community Health Centre? What are the perceptions of parents regarding ECC among the children attending the SCHC?

• What practices by the parents may contribute towards the development of ECC amongst children attending the SCHC?

• What is the ECC prevalence amongst children attending the SCHC?

• Is there any relationship between the parents’ oral health knowledge, perceptions and practices and their children’s caries status?

1.5 AIM AND OBJECTIVES OF THE STUDY

The aim of the study was to investigate parents’ the Oral health knowledge, perceptions and practices in relation to ECC prevalence amongst their children aged between 1 and 5 years of age at the SCHC.

1.5.1 Study objectives:

• To determine the socio-demographic status of parents and children attending the SCHC
• To determine the oral health knowledge of parents regarding the causes and prevention of ECC amongst their children attending the SCHC.
• To determine the perceptions of parents regarding ECC amongst their children attending the SCHC.
• To determine parents’ practices in relation to early childhood caries amongst their children attending the SCHC.
• To determine the prevalence of ECC amongst children attending the SCHC.
• To determine any relationship between parents’ oral health knowledge, perception, practices and their children’s caries status.
CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Dental caries in infants has a distinctive pattern. Different terminologies and names have been used to define the presence of dental caries amongst children (Tinanoff, 1998). The definitions first used to describe this condition were related to etiology, with the focus being on inappropriate use of the nursing bottle. The following terms were used interchangeably: Early childhood tooth decay, early childhood caries, baby-bottle-fed tooth decay, early childhood dental decay, comforter caries, nursing caries, maxillary anterior caries, rampant caries, nursing bottle syndrome and many more (Dilley et al., 1980; Ismail & Sohn, 1999).

Some of these terms indicate the cause of caries in pre-school children (Ismail and Sohn, 1999). Baby bottle-fed tooth decay refers to decay in the teeth of infants associated with what the baby drinks. However the term “early childhood caries” is becoming increasingly popular with dentists and dental researchers alike (Ismail and Sohn, 1999).

Dental caries is the most chronic infection of childhood, caused by an interaction between bacteria, mainly *Streptococcus mutans*, and sugary foods on the tooth enamel. *S. mutans* can spread from mother to baby during infancy and can infect even pre-dentate infants. This bacteria breaks down sugars for energy, causing an acidic environment in the mouth which results in demineralization of the enamel of the teeth, resulting in dental caries (Douglass et al. 2004).
Early childhood caries is a disease that can never be eradicated because of the complex interaction of cultural, social, behavioural, nutritional and biological risk factors that are associated with the initiation and progression of the disease (Ismail et al. 1997). It is a significantly serious public health concern and certain segments of society such as the socially disadvantaged carry the highest burden of the disease in both developed and developing countries (Vargas and Ronzio, 2006). Yet it remains unexplored and poorly defined in many developing countries, including Sub-Saharan Africa. Left untreated, ECC impacts on the quality of life of the individual to an extent that is similar to other systemic diseases and which may lead to dental pain, avoidance of certain types of food and may interfere adversely with the child’s nutritional status, socializing, self-esteem and learning abilities (Feitosa et al. 2005).

An enormous diversity of definition and diagnosis of ECC is used all over the world. There is currently no universally accepted definition for the term ECC. Some researchers define ECC as the presence of caries on the anterior maxillary incisors (1-4 front teeth). Carino et al (2003) defined ECC as the presence of any decayed, missing and filled (dmft) teeth, regardless whether this affects the anterior or posterior teeth.

The expression ECC was also adopted in the presence of at least one of the following criteria:

- Any sign of caries on a smooth surface in children younger than three years old.
- Any smooth surface of antero-posteriors primary teeth that is decayed, missing (due to caries) or filled, in children between three and five years old.
- Decayed, missing and filled teeth index (dmft) equal to or greater the 4 at the age of 3, 4 and 6 at the age of 5 years old AAPD, 2009).
2.2 CLINICAL APPEARANCE

Early childhood caries is a predominantly severe form of caries in children. It begins on the tooth surfaces which are normally only affected to a minor extent, such as the labial, lingual and interproximal surfaces of maxillary central and lateral incisors, soon after the teeth erupt into the oral cavity (Davies, 1998). Babies as young as 11 months old may be susceptible to early childhood caries development (Lee et al. 1994) because the teeth are affected in the order that they erupt (Peters, 1994). The maxillary central and lateral incisors are predominantly affected, while the mandibular incisors are commonly unaffected (Koroluk and Riekman, 1991).

The disease has a noticeable progression pattern. Initially white spots appear on the smooth surface of the teeth. A light brownish band adjacent to the gingival margin may then develop and usually goes unnoticed by parents. These are usually decalcified lesions and may progress to carious lesions in six months to a year (Lee et al. 1994). Sometimes decalcification occurs inter-proximally and cervically, thereby creating an area for dental plaque retention (Veerkamp and Weerheijm, 1995).

In the long run the white lesions progress into dark brown lesions, which eat up the necks of the teeth (Ismail, 1998). In more advanced cases the crowns of the maxillary incisors may be completely destroyed, leaving black root rests (Ripa, 1988).

Left untreated the carious lesions may lead to inability to chew, eat and swallow - due to pain, tongue thrush, as well as speech difficulties (Koroluk and Riekman, 1991). The teeth become affected in the order they erupt (Davey and Rogers, 1984). The explanation for this pattern of caries distribution is based on the pooling of milk or cariogenic drinks from the nursing bottle around the maxillary incisors and other teeth, while the mandibular incisors are physically protected by the tongue, in most cases (Berkowitz and Jordan, 1975).
Clinically, ECC may present as one of the following (Berkowitz and Jordan, 1985):

**TYPE 1 (Mild-Moderate) ECC**
Type 1 ECC is defined by the existence of carious lesions involving incisors or molars, usually caused by a combination of cariogenic semi-solid or solid food consumption and lack of oral hygiene. The number of teeth affected usually increases as the cariogenic challenges persists. This type of ECC is usually found in children between the ages of 2 and 5 years old.

**TYPE II (Moderate-Severe) ECC**
Type II ECC is defined by the existence of labio-lingual carious, lesions affecting maxillary incisors, with or without molar caries, depending on the age of the child and stage of the disease, and unaffected mandibular incisors. The cause of Type II ECC is associated with the inappropriate use of bottle-feeding and breastfeeding, or a combination of both, with or without poor oral hygiene. Poor oral hygiene most probably compounds the cariogenic challenge. This type of ECC could be found soon after the first tooth erupts. Unless controlled, it may progress to Type III ECC.

**TYPE III (Severe) ECC**
This type manifests itself in the form of carious lesions affecting all the teeth, including the lower incisors. This condition is commonly found in children between the ages of 3 and 5 years old. The type is rampant and generally involves tooth surfaces that are normally not affected by caries, for example the mandibular incisors (Berkowitz and Jordan, 1985)
2.3 ETIOLOGY OF EARLY CHILDHOOD CARIES

The etiology of ECC is multifactorial and has been well established. ECC is frequently associated with poor diet and bad oral health habits (Berkowitz, 2003). The disease is initially reversible and can be halted at any stage, even when some cavitation occurs, provided that sufficient biofilm can be removed (Davies, 1998). ECC was historically associated with inappropriate and prolonged bottle-feeding or breastfeeding. The use of the bottle, especially at night, is believed to be associated with increased risk of caries. Carious lesions are formed from an interaction between cariogenic microorganisms, fermentable carbohydrates and a susceptible tooth surface. Given adequate time, these factors induce carious lesion formation (Lee et al. 1994).

2.4 RISK FACTORS ASSOCIATED WITH EARLY CHILDHOOD CARIES

A number of factors contribute to the high prevalence of dental disease in young children and to its lack of treatment. Some of the more common risk factors for ECC in infants and children include unhealthy eating habits and the extended use of bottle feedings or breastfeeding beyond 12 months (Azevedo et al, 2005) Dental caries are also associated with social and behavioral characteristics. Because parents are the primary caretakers of their children, their oral health knowledge, values and preventive practices are directly related to the oral health of their children (Ismail 1998).

Some parents have a limited understanding of dental disease prevention and depend on professionals to meet the dental needs of their children once disease occurs. Because of the attitudes and beliefs of parents, many children develop dental caries and suffer the consequences of the disease. Many dental practitioners are not prepared to provide treatment to patients younger than 3 years of age because of a lack of cooperation from the children and a lack of support from the primary caregivers present during treatment (Lopez 1998).
Children below the age of 5 years spend most of their time with their parents and caregivers. The establishment of dietary habits and healthy behaviors as norms in the home is dependent on the knowledge and behavior of parents and/or caregivers. Without basic knowledge of the risk factors leading to caries, the importance of the deciduous teeth and the maintenance of oral hygiene, it is difficult to employ effective disease prevention strategies.

2.5 PRIMARY RISK FACTORS

2.5.1 Susceptible Tooth

For dental caries to develop there must be a tooth present as S. mutans colonisation in the mouth can only take place once teeth are present inside the mouth since teeth provide a conducive surface for colonisation of the micro-organisms (Ripa, 1988).

Several factors can predispose a particular tooth to dental caries. Host risk factors for the development of caries include reduced saliva flow, immunological factors, presence of enamel defects characterised mainly by hypoplasia, immature enamel, tooth morphology, genetic characteristics of the tooth and crowded teeth (Schafer et al. 2000, Milgrom et al. 2000)

Immediately after eruption, newly exposed enamel surfaces undergo the final stages of maturation and hardening. The period between eruption and final stages of maturation is the time when the tooth is most susceptible to caries (Milgrom et al 2000). Enamel defects in primary teeth have been associated with a variety of causes, such as hereditary diseases acquired pre/post natal and post-natal conditions such as premature birth, low birth weight, infections, malnutrition metabolic disorders and chemical toxicity (Nunn et al. 1992).
2.5.2 Cariogenic Diet

The formation of dental caries is associated with the carbohydrate component of the diet. Oral micro-organisms, especially *S. mutans*, make use of certain carbohydrates to form a sticky matrix that enables them to adhere to the teeth (Lumis and Hamdan, 2002). The frequent consumption of soluble carbohydrates and their prolonged contact with the tooth surface are highly significant risk factors in the development and progression of the disease (Dimitrova *et al.* 2002). The major cariogenic food in the human diet is sugar (sucrose) (Ripa, 1998). Children who feed on bottles containing sweetened milk or other sweet drinks have a higher prevalence of maxillary anterior caries than those whose bottles contain only milk or water (Reisine and Douglass, 1998). Studies show that the frequency of sucrose intake is more important than the total amount consumed with respect to the development and progression of dental caries (Gussy *et al.* 2006).

2.6 ASSOCIATED RISK FACTORS

2.6.1 Socio Economic Factors

Early childhood caries has shown to be one of the major health problems in socio-economically disadvantaged communities as a result of high levels of unemployment in these communities. The prevalence of ECC was shown to be related to low family income and parental socio economic factors have a role to play in the development of caries in their children (dos Santos Junior, 2014).

Parent’s education level has a strong relationship with the occurrence and severity of ECC in their children, while lower prevalence of dental caries in children has been associated with higher levels of parental education (Zafar *et al.*, 2011). It has been noted that the financial status of parents is related to levels of diseases in populations. It was found that children with parents in the lowest income category had mean DMFT scores four times higher than those with parents in the highest category (Weinstein, 1998).
According to Zafar et al. (2011), there is a strong link between the parent’s socio-economic status and adverse health events. Children born to low-income families are more likely to have low birth weight, which impacts on oral health (Harries et al., 2004).

Early childhood caries is more common in children from single parent families and those with parents of low educational level, especially of illiterate mothers (Maciel et al. 2001). A survey found that, in Taiwan, mothers who had full time jobs were more likely to have children with ECC than the children of mothers who had part-time jobs or who were housewives (Tsai et al. 2006).

A study which investigated the relationship between income group and dental caries confirmed that children with parents in the lowest income group had mean decayed, missing, and filled teeth (dmft) index scores four times as high as children with parents in the highest income group (Tanget et al. 1997). Socioeconomic status can have a considerable impact on the environment, the availability of foods, access to proper health care, and the education of children (Ismail, 2003). These are all factors that can potentially negatively affect whether a child develops ECC or not.

The cost of ECC treatment, in which a restoration or extraction is required, is extremely high for low-income families and often these families are unable to make dental care a priority. Thus, children in families with lower socioeconomic status are more likely to have their dental caries left untreated or are likely to have incomplete dental care. Children from low income families tend to make their first visit to the dentist at an older age, less frequently and only when there are established problems, such as toothache. In addition, deprived children usually start brushing their teeth at much later age in life and do so less frequently (Eckersley et al. 2001).
The following families are typical of children who may develop caries:

- Families where relationships are complicated, for an example in situation where parents are divorced or separated.
- Parents who fail to pay adequate attention to their children.
- Young parents who are ill-equipped to bring up their children.
- Families where children watch television daily for hours.
- Families where children are frequently fed sweets.
- Families in which sweets are used to comfort the child during tantrums (Lopez-Del Valle et al, 1998; Weinstein et al, 1996).

2.6.2 Parent’s Perceptions on the Oral Health of Their Children

Many parents believe that tooth decay in their children is detrimental, however, in regard to very young children, a long-standing societal belief is that primary teeth are not that important because they will “fall out” and therefore do not need treatment unless they are causing pain in the child or disturbing the family in some way. Young children's oral health maintenance and outcomes are influenced by their parent's knowledge and perceptions, which affect oral hygiene and healthy eating habits (Suresh et al. 2010).

A poor attitude of parents toward oral health of infants and young children is associated with an increased in caries prevalence (Mani, 2012). It has been found that the more positive the parents' attitudes towards dentistry and oral health is, the better the dental health of their children will be (Finalyson, 2007).

Perceptions about the importance of “baby teeth”, in many families, vary. Erroneous beliefs of friends and other family members played an important role in their child’s oral health. For example, the notion that baby teeth are not important is a common belief among family members (especially grandparents) and friends. Caries in baby teeth are believed to be temporary, with no long-term consequences. This belief at times resulted
in some parents being less vigilant about their child’s oral health behaviours or the receipt of dental care (Isong et al. 2011).

2.6.3 Parent’s Practices That Contributes to ECC

Generally, mothers with higher confidence in brushing their children’s teeth and higher frequency of brushing had children with cleaner teeth. Children who started brushing their teeth earlier in life also presented with fewer caries (Togoo et al. 2012). Parents should therefore be taught how to clean their children’s teeth with fluoridated toothpaste. The surfaces of the teeth should be carefully scrubbed after each meal (Ripa, 1988).

The impact of nutrition, especially the consumption of refined sugars, on the progression of dental caries has been widely documented (Ismail 1998). However, an exclusive focus on education, dental counselling, dietary knowledge and attitudes to food and ignoring the impact of socio-environmental factors impacting on caries development is needed. Healthy dietary habits and feeding behaviours should be established as norms in the home and are dependent on the knowledge and behaviour of parents and older siblings (Masumo et al. 2012).

Diets containing highly fermentable carbohydrates have been associated with an increment in ECC. In a study conducted at the University of Western Cape, it was found that young parents between the age of 20-30 years who are single and unemployed had a negative impact on development of ECC in their children. This phenomenon might be due to the fact that these young parents are ill equipped to bring up their children and are prone to frequently feeding their children sweets and chips during episodes of tantrums to comfort them (Jacobs, 2006).
2.6.4 Bottle-feeding

Bottle feeding, particularly when children are allowed to go to sleep with a bottle in their mouths, has been considered cariogenic (Azevedo et al 2005; Davies, 2000). Du and others found that children who had been bottle-fed had a five times higher risk of developing ECC when compared to children who were breast-fed. Milk-based formulas for infant feeding, even those with sucrose in their formulation, are also proven to be cariogenic in some studies. The use of baby bottles during the night is associated with reduction of saliva flow, thus decreasing salivary neutralisation capacity, which would cause food stagnation around the teeth results in prolonged exposure of the teeth to fermentable carbohydrates (Seow, 2000). The mandibular incisors are close to the main salivary glands and are protected from the liquid contents by the bottle nipple and the tongue. As a result the teeth are less likely to be affected by caries (Davies, 1998).

Fruit juices and other sweetened drinks have also been associated with ECC diagnosis in children. Fruit juices and sweetened drinks contain sugar and are intrinsically acidic. Both beverages lead to a significant decrease in plaque pH levels in the mouth, thus initiating the process of ECC (Du et al, 2000).

A study by Hallet and O’Rourke (2003) found that there was a significant increase in ECC prevalence and severity associated with the habit of giving a bottle to a child to sleep at night compared to children not given the bottle at night. Similarly, there was a significant increase in the prevalence and severity of ECC in those children allowed to sip continually from a bottle during the day when compared to those who were not allowed this.

A 1993 survey was conducted to determine the relationship between infant bottle drinking patterns and ECC. The sleeping habits of the child and the contents of the bottle were evaluated. The results indicated that children who fell asleep while feeding from a bottle had significantly more cases of ECC than did children who discarded the bottle before falling asleep. Children who discarded the bottle before falling asleep, however, had more cases of ECC than did children who were not given the bottle at all.
at bedtime (Schwartz et al. 1993).

2.6.5 Breast-feeding

Breast-feeding has many advantages: it provides optimal infant nutrition, immunological protection and minimises the economic impact on the family. Breast milk contains the carbohydrate lactose, which precipitates the oral implantation of cariogenic bacteria and demineralises the tooth enamel when acted upon by bacteria. After frequent use of either lactose or milk, acid production in dental plaque increases (Du et al. 2000). Although breast-feeding is essential in providing the best possible nutrition to infants, frequent breast-feeding at night and on demand after eruption of teeth may be implicated in contributing to the development of ECC. This is a highly controversial topic and one in which there is considerable conflict and confusion (Gussy, 2006). Mothers consider breastfeeding safe, economical and nutritious, (Swarts et al. 2010), however, a study conducted among 1 to 4 year old South African children, reported that children who were breastfed for longer than 12 months had a lower level of caries than those bottle fed and breastfed for less than 12 months (Roberts et al. 1993).

Despite good practice, there is conflicting evidence regarding breastfeeding with regards to oral health. Prolonged breast-feeding carries a risk of dental caries development in children (Azevedo et al. 2000). The World Health Organization (WHO) recommended that children be breast-fed until 24 months of age. On the other hand, some reports suggest prolonged exposure of teeth to daytime or night time breastfeeding are risk factors for ECC (Azevedo et al. 2000; Davies, 1998). Based on these reports, the American Dental Association (ADA) recommended weaning from the breast as soon as the child turns 1 year old (ADA, 2009). Earlier commencement of drinking from the cup did not affect ECC experiences. However, commencement of food solids between four to six months of age significantly reduced ECC prevalence and severity compared with later or earlier commencement of solid foods in infant’s diet (Hallet and O’Rourke, 2003).
The relationship between breastfeeding and ECC could not be established in many studies (Nilza et al 2004; Palmer 2000). The period of duration of breastfeeding is also controversial. Weerheijm and co-workers stated that there is no right time to wean the baby from breastfeeding, as long as preventive measures, such as tooth brushing with fluoridated toothpaste and reducing frequency of cariogenic foods feedings are practiced (Weerheijm et al. 1998).

2.6.6 Parent’s Oral Health Knowledge

Children under the age of 5 years old generally spend most of their time with their parents and guardians, especially mothers, even when they attend pre-schools or nurseries. It has been found that a young child's oral health maintenance and outcomes is influenced by its parent's knowledge of and beliefs about oral hygiene (Suresh et al. 2010). Without a basic knowledge of caries risk factors, the importance of the deciduous teeth and of oral maintenance, it is difficult for parents to employ effective disease preventive strategies.

Parent's knowledge and positive attitude towards good dental care are very important in the preventive cycle (Finalyson et al. 2007). Parents reported that they lacked adequate oral health knowledge and had limited knowledge of behaviours contributing to ECC before participating in the ECC demonstration project. This lack of knowledge was prevalent across all socioeconomic groups and was perceived by many parents to be an important contributor to their child’s ECC. Many felt they were doing everything right and were shocked when their child developed caries (Isong et al. 2011).

The education level of parents has been shown to be correlated with the occurrence and severity of ECC in their children (Al-Hosani et al. 1998; Dini et al. 2000). Lower prevalence of dental caries and lower mean dmft scores have been highly associated with higher levels of parental education, while higher rates of caries have been reported in families with a generation to generation history of dental caries (AAPD, 2009; Tweetman et al. 2000). Milgrom et al (2000) showed that the mother is not only the
reservoir of cariogenic bacteria, but that her dental knowledge, behaviour, as well as the general care of her child are also some of the factors that contribute to the risk of dental caries in young children.

2.7 CONSEQUENCES OF EARLY CHILDHOOD CARIES

If the treatment of dental caries is ignored, then the child's condition will deteriorate and it will become more difficult to treat the dental caries, resulting in an increase in the cost of treatment. Children's quality of life is seriously affected by severe dental caries. The most common consequence of untreated caries is pain, which affects the child's regular activities, such as eating, communication, sleeping patterns and interaction with other children (Kaste, 1999). Children who have dental caries on their primary teeth are at a greater risk of developing additional carious lesions in their permanent dentition (Kaste, 1999). Left untreated, severe ECC may lead to premature loss of the child's maxillary anterior teeth. The child may suffer further developmental setbacks involving speech articulation as these years are critical for speech development. Children with ECC may also experience some delays in physical development, especially with respect to weight and height. The pain caused by ECC may lead to decreased appetite and refusal to eat, ultimately resulting in malnutrition. Early extraction of teeth often results in children suffering from psychological trauma as a result of the dental procedures required to restore their teeth (Low et al. 1999) Teasing by siblings, peers and family members may lead to an inability to concentrate in class and reduced self-esteem, especially in the girl child (Acs et al. 1998; Low et al. 1999).
2.8 PREVENTION OF EARLY CHILDHOOD CARIES

ECC is a preventable disease. The physical, psychological and economic consequences of ECC can be avoided through the education of prospective parents and new parents in the practice of good oral hygiene (Kowash et al. 2000). Prevention of ECC should begin in the pre and postnatal period. It is critical to provide dental care to pregnant women and women of childbearing age, both for their own health and to delay the initial transmission of ECC to their child (Lee et al. 1994).

ECC is the result of improper feeding practices as discussed above, therefore prevention of the disease should focus on educational programs to improve the children's feeding practices and to reduce levels of S. mutans in their mouths. There are other preventive measures that can be applied to prevent caries development in children.

2.8.1 Oral Health Education

Oral health education is a designed package of information, learning activities or experiences that are intended to result in improved oral health (Overton, 2005). The primary goal in disease prevention and its purpose is to facilitate decision-making about oral health practices and to encourage appropriate parental behaviours. Effective oral health education may involve the following (Adair and Ascroft, 2007):

- Bringing about changes in parental knowledge
- Inducing a clarity of values
- Bringing about a shift in beliefs and attitudes
- Facilitating the attainment of skills
- Bringing about change in behaviours and lifestyles

Child health professionals, including but not limited to dental practitioners, medical practitioners, dental assistants and nurses, can play a significant role in reducing the burden of this disease. While most children do not visit the dentist until the age of 3
years, some children will have visited the medical practitioner up to 11 times by this age (Ismail, 1998).

Health promotion programs to stimulate the brushing of teeth have been among the most successful educational programs (Curnow et al. 2002; de Almeida et al. 2003). Cross-sectional surveys, clinical trials and experiments involving studies about the brushing of teeth involving 1450-1545 children have found that the brushing of teeth and flossing twice daily resulted in a reduction in caries development (Curnow et al, 2002).

### 2.8.2 Fluoride Application

The use of fluorides for dental purposes began in the 19th century. Fluorides are found naturally throughout the world (Ercan et al. 2010). Fluorides are used by populations all over the world in the form of toothpastes, oral rinses, lozenges, chewable tablets, drops and by dental professionals in the application of gels, foams and varnishes.

The effect of fluoride in reducing caries is well established. Flouride may be delivered topically and systemically. The most common route for systemic application of fluoride is fluoridated water, which is shown to be effective in reducing the severity of dental caries in both children and adults (Featherstone, 2004). Studies have shown that five year old children living in areas where the water is flouridated have approximately 50% less caries than those living in areas with non-flouridated water (Marhino et al. 2004; Shellis et al. 1994). Regular brushing of teeth with flouridated toothpaste and brushing before going to bed are important measures for the control of dental caries, since they maintain the concentration of fluoride in the saliva for an extended period of time.

### 2.8.3 Fissure Sealants

Dental sealants are a plastic material placed on the chewing surface of the pits and fissures of primary teeth (CDC, 2002) and have been recognized as an effective approach to preventing pit-and-fissure caries in children (Lodra et al. 1993). They are placed to prevent the onset of caries and to arrest the progression of caries by creating
a physical seal between the teeth and the caries-causing bacteria (Ahovuo et al. 2004). Pit-and-fissure sealants can be used effectively as part of a comprehensive approach to caries prevention on an individual basis or as a public health measure for high-risk populations, such as children.

Systematic reviews have found strong evidence of sealant effectiveness on sound posterior teeth in children and adolescents (Gooch et al. 2009). Fissure sealants delivered in clinics, mobile units or school settings can reduce caries in the pits and fissures by 60% from two to five years after placement. Placement of auto-polymerized sealants reduced caries by 78% in the first year, and by 59% at four years or more. School-based sealant programs have the potential to reduce racial and economic disparities (Gooch et al. 2009).

However, the extent to which the sealant programs can eliminate the disparity will be influenced by the selection of the target population and the processes involved (Siegal et al. 2001). Given its value as a primary preventive strategy, fissure sealant programs need to be included in the basic minimum package for oral health service delivery.

2.9 MANAGEMENT OF EARLY CHILDHOOD CARIES

Treatment of ECC can be accomplished through different types of interventions, depending on the severity of the condition, the child’s age, behaviour and medical history. Thus, examining a child by his/her first birthday is ideal in prevention and intervention of ECC (ADA, 2009). During this initial visit, conducting a risk assessment can provide baseline data necessary to counsel the parent on the prevention of dental caries.

Children with low risk may not need any restorative treatment. Children with moderate risk may require restoration of progressing lesions, while white spots on the enamel should be treated by preventive techniques and monitored for progression. Atraumatic
restorative technique ART is a procedure based on removing carious tooth tissue using a hand instrument only and restoring the tooth with an adhesive restorative material (Dalli et al. 2012). The ART technique is a simple technique with many advantages, such as the reduction of fear in the patient pain reduction during treatment, it does not require electricity, and it is more cost effective than are other treatments (Ercan et al. 2009; Frencken et al. 1996; Seale and Casamassimo, 2003).

Children at high risk may require earlier intervention to minimise continual caries development (Tinanoff and Douglas, 2001).

When caries has occurred, a more definitive treatment is required. The early stages of ECC may be treated restoratively using ART, which does not require the use of local anaesthesia and a dental hand piece, while advanced of ECC stages can be treated using stainless steel crowns for the posterior teeth and strip crowns for the anterior teeth. Depending on the extent of the lesions, pulpectomies or extractions may be indicated. Such treatments may become extremely expensive and difficult to employ due to the uncooperative nature of young children. General anaesthesia and conscious sedation are recommended in these cases, which can cost thousands of rands (Whelton and O'Mullane, 1997).
CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

The study setting and design, inclusion and exclusion criteria, sample size and pre-testing of the tool will be discussed in this chapter. Data analysis, the questionnaire and the oral examination will also be described.

3.1.1 Study Setting and Population

The study was conducted at Sharpeville Community Health Centre (SCHC), Sedibeng District. Sharpeville is a township situated between two large industrial cities namely; Vanderbijlpark and Vereeniging, in the southern Gauteng region. Sharpeville township was established in 1932 and is one of the oldest of the six townships in the Vaal Triangle. The community is populated by a high number of unemployed youth and drug abuse remains one of the major public health issues faced by this community.

SCHC is a community health centre comprising the MOU, PHC, Immunisation/Baby Clinic, Mental Department as well as the Dental Department. It is the oldest clinic in the area and deals with about 6 500 patients per day, in all the above mentioned departments. The Dental Department is made up of five staff members, including the researcher. There are two dental surgeries and a waiting area in the department.

Participants were recruited from both the Immunisation Clinic and Dental Clinic at SCHC. Answering of the questionnaires by the participants took place in one of the dental surgeries in the clinic. The sample population consisted of both parents and their
children, aged between 1 and 5 years old. A parent and their child were counted as one sample

3.1.2 Study Design and Approach

This was quantitative study that engaged a cross-sectional survey design and it was carried-out in two phases. **Phase-1** focused on the oral health examination of the children aged between 1 and 5 years attending the SCHC. **Phase 2** entailed the assessment of the knowledge, perceptions and practices of parents with respect to the causes of ECC.

3.1.3 Inclusion Criteria

- Parents of children between 1 and 5 years old attending the SCHC.
- Parents who agreed to sign the consent forms.
- Co-operative children, meaning those children that agreed to sit on the dental chair and open their mouths for oral examination. Co-operative children, meaning children who agreed to sit on the dental chair and open up their mouths for oral examination.
- Children who were present at the clinic on a specific day of data collection

3.1.4 Exclusion Criteria

- Parents of children older than 5 years old ethier attending the Sharpeville Clinic or not.
- Uncooperative children and thier parents
- Parents and children who took part in the pilot test.
3.2 SAMPLE AND SAMPLING TECHNIQUES

The population frame for this study comprised of parents or caregivers and their children aged between 1 and 5 years old. A parent and the child served as a single sample. The children were required to undergo a dental screening while their parents were requested to complete a questionnaire that assessed their oral health knowledge, perceptions and practices regarding ECC and its prevention. Parents attending the Immunisation Clinic, especially parents of children aged between 1 and 5 years old and those bringing their children to the dental clinic were targeted for the study as long as they agreed to participate. A simple random sampling technique was used to select participants for the study. Their queuing numbers at the clinic were used to conduct a blind-draw of those to participate in the study, provided that they were willing to do so. Secondly, cooperation of the child to undergo an oral examination (following consent and assent) was also considered. Parents of children who refused to be examined were automatically excluded from the study.

The researcher made use of the OpenEpi software to calculate the sample size. The sample size was calculated by using the 45% (0.45) value as an hypothesised value (p) and the proportion of failure value (q) was calculated from the formula q=1-p. After determining p=0.45 (hypothesis value), clinical records and statistics of the patients between 1 and 5 years old were also used to assist in giving approximate numbers of patients seen per day and then working out the approximate population for the duration of the study, which was approximately 3 months. The clinic’s daily statistics records revealed that the patients influx was approximately 50 patients per day attending both the Dental and the Immunisation Clinics, with a population size of the study demographic area approximated to be 1 000 at a confidence level of 95%. This data was entered to OpenEpi to calculate the sample size. The sample size for the study was 278 parent/child pairs, however 300 participants were sampled to cater for any eventualities during the study. The researcher ended up collecting data from 299 participants on the last day of data collection as she was about to take leave the next day.
3.3 PRE-TESTING

Prior to conducting the study a pilot test was conducted on 10 parents or caregivers with their 10 children aimed at the following:

- To get the research assistant acquainted with facilitation of the questionnaire completion
- To detect gaps, such as wording and grammar errors, in the questionnaire
- To make sure that the questions are well understood by the participants
- To check how much time each participant might need to complete the questionnaire, and time needed for the oral examination of each child.
- To assess the acceptability of the questions to the parents.

Pre-testing was supposed to take place at Kopanong Hospital, however, during the first day of the pilot the researcher encountered some limitations in that, Kopanong Hospital did not have participants that met the criteria that the researcher was looking for. Most of the children there were very sick and the parents were not always available to complete the questionnaires. Therefore, the pilot location changed to Levai Mbatha Community health centre in Evaton, South Johannesburg. The participants that took part in the pilot study did not form part of the main study sample. The pilot testing exercise was used to amend the data collection tool according to the results obtained from the test. During the tool test, participants did not show any form of misunderstanding of the questions, however, some of the responses were found to be a repetition when translated from English to Sesotho, which led to the amendment of the responses and not necessarily the questions asked, particularly on the parent’s knowledge variable the answer not sure and do not know were were added to answer the questions asked in that section.
3.4 DATA COLLECTION AND TOOLS

- After obtaining permission from the Immunisation Clinic, parents who were interested to be part of the study were invited into the dental waiting area and received a briefing about the study. Parents recruited from the Dental Clinic during their routine dental consultations also received a briefing about the study.

- Both the oral examination of the child and the answering of the questionnaires took place in one of the dental surgeries in the clinic. The questionnaires were translated into the local language (South Sotho) for those parents who did not understand English. The questionnaire was sent to experts in the field of study before and after the pilot testing in order to validate the questions that were being asked. This took place before and after the pilot study. Data collection was conducted by means of a self-administered questionnaire which was designed with reference to the objectives of the study.

- Data was collected from both the parent or caregiver and the children, making use of a self-administered questionnaire, and an oral health examination sheet, in the case of the children. Data collection was conducted in two phases, namely, Phase 1, which focused on the oral health status of the children and Phase 2, which looked at the parent’s knowledge, perceptions and practices that may influence prevalence and prevention of ECC in their children. The parent or caregiver questionnaire had a code that matched with that of their child during the data collection process. This assisted the data analysis process.
3.4.1 Phase 1

Oral health assessment

- Examination focused on the oral health of the children aged between 1 and 5 years old at the Sharpeville Clinic.
- The researcher clinically examined the children’s teeth for the presence of dental caries in order to link the parent’s responses with the children’s oral health status.
- Sterile standard examination instruments were utilised during the exam i.e. mouth mirrors, dental probes and tongue-retractors.
- The researcher conducted the oral examination, the results of which were recorded by the research assistant and verified by the researcher on an oral examination form before transferring them to a Excel spreadsheet.
- For the purpose of the study, dental caries was assessed according to the World Health Organization (WHO) criteria. The dmft, (d) decayed, (m) missing and (f) filled teeth indices were used to record the presence or absence of dental caries. The dmft index referred to the primary dentition and DMFT index is used for adult dentition, therefore since the age group ranged between 1-5 years old, the DMFT index was excluded since the focus was only on primary teeth. The examination proceeded in a systematic manner with the first, second, third and fourth quadrants being examined in that order. A tooth was considered present in the mouth when any part was visible (WHO, 1997).

3.4.2 Phase 2

The questionnaire:

- Entailed the assessment of the parent’s knowledge, perceptions and practices on ECC,
- Parents were requested to complete the questionnaire by answering questions assessing their oral health knowledge, perceptions and practices on the brushing of teeth and on feeding practices. The demographics variable consisted of seven question, knowledge variable consisted of nine questions, perceptions consisted of five questions and the practices variable consisted of twelve questions.
• Parents who were unable to read and write were assisted to complete the questionnaire using their home language, which is Sesotho.

3.4.3 Scoring

Scoring was done by writing the alphabets from the dmft index in the box of the tooth, indicating the status of the tooth.

• Carious tooth- d
• Sound tooth- t
• Missing tooth- m
• Filled tooth-F

3.5 TRAINING OF THE RESEARCH ASSISTANT

A research assistant from outside the study location was trained in the collection of data and the handling of dental instruments that were used during oral examination prior to engagement in the field.

3.6 DATA ANALYSIS

The participant’s responses were checked thoroughly for any discrepancies before being entered into the spreadsheet. The data collected was entered into an Excel Microsoft version window 10 spreadsheet and then imported into STATA 10.0 software for analysis. Univariate analysis on numerical data was interpreted using summary measures expressed as means (standard deviations) and medians (ranges). These were displayed using graphs, pie charts and histograms. Categorical data was described using percentages and proportions. Tabulations were used to present the data. Comparison between groups was performed using student t test and chi-square test for continuous and categorical variables, respectively. Logistic regression analysis was used to determine the possible association between the key variables. All statistical
tests were performed using two-tailed tests and p-values less than 0.05 were considered to be statistically significant.

The categories of knowledge, perceptions and practices were analysed in tables individually and the factors associated with caries prevalence in the children were analysed according to the oral examination results. Satisfactory knowledge, perceptions and practices from parents were regarded as having provided positive or preferred responses to 75% of the questions, as indicated by the codes on the questionnaire. These codes for positive or preferred answers were for data analysis purposes only and did NOT appear on the printed questionnaire.

3.7 BIAS, VALIDITY AND RELIABILITY

This study was subjected to selection bias because only parents and children who attended the dental an immunization clinics were included in the study. Inclusion of all children and their parents attending all departments in the clinic might have changed the outcome of the study. A tool pre-testing was done to check if all the variables to be asked are covered on the questionnaire and to ensure consistency and to increase validity of the tool i.e. asking identical questions in the same order to the participants.

The questionnaire were sent to experts in the field of study to increase validity of the questions that were being asked, to check if the response of the questionnaire answers the research questions as well as to rule out any ambiguity of the questions asked. This happened before and after the pilot test. The questionnaire contained questions that addressed the research problem as well as answered the research questions. To ensure the reliability of the questionnaire, the questions were consistent, clear and well defined in order not to confuse the participants during answering.
3.8 ETHICAL CONSIDERATIONS

3.8.1 Ethical Clearance

- The research protocol was submitted to the School of Public Healthcare Science Research Ethics Committee and the Medunsa Research and Ethics Committee (MREC) at the University of Limpopo for ethical clearance, MREC Ref number: MREC/H/219/2014. Permission to conduct the study was sought from the Sedibeng District Ethics Committee, the Director and the Oral Health Clinical Manager, SCHC Facility Manager and Sister in charge at the SCHC Immunization Clinic.

3.8.2 Informed Consent and Assent

- The researcher explained the purpose of the study to the participants in simple terms and, thereafter, distributed informed consent forms to parents who were sampled, or were interested to be part of the study, to complete prior to participation in the study. Participants were informed through a participant information sheet that their participation was voluntary and that there were no consequences if they chose not to participate in the study i.e. answering the questionnaire will not interfere with any health service they may need in future. Participants (parent and child) were free to withdraw before, during and after completion of the questionnaire.

- Since we were dealing with minors, parents/guardians had to give permission on behalf of the children and no child was enrolled in the study without written consent from the parents or guardians as per Law. Over and above the parent’s consent, the child had to assent to the oral examination by agreeing to the examination after the researcher explained the process to him/her. If the child refused to be examined and the parent does not consent they were both excluded from participation in the study.
4.1 INTRODUCTION

In the previous chapter, materials and methods for the study were outlined. In this chapter, the findings are presented and interpreted.

4.2 DEMOGRAPHIC INFORMATION OF THE PARTICIPANTS

A total of number of 299 parents participated in the study. Of these, 97% \((n=290)\) were the biological parent of the child. Ninety eight per cent \((n=293)\) of the participants lived with the child. Figure 4.1 shows the number of children in the family, including the participating child. More than two-thirds 74\%(n=221) of the parents said that they live with one child.

Figure 4.1: Percent distribution of number of children in the family
The majority 97% (n=290) of the participating parents were female (Figure 4.2), and 42% (n=125) were in the age group 30 to 39 years old, followed by those 32% (n=95) under 20 years old (Figure 4.3). The mean age of the adult participants was 28.7±11.0 years, ranging from 14 to 63 years of age.
Figure 4.4: Distribution of marital status

Figure 4.4 presents the marital status of the adult participants. Seventy-three per cent (n=218) of the respondents were single and 27% (n=82) were married. Most (63%) (n=189) of the participants were unemployed and only 37% (n=110) were employed (Figure 4.5).
A large proportion 91% ($n=272$) of the participants had primary education followed by 6% ($n=179$) with tertiary education and 3% ($n=89$) with secondary education (Figure 4.6).
4.3 TO DETERMINE THE ORAL HEALTH KNOWLEDGE OF PARENTS REGARDING THE CAUSES AND PREVENTION OF ECC AMONG CHILDREN ATTENDING SHARPEVILLE CLINIC

Table 4.1 shows the parents’ knowledge regarding the causes and prevention of early childhood caries. Ninety-four per cent of parents did not know that sugar consumption and the consumption of other cariogenic foods increases caries development. More than half of the respondents 59% (n=177) did not know that milk teeth are important in their children’s mouth and that it is important to clean a baby’s teeth after each meal, even before tooth eruption 54% (n=161).

About 87% (n=261) of the respondents did not know that dental caries affect children below 2 years of age and that brushing a child’s teeth is important for maintaining good oral health 65% (n=192). Most participants 97% (n=287) did not know that fluoride application is important in caries prevention. Seventy-nine per cent did not know that it is necessary to restore their baby’s teeth.
Table 4.1 Oral Health Knowledge of the participants

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
</tr>
<tr>
<td>Sugar consumption/other cariogenic food increase caries development</td>
<td>299</td>
<td>11</td>
<td>3.7</td>
<td>7</td>
</tr>
<tr>
<td>Milk teeth are important in your child’s mouth.</td>
<td>299</td>
<td>4</td>
<td>1.3</td>
<td>118</td>
</tr>
<tr>
<td>It’s important to clean baby’s teeth after each meal before the teeth erupt</td>
<td>299</td>
<td>4</td>
<td>1.3</td>
<td>134</td>
</tr>
<tr>
<td>Dental caries affect children below 2 years of age.</td>
<td>299</td>
<td>6</td>
<td>2.0</td>
<td>32</td>
</tr>
<tr>
<td>Brushing child’s teeth is important for maintaining good oral health</td>
<td>296</td>
<td>10</td>
<td>3.4</td>
<td>94</td>
</tr>
<tr>
<td>Fluoride application is important in caries prevention.</td>
<td>295</td>
<td>0</td>
<td>0.0</td>
<td>8</td>
</tr>
<tr>
<td>It necessary to do fillings on milk/baby teeth</td>
<td>299</td>
<td>0</td>
<td>0.0</td>
<td>62</td>
</tr>
</tbody>
</table>

4.4 TO DETERMINE THE PERCEPTIONS OF PARENTS REGARDING ECC AMONG CHILDREN ATTENDING SHARPEVILLE CLINIC

The perception of the participants with respect to early childhood caries is shown in Table 4.2. Four per cent of the participants knew that regular dental check-ups are important for a child’s oral health and 3%(n=9) knew that frequent and prolonged bottle-feeding may cause dental caries. Fourteen per cent(n=42) knew that night-time breast and bottle-feeding can cause dental caries.
Table 4.2 Perception of the participants

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Agree</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Dental regular check-ups are important for your child's oral health</td>
<td>299</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>286</td>
<td>95</td>
</tr>
<tr>
<td>Frequent and prolonged bottle-feeding can cause dental caries</td>
<td>299</td>
<td>9</td>
<td>3</td>
<td>40</td>
<td>13</td>
<td>250</td>
<td>84</td>
</tr>
<tr>
<td>Nighttime breast and bottle-feeding can cause dental caries</td>
<td>293</td>
<td>42</td>
<td>14</td>
<td>251</td>
<td>86</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Primary teeth are important in child's development</td>
<td>298</td>
<td>218</td>
<td>73</td>
<td>78</td>
<td>26</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Primary teeth are important during development of permanent teeth</td>
<td>296</td>
<td>232</td>
<td>78</td>
<td>63</td>
<td>21</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
### 4.5 TO DETERMINE PARENTS’ PRACTICES IN RELATION TO EARLY CHILDHOOD CARIES AMONG CHILDREN ATTENDING SHARPEVILLE CLINIC

**Table 4.3: Practice of the participants**

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who brushes the child’s teeth?</td>
<td>Don't brush</td>
<td>76</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Child</td>
<td>214</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Parent</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>How often do you brush your child’s teeth?</td>
<td>Never</td>
<td>41</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Once daily</td>
<td>218</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>Twice daily</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>After every meal</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>How often do you give plain water after each meal?</td>
<td>Never</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Once daily</td>
<td>66</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Twice daily</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>After every meal</td>
<td>206</td>
<td>70</td>
</tr>
<tr>
<td>When do you brush the child’s teeth?</td>
<td>Never</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Every morning</td>
<td>141</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Morning &amp; Evening</td>
<td>71</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>After every meal</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Bed time &amp; night time</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>What do you use to clean your child’s teeth?</td>
<td>Cloth &amp; water</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Toothbrush &amp; toothpaste</td>
<td>213</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>How often do you examine your child’s mouth?</td>
<td>Never</td>
<td>82</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td>170</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>38</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>How often do/did you put your child to bed with a bottle?</td>
<td>Never</td>
<td>155</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>137</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Do you take effort to improve your dental health knowledge?</td>
<td>No</td>
<td>280</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Do you assist your child to brush their teeth?</td>
<td>No</td>
<td>202</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>97</td>
<td>32</td>
</tr>
</tbody>
</table>
Seventy-two per cent (n=214) of the parents said their children’s brushes their own teeth and 82% (n=218) brush their children’s teeth once daily (Table 4.3). Seventy percent (n=206) of the participants give their children plain water after each meal. Sixty-four per cent (n=141) indicated that they brush their children’s teeth every morning and 93% (n=213) of the participants used a toothbrush and toothpaste. More than half 57% (n=170) of the respondents said that they examined their children’s mouth daily. Fifty-two per cent (n=155) of the respondents had never put their children to bed with a bottle. About 68% (n=202) of the parents did not assist their children to brush their teeth and 95% (n=280) did not make effort to improve their dental knowledge.

### 4.6 TO DETERMINE THE PREVALENCE OF ECC AMONG CHILDREN AT SHARPEVILLE CLINIC

A total of 60% (n=179) of children in this study had a dental caries and 40% (n=120) were caries free (Figure 4.7).

![Figure 4.7: Prevalence of dental caries](image)

Figure 4.7: Prevalence of dental caries
Table 4.4 shows the association between child age, gender and caries prevalence. The prevalence of caries was insignificantly higher in girls than boys (64% vs 56%, p>0.05). Children in the age group 3 to 5 years old showed a significantly higher caries prevalence than those aged between 1 and 2 years of age (76% vs 41%, p<0.05). Overall, the mean dmft score amongst the children was 7.5±4.2, ranging from 1 to 20. Girls had an insignificantly higher mean dmft score than did boys (7.9±3.3 vs 6.9±4.6, p>0.05), while children in the age group 1 to 2 years old had higher mean dmft scores than those aged 3 to 5 years old (7.6±4.7 vs 7.5±3.9, p>0.05).

Table 4.4: Caries prevalence and mean DMFT by age and gender

<table>
<thead>
<tr>
<th>Caries prevalence</th>
<th>Gender</th>
<th>Age (years)</th>
<th>p-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>1-2</td>
<td>3-5</td>
<td></td>
</tr>
<tr>
<td>with caries</td>
<td>90(64%)</td>
<td>57(41%)</td>
<td>122(76%)</td>
<td>0.159</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>86(56%)</td>
<td>82(59%)</td>
<td>38(24%)</td>
</tr>
<tr>
<td>caries free</td>
<td>50(36%)</td>
<td>67(44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DMFT score, mean±sd</td>
<td>7.9±3.3</td>
<td>7.6±4.7</td>
<td>7.5±3.9</td>
<td>0.081</td>
</tr>
</tbody>
</table>

4.7 TO DETERMINE ANY RELATIONSHIP BETWEEN PARENTS’ ORAL HEALTH KNOWLEDGE, PERCEPTION, PRACTICES AND THEIR CHILDREN’S CARIES STATUS

Table 4.5 shows the parents’ knowledge of ECC with respect to the caries status of their children. A large proportion of parents with a caries free child agreed that sugar consumption and other cariogenic foods increase caries development (8% vs 1%, p<0.05). They also knew that milk teeth are important in a child’s mouth (3% vs 1%, p<0.05) and that brushing a child’s teeth is important for maintaining good oral health and to prevent caries development (7% vs 1%, p<0.05).
Table 4.5: Participants knowledge to ECC by children caries status

<table>
<thead>
<tr>
<th>Statement</th>
<th>With Caries</th>
<th>Caries Free</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar consumption/other cariogenic food increase caries development.</td>
<td>Agree: 1(1%)</td>
<td>9(8%)</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>Disagree: 6(3%)</td>
<td>1(1%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK: 171(86%)</td>
<td>110(91%)</td>
<td></td>
</tr>
<tr>
<td>Milk teeth are important in the children mouth.</td>
<td>Agree: 1(1%)</td>
<td>3(3%)</td>
<td>0.012</td>
</tr>
<tr>
<td></td>
<td>Disagree: 82(46%)</td>
<td>36(30%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK: 96(54%)</td>
<td>81(67%)</td>
<td></td>
</tr>
<tr>
<td>It’s important to clean baby’s teeth after each meal before the teeth erupt.</td>
<td>Agree: 1(1%)</td>
<td>3(3%)</td>
<td>0.351</td>
</tr>
<tr>
<td></td>
<td>Disagree: 80(45%)</td>
<td>54(45%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK: 98(55%)</td>
<td>63(52%)</td>
<td></td>
</tr>
<tr>
<td>Dental caries affect children below 2 years of age.</td>
<td>Agree: 2(1%)</td>
<td>4(3%)</td>
<td>0.358</td>
</tr>
<tr>
<td></td>
<td>Disagree: 18(10%)</td>
<td>14(12%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK: 159(89%)</td>
<td>102(85%)</td>
<td></td>
</tr>
<tr>
<td>Brushing child’s teeth is important for maintaining good oral health.</td>
<td>Agree: 2(1%)</td>
<td>8(7%)</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>Disagree: 66(37%)</td>
<td>28(24%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK: 110(62%)</td>
<td>82(69%)</td>
<td></td>
</tr>
<tr>
<td>Fluoride application is important in caries prevention.</td>
<td>Agree: 0(0%)</td>
<td>0(0%)</td>
<td>0.181</td>
</tr>
<tr>
<td></td>
<td>Disagree: 3(2%)</td>
<td>5(4%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK: 175(88%)</td>
<td>112(96%)</td>
<td></td>
</tr>
<tr>
<td>It necessary to do fillings on milk/baby teeth</td>
<td>Agree: 1(1%)</td>
<td>3(3%)</td>
<td>0.351</td>
</tr>
<tr>
<td></td>
<td>Disagree: 80(45%)</td>
<td>54(45%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK: 98(55%)</td>
<td>63(52%)</td>
<td></td>
</tr>
</tbody>
</table>

The participant’s perception to the ECC of their children with respect to the caries status of their children is shown in Table 4.6. A significant higher proportion of parents with caries free children said that regular dental check-ups are important for their children’s oral health (8% vs 1%, p<0.05), and that frequent and prolonged bottle-feeding can cause dental caries (6% vs 1%, p<0.05). Few parents with caries free children said that primary teeth are important in children’s development compared to the group whose children had ECC (64% vs 79%, p<0.05). However, parents with caries free children said that primary teeth are important during development of permanent teeth (71% vs 83%, p<0.05).
Table 4.6: Participants perception to ECC by children caries status

<table>
<thead>
<tr>
<th></th>
<th>with caries</th>
<th>caries free</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental regular check-ups are important for your child’s oral health.</td>
<td>Agree 2(1%)</td>
<td>9(8%)</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>Disagree 2(1%)</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK 175(98%)</td>
<td>111(92%)</td>
<td></td>
</tr>
<tr>
<td>Frequent and prolonged bottle-feeding can cause dental caries.</td>
<td>Agree 2(1%)</td>
<td>7(6%)</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>Disagree 18(10%)</td>
<td>22(18%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK 159(88%)</td>
<td>91(76%)</td>
<td></td>
</tr>
<tr>
<td>Nighttime breast and bottle-feeding can cause dental caries.</td>
<td>Agree 22(13%)</td>
<td>20(17%)</td>
<td>0.343</td>
</tr>
<tr>
<td></td>
<td>Disagree 151(87%)</td>
<td>100(83%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK 0(0%)</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td>Primary teeth are important in child’s development.</td>
<td>Agree 142(79%)</td>
<td>76(64%)</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>Disagree 37(21%)</td>
<td>41(35%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK 0(0%)</td>
<td>2(1%)</td>
<td></td>
</tr>
<tr>
<td>Primary teeth are important during development of permanent teeth.</td>
<td>Agree 149(83%)</td>
<td>83(71%)</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>Disagree 30(17%)</td>
<td>33(28%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DK 0(0%)</td>
<td>1(1%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.7 illustrates the participant’s practices in relation to ECC with respect to their children’s caries status. A significantly higher proportion of the parents with a caries free child indicated that they brush their children’s teeth themselves compare to the group whose children had caries (6% vs 1%, p<0.05) and brush the child teeth twice daily (3% vs 1%, p<0.05). Seventy-nine per cent(n=93) of the participants with a caries free child gave the child plain water after every meal compare to 64%(n=113) of parents in the group whose children had caries (p<0.05).
<table>
<thead>
<tr>
<th>Question</th>
<th>With Caries</th>
<th>Caries Free</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who brushes the child’s teeth?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t brush</td>
<td>31(17%)</td>
<td>45(38%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Child</td>
<td>147(82%)</td>
<td>67(56%)</td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>1(1%)</td>
<td>7(6%)</td>
<td></td>
</tr>
<tr>
<td>How often do you brush your child’s teeth?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>16(10%)</td>
<td>25(25%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Once daily</td>
<td>148(90%)</td>
<td>70(69%)</td>
<td></td>
</tr>
<tr>
<td>Twice daily</td>
<td>0(0%)</td>
<td>3(3%)</td>
<td></td>
</tr>
<tr>
<td>After every meal</td>
<td>0(0%)</td>
<td>3(3%)</td>
<td></td>
</tr>
<tr>
<td>How often do you give plain water after each meal?</td>
<td></td>
<td></td>
<td>0.002</td>
</tr>
<tr>
<td>Never</td>
<td>20(11%)</td>
<td>1(1%)</td>
<td></td>
</tr>
<tr>
<td>Once daily</td>
<td>443(24%)</td>
<td>23(19%)</td>
<td></td>
</tr>
<tr>
<td>Twice daily</td>
<td>0(0%)</td>
<td>1(1%)</td>
<td></td>
</tr>
<tr>
<td>After every meal</td>
<td>113(64%)</td>
<td>93(79%)</td>
<td></td>
</tr>
<tr>
<td>When do you brush the child’s teeth?</td>
<td></td>
<td></td>
<td>0.012</td>
</tr>
<tr>
<td>Never</td>
<td>3(2%)</td>
<td>3(4%)</td>
<td></td>
</tr>
<tr>
<td>Every morning</td>
<td>102(71%)</td>
<td>39(51%)</td>
<td></td>
</tr>
<tr>
<td>Morning &amp; Evening</td>
<td>38(26%)</td>
<td>33(42%)</td>
<td></td>
</tr>
<tr>
<td>After every meal</td>
<td>0(0%)</td>
<td>2(3%)</td>
<td></td>
</tr>
<tr>
<td>Bed time &amp; night time</td>
<td>2(1%)</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td>What do you use to clean your child’s teeth?</td>
<td></td>
<td></td>
<td>0.002</td>
</tr>
<tr>
<td>Cloth &amp; water</td>
<td>3(2%)</td>
<td>10(13%)</td>
<td></td>
</tr>
<tr>
<td>Toothbrush &amp; toothpaste</td>
<td>145(97%)</td>
<td>68(87%)</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>2(1%)</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td>How often do you examine your child’s mouth?</td>
<td></td>
<td></td>
<td>0.005</td>
</tr>
<tr>
<td>Never</td>
<td>43(24%)</td>
<td>39(33%)</td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>99(56%)</td>
<td>71(60%)</td>
<td></td>
</tr>
<tr>
<td>Weekly</td>
<td>1(1%)</td>
<td>3(2%)</td>
<td></td>
</tr>
<tr>
<td>Monthly</td>
<td>32(18%)</td>
<td>6(5%)</td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>2(1%)</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td>How often did you put your child to bed with a bottle?</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Never</td>
<td>66(37%)</td>
<td>89(75%)</td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>11(62%)</td>
<td>26(22%)</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>2(1%)</td>
<td>4(3%)</td>
<td></td>
</tr>
<tr>
<td>Do you take effort to improve your dental health knowledge?</td>
<td></td>
<td></td>
<td>0.004</td>
</tr>
<tr>
<td>No</td>
<td>173(98%)</td>
<td>107(90%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4(2%)</td>
<td>12(10%)</td>
<td></td>
</tr>
<tr>
<td>Do you assist your child to brush their teeth?</td>
<td></td>
<td></td>
<td>0.815</td>
</tr>
<tr>
<td>No</td>
<td>120(67%)</td>
<td>82(68%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>59(33%)</td>
<td>38(32%)</td>
<td></td>
</tr>
</tbody>
</table>
Almost half 42% (n=33) of the parents with a caries free child brushed the child’s teeth morning and evening compared to 26% (n=38) of parents whose children had ECC (p<0.05). Sixty per cent (n=71) of the participants with a caries free child examined their child's mouth every day compared to 56% (n=99) of the other group (p<0.05). More than two-thirds 75% (n=89) of the parents with a caries free child indicated that they never put their children to bed with a bottle compared to 37% (n=66) the parents whose children had ECC (p<0.05).

**Parental knowledge, perception and practices as predictor of ECC**

**Table 4.8** Parents’ oral health knowledge was found to be significantly associated with disagreeing that sugar consumption and other cariogenic foods increase caries development (OR=27.0, p=0.013, CI: 1.9-100.0). Parents were found to be six-times more likely to lack knowledge that sugar consumption and other cariogenic foods increase caries development (OR=6.8, p=0.014, CI: 1.5-32.9). Parents’ oral health knowledge was found to be significantly associated with disagreeing that brushing a child’s teeth is important for maintaining good oral health (OR=9.4, p=0.006, CI: 1.9-47.2). Parents were found to be five-times more likely to lack knowledge that brushing a child’s teeth is important for maintaining good oral health (OR=5.4, p=0.037, CI: 1.1-25.9)

**Table 4.8** Parent knowledge as predictor of ECC

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar consumption/other cariogenic food increase caries development.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>27.0</td>
<td>(1.9;100.0)</td>
<td>0.013</td>
</tr>
<tr>
<td>Don’t know</td>
<td>6.8</td>
<td>(1.5;32.9)</td>
<td>0.014</td>
</tr>
<tr>
<td>Milk teeth are important in the children mouth.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>6.8</td>
<td>(0.68;67.9)</td>
<td>0.101</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3.6</td>
<td>(0.36;34.8)</td>
<td>0.276</td>
</tr>
<tr>
<td>It’s important to clean baby’s teeth after each meal-before the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>4.4</td>
<td>(0.45;43.9)</td>
<td>0.202</td>
</tr>
</tbody>
</table>
Dental caries affect children below 2 years of age.

<table>
<thead>
<tr>
<th>Perception</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental regular check-ups are important for your child’s oral health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>2.6</td>
<td>(0.41;16.1)</td>
<td>0.313</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3.1</td>
<td>(0.56;17.3)</td>
<td>0.194</td>
</tr>
</tbody>
</table>

Brushing child’s teeth is important for maintaining good oral health

<table>
<thead>
<tr>
<th>Perception</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency and prolonged bottle-feeding can cause dental caries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>2.8</td>
<td>(0.5;15.5)</td>
<td>0.223</td>
</tr>
<tr>
<td>Don’t know</td>
<td>6.1</td>
<td>(1.2;30.1)</td>
<td>0.026</td>
</tr>
</tbody>
</table>

Fluoride application is important in caries prevention.

<table>
<thead>
<tr>
<th>Perception</th>
<th>Disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>夜 nighttime breast and bottle-feeding can cause dental caries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>1.2</td>
<td>(0.7;2.1)</td>
</tr>
</tbody>
</table>

Table 4.9: Parent perception as predictor of ECC

<table>
<thead>
<tr>
<th>Perception</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental regular check-ups are important for your child’s oral health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>7.1</td>
<td>(1.5;33.4)</td>
<td>0.013</td>
</tr>
<tr>
<td>Disagree</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Don’t know</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Frequent and prolonged bottle-feeding can cause dental caries

<table>
<thead>
<tr>
<th>Perception</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency and prolonged bottle-feeding can cause dental caries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>1.4</td>
<td>(0.7;2.6)</td>
<td>0.344</td>
</tr>
<tr>
<td>Don’t</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 4.9 Parents were found to be seven-times more likely not knowing that dental regular check-ups are important for child oral health (OR=7.1, p=0.013, CI: 1.5-33.4). Parents oral health perception was found to be significantly associated with not knowing that primary teeth are important in child development (OR=0.48, p=0.007, CI: 0.2;0.8-33.4) and primary teeth are important during development of permanent teeth (OR=0.51, p=0.018, CI: 0.3-0.9).
Primary teeth are important in child’s development

<table>
<thead>
<tr>
<th>Know</th>
<th>Disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>0.48</td>
<td>0.51</td>
</tr>
<tr>
<td>Don’t know</td>
<td>1</td>
<td>(0.2;0.8)</td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
<td>(0.3;0.9)</td>
</tr>
<tr>
<td>P-value</td>
<td>0.007</td>
<td>0.018</td>
</tr>
</tbody>
</table>
Table 4.10: Parent practice as predictor of ECC

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>95%CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who brushes the child’s teeth?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't brush</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child</td>
<td>3.1</td>
<td>(1.9;5.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Parent</td>
<td>0.2</td>
<td>(0.02;1.8)</td>
<td>0.151</td>
</tr>
<tr>
<td><strong>How often do you brush your child’s teeth?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once daily</td>
<td>3.3</td>
<td>1.7;6.5</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>How often do you give plain water after each meal?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once daily</td>
<td>0.09</td>
<td>0.01;0.74</td>
<td>0.025</td>
</tr>
<tr>
<td>After every meal</td>
<td>0.06</td>
<td>0.01;0.46</td>
<td>0.007</td>
</tr>
<tr>
<td><strong>When do you brush the child’s teeth?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Every morning</td>
<td>2.6</td>
<td>0.5;13.5</td>
<td>0.251</td>
</tr>
<tr>
<td>Morning &amp; Evening</td>
<td>1.2</td>
<td>0.2;6.1</td>
<td>0.868</td>
</tr>
<tr>
<td><strong>What do you use to clean your child’s teeth?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloth &amp; water</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toothbrush &amp; toothpaste</td>
<td>7.1</td>
<td>1.9;26.7</td>
<td>0.004</td>
</tr>
<tr>
<td><strong>How often do you examine your child’s mouth?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>1.3</td>
<td>0.7;2.1</td>
<td>0.385</td>
</tr>
<tr>
<td>Weekly</td>
<td>0.3</td>
<td>0.03;3.0</td>
<td>0.309</td>
</tr>
<tr>
<td>Monthly</td>
<td>4.8</td>
<td>1.8;12.8</td>
<td>0.002</td>
</tr>
<tr>
<td>Sometimes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>How often do/did you put your child to bed with a bottle?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>5.7</td>
<td>3.4;9.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Always</td>
<td>0.67</td>
<td>0.1;3.8</td>
<td>0.655</td>
</tr>
<tr>
<td><strong>Do you take effort to improve your dental health knowledge?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>4.9</td>
<td>1.5;15.4</td>
<td>0.007</td>
</tr>
<tr>
<td><strong>Do you assist your child to brush their teeth?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0.94</td>
<td>0.6;1.5</td>
<td>0.815</td>
</tr>
</tbody>
</table>
CHAPTER 5
DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

In chapter 4, the study results are presented and interpreted. This chapter focuses on the discussion of the findings and compares these findings to the findings of other studies.

5.2 DEMOGRAPHICS OF THE STUDY

The majority 97% (n=290) of the participating parents were female and 42% (n=125) were in the age group 30 to 39 years old, followed by those 32% (n=95) under 20 years old. With regards to the marital status of the adult participants, 73% (n=218) of the respondents were single and 27% (n=82) were married. Weinstein, et al (1996) suggested that families with complicated relationships turn to have children with high caries levels. In the present study, the prevalence of caries was higher in girls than boys; however, the difference was not statistically significant. Similar findings were reported by Al Hosani and Rugg-Gunn (1998), while other studies reported a significant gender difference in caries (Hattab et al. 1999; O’Sullivan et al. 1994). Therefore this indicates that gender is not a risk factor. This may be because at this early age feeding and oral hygiene practices related to dental caries are mostly controlled by parents and are equally shared.

Most of the participants (63%; n=189) were unemployed and only 37% (n=110) were employed and a large proportion 91% (n=272) of the participants had primary education followed by 6% (n=179) with tertiary education and 3% (n=89) with secondary education. With an average of 73% (n=218) of parents confirming to be single, 63% (n=188) of the parents unemployed, the high prevalence of caries in this study correlates with the
socio-economic status of the parents. Since most of the parents were single and unemployed, it must have been difficult for them to cater for the child's needs let alone oral health needs such as changing toothbrushes timely, providing health food such as fruits and vegetables as well as travelling to the clinic for regular dental check-ups.

According to a study conducted by Tinahoff (1997), children from disadvantaged socio-demographics backgrounds turn to present with high degrees of dental caries as compared to those children who are from socio-demographically advantaged backgrounds. He further discovered that children whose parents had attained higher education level also appeared to have lower dmft scores Tinahoff (1997).

The sample population used in this study represents the children who attended the Immunisation Clinic and those who came in for regular dental treatment. It did not include children of this age of the entire clinic. The sample number of children examined in the above-mentioned departments was large enough to be represent the population attending the clinic.

Scanty literature in the discussion.

5.3 PREVALENCE OF EARLY CHILDHOOD CARIES

In this study the prevalence of caries was found to be insignificantly higher in girls than boys (64% vs 56%, p>0.05). Children in the age group 3 to 5 years old showed a significantly higher caries prevalence than those aged between 1 and 2 years of age (76% vs 41%, p<0.05). Overall, the mean DMFT score amongst the children was 7.5±4.2, ranging from 1 to 20. Girls had an insignificantly higher mean DMFT score than did boys (7.9±3.3 vs 6.9±4.6, p>0.05), while children in the age group 1 to 2 years old had higher mean DMFT scores than those aged 3 to 5 years old (7.6±4.7 vs 7.5±3.9, p>0.05).
In Brazil a cross-sectional study indicated that, amongst 320 children, the prevalence of early childhood caries was 20% of the sample (dos Santos Junior et al. 2014). In China, Liu and colleagues reported early childhood caries prevalence in 61.6% of their sample (Liu et al. 2014). In Italy, of the 515 children who participated in the study, 19% had experienced early childhood caries (Nobile et al. 2014). In the present study, 40% of the children were caries free, which is similar to the incidence of ECC (39.7%) reported by the South Africa National Oral Health Survey, 2000, (Van Wyk and Van Wyk, 2004). This might be an indication that caries prevalence in South Africa remains a critical issue because, ten years after this study by Van Wyk and Van Wyk, (2004), we still discover the same results with respect to caries prevalence. This is also an indication that little or nothing is being done in the country to lower the incidence of early childhood caries.

Several studies reported that the prevalence of early childhood caries significantly increased with age (Nobile et al. 2014; Wulaerhan et al. 2014). In this study, children in the age group 3 to 5 years of age had a significantly higher prevalence of early childhood caries when compared to those children aged between 1 and 2 years old. Between the ages of 1 and 2 years old, children have not yet reached full primary dentition while between the ages of 3 and 5 years old, children have the whole set of primary teeth which makes them more susceptible to development of dental caries when compared to children in the 1 to 2 years old group. Parents tend to shift the responsibility for brushing of teeth to children by the age of 3 years, which leads to poor brushing and thus pre-disposing the teeth to the development of early dental caries.

Although there is a well-established relationship between being single-parent (Wigen and Wang, 2010); lower socio-economic status (Aida et al. 2008; Ardenghi et al. 2012; Wigen et al. 2011) and level of education (Leroy et al. 2008; Li et al. 2011; Piovesan et al. 2010), these studies did not assess the association between caries prevalence and these demographics. However, greater proportions of the parents or caregivers were single, unemployed and had primary education as their highest qualification, which indicates that there is indeed an inversely proportional relationship between socio-
economic, single parenthood and low levels of education and the development of ECC in children.

5.4 KNOWLEDGE OF PARENTS REGARDING EARLY CHILDHOOD CARIES

Results from this study indicate that, the parents’ knowledge of ECC with respect to the caries status of their children. A large proportion of parents with a caries free child agreed that sugar consumption and other cariogenic foods increase caries development (8% vs 1%, p<0.05). They also knew that milk teeth are important in a child’s mouth (3% vs 1%, p<0.05) and that brushing a child’s teeth is important for maintaining good oral health and to prevent caries development (7% vs 1%, p<0.05). In the current study, more than two-thirds of the parents did not know that sugar consumption and the consumption of other cariogenic foods increase caries development. Previous studies have reported that frequent consumption of sweet drinks and cariogenic food were associated with caries development in children (Dimitrova et al. 2002; Gussy et al. 2006; Reisine and Douglass, 1998; Ripa, 1998; Lumis and Hamdan, 2002).

A number of studies have illustrated that the brushing of teeth is associated with a decrease in early childhood caries (Namal et al. 2009; Narksawat et al. 2011; Togoo et al. 2012). Studies have revealed that poor oral hygiene in parents is associated with early childhood caries (Mohebbi et al. 2008; Meurman and Pieniha˚kkinen, 2010; Seow et al. 2009). The findings of this study show that two-thirds of the parents do not know that brushing a child’s teeth is important for maintaining good oral health. In addition, more than half 54% (n=161) of the participants did not know that it is important to clean child’s teeth after each meal.

In a study by Pedrita et al (2015), majority of mothers did not receive information on dental care during pregnancy. In addition to that, they don’t know when to start the baby’s oral hygiene or when to visit the dentist for the first time. When the mothers received some type of information, it was from the pediatric physician regarding the child’s health and nothing was mentioned about the oral health of their babies
Several studies have demonstrated that parents knew that the use of fluorinated toothpaste was useful in preventing tooth decay (Schroth et al., 2007; Gussy et al., 2008). In this study, most participants (97%) did not know that fluoride application is important in caries prevention. Many authors have established the significant role of parents in reducing the risk of ECC (Finalyson et al. 2007; Isong et al. 2011; Suresh et al. 2010). Therefore, ECC can be prevented by designing oral health education programmes for parents and primary caregivers.

5.5 PERCEPTIONS OF PARENTS REGARDING EARLY CHILDHOOD CARIES

A significant higher proportion of parents with caries free children said that regular dental check-ups are important for their children’s oral health (8% vs 1%, p<0.05), and that frequent and prolonged bottle-feeding can cause dental caries (6% vs 1%, p<0.05). Few parents with caries free children said that primary teeth are important in children’s development compared to the group whose children had ECC (64% vs 79%, p<0.05). However, parents with caries free children said that primary teeth are important during development of permanent teeth (71% vs 83%, p<0.05).

Many studies reported that an early visit to a dentist for regular dental check ups, significantly reduces early childhood caries (Beil et al. 2012; Beil et al. 2014; Yeap and Slack-Smith, 2013). Despite the current recommendations for the year 1 dental visit, the findings of this study indicated that only 4%(n=11) of the parents or caregivers knew that regular dental check-ups are important for their child’s oral health.

A number of studies reported bottle feeding as a risk factor for the development of early childhood caries (Azevedo et al. 2005; Davies, 2000; Hoeft et al. 2010; Tyagi, 2008), while others found no effect (Leroy et al. 2008). A significantly high proportion of ECC was found amongst children who were breast and/or bottle-fed at night, (Du et al. 2000; Seow et al. 2010; Tyagi, 2008). In this study, only a few 3%(n=89) of the parents or caregivers knew that frequent and prolonged bottle-feeding may cause dental caries.
Furthermore, 14% knew that night-time breast and bottle-feeding can cause dental caries.

5.6 PRACTICES OF PARENTS IN RELATION TO EARLY CHILDHOOD CARIES

A significantly higher proportion of the parents with a caries free child indicated that they brush their children’s teeth themselves compare to the group whose children had caries (6% vs 1%, p<0.05) and brush the child teeth twice daily (3% vs 1%, p<0.05). Seventy-nine per cent (n=93) of the participants with a caries free child gave the child plain water after every meal compare to 64% (n=113) of parents in the group whose children had caries (p<0.05). Sixty four per cent (n=141) indicated that they brush their child’s teeth every morning and 93% (n=213) of the participants used a toothbrush and toothpaste. More than half 57% (n=170) of the respondents said that they examined their child's mouth daily. Fifty-two per cent (n=155) of the respondents had never put their child to bed with a bottle. About 68% (n=202) of the parents did not assist their child to brush their teeth and 95% (n=280) did not make effort to improve their dental knowledge.

There is enough evidence that children who started brushing their teeth earlier and brushed their teeth once or twice daily are more likely to have less caries (Berg & Slayton, 2009; Gussy et al. 2008; Mohebbi et al. 2008). It is also shown that the use of baby bottles during the night is associated with the development of early childhood caries (Du et al. 2000; Meurman and Pieniha¨kkinen, 2010; Tyagi, 2008). In this study, more than two-thirds of parents or caregivers said their child brushes their own teeth once daily, every morning, using toothbrush and toothpaste. Furthermore, more than half 57% (n=170) said that they examine their child’s mouth daily and never put their child to bed with a bottle.
5.7 ASSOCIATION BETWEEN KNOWLEDGE, PERCEPTION, PRACTICES OF PARENTS REGARDING EARLY CHILDHOOD CARIES

The results of this study illustrated that a significantly higher proportion of the parents with a caries free child indicated that they brush their children’s teeth themselves and that they brush the child’s teeth twice daily compared to the group whose children had developed ECC. Promoting the brushing of teeth in young children is of paramount importance because this is a way to instil dental health by maintaining clean teeth. Results revealed lower prevalence of caries amongst children who were assisted by their mothers when cleaning their teeth. This suggests that children should always be assisted to brush their teeth. Previous studies reported similar findings with regards to caries prevalence and assistance from the mother (Bjarnason et al. 1995, Kuriakose and Joseph, 1999). Parents’ oral health knowledge was found to be significantly associated with caries and parents disagreeing that sugar consumption and other cariogenic foods increase caries development. Parents were found to be six-times more likely to lack knowledge that sugar consumption and other cariogenic foods increase caries development. Parents’ oral health knowledge was found to be significantly associated with disagreeing that brushing a child’s teeth is important for maintaining good oral health. Parents were found to be five-times more likely to lack knowledge that brushing a child’s teeth is important for maintaining good oral health.

This study revealed that parents were found to be seven-times more likely not knowing that dental regular check-ups are important for child oral health. Parents oral health perception was found to be significantly associated with not knowing that primary teeth are important in child development and primary teeth are important during development of permanent teeth. Prolonged and frequent use of bottle feeding put a population of low socio-economic status at Latino preschool children at an increased risk of developing ECC (Hoeft et al. 2010). In this study parents were found to be six times more likely to frequently bottle feed their children, hence this population was at a high risk of developing ECC and a number of studies have found a strong relationship between frequent bottle feeding and the development of ECC in children similar to this.
age group (Roberts et al 1993; Mohebbi et al 2003; Hallet et al 2002)

Cleaning of the child’s mouth must begin before the teeth erupt and tooth brushing is recommended as soon as the first tooth erupts in the mouth at least once daily and twice daily from 2 years old onwards (Berg and Slayton, 2009). Parents with confidence in terms of brushing their children’s teeth and their own teeth using a fluoridated tooth paste had children free of caries (Gussy et al. 2008; Mohebbi et al. 2008).

Parent’s oral health practice was found to be significantly associated with brushing child teeth once daily. Parents were found to be seven-times more likely to clean their child’s teeth with toothbrush and toothpaste. Most of the parents did not think that taking care of primary teeth was important thus they preferred to brush their children’s teeth once daily and did not make any effort to assist the children in tooth brushing.

Oral health literacy is one of the most important facctors affecting oral health today. Poor oral health is associated with poorer perceptions on oral health, under usage of resources and serviced as well as poorer understanding of written and spoken instructions on self care (Jackson 2006; Yin et al. 2009).

This study revealed that parents were found to be five-times less likely to take effort to improve their dental health knowledge. The study is revealing a significant lack of oral health knowledge from parents which may be linked to the fact that parents with children having caries have shown to put no effort in improving their oral health knowledge in terms or reading books and health information pamphlets offered at the clinic and health centres. There is evident relationship between parent’s level of oral health knowledge, perceptions and practices as revealed by the results of this study and more effort still needs to be put in health education which needs to focus on emphasising the importance of parental involvement when it comes to ECC prevention from an early age.
5.8 STUDY LIMITATIONS

The sample size and the time given to conduct the study was limiting in a sense that such a study has never been conducted in this district, so a larger sample size would have been favourable in order to have a bigger view of the subject researched. There is still a need to conduct this study on broader scale which will include all the district clinics and hospitals where dental services are being rendered. The study is a cross-sectional, cases (children with caries) are over represented as shown in this study, which might affect the calculated odd ratio. The pilot test was done in a similar environment as the venue of the study due to lack of participants in the initially proposed pilot venue. Parents who were unable to read and write were assisted with completing the questionnaire using the local language, Lack of incentives such as toothpastes and toothbrushes was also a limitation. Some parents wanted to know if toothpastes and toothbrushes will be provided after data collection.

5.9 CONCLUSION

This study revealed that parents who lacked knowledge with regards to sugar consumption and those who did not brush their children’s teeth to prevent ECC development presented with higher odd ratios as compared to the other groups. Parents who did not know that regular dental check ups are important and the importance of primary teeth in their children’s mouth also presented with a high odd ratio compared to other groups. The prevalence of ECC in this sample suggests the need for oral health promotion strategies that include a more supportive and practical advice for parents and caregivers of preschool children, along with improved access to dental care, to enable primary prevention and management of ECC. Cultural beliefs also play a major role in this population, therefore counselling of the parents with regards to how they can prevent ECC must focus on behaviour and belief modification. Intervention during early childhood would seem to be a most appropriate action to ensure healthy dental habits throughout life. This study has revealed a number of significant issues which have
important implications for current efforts to prevent the development of dental caries in young children and which will provide a basic foundation for active preventative strategies in the future. Prevention of caries in this age group needs to begin at least during the time of antenatal classes and emphasis put when the child’s first tooth eruption.

5.10 RECOMMENDATIONS

Children’s preventive practices tend to be controlled by their parents’ actions and attitudes. The best way of motivating young children towards good oral health is through their parents because at this age parents act as their role models. For the implementation of preventive attitudes in a given population, the knowledge about the existing standards of health and existing practices and attitudes of that particular population is essential. Furthermore Dentists across the board need to be sensitive and aware of the risk factors that are associated with early childhood prevalence in their respective communities and be able to come up with oral health promotion and education in order to deal with issue effectively.

Multidisciplinary approaches such as outreaches to schools, churches, media and health care centres. Reinforce school outreach programmes grade 0-3, oral health screening and oral health promotion. Incorporating oral health education during the prenatal and the postnatal visits for pregnant women is highly recommended. We can also adopt AADA policies that we should incorporate 1 year oral health examination in the immunization booklet as well as bargaining for a Strep mutans vaccine. There is still a need to conduct this study on broader scale which will include all the district clinics and hospitals where dental services are being rendered.
REFERENCES


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ANNEXURE A: STUDY QUESTIONNAIRE

Demographic Information

Gender  
- Male  
- Female  

Occupation  
- Employed  
- Unemployed  

Education Level  
- Primary  
- Secondary  
- Tertiary  

Are you the biological parent of the child?  
- Yes  
- No  

Do you live with the child?  
- Yes  
- No  

Number of children in the family including participant (child)  
1  
3  
5  
2  
4  
>5  

Knowledge Items

Do you have basic oral health care knowledge?  
- Yes  
- No  
- Not sure  

Sugar consumption and other cariogenic food increase caries development.  
- Agree  
- Disagree  
- DK  

Primary /Milk teeth are important in your child’s mouth.  
- Agree  
- Disagree  
- DK  

It is important to begin cleaning your baby’s teeth after each meal even before the teeth erupt.  
- Agree  
- Disagree  
- DK  

Is it necessary to do fillings on milk/baby teeth?  
- Agree  
- Disagree  
- DK  

Dental caries affect children below 2 years of age.  
- Agree  
- Disagree  
- DK  

Brushing your child’s teeth is important for maintaining good oral health and to prevent caries development.  
- Agree  
- Disagree  
- DK  

Fluoride application is important in caries prevention.  
- Agree  
- Disagree  
- DK  

What is the ideal time for child’s first dental visit?  
- When tooth erupt  
- In pain  
- Not sure  

Perception Items

Dental regular check-ups are important for your child’s oral health.  
- Agree  
- Disagree  

Frequent and prolonged bottle-feeding can cause dental caries.  
- Agree  
- Disagree  

Nighttime breast and bottle-feeding can cause dental caries.  
- Agree  
- Disagree  

Primary teeth are important in child’s development.  
- Agree  
- Disagree  

Primary teeth are important during development of permanent teeth.  
- Agree  
- Disagree  

Who brushes the child’s teeth  
- Child  
- Parent  
- Don’t brush  

How often do you brush your child’s teeth?  
- After every meal  
- Twice daily  
- Once daily  
- Never  

How often do you give plain water after each meal?  
- After every meal  
- Twice daily  
- Once daily  
- Never
When do you brush the child’s teeth?  
- Every morning  
- Before bedtime  
- M+B  

What do you use to clean your child’s teeth?  
- Cloth and water  
- Brush and toothpaste  
- Other aids  

How often do you examine your child’s mouth?  
- Everyday  
- Weekly  
- Monthly  
- Never  

How often do/did you put your child to bed with a bottle?  
- Always  
- Sometimes  
- Never  

Do you take effort to improve your dental health knowledge?  
- Yes  
- No  

Do you assist your child to brush their teeth?  
- Yes  
- No  

Do you give plain water to your child after each meal?  
- Yes  
- No  

Thank you for your cooperation in participating in this study, God bless you....
ANNEXURE B: PARTICIPANT INFORMATION SHEET

The parent/guardian will be requested to sign consent for their participation in this study and an assent form for the child's participation. The parent will be assisted by the researcher in to completing the structured questionnaire followed by an oral examination of their child.

YOU ARE REQUESTED TO PARTICIPATE IN A STUDY ENTITLED:
Oral health Knowledge, Perceptions and Practices of parents in relation to early childhood caries among children 1-5years at Sharpeville Clinic, South Africa.

THE PURPOSE OF THE STUDY IS TO DETERMINE THE PREVALENCE OF EARLY CHILDHOOD CARIES AMONG CHILDREN AGED 1-5 YEARS AND PRACTICES OF PARENTS ON ECC AT SHARPEVILLE CLINIC.

VOLUNTARY PARTICIPATION
YOUR PARTICIPATION IN THIS PROJECT IS VOLUNTARY, YOU CAN WITHDRAW FROM PARTICIPATING IN THE PROJECT AT ANY TIME YOU WISH TO AND YOUR DECISION WILL NOT AFFECT YOUR SUBSEQUENT TREATMENT OR RELATIONSHIP WITH THE TREATING DOCTOR.

RISK TO THE PARTICIPANTS
NO RISKS WILL BE INVOLVED IN THIS STUDY.
ANNEXURE C: INFORMED CONSENT FORM

Name of Study: **Oral health Knowledge, Perceptions and Practices of parents in relation to early childhood caries among children 1-5 years at Sharpeville Clinic, South Africa.**

**Statement concerning participation in a Research Study**

I have read/heard the information on the aims and objectives of the proposed study and was provided the opportunity to ask questions and given adequate time to decide about the issue. The aim and objectives of the study are sufficiently clear to me. I have not been pressurized to participate in any way.

I know that information will be collected about me. I am aware that this material may be used in scientific publications, which will be electronically available throughout the world. I consent to this provided that my name and medical record number are not revealed.

I understand that participation in this Study is completely voluntary and that I may withdraw from it at any time and without supplying reasons.

I know that this Study has been approved by the Medunsa Research Ethics Committee (MREC) University of Limpopo (Medunsa Campus). I am fully aware that the results of this Study will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed.

I hereby give consent to participate in this Study.

..................................................................................................................
Name of Parent........................................................................................................
..................................................................................................................
Signature of Parent................................................................................................
..................................................................................................................
Place..................................................................................................................  Date.........................................................................................  Witness........................................................................................
**Statement by the Researcher**

I provided verbal and written information regarding this Study.

I agree to answer any future questions concerning the Study as best as I am able.

I will adhere to the approved protocol.

........................................................................................................................................................................

Name of Researcher                Signature                            Date                           Place
ANNEXURE D: LETTER TO HOSPITALS MANAGEMENT

Enquiries: Dr D.E Ntombela
Tel: 016 451 2342

To: Kopanong Hospital Research Committee
Mr T Nhlapo
Kopanong Hospital
NO: 2 Cassino Rd
Duncanville

PERMISSION REQUEST TO CONDUCT RESEARCH

My name is Dr D.E NTOMBELA a Dentist practicing at Sharpeville Community Health Center, and I am currently studying towards my Masters degree in Public Health (MPH) at the University of Limpopo previously known as MEDUNSA. Conducting a research is one of the requirements that I need to fulfill in order to successfully attain the above-mentioned qualification.

The proposed title of my study is: Parents oral health Knowledge, Perceptions and Practices that influence early childhood caries prevalence and prevention among children aged between 1-5 years at Sharpeville CHC, South Africa. This study will be conducted under the supervision of DR S L MNDZEBELE a senior lecture and supervisor in the Department of Public Health at the University of Limpopo (MEDUNSA campus).
STUDY BACKGROUND

I chose to research on this area because of an increased number of paedodontic patients as young as 1 year old have been observed at Sharpeville Dental Clinic as well as other surrounding Dental clinics that I work in during my rotations. Children visit these dental clinics in the company of their parents or caregivers on a daily basis for dental extractions as a result of early childhood caries (ECC).

Early childhood caries (ECC), also known as the “nursing bottle syndrome” has become a public health problem both in South Africa and other Sub-Saharan countries. The American Dental Association defines ECC as the development of decayed cavities on the deciduous teeth of children from age 6-71 months defines early childhood caries. The development of caries at this age leads to early loss of the deciduous teeth, which results to psychological disturbances and future esthetic issues on the child, more especially the girl child during the stages of puberty. In order to reduce the number of early dental extractions due to early childhood caries, the success of prevention measures depends upon the parents and caregivers oral health knowledge, understanding, socio-economic background, behavior and perceptions towards the prevention of early childhood caries.

I hereby seek permission to conduct the study at the above-mentioned clinic during office hours at Sharpeville clinic and the pilot testing at Kopanong Hospital, however the process of data collection will not by any means temper with the smooth running of the oral health services, that will be ensured by collecting data after the patient received treatment. I have provided you with a participation information sheet as well as a consent form draft that I intend to use in order to access permission from the parents to participate in the study. The proposal of my study can be made available to you upon request. Upon completion of the study, the District will be provided with a copy of my full research report and findings (Dissertation).

If you require any further information, please do not hesitate to contact me on my details above. Thank you for your time and consideration on this matter.
My supervisor can be contacted on the following details:

Supervisor Details

Dr. Samuel L. Mndzebele
PhD; MPH; PGDPH; BEd; Adv.Dip.Prev-Dent; Dip.DH
Senior-Lecturer: HSM&P (University of Limpopo - MEDUNSA Campus)
School of Public Health
P.O.MEDUNSA, 0204
Tel: 012 521 4175.
Cell: 073 827 6309
Email: samuelmndzebele@embanet.com / Samuel.Mndzebele@ul.ac.za

Requested by
Dr D.E Ntombela

____________________________  ___________________
Date

Dr O. Motloung
Clinical manager Oral Health
RECOMMENDED/ NOT RECOMMENDED

____________________________  ___________________
Date
Mr T Nhlapo  
Chairperson KHRC  
APPROVED/ NOT APPROVED

____________________________  ___________________  
                                Date
ANNEXURE E: ETHICS CLEARANCE LETTER

UNIVERSITY OF LIMPOPO
Medunsa Campus

MEDUNSA RESEARCH & ETHICS COMMITTEE

CLEARANCE CERTIFICATE

MEETING: 06/2014
PROJECT NUMBER: MREC/H/219/2014: PG
PROJECT:
Title: Oral health knowledge, perceptions and practices of parents in relation to early childhood caries among children aged 1-5 years at Sharpeville clinic, South Africa.
Researcher: Dr D Ntombela
Supervisor: Dr S Mdzebele
Department: Public Health
School: Health Care Sciences
Degree: MPH

DECISION OF THE COMMITTEE:
MREC approved the project.

DATE: 21 August 2014

PROF GA OGBUNJALNO
CHAIRPERSON MREC

The Medunsa Research Ethics Committee (MREC) is an International Organisation (IORG0004189), as an Institutional Review Board (IRB0000122), and functions under a Federal Wide Assurance (FWA00009419).
Expiry date: 11 October 2016

Note:
(i) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.
(ii) The budget for the research will be considered separately from the protocol. PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

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