



Knowledge, attitudes and practices of oral health care among caregivers, parents and teachers of autistic disorder children in Randburg Clinic School.

By

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Dentistry: Community Dentistry.

Johannesburg, 2021

Declaration

I, Simphiwe Nkosinathi Ngema (Student No. 972473), hereby declare that this report is my own work. It is being submitted for the degree of Master of Dentistry: Community Dentistry at the University of the Witwatersrand, Johannesburg. It has not been submitted or presented for any degree or examination at this or any other university.

Signed at Johannesburg on the 25th day of July in the year 2022.

Dr SN Ngema

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the left. The signature is positioned above a horizontal dotted line.

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Dedication

To my late grandmother Bethe Ngema, my wife Jabulile and my children Musawenkosi and Ntokozo.

Acknowledgements

I would like to acknowledge the following:

My supervisors namely Dr Y Malele-Kolisa for her encouragement in the initiation of the project and supervision throughout; Prof V Yengopal for his earnest and enormous support, his patient mentorship and endless inspiration throughout the duration of the project.

My acknowledgement goes to The Department of Education in Gauteng for allowing me to use one of their schools to conduct my study; The Randburg Clinic Autism School management, teachers, parents and caregivers in the Region 8 of the City of Johannesburg who agreed to participate in this study and Prof S Nmutandani for his support and constant mentorship throughout my studies.

Lastly, I would like to thank Dr Zvifadzo Matsena-Zingoni from the Division of Epidemiology and Biostatistics at the School of Public Health at Wits University for all the statistical guidance and advice.

Abstract

Background: Autistic children are one of the special needs children groups who demand special care from their caregivers/ parents. Usually, caregivers/ parents play an important role in health-related matters affecting their children.

Objectives: To assess the knowledge, attitudes and practices of caregivers/ parents and teachers on oral health care of autistic children. Additionally to determine the associated factors that impact knowledge, attitudes and practices of oral health care among caregivers/ parents and teachers of autistic children in Randburg Clinic School in Johannesburg.

Methods: A total of 71 caregivers/ parents and 16 teachers participated in the study. A cross-sectional analytical study was conducted among caregivers/ parents and teachers of children with autistic disorder in Randburg Clinic School. Data on caregivers/ parents' and teacher's knowledge, attitude and practice of oral health was collected using a modified self-administered questionnaire, and formulated in simple English. The questionnaires consisted of demographic questions and also questions to assess the caregivers/ parents and teacher's knowledge, attitude and practice on oral health, child's oral hygiene practices and visits to their dentist among other issues.

Results: All obtained data was captured in Microsoft Excel and then imported into Stata version 15.2 for analysis. A total of 57.7 % of the participants were between the ages of 31-40 years and the majority of them 85.5% were females. A total of 57.75% of caregivers/ parents indicated that the health of the mouth and teeth does not affect the overall health of the child. This is despite 60.56% of caregivers/ parents indicating that they have been taught/ informed about oral health care. A total of 59.15% of caregivers/ parents indicated that it was important to look after their children's baby teeth, however, 47.89% of caregivers/ parents indicated that they would rather have their children's teeth taken out as a form of preferred treatment. A total of 45.07 caregivers/ parents took the children to a dentist when there is an oral disease complaint. More than 60% of the caregivers/ parents indicated that their children brush their teeth twice a day in the morning and at night.

A total of 43.75% of teachers indicated that dental cavities were mainly caused by bacteria in the mouth and 31.25% indicated that autism spectrum disorder (ASD) children should have their first dental visit only in the event of pain. A total of 87.5% of teachers indicated that they have never referred a child with ASD to a dental clinic and 68.75% of them had never done a simple examination of the teeth of children with ASD.

Conclusion: While the attitude and practice of oral health care seemed adequate among caregivers/ parents, knowledge of both caregivers/ parents and teachers toward oral health was noted to be inadequate.

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Chapter 1: Introduction and Background

1.1 Introduction

Autism spectrum disorder (ASD) is broadly defined as a disorder that negatively affects neurological development, characterised by limited concentration-time, inappropriate behavioural tendencies, challenging social behaviours, speech or language problems, hyperactivity, with repetitive movements from childhood (Weddel et al., 2010). It involves other conditions such as autistic disorder, Asperger syndrome, Rett's syndrome, childhood disintegrative disorder and pervasive developmental disorder (Segal, 2010). Autistic disorder is a behavioural syndrome consisting of abnormal development of social skills, and limitations in the use of interactive language sensorimotor deficits (Hernandez & Oyarzun, 2014).

Autistic disorder is considered to be a public health problem (Newschaffer & Curran, 2003). Globally the prevalence of the autistic disorder is estimated to be 1 to 2 per 1,000 autistic disorder children and 6 per 1,000 for autism spectrum disorder and the condition affects males four times more when compared to females (Daniels et al., 2007). Children that are diagnosed with autism spectrum disorder as early as 1 year after birth, usually find it difficult to communicate with other people due to their inborn challenges (Chahrour et al., 2016). On many occasions, they find it more comfortable to deal with objects than people (Chahrour et al., 2016). The majority of these children find it difficult to express themselves to others and at times would resort to using non-verbal communication to pass on the message to their peers or even to their parents (Febriantini, Fitriati & Oktaviani, 2021). Children with autism often prefer to be left alone and avoid eye contact and interacting with others (Cotugno, 2009).

Anxiety is one of the behavioural signs that is noted in children living with ASD (Ozsivadjian, Knott & Magiati, 2012). Studies have shown that the prevalence of anxiety disorder among these children could be as high as 80% (Ozsivadjian, Knott & Magiati, 2012). Anxiety disorder can induce anti-social behaviour such as avoiding eye contact and a preference to be alone (Cotugno, 2009). According to the United States Centre for Disease Control and Prevention, it is estimated that 1:59 children have ASD in the United States (Seo & Aravindan, 2015).

Data from African countries are limited with regions such as South-Western Nigeria reporting an ASD prevalence of 1:44 South-Eastern Nigeria reporting a prevalence rate of 1:125 and Uganda recording a prevalence of 7:1000 (Naidoo & Singh, 2018). According to Statistics South Africa, there is approximately 15 million youth who are between 0 to 18 years of age, and it is estimated that about 150,000 of that youth have ASD so the prevalence is 1:100 (Wilford, 2013).

Children with the autistic disorder generally have no unusual manifestations of oral conditions when compared to non-autistic children (Medina et al., 2003). However, due to their repetitive behaviours, unusual oral habits, routine medications that they take for their conditions, and diet which may be rich in sugar, they seem to appear to be at risk for developing dental conditions such as caries (Medina et al., 2003).

The effects of prescribed medications may result in increased or reduced salivary flow in their mouths (Stein et al., 2011). Other factors such as poor dietary habits, damaging oral habits such as bruxism or eating non-food items and poor oral self-care can negatively affect adequate oral care and increase the risk of developing caries and periodontal diseases in children with autism (Stein et al., 2011).

1.2 Background

Children with autism generally experience challenges in terms of accessing oral health services (Ng et al., 2017). The few specialised public schools for children with ASD are mainly located in urban areas; they are not adequate and generally inaccessible to the majority of children who need those services (Van Biljon, 2015).

The number of people diagnosed with the autistic disorder has significantly increased over the past three decades; this could be attributed to improvements in diagnostic practice, more services available for referral and treatment, early age of diagnosis of the condition, and improved public awareness (Fombonne, 2009). To a large extent, the cause of autism is not fully known, although environmental, physiological and genetic factors contribute significantly (Ng et al., 2017).

Studies have shown that physiological factors that contribute to the onset of autism disorder include among other factors advanced parental age at the time of conception, prenatal exposure to air pollution or certain pesticides, low birth weight, extreme prematurity and clustering of pregnancy complications, maternal obesity, and diabetes or immune system disorders (Frans et al., 2013).

Environmental factors associated with autism disorder include heavy metals such as exposure to mercury, and air pollutants e.g. air, water and pesticides (Frans et al., 2013). Studies have reported that constant exposure to traffic-related pollution, e.g. nitrogen oxide during pregnancy or staying near freeways during pregnancy, especially during the third trimester is linked to conceiving a child with autism (Volk et al., 2011).

Characteristics that are associated with children with ASD such as food preferences, difficulty in brushing and flossing, unusual oral habits e.g. bruxism and poor oral self-care, routine sweetened medications and poor dietary habits that are rich in sugar may result in dental caries and periodontal diseases (Medina et al., 2003). Therefore, a caregiver's/ parent's and teacher's knowledge, attitude and practice of oral health play a significant role in maintaining good oral health care for children with ASD. There is a greater need to increase oral care knowledge, and attitude and improve the practice of these caregivers/ parents and teachers and this would prove to be beneficial for the child.

At this stage of the study on knowledge, attitude, and practice (KAP) it is postulated to be a good way to assess health care delivery such as oral health promotion, prevention, and oral health education programmes, especially to vulnerable groups by all relevant stakeholders. KAP studies are easy to conduct, measurable, and easy to interpret (Giri et al., 2013).

Chapter 2: Literature review

2.1 Parental/caregiver's knowledge and oral health-related to children with ASD

Autism characteristics can vary from mild to severe symptoms and at times an autistic child may have other coexisting conditions such as epilepsy or mental retardation (Chadha et al., 2012). They often have their food preferences such as a diet rich in sweets and a soft diet, and often present with reduced manual dexterity that is necessary for tooth brushing which may negatively affect their dental care (Jaber, Sayyab & Fanas, 2011).

If autism characteristics are not addressed, they can result in increased risks of developing conditions such as dental caries and periodontal diseases and as a result caregivers/ parents may experience difficulties when trying to teach children brushing and flossing skills (Vajawat & Deepika, 2002). Dental care for patients with autism is often a challenge for parents due to the specialised care these individuals may require (Vajawat & Deepika, 2002). The children are more dependent on their parents for their oral health care and other needs, thus parents play a critical role in their oral health care needs (Vajawat & Deepika, 2002).

Prevention of oral diseases in special needs groups has higher importance due to limited availability of resources and poor access to oral health care (Lewis, Robertson & Phelps, 2005). It has been demonstrated that oral health education is well recognised and shows improvement in attitudes and knowledge towards dental health care, especially among caregivers of special needs patients (Khanagar et al., 2014). Caregiver's optimal oral health knowledge is associated with better oral care for children with special needs (Frenkel et al., 2002).

A Taiwan study reported that children with disabilities are either totally (26%) or extensively (35%) dependent on their caregivers to maintain their oral health (Costa et al., 2016). Studies have shown that the relationship that caregivers have with their autistic children could either facilitate or hinder children's oral health and oral health-promoting behaviors (Seppä et al., 2007). A better understanding of the caregiver's knowledge, attitude and behavior status will be valuable in planning effective preventive oral health strategies (Hsiao et al., 2017).

A study by Florindez et al., (2021) in Lantix (Latin America) among 65 children between the ages of 4-14 years with or without ASD found that there was a significant difference in the level of education among caregivers/ parents, where caregivers/ parents of children living with ASD were less educated compared to caregivers/ parents of children without ASD (Florindez et al., 2021). The results of the study also found that caregivers/ parents who had lower income and lower levels of education, had lower oral health knowledge scores when compared to those with higher income and higher levels of education (Florindez et al., 2021). The study reported a reduced frequency of seeking dental care in the lower-income group and lower education group which was assumed to be explained by fear of being discriminated against and the difficulty in finding an oral health practitioner (Florindez et al., 2021).

The study concluded that dental caries and poor oral hygiene in children with ASD were a result of a wide range of factors, such as low levels of education among parents, low-income levels and ethnically marginalized groups (Florindez et al., 2021). Other contributing factors included barriers to accessing oral health care, such as stigmatization by the health care provider, fear of a dentist and difficulty to attend dental appointments (Florindez et al., 2021). The study emphasized the need to increase oral health knowledge among caregivers/ parents in the Lantix community as a means of oral health prevention. Gaps in parental oral care knowledge may contribute to increasing oral health disparities and furthering health inequalities, warranting the need for more targeted education programs to address these areas (Cortes, Reateguil-Sharpe & Spiro, 2021).

Magoo et al., (2014) in North Bengaluru (south India) reported on a study to determine the knowledge, attitude and practice toward oral health among parents of children living with autism. Children with ASD were examined in a normal seating position using a dental mirror and a probe and under natural light and in accordance with the American Dental Association (ADA) Type III, “which examines pocket depths or attachment loss of 4-6mm, bleeding on probing and Grade I or II furcation involvement and Class I mobility specification by a single examiner” (Peter, 2004). They also used a “dichotomous reference scale to assess the gingival status criteria bleeding on probing” and “Decayed Missing Filled Teeth (DMFT)/ dmft indices” were used to record dentition status according to WHO modification (WHO, 2013).

The results indicated that the knowledge of the majority of parents was not adequate and those with limited knowledge did not incorporate it into their daily oral health care practices (Magoo et al., 2014). While more than 76% of the caregivers knew that oral health affected the general health of their children, however only 40% felt it was necessary to consult an oral health practitioner should a child encounter any dental problems (Magoo et al., 2014).

A majority of caregivers/ parents (71%) indicated that it was important to keep good oral hygiene of primary teeth and 61% of the caregivers/ parents felt it was necessary to seek treatment of primary teeth (Magoo et al., 2014). The study also revealed that the majority (82%) of caregivers assisted their children in brushing their teeth but only once a day (Magoo et al., 2014). Attitudes and practices of caregivers/ parents toward oral health were associated financial difficulties, and with the opinion that their children would not cooperate when visiting an oral health practitioner resulted in reduced dental visits.

Nonong et al., (2014) in Bangung (Indonesia) reported on a study to determine the oral health knowledge of parents whose children were diagnosed with autism. The oral health status of the children was recorded using dmft and DMFT caries index. The results showed that the caries levels of autistic children were lower when compared to children without autism and this was independent of the parent's behavior, knowledge, practice and attitude (Nonong et al., 2014).

This could also be attributed to the higher frequency of brushing in autistic children than in non-autistic children with a majority of them practising their brushing during bathing and prior to sleeping. The study also showed that several reasons were given by caregivers/ parents with regard to keeping away from visiting an oral health practitioner and top on their list were fear and anxiety of facing oral health practitioners, followed by cost issues related to dental care, ignoring of a toothache with the hope that it will subside or go away over time and lastly having a negative attitude that dental problems are not life-threatening conditions that do not deserve urgent attention, and for that reason, the majority of parents felt there was no need to consult an oral practitioner.

The study found that above 25% of the caregivers of non-autistic children considered cost as a major barrier that keeps them away from visiting an oral health practitioner. With regard to behavioural food patterns, the study showed that children living with autism had a preference for sweets or sugary foods when compared to the non-autistic group. The study showed that generally there was inadequate oral health knowledge among parents.

2.2 Parental/ caregiver's oral health attitudes related to children with ASD

A published study has shown an association between the negative attitude of caregivers/ parents and higher oral disease levels in children. Several reasons have been highlighted as the possible causes of dental caries in children with ASD. A study by Floríndez et al., (2019) found that negative attitudes displayed by parents towards the oral health of their children were found to be associated with poor oral health in their children. As such, positive attitudes yielded positive results and can be used as a predictor of a child's favourable oral health (Floríndez et al., 2019). Difficulty in tooth brushing is one of the challenges faced by caregivers/ parents if a child has ASD due to hypersensitivity (Floríndez et al., 2019). Other reasons included self-mutilation practices, frequent intake of sweetened medication and lack of good oral hygiene in children with ASD (AlHumaid et al., 2020).

A study conducted in Eastern Saudi Arabia over three years to determine if parents had influence and showed a willingness to assist in offering oral health care to their children (AlHumaid, 2020). The study looked at the clinical examination of dental caries using a DMFT/ dmft index as per the World Health Organization criteria (Wanichsaithong, 2019), a clinical examination of gingival disease using an adjusted gingival index (GI) by Löe, (1967), as well as to determine plaque accumulation by using the plaque index (PII) (Silness & Löe, 1964).

The study reported the prevalence of dental caries to be 76% in primary dentition, 68% in permanent dentition and 31% of participants had gingival problems (AlHumaid, 2020). The study also showed that 50% of the caregivers/ parents played a role in supervising children's teeth (AlHumaid, 2020).

Many studies have shown that caregivers/ parents as main role players in their children's life particularly when they are very young, and also play a major role in making sure that their oral and general health is maintained well (MacDonald et al., 2011). The relationship between the dental health of mothers and dental caries in their children can be explained by the influence of dietary and hygiene habits on their children (Touger-Decker & van Loveren, 2003). The tooth brushing habits, dietary habits and food choices of caregivers/ parents are directly associated with those of their children (Dye et al., 2011). Parental oral health-related beliefs and attitudes have been reported to be to play a major role in the tooth-brushing behaviour of their children (Szatko et al., 2004).

Several studies have reported a lower prevalence of dental caries among children with ASD, while others reported no association at all between ASD and dental caries (Jaber, 2011). Some of the reasons mentioned by parents included difficulty in tooth brushing that was observed in children with ASD when compared to children without ASD (Floríndez et al., 2019). This was noted to be due to hypersensitivity such as being extremely sensitive to touch, sound and light (Floríndez et al., 2019).

In a study that was conducted in Eastern Saudi Arabia over three years, a total of 75 children with autism were requested to participate in the study (AlHumaid, 2020). The study reported the prevalence of dental caries to be 76% in primary dentition and 68% in permanent dentition and 31% of participants had gingival problems (AlHumaid, 2020). This has been shown to have contributed to a lack of parental supervision. Other reasons included self-mutilation practices, frequent intake of sweetened medication and lack of good oral hygiene in children with ASD. (AlHumaid et al., 2020).

Many studies have shown that caregivers/ parents as main role players in their children's life particularly when they are very young, also play a major role in making sure that their oral and general health is maintained well (MacDonald et al., 2011). The relationship between the dental health of mothers and dental caries in their children can be explained by the influence of dietary and hygiene habits on their children (Touger-Decker, & van Loveren, 2003).

The tooth brushing habits, dietary habits and food choices of parents/ caregivers are directly associated with those of their children (Dye et al., 2011). Studies have also shown that parental oral health related beliefs and attitudes play a major role in the tooth-brushing behaviour of their children (Szatko et al., 2004). Factors such as television viewing and peer pressure at home or school, high dental costs, lack of accessibility to oral health care services and the child's indifference towards dental procedures play a major role in influencing parents/ caregiver's knowledge of good nutrition, and good feeding practices (Lai et al., 2012). Good brushing habits, proper dietary habits and a positive attitude from the parents of children with ASD are all linked with good oral hygiene (Lai et al., 2012).

Other studies have investigated the oral health status of children with ASD either as a single group or in comparison with the general population (Kalyoncu & Tanboga, 2017). There were various conclusions in the literature about the association between dental caries and ASD conditions. Some studies reported a lower prevalence of caries and others reported a higher rate of caries among children with ASD, while others reported no association at all between ASD and dental caries (Jaber, 2011). Some studies have also reported less frequent brushing in children with ASD than in normally developing children, which in most cases brushing was carried out by parents or was done under parental supervision (Kalyoncu & Tanboga, 2017).

In a qualitative study to determine the oral hygiene practices and habits amongst caregivers of children with autism. The study found that 46% of caregivers/ parents never visited oral health care (Hage et al., 2020). More than 30% of the children did not brush their teeth daily and more than 60% of these children were assisted by their parents or family member to brush their teeth (Hage et al., 2020). At least 13% of the parents only visited a dental practitioner when the child was only in pain and more than 50% did not visit a dental practitioner at all (Hage et al., 2020).

In a qualitative study to determine strategies to improve oral health among children with autism by Stein-Duker, Florindez & Como (2019) using focus group discussions. A network of health professionals included other categories of oral health workers and professionals such as dental practitioners, occupational therapists, physiotherapists, speech therapists and behavioural therapists.

The study concluded that for effective and efficient dental treatment of children with ASD, there is a need for incorporating home- and office-based strategies, individualized for a child's particular set of needs, which are best practices for increasing the likelihood of a successful dental encounter for children with ASD. Negative parental attitudes toward oral health were found to be associated with the deterioration of their children's oral health. As such, a parent's positive attitude towards the oral health of a child with ASD can be a strong predictor of a child's favourable oral health (Stein-Duker, Florindez & Como DH, 2019).

2.3 Parental/ caregiver's oral health practices related to children with ASD

Studies have shown that good oral health practices are derived from the behaviours of the child's family members or parents who contribute significantly to their good oral health habits (Prinstein et al., 2001). Several studies have looked at factors influencing parental practice on oral health care in the family (Russo et al., 2009). Parental oral hygiene and self-care practices such as tooth-brushing routines, knowledge of fluoride, a healthy diet and perceptions of the importance of good oral health care, have been found to have an impact on the oral health behaviour of their children (Harris et al., 2004). Improper feeding practice by mothers increases the risk for the development of early childhood caries in infants and toddlers (Cooper et al., 2017).

Children under the age of 5 years generally spend most of their time with parents and guardians even when they attend pre-school or nurseries. Amin & AL-Abad (2008) in Saudi Arabia reported on a study to determine the "frequency of consumption of cariogenic foods, oral hygiene practices and dental health knowledge among Saudi male primary school children in relation to socio-demographics and to find the possible predictors for dental caries among them". The results of the study showed that clinically decayed tooth was diagnosed in more than 69% of the included children, more in urban areas and among younger students.

Caries affected the participants that consumed cariogenic foods at greater frequency compared with those that had a less cariogenic diet. Only 25% of the students brushed their teeth twice per day, and 29% of them never received instructions regarding oral hygiene practices. Dental caries were significantly higher among students with low parental educational status and high maternal illiteracy.

El Tantawi et al., (2017) in Saudi Arabia reported on a study to evaluate the relationship between oral health practices and similar practices adopted by parents, close friends and classmates in a group of Saudi male teenagers. Most teenagers reported that their parents used tobacco and snacked on sugary foods and drinks. (El Tantawi et al., 2017). Snacking on sugary foods was perceived to be more prevalent among close friends (86%) and classmates (70%) than fathers (24%) and mothers (35%) (El Tantawi et al., 2017). Snacking on sugary drinks showed similar results and was perceived to be more prevalent among close friends (83%) and classmates (73%) than fathers (39%) and mothers (36%) (El Tantawi et al., 2017). About two-thirds of the teenagers agreed that their classmates helped them, solved problems together, felt close to each other and were loyal to their classmates. The study found that more than 56% of the participants agreed that they can rely on their friends in case of trouble (El Tantawi et al., 2017). Therefore health education interventions targeting male teenagers should include close friends for a positive impact on behaviour change.

Several other studies reported a significant association between the parent's dental knowledge, routine oral hygiene practices, dietary habits, and children's oral health (Mirza et al., 2011). Parents with better oral hygiene tended to have children with similarly high standards of hygiene (Saied-Moallemi et al., 2008). The latter may be attributed to the notion that children's oral health behaviour originates mainly from the family (Wang et al., 2020). Other studies reported that improved parent's oral health care knowledge and better caring skills for children with ASD were associated with decreased parent's stress and improved skills, knowledge and attributes in managing their children (Schultz, Schmidt & Sticher, 2013).

In a qualitative study to determine the oral hygiene practices and habits amongst caregivers of children with autism. The study included parents of 120 children who were between the ages of 4 and 12 years and living with autism. (Hage et al., 2020). The study found that 46% of caregivers/ parents never visited oral health care (Hage et al., 2020). More than 30% of the children did not brush their teeth daily and more than 60% of these children were assisted by their parents or family member to brush their teeth (Hage et al., 2020). At least 13% of the parents only visited a dental practitioner when the child was in only in pain and more than 50% do not visit a dental practitioner at all (Hage et al., 2020).

In a study that was done in Instabul (Turkey) to determine oral health practices among children with autism and those without autism. The study revealed that children with autism had better dental caries status than children without autism at younger ages. The main reason for this was that the parents of autistic children controlled their sweet consumption (Namal et al., 2007). Dental caries was recorded 12 according to the WHO criteria, as well as the dental plaque and gingival health indices were used to assess the periodontal health of the participants (Namal et al., 2007).

Limited understanding of good oral health practices by parents or caregivers may result in their children developing dental caries and other oral health-related conditions. Self-mutilation practices, ASD medications, and lack of oral hygiene practices may result in the deterioration of oral health with a negative impact on the nutritional status, quality of life, and overall well-being of an ASD child.

2.4 Teacher's knowledge, attitudes and practices and oral health among children with ASD

School teachers are known to be important role players in any child's life, as a significant part of a child's life is spent at school with teachers (Stella et al., 2005). A school is a place where lifetime beliefs and habits are usually developed. Schools are considered to be the first level of learning and form an important part of a child as they provide an effective platform to create general and oral health awareness among school children (Haleem & Khan, 2006).

In 1995 the World Health Organization (WHO) launched a Global School Health Initiative which highlighted the importance of delivering health education to school children (Global School Health Initiative, 1995). This initiative by WHO also highlighted that school teachers may serve as pioneer role models to motivate children towards a healthy lifestyle on regular basis including oral health promotion (Global School Health Initiative, 1995). Oral health promotion has not been fully attained at schools as school curriculums lack the integration and inclusion of general and oral health.

Basic oral health awareness and dental check-ups are hardly performed in many schools by teachers (Bokhari & Almas, 20016). Similarly, the teachers are not trained for disseminating oral health knowledge to their learners since such health education courses are not integrated into their respective curriculum courses. The majority of secondary school teachers of Sahiwal (Pakistan) had knowledge about tooth decay and its relationship with dental plaque but they did not visit the dentist on regular basis except when suffering from any sort of dental pain and had limited experience of undergoing any sort of dental treatment (Bokhari & Almas, 20016).

Several well-documented national and international studies have observed a lack of dental knowledge among teachers and primary health care practitioners who work with children. Most published studies have reported data collected from healthcare practitioners who work with healthy children, or those with disabilities, such as cerebral palsy, or Down syndrome; however, no studies have been conducted to assess the dental knowledge of educators and healthcare practitioners that interact with children diagnosed with ASD (Bokhari & Almas, 20016).

A cross-sectional survey conducted by AL-Aboudi et al., (2015) in Riyadh (Saudi Arabia) was done to assess the oral health knowledge and attitudes among healthcare providers and teachers working with children living with autism spectrum disorders. The results of the study showed that more than 50% of the participants did not offer any toothbrushing advice, more than 70% never recommended dental checkup visits to parents, and 76% never performed dental examinations on children under their care. Only 10% of the participants felt that children living with autism should have their first dental visit after the age of six (AL-Aboudi et al., 2015). The majority of participants (60%) should brush their teeth twice a day (AL- Aboudi et al., 2015).

A cross-sectional study was conducted by Manohar, (2013) in Karach (Pakistan) to evaluate the knowledge, attitudes and practices regarding dental health amongst teachers of the public. The study revealed that there was poor knowledge regarding the cause of dental caries and periodontal diseases among the teachers. Sixty-six percent of teachers were aware of the protective role of fluoride against dental caries and 48% did not feel that brushing the teeth of babies with toothpaste was a necessity (Manohar, 2013). Teachers have been reported to be aware and have positive attitudes toward oral health.

Teachers provide more information to pupils on the relationship between sugars, bacteria and tooth decay and teach effective dental caries preventive strategies (Elena & Petr, 2004).

Most teachers demonstrated a positive approach towards school-based oral health education and promotion. Teachers have been reported to participate in oral health education sessions by receiving relevant training to enhance their understanding related to oral health issues. Overall, school teachers displayed healthy oral hygiene practices but regarding routine dental visits, a limited proportion affirmed visiting a dentist regularly (Begzati et al., 2011).

In a cross-sectional study on both private and government teachers to determine their oral health knowledge among them. A total of four experts and four junior dental practitioners were involved in conducting the study. All the data was collected by four oral health practitioners and led by a principal investigator (Singh et al., 2021). The study found that non governmental school teachers (21%) had better oral health

knowledge when compared to government teachers (Singh et al., 2021). Taking into consideration the insufficiency of knowledge among teachers working with children with special needs, the urgency to assess the dental knowledge of professionals working with children with autism is greatly increased.

2.5 Rationale

Oral health is more often neglected in children with autistic disorders, due to challenges such as lack of cooperation, co-occurring disorders and financial burdens (Magoo et al, 2015). Good oral health among children is more likely to occur among children whose caregivers show better knowledge of oral health, attitudes and oral health behaviours (Kopycka-Kedzierawski & Auinger, 2008).

Parents are responsible for making decisions on matters affecting all health issues related to their children with autistic disorder. The role of parents is crucial in their children's preventive and maintenance of oral health throughout life. Specifically, parents/ caregivers play an important role in promoting oral health and proper hygiene skills. (Akpabio et al., 2008). Parent's knowledge about oral health care is thus a relevant part of child care (Magoo et al., 2015).

The parent's oral health education is even more important because children's oral health behaviour originates mainly from the family (Wang et al., 2003). Studies have shown that there is a direct association between the parent's knowledge; attitude and practice and their oral health (Bilal Mirza et al., 2011).

Parents or caregivers are important role players in the maintenance of the oral health-related quality of life and their importance in caring for children with autism becomes even more important (Pani et a., 2013). Most of the studies conducted on autistic children and health, were from the medical point of view, mainly focusing on parents of healthy children or children with other medical conditions other than the autistic disorder.

Very few published studies were done to assess the caregivers/ parents and educator's knowledge, attitude and practice toward oral health care among children with autistic disorders (Stein et al., 2012). This study thus seeks to ascertain the

caregivers/ parents and teacher's knowledge, attitudes and practices with regard to oral health care among children with autistic disorders.

2.6 Aim

To assess the knowledge, attitude and practice towards oral health care among caregivers/ parents and teachers of children with autism in Randburg Clinic School.

2.7 Objectives

The objectives of the study are to:

1. Assess the knowledge of caregivers/ parents and teachers on oral health care of autistic children in Randburg Clinic School.
2. Evaluate the attitudes of caregivers/ parents and teachers towards oral health care of autistic children in Randburg Clinic School.
3. Determine the oral health care practices of caregivers/ parents and teachers of children with autistic in Randburg Clinic School.
4. Determine the factors that impact knowledge, attitude and practices among caregivers/ parents and teachers of children with autism in Randburg Clinic School.

Chapter 3: Methodology

3.1 Study design

A cross-sectional analytical study was conducted among caregivers/ parents and teachers of children with autistic disorder in Randburg Clinic School. The cross-sectional study design was used to determine the knowledge, attitude and practices of caregivers based on a questionnaire survey study (Parmeggiani et al., 2019).

3.2 Study setting

The study took place in Randburg Clinic School in Gauteng province, South Africa.

3.3 Study population

The study included caregivers/ parents and teachers of children with autistic disorder in Randburg Clinic School.

3.4 Study sample and sampling

The required sample size was 100 caregivers/parents and 20 teachers.

3.5 Inclusion criteria

All caregivers/ parents and teachers s of children with ASD in Randburg Clinic School.

3.6 Exclusion criteria

Caregivers/ parents of children with other mental & physical disabilities other than ASD e.g. Downs syndrome, Cerebral Palsy and those that did not consent to participate in the study.

3.7 Data collection and recruitment

Self-administered questionnaires written in simple English (see appendix V) were sent out to all caregivers/ parents and teachers in Randburg Clinic School who agreed to participate in the study. All data collection was done by the researcher in the Randburg Clinic School. The authorities of the school were contacted prior to the distribution of a self-administered questionnaire to the parents of autistic children.

The researcher explained the study process to the participants according to a participant's information leaflet.

3.8 Data collection process: COVID- 19 Contingency plan

Due to the pandemic, a deviation from the original protocol was implemented as follows: An electronic instrument was to be used to collect data, e.g. Red cap electronic data collection tool. A link was to be sent to caregivers/ parents and teachers via their email addresses or What's App social media platform.

Another option was to follow stringent infection, prevention and control measures and provide participants with masks with visors and sanitizers in case it was not possible to do an online survey.

3.9 Data collection tool

The questionnaire (Appendix V) on knowledge, attitude and practice towards oral health care parents of autism spectrum disorder children was used to collect data. The questionnaire was adapted from the Murshid, (2014) and Magoo et al., (2015) that did a similar study. The questionnaire had a total of 37 items. It was modified to include five sections.

The demographics information section captured the parent's age, sex, employment status, possession of medical aid, educational level, child's age, child sex, child's grade, child's medical history, and how long with autistic disorder.

The oral health knowledge section assessed knowledge information using five knowledge items namely "Does the health of mouth and teeth affect the overall health of the child"? "When should your child consult a dentist or clinic about his or her teeth"? "Have you ever been informed/ taught about oral health care"? "If yes, where did you hear about oral health"? "In your view, what is the reason(s) for tooth decay in your child or children [may choose more than one answer]".

The attitude section had six items, i.e. "In your view, is it important to look after your child's baby teeth"? "In your opinion, is it important to seek treatment for your child/children's milk /baby teeth"? "If your child complains of tooth pain where do you go to"? "Do you think it is necessary to take your child for treatment for rotten teeth"? "Do you think it is necessary to take your child for treatment for cleaning teeth"? "And if treatment is preferred, would rather the tooth/teeth are taken out or saved"?

The practices section had six items i.e. “If your child has a toothache, how do you manage it”? “If you did not choose ‘dentist’; what may be the reason for not going to a dentist if your child has toothache”? (Follow up question from above), “Is your child able to brush his/her teeth by himself/ herself”? “If the answer is no, who helps the child to brush his or her teeth”? “How many times per day does your child brush his or her teeth”? “When does your child brush his or her teeth”?

And lastly, the teachers' section had ten items such as Type of job you do, Have you ever advised the parents of a child with ASD to brush their child’s teeth? Have you ever referred a child with ASD to a dental clinic? Have you ever examined the teeth of a child with ASD? At what age do you believe that children with ASD should have their first dental visit? In your opinion, how many times should children with ASD (brush their teeth) practice good OH per day? In your opinion, if the child is unable to practice OH, who should help him or her? Have you ever received instructions for OH practice? if so, from which source? In your opinion, what is the cause of dental cavities?

The questionnaire was piloted with a few caregivers/ parents and teachers of children with autistic disorder in a different school called Transvaal Memorial Institute (TMI) for feasibility, accuracy, comprehension and time-taken to complete the questionnaire. The questionnaire was not revised nor corrected after it was given to participants as there were no comments of clarity received after it was distributed.

3.10 Data analysis plan

The data was collected from caregivers/ parents and teachers and managed in excel then imported into Stata version 15.2 for analysis. The descriptive statistics were summarized using frequencies and percentages for categorical data and median and interquartile ranges for non-normal continuous data. Bar charts, pie charts, and doughnuts charts were used to display categorical data while line graphs were used to display continuous data.

The knowledge, attitude and practices scores were generated from the corresponding items to measure these parameters on the parents using scores. The median and interquartile range was used to summarise the scores. The five items under knowledge were used to generate a knowledge score which ranged from 1 to 5.

The median and interquartile range was used to summarise the scores. The knowledge score was categorised into two groups [knowledgeable (≥ 2) and not knowledgeable (< 2). Questions about attitudes used a Yes/ No and were coded 1 for a correct answer and 0 for otherwise and the Likert scale was used where teachers were asked to express their level of agreement with a statement, and the was converted to a numerical value from 1 to 5 and then summed the attitude score. From the questions used, 2.5 is the mid-point but since none got the fraction then 3 became the cut-off. With the further categorisation of the attitude score into two groups (< 3 =negative attitude and ≥ 3 meaning positive attitude). The practice score was categorised into two groups [< 2 bad practices and ≥ 2 meaning good practice].

Bivariate analysis was performed for the knowledge and practice categorical variables where Chi-squared analysis was performed to determine the proportion difference between categorical independent variables. Mann Whitney U test was used to compare the median difference of the independent variable between the groups of the outcome variable. Since the outcome variables were binary, logistic regression was performed to quantify the magnitude of association of each of the independent variables and results were reported as crude odds ratio with their corresponding 95% confidence interval. Since the sample size was small, the adjusted model was not fitted. Significance was set at 5%.

3.11 Ethical considerations

Ethical clearance was sought from the Human Research Ethics (M 201128) in Appendix I. Permission to conduct the study was also received from the Department of Education, the Principal of Randburg Clinic School and the parents. Individual participants consented to be part of the study.

The protocol was submitted to the School of Oral Health Sciences postgraduate committee (WITS) for approval. All stakeholders were fully informed about the purpose and methods of the study. All the questionnaires were written in English and left with the management of the school to distribute and all information was treated with confidentiality.

All the data was stored safely in the Department of Community Dentistry (WITS). Reporting about the study findings will be presented to all stakeholders. The Department of Community Dentistry (WITS), School of Oral Health Sciences; the management and caregivers/ parents of Randburg Clinic School and made available to the Department of Education.

The study was done in abidance of the World Medical Association Declaration of Helsinki which emphasizes respecting human participants in research studies. Respect for research participants was maintained as participants were allowed to accept or decline to participate in the study after they were given an information participatory sheet that outlined what the study was all about. Confidentiality of the results and privacy of research participants was also maintained at all times and participants were informed that the results were not going to be shared with a third party. The study was conducted in a fair/ just manner and did not seek to cause any harm to participants but to generate new knowledge that would be beneficial to all.

Chapter 4: Results

Introduction

A total of 87 participants were in the study, and due to the non-response of some participants, a convenience sampling was conducted and 71 caregivers/ parents and 16 teachers made the final sample size. The overall response rate for all the participants was $(71+16/120)=73\%$. All participants who met the inclusion criteria were considered.

4.1 Socio-demographic data of caregiver/ parents of autistic children

Table 4.1: Socio-demographic characteristics of the study participants (n=71)

Variable	Categories	Frequencies	Percentages
Parent and Caregiver information			
Age groups (years)	20-30	10	14.08
	31-40	41	57.75
	41 and above	20	28.17
Sex	Female	61	85.92
	Male	10	14.08
Employment status	Employed	47	66.2
	Unemployed	22	30.99
	Student	2	2.82
Children information			
Child on medical aid	Yes	30	42.25
	No	41	57.75
Child's school grade	Grade R-1	29	38.03
	Grade 2-5	31	43.66
	Grade 6-12	11	15.49
	Other	2	2.82
Child's age in years	Median(IQR)	9 (7-11)	
Number of years since the child was diagnosed with autism	Median(IQR)	5 (4-8)	

In Table 4.1 above, the majority of participants were aged 31-40 years (n=41) 57.75%, (n=61) 85.92% were females and (n=47) 66.2% were employed. There were (n=41) 57.75% children not on medical aid and (n=31) 43.66% were in grade 2-5. The median age of the children was 9 years with an interquartile range (IQR) of 7-11 years. The median (IQR) time since the child was diagnosed with autism was (4-8) years.

4.2 Response on knowledge of caregivers/ parents on oral health care practices of autistic disorder children

Table 4.2 Knowledge of oral health care of caregivers/ parents among autistic children in Randburg Clinic School (n=71)

Item	Yes n (%)	No n (%)	Don't know n (%)
1. Does the health of the mouth and teeth affect the overall health of the child?	22 (30.99)	41 (57.75)	8 (11.27)
2. Have you ever been informed/ taught about oral health care?	43 (60.56)	27 (38.03)	1 (1.41)

Table 4.2 above, summarises the knowledge of oral health care practices of caregivers/ parents of children with autism. The majority (n=41) 57.75% of the caregivers/ parents felt that the health of the mouth and teeth does not affect the overall health of the child although, n=43 (60.56%) indicated that they have been informed/ taught about oral health care. Of those (n=43) 60.56% who had been informed/ taught about oral health care, n= 13 (29.5%) received the information from television, (n=14) 31.82% received information from the clinic and n=17 (38.64%) received it from the other sources.

In Figure 4.1 below, there were (n=14) 19.72% caregivers/ parents who indicated that children should be taken to the dentist or clinic once in 6 months and (n=12) 18.31% did not know when a child should be taken to a dentist or dental clinic.

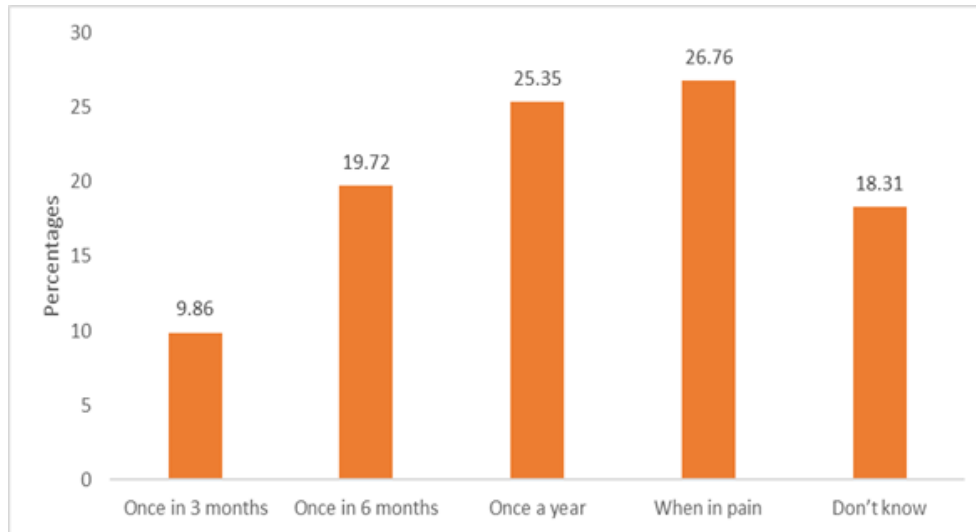


Figure 4.1: When does a child consult a dentist or clinic about his or her teeth

In Figure 4.2 below, only (n=7) 10% of the participants did not know the reasons for tooth decay. Approximately (n=60) 61% of the caregivers/parents reported that eating food high in sugar was the most common reason for tooth decay. While (n=22) 31% of the caregivers/ parents reported that the irregular brushing was the reason for dental decay and (n= 20) 29% reported bacteria as the cause for dental decay.

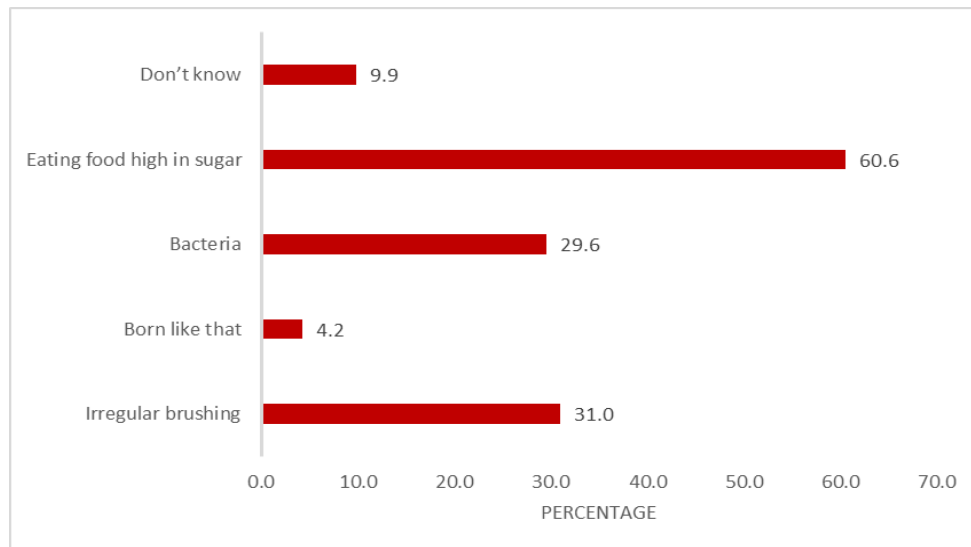


Figure 4. 2: Reasons for tooth decay in children

Table 4.3: Knowledge about oral health care among caregivers/parents (n=71)

Variable	Not Knowledgeable n (%)	Knowledgeable n (%)	*P- value	Logistic regression,	
				OR (95%CI)	P-value
Age groups (years)					
20-30	3(8.57)	7(19.44)	0.302	1(reference) 0.34(0.076 to 1.48) 0.52(0.11 to 2.63)	0.15 0.432
31-40	23(65.71)	18(50.0)			
41 and above	9(25.71)	11(30.56)			
Sex					
Female	27(77.14)	34(94.44)	0.036	1(reference) 0.19(0.039 to 1.01)	0.052
Male	8(22.86)	2(5.56)			
Employment status					
Employed	23(65.71)	24(66.67)	0.996	1(reference) 0.96(0.35 to 2.64) 0.96(0.06 to 16.24)	0.934 0.976
Unemployed	11(31.43)	11(30.56)			
Student	1(2.86)	1(2.78)			
Child on medical aid					
Yes	15(42.86)	15(41.67)	0.919	1(reference) 1.05 (0.41 to 2.69)	0.919
No	20(57.14)	21(58.33)			
Child's age in years					
Median(IQR)	10(7-12)	9(7-10)	0.2131	0.91(0.76 to 1.07)	0.24
Number of years since the child was diagnosed with autism					
Median(IQR)	6(4-8)	5(4-7)	0.1008	0.85 (0.69 to 1.03)	0.098

*Chi-square and Mann Whitney U test

The factors associated with the knowledge distribution of the caregivers/parents are summarised in Table 4.3 above. The majority of participants aged between 31-40 years, (n =23) 65% were not knowledgeable about oral health and the majority of male participants (n=8) 22.86% were also not knowledgeable about oral health. There was not much of a difference between employed and unemployed participants in terms of their oral health knowledge as well as those with their children on medical aid and those who were not.

4.3 Response on the attitude of caregivers/ parents on oral health care practices of autistic disorder children

Table 4.4: Attitude of oral health care practices of caregivers/ parents among autistic children in Randburg Clinic School (n=71)

Item	Yes n(%)	No n(%)	Don't know n(%)
1. In your view, is it important to look after your child's baby teeth?	42(59.15)	22(30.99)	7(9.86)
2. In your opinion, is it important to seek treatment for your child/children's milk /baby teeth?	47(66.2)	15(21.13)	9(12.68)
3. Do you think it is necessary to take your child for treatment for rotten teeth?	60(84.51)	9(12.68)	2(2.82)
4. Do you think it is necessary to take your child for cleaning teeth?	61(85.92)	6(8.45)	4(5.63)
5. If treatment is preferred, would rather have the tooth/teeth saved or taken out Please tick (Yes for tooth/ teeth saved) or (No for tooth/ teeth taken out)	34(47.89)	27(38.03)	10(14.08)

Table 4.4 above shows results for the attitude of the caregivers/parents toward oral health care among children with autism. The majority of the caregivers/ parents responded that it is important to look after an autistic child's teeth (n=42) 59.15%, (n=42) 66.2% agreed that it is important to seek treatment for the child's teeth; (n=60) 84.51% indicated that it is necessary to take the child for treatment and (n=61) 85.92% agreed that it is important to take the child for teeth cleaning. However, almost a third of the participants (n=22) 30.99% did not think children's teeth should be looked after. Additionally, one in five; (n=1) 21.13%; of the participants didn't think it was important to take care of milk/baby teeth. There were 47.89% (n=34) of the caregivers/ parents who indicated that if the child is taken for treatment, their teeth should be removed.

Figure 4.3 below, shows the results of caregivers/ parents as to where they take their child/ children should they have a tooth problem. If the child complains about their teeth, 73% of the caregiver/parents indicated they will take the child to the dentist.

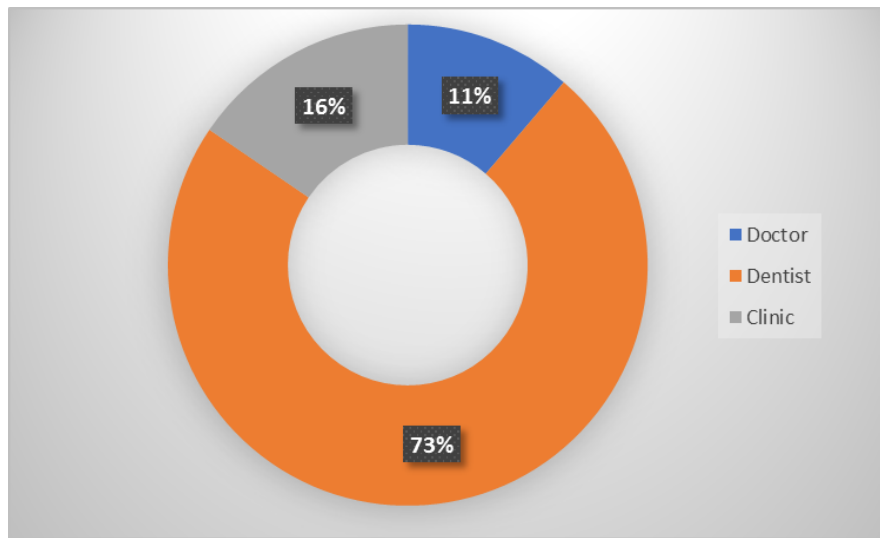


Figure 4.3: Where does the caregiver/parent takes the child if they have a tooth problem?

To assess whether the caregivers/ parents had a positive attitude towards oral health care of the children with autism, six attitude questions were used. The data was skewed so means could not be used. From Figure 4.4 below, the results showed that the majority (n=66) 92.97% caregivers/ parents with a score of 3 and above, showed a positive oral health attitude, while only (n=5) 7% of them showed a negative attitude towards oral health.

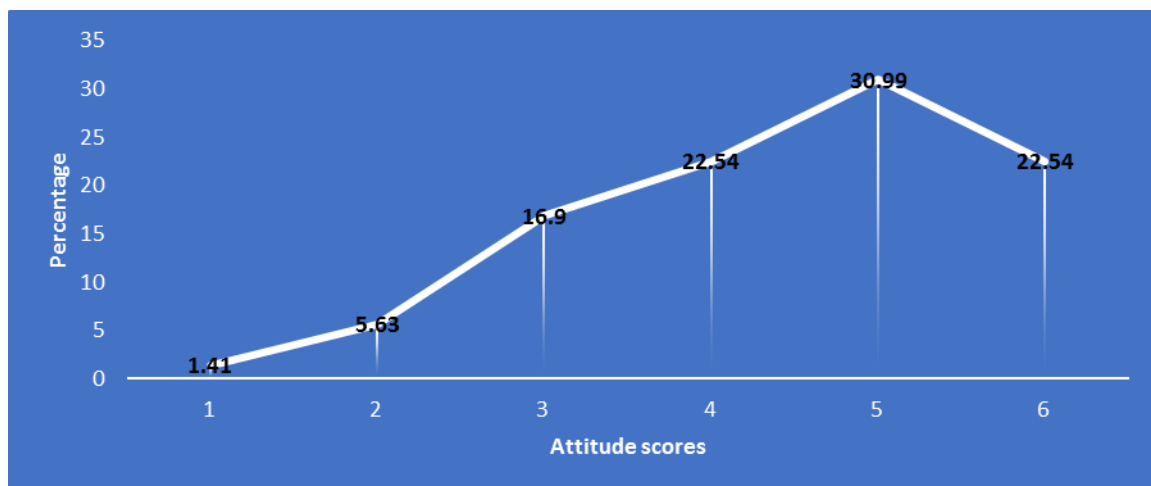


Figure 4.4: Attitude score distribution of the parents/caregivers

4.4 Response on practices of caregivers/ parents on oral health care practices of autistic disorder children

Table 4.5: Practices of oral health care practices of caregivers/ parents among autistic children in Randburg Clinic School (n=71)

Practices Items	Categories	Frequency (%)
1. If your child has a toothache, how do you manage it?	Leave it	1(1.41)
	Take medication	17(23.94)
	Go to a Dentist	32(45.07)
	Go to Clinic	11(15.49)
	Don't know	2(2.82)
	Dentist+medication	8(11.27)
2. How many times per day does your child brush his or her teeth?	Once a day	25(35.21)
	Twice a day	44(61.97)
	Three times a day	2(2.82)
3. When does your child brush his or her teeth?	In the morning only	26(36.62)
	At night only	2(2.82)
	Both morning & at night	43(60.56)
4. Is your child able to brush his/her teeth by himself/herself?	Yes	48(41.03)
	No	69(58.97)

Table 4.5 above shows results for the practices of oral health, n=32 (45.07%) of caregivers/ parents indicated that if a child has a toothache, they take them to the dentist. According to caregivers/ parents, (n=44) 61.97% of their children brush their teeth twice a day, and (n=43) 60.56% indicated that their children brush their teeth in the morning and evening. Table 4.5 also shows that there were (n=48) 41.03% caregivers/ parents indicated that their children can brush their teeth and (n=69) 58.9% caregivers/ parents said their children cannot brush their teeth but get help from their mothers (60.87%) or other family members (39.13%).

To assess if the caregivers/ parents have a good practice towards their children's oral health, three questions were used: 1. "If your child has a toothache, how do you manage it"? 2. "How many times per day does your child brush his or her teeth"? 3.

“When does your child brush his or her teeth”? The data was skewed hence no mean score was used. The median (IQR) practice score was 2 (1-3). Further categorising the score into two groups (<2 meaning bad practices and ≥ 2 meaning good practices. The analysis showed that (n=27) 38.03% of caregivers had bad practices toward oral health while (n=44) 61.97% have good practices towards oral health.

Figure 4.5 below gives the results about the reasons for caregivers/ parents not taking their children to the dentist when a child has a toothache, the parents indicated that the cost (50%) was the main hindrance to taking their child to the dentist.

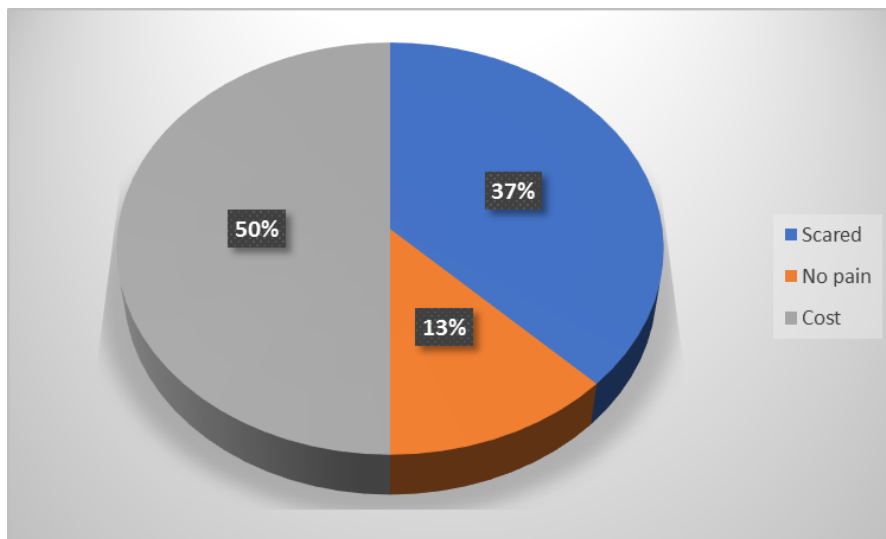


Figure 4.5: Reason for not going to the dentist

Table 4.6: Practices about oral health care among caregivers/ parents (Calculation scores are shown in the methodology section) (n=71)

Variable	Bad practices n(%)	Good practices n(%)	*P-value	Logistic regression	
				OR(95%CI)	P-value
Age groups (years)					
20-30	2(7.41)	8(18.18)	0.445	1(reference)	0.221
31-40	17(62.96)	24(54.55)		0.35(0.067 to 1.87)	
41 and above	8(29.63)	12(27.27)		0.38(0.06 to 2.24)	
Sex					
Female	22(81.48)	39(88.64)	0.4	1(reference)	0.404
Male	5(18.52)	5(11.36)		0.56(0.15 to 2.17)	
Employment status					
Employed	17(62.96)	30(68.18)	0.875	1(reference)	0.705
Unemployed	9(33.33)	13(29.55)		0.82(0.29 to 2.31)	
Student	1(3.7)	1(2.27)		0.57(0.03 to 9.65)	
Child on medical aid					
Yes	16(59.26)	14(31.82)	0.023	1(reference)	0.025
No	11(40.74)	30(68.18)		3.12(1.15 to 8.44)	
Child's age in years					
Median(IQR)	9(7-11)	10(7-11.5)	0.5390	1.03(0.87 to 1.22)	0.759
Number of years since the child was diagnosed with autism					
Median(IQR)	5(4-8)	5.5(3-7.5)	0.7882	0.99(0.82 to 1.21)	0.975

According to Table 4.6 above, there was no difference in the participant's practices proportion to the age of the caregiver/ parent, gender of the parent, employment status, age of the child and number of years since the child was diagnosed with autism in both the bivariate analysis and logistic regression. However, there was a significant association between having a child on medical aid and the practice status of the caregivers/ parents. Many caregivers/ parents whose children were not on medical aid (n= 30) 68.18% had a good oral health practice p-value=0.023. the logistic regression shows that these parents whose children were not on medical aid were 3.12 times more likely to have good practices towards their children's oral health compared to those parents whose children were on medical aid with an odds ratio of 3.12. The 95% confidence interval ranged from 1.15 to 8.44 and this was statistically significant, p-value=0.025.

4.5 Response by teachers on oral health care knowledge, attitude and practices of autistic disorder children

Figure 4.6 below, shows a total of 16 teachers that were interviewed in this study and the majority of them were permanently employed (n= 11) 68.75%.

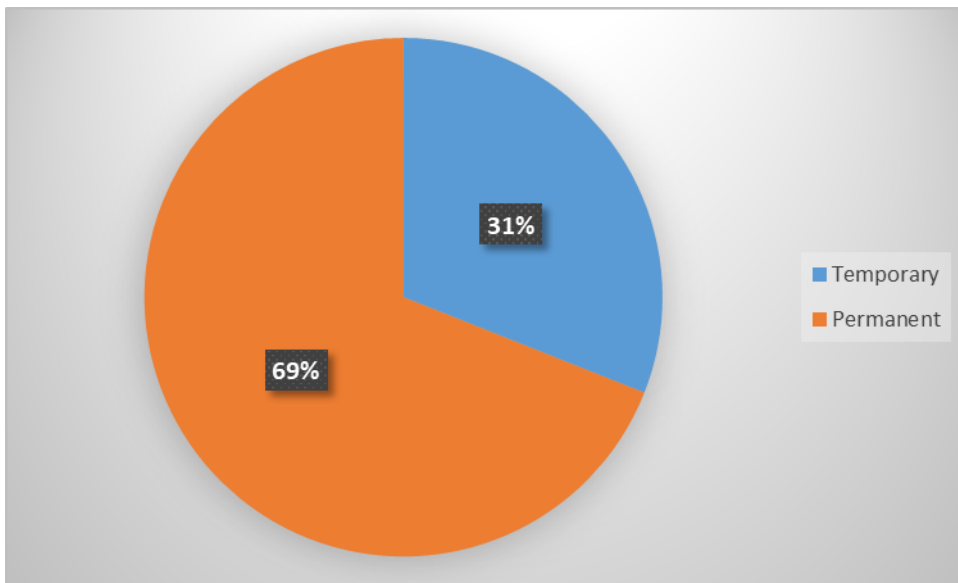


Figure 4.6: Job type distribution of the teachers

4.6 Response by teachers on oral health care knowledge and autistic disorder children

Table 4.7: Teachers' Knowledge of oral health care at Randburg autistic Clinic School, (n=16)

Knowledge Items	Categories	Frequency (%)
At what age do you believe that children with ASD should have their first dental visit?	Between 1 and 3 years	5(31.25)
	Between 3 and 6 years	3(18.75)
	6 years and up	3(18.75)
	Only in the event of pain	5(31.25)
In your opinion, how many times a day should children with ASD be assisted brushing their teeth	Never	1(6.26)
	Once per day	3(18.75)
	Twice per day	12(75.0)
In your opinion, what is the cause of dental cavities?	Bacteria in the mouth	7(43.75)
	Irregular oral hygiene practices	3(18.75)
	Combination of factors e.g. irregular brushing, born like that, bacteria in the mouth, eating foods high in sugar etc.	6(37.5)

Table 4.7 above shows that the majority of teachers (n=12) 75% indicated that children with ASD should brush their teeth twice per day and (n=7) 43.75% indicated that bacteria in the mouth was the cause of dental cavities and (n=5) 31.25% of the teachers indicated that children with ASD should have their first dental visit only when there were in pain. There were (n=12) 75% teachers with a knowledge score of 2 and above which indicates that the teachers had a good knowledge of oral health care for children with autism.

Figure 4.7 below, shows the overall assessment of the teacher’s knowledge. Most of the teachers (44%) were knowledgeable about oral health.

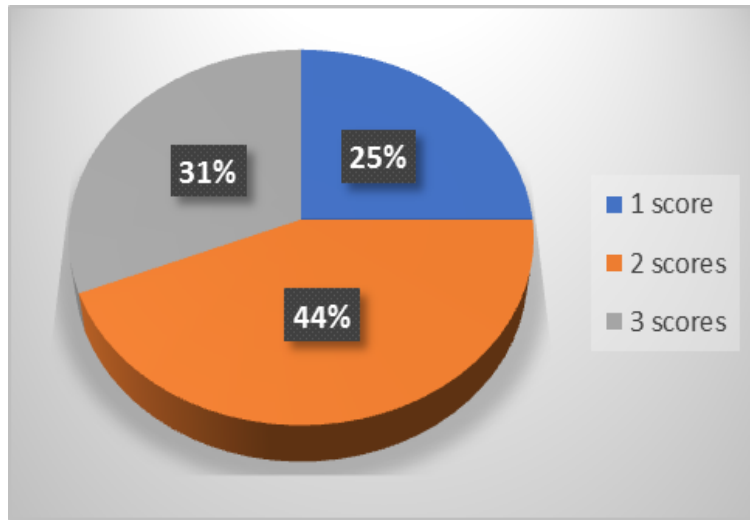


Figure 4.7: Oral health Knowledge distribution of the teachers

4.7 Response by teachers on oral health care attitude and autistic disorder children

Table 4.8: Oral health care attitudes of teachers of autistic children at Randburg Clinic School

Attitude Items	Categories	Frequency (%)
1. Have you ever advised the parents of a child with ASD to brush their child’s teeth?	Yes	9 (56.25)
	No	7(43.75)
2. Have you ever advised parents on where to refer a child with ASD for oral health care should a need arise?	Yes	2(12.)
	No	14(87.5)
3. 28. Do you think you have a role to play in the oral health care of children with ASD in your school?	Yes	5(31.25)
	No	11(68.75)

Overall assessment of the teacher's attitude is shown using Table 4.8 above. The majority (n=9) 56.25% of the teachers indicated that they had advised the parents of a child with ASD to brush their teeth; however, (n=14) 87.5% had never advised parents

on where to refer a child with ASD for oral health care. There were (n=11) 68.75% of teachers who felt that they never had a role to play in the oral health care of children with ASD in their school.

The attitude scores are summarised in Figure 4.8 below. Using an attitude cut-off of <2 scores to mean negative attitude and ≥ 2 scores to mean positive. In total there were (n=11) 68.75% teachers who showed a negative attitude towards children's oral health with a score of less than 2, which are zero (43.75%) and one (25%) combined from the figure below. Those with positive attitudes toward oral health were 31.25 % in total after the addition of a score of two proportion (18.75%) and a score of three proportion (12.5%).

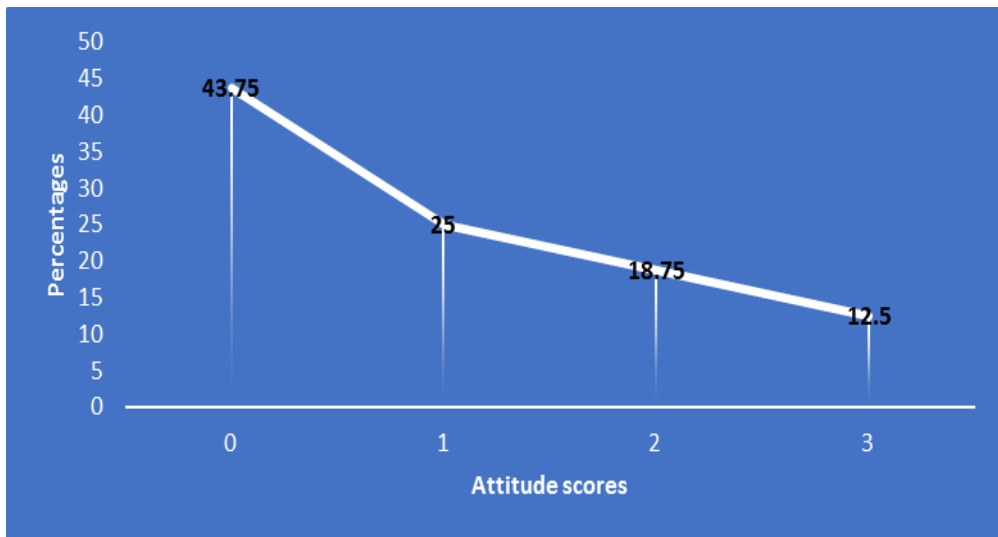


Figure 4.8: Attitude score distribution of the teachers

4.8 Response by teachers on oral health care practices and autistic disorder children

Table 4.9: Practices of oral health care practices of teachers among autistic children in Randburg Clinic School (n=16)

Practices Items	Categories	Frequency (%)
1. In your opinion, if the child is unable to practice oral hygiene, who should help him or her?	The mother or father	7(43.75)
	Any family member	1(6.25)
	A nanny or house helper	2(12.5)
	Anyone can help	6(37.5)
2. Have you ever received training on how to provide basic oral hygiene knowledge and practice to children?	Yes	7(43.75)
	No	9(56.25)

Table 4.9 above summarises the oral health care practices of the teachers. The teachers indicated that children with autism who cannot practice good oral hygiene get help from mother or father (n=7) 43.75% or anyone available (n=6) 37.5%. The majority n=9 (56.25%) never received training on how to provide basic oral hygiene knowledge and practice to children, while only (n=7) 43.75% indicated that they received training on how to provide basic oral hygiene knowledge and practice to children with ASD.

Figure 4.9 below shows that of those who were trained on how to provide basic oral hygiene knowledge and practice to children with ASD, 71.43% received from the dentist.

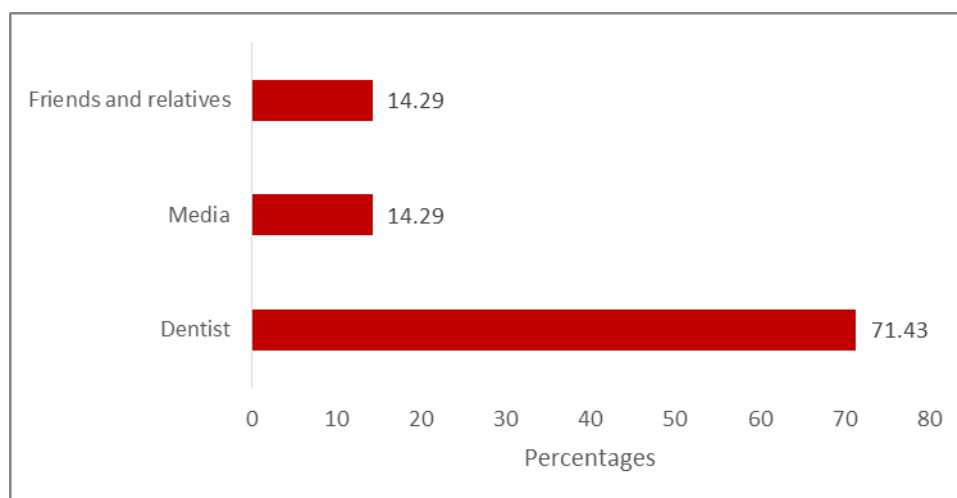


Figure 4.9: Source of instructions for oral hygiene practice

Chapter 5: Discussion

This study aimed to assess the knowledge (K), attitude (A) and practice (P) towards oral health care among caregivers/ parents and teachers of autistic children in Randburg Clinic School. This was done using a self-administered questionnaire that was adapted from Murshid, (2014) and Magoo J et al., (2015). The findings of this study highlighted different factors and impacts that contributed to knowledge, attitudes and practices towards oral health care. It also highlighted some of the challenges faced by caregivers/parents of children with ASD. The response rate was 73%, which was considered to be good.

5.1 Socio-demographic profile

The results showed that (n=61) 85.92% of the caregivers/parents who participated in the study were females, aged between 31 and 40 years (n=41) 57%. This is in line with many studies where the majority of caregivers/ parents are females. For example, a study conducted in Pakistan where the majority (89%) of the participants were females and a half (50%) of them were aged between 25 and 40 years (Dawani, Afaq & Bilal 2013). In another study that seeks to identify gaps in oral care knowledge of parents/caregivers of children with ASD, the majority (90%) of those respondents were females (Florindez et al., 2021). This could be attributed to the fact that most of the care and nurturing is traditionally dominated by females because women are usually the primary caregivers.

The study revealed that 66% of the caregivers/ parents were employed, however, (57, 75%) of their children were not on private medical aid. Accessibility to general and oral health facilities may prove to be a challenge, more so for children with disabilities or special needs. In a study that focused on the dental services utilization and barriers to dental care for individuals with ASD, it was found that individuals with ASD found it difficult to access professional dental care and locate dental practitioners willing or qualified enough to provide the necessary dental care (Nelson et al., 2011 & Stein et al., 2012).

In a study by Knappo et al., (2009), it was shown that parents of children with autism found it difficult to cope with high costs related to their children's health care. This often resulted in parents spending more time looking for their children at home and being absent from work and that led to decreased productivity for their families (Ganz, 2007). However, some studies found that some parents of children with autism would work extra hours to try and meet the financial costs related to caring for their children (Leonard et al., 1992). This may be viewed as having a negative effect as parents would have less time with their children. Parents of children with autism are more likely to experience work-related problems such as working fewer hours, quitting their work and frequently changing jobs to accommodate the condition of their children (Cidav et al., 2012).

A study by Li & Liu, (2019) looked at the effect of co-parenting as one of the coping mechanisms for parents of autistic children. The study found co-parenting, which involved not only biological parents but also other family members such as grandparents played an important role in reducing the stress levels associated with raising a child with autism (Li & Liu, 2019). Studies that were done on low-income parents of children with special needs, found that co-parenting played a significant role in influencing better social coping skills in children through sharing of responsibilities and reducing pressure on parents (Baker et al., 2010).

5.2 Caregivers parent's knowledge and oral health related to children with ASD

In the present study, the oral health knowledge of the participants was found to be poor. This is in line with a study done by Magoo et al., (2014), where it was found that oral health knowledge of autistic children's parents was found to be insufficient. Lack of adequate oral health knowledge among parents of autistic children is also evident in the study done by AlHammad et al., (2020). This study highlighted the importance of education and regular dental visits as contributing factors to inadequate knowledge among parents. Other factors that could contribute to inadequate oral health knowledge could be poor access to oral health personnel and expensive oral health services, a notion by both parents and oral health practitioners that these children would not cooperate in a dental chair. As a result of that, it is important to find

innovative ways to bring services to these vulnerable groups, as well as a need for oral health education and promotion.

More than (n=43) 60.0% of the caregivers/ parents indicated that eating food high in sugars was the most common reason for tooth decay. According to Klein & Nowak, (1998) autistic children generally prefer to eat soft and sweetened foods due to their poor tongue coordination, as a result, they are prone to developing dental caries. The risk of developing dental caries can also be influenced by other factors such as difficulty in brushing and flossing (Jaber, 2011).

Caregivers/ parents can at times also be a contributing factor in terms of tolerance and patience. However, a study by Bassoukouet et al., (2009) found no difference in terms of dental caries between autistic and non-autistic groups. This was attributed to no significant difference in their salivary flow rate in the mouth and similar buffering capacity of the saliva (Bassoukouet et al., 2009). Autistic children that are in non-institutionalized environments were also found to have similar dental caries patterns to those of non-autistic children (Shapira et al., 1998). This would mean autistic children who live in institutions would live in controlled environments where diet is controlled, with reduced frequency of sweet foods and regular brushing of teeth with fluoridated toothpaste is practised.

Studies have shown that the attitude and knowledge of oral health among parents are also influenced by factors that are beyond oral health. For example, in a Polish study, it was found that parents with a higher level of education have a better attitude towards oral health (Williams et al., 2002). Usually, such parents have better access to oral health care services when compared to parents with a lower level of education (Williams et al., 2002). Other socio-demographic factors such as parents with higher income levels have been shown to have a positive attitude toward oral health care (Szatko et al., 2004). This could be linked to better access to health care facilities and better access to information relating to general and oral health (Szatko et al., 2004).

Poor compliance by parents of children with special needs is associated with negative attitudes towards oral health education as most of these children depend on their parents for support (Chinn 2017). These parents are likely to display poor compliance towards oral health due to several reasons, such as long travel time to seek dental

help, poor oral health literacy and poor social background and developmental status of a child (Jasinski et al., 2017).

Studies have shown that poor oral health literacy could act as a barrier to parents receiving good oral health education (Rowlands & Nutbeam, 2013). Some of these parents have been identified as having inadequate reading skills of the materials given to them as well as acceptance of the reading materials by parents (Rowlands & Nutbeam, 2013). Studies have shown that parents who viewed oral education material as not being useful were likely not to comply with oral health education given to them (de Graaf, 2013). These parents should be supported through teaching aids or material suitable for them (Rowlands & Nutbeam, 2013). Topics that could be covered include toothbrushing techniques, reduction of in-between snacks and the emphasis on regular dental visits and check-ups, story-telling and visual aids (Chen et al., 2017).

5.3 Caregivers/ parent's attitudes and oral health-related to children with ASD

The study investigated the impact of parental attitudes and oral health. The overall attitude shown by caregivers/ parents was a positive one. Nearly 60.0% of the respondents indicated that it was important to look after one child's baby teeth. This is comparable to a study done in India in which 71.2% of the parents acknowledged the importance of maintaining primary teeth (Magoo et al., 2015).

The majority of parents indicated that it was necessary to follow necessary prevention measures such as cleaning and seeking treatment for their children's primary teeth; however, less than 50% of these parents felt that the best treatment would be to take the tooth out rather than to save it. A study by Blinkhorn et al., (2001) found that only 47% of parents wanted their children's teeth needed to be filled.

This indicated that caregivers/ parents did not appreciate the importance of primary teeth and regarded extraction as the best option available to alleviate pain. Studies have shown that a positive caregiver's attitude plays an important role in the management and support of oral health care for their children (Davis et al., 2015).

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5.4 Caregivers/ parent's practice and oral health-related to children with ASD

The findings in the study indicated that 45.07% of caregivers/ parents would go to a dentist for the management of toothache. The reasons for such a figure were not explored in the study. However, studies have shown that some parents would avoid going to a dentist because they felt their children would not cooperate and some found oral health services to be unaffordable (McIver, 2001).

There are many barriers reported by other studies, these include lack of medical/dental insurance coverage, lack of cooperation, and difficulty in locating a competent oral health practitioner (Altun et al., 2010). Mangione & colleagues (2007) also reported similar barriers to accessing oral health care.

Oral health care of children with special needs has not been generally addressed adequately due to the nature of their conditions (Pharr, 2014). Studies have shown that children with disability suffer a great deal in accessing health care services (Ali et al, 2013), even though these children have a high caries burden (Bhambhal et al., 2011). The consequences of unattended dental care may have far-reaching emotional and psychological impacts on them (Bhambhal et al., 2011). Some of the contributing barriers include difficulty in communication or expressing themselves, poorly motivated parents to seek help and inadequate knowledge by health care professionals (Ali et al., 2013).

Other factors include lack of adequate training of oral health care professionals, fear of dental treatment, financial constraints and inadequate dental infrastructure. Studies done on practising dentists revealed that a majority of them needed more training concerning the management of children with special needs (Adhyanthaya et al., 2017). Parents felt that fear and anxiety of visiting a dentist as well as the difficulty in accessing dental services were some of the barriers that contributed to poor oral health practices (Adhyanthaya et al., 2017).

Slightly above 50% of caregivers/ parents indicated that their children could brush their teeth without being assisted. Studies have reported supervised brushing of their children with ASD ranging from 27% to 86.5% (Asimakopoulou et al., 2015). Other studies revealed that parents would only intervene when signs of gingival inflammation are seen. This is in line with the Health Belief Model which states that people are less likely to change their behaviour unless they perceive its severity and its potential consequences (Glanz et al., 2008).

Gingival inflammation due to plaque accumulation in children with autism is likely to occur as these children have poor manual dexterity (Vajawat & Deepika, 2012). Other contributing factors to gingival inflammation are lack of adequate knowledge in terms of brushing techniques, improper use of dental aids such as dental floss and lack of patients from the parents (Magoo et al., 2015).

The highest brushing frequency was twice a day (n=44) 62%. This is in line with the study that recorded a high frequency of brushing teeth among autistic children aged between 4-12 years old (Orellana et al., 2019). This is also found in similar other studies that looked at oral hygiene practices conducted in Dubai (Mansoor et al., 2016).

In a study by Nonong et al., (2014), there was more frequency of brushing in autistic children when compared to non-autistic children. The study found that these autistic children practice a routine of brushing and bathing at night before going to sleep (Nonong et al., 2014). In one study it was found that parents would only assist their children to brush their teeth only once a day and this contributed to an increase in caries prevalence (Namal et al., 2007). This may be linked to the hypersensitive nature and aggression these children may display to their parents, particularly if they do something they are not keen to do (Duker et al., 2017).

In another study, caries prevalence was found to be below as a result of several factors and these included not only parents assisting in brushing their children's brushing teeth but also good supervision on proper brushing techniques by parents, engagement of teachers at schools in terms of monitoring menus in their diet and avoidance of snacks in between meals (Shapira et al., 1998).

In the current study, the mean age of children was 9 years. The age of the child is considered to be an important factor in the psychological well-being of the parent (Townsend et al., 1989). In one study it was reported that having older children with a mean age of 15 years with autism had a lower psychosocial burden on their parents when compared to parents of children with a lower mean age of 10 years (Fitzgerald et al., 2002). This is also found in similar other studies where it was stated that the psychosocial well-being of parents of autistic children improved over time (Lounds et al., 2007). This could be attributed to parents having developed coping mechanisms

and strategies over many years. For example, in a longitudinal study, it was found that parents of autistic children were coping better over a long period of time (Gray, 2002). This was found to be true with parents of children with other special needs, for example, parents of older children with mental retardation were found to have better skills in dealing with their children over many years (Essex et al., 1999).

5.5 Teacher's knowledge, attitude and practices and oral health-related to children with ASD

The majority of the respondents (n=11) 68.75% were permanently employed. The study revealed that 44% of the teachers were knowledgeable about oral health care practices. This was in line with another study conducted in south India that was looking at the conceptual knowledge of oral health among school teachers found that oral health knowledge of teachers was 44%% (Jagan et al., 2018), and another study that was looking oral health knowledge of teachers in a government school in Mathura city (India) was found to be 56%.

However other studies done elsewhere have indicated figures which were above 50% in terms of oral health knowledge of teachers of autistic children. A study conducted in Rungwe (Tanzania) which was looking at the oral health-related knowledge of primary school teachers among other factors. The study found that 83% of teacher trainees and 76% of in-service teachers correctly recorded at least 50% of the knowledge items (Mwangosi & Nyandindi, 2002).

In response to the attitude of teachers, there were (n=11) 68.75% of teachers showed a negative attitude towards children's oral health. The majority of teachers showed poor awareness regarding referring children with ASD to a dental clinic. This is not surprising as the study revealed that the majority of teachers never advised caregivers/ parents to brush their children's teeth with ASD. This may indicate a lack of concern or appropriate support from teachers.

Studies have shown that if caregivers/ parents are advised on oral health issues and early dental check-ups, this is usually associated with improved dental care among young children (Beil & Rozier, 2010). A majority of teachers never received instructions for oral health practices. Studies have shown that the majority of teachers

focus primarily on medical and educational components and more often overlook the oral health component (Murshid, 2015).

5.6 Limitation of the study

The results of the present study cannot be generalised, as the sample of the study was a convenient one and hence using the total population of the school. Some caregivers/ parents and teachers may not have access to smartphones and some of them may find it to be a challenge to complete online surveys.

5.7 Conclusion

Taking into consideration the limitation of the study. The current study concluded that the knowledge about oral health among caregivers/ parents is inadequate however, attitudes and practices were adequate. Teachers had acceptable knowledge and attitude regarding basic oral health. Parental training programs in oral health knowledge are important. Practices of caregivers/ parents on oral health seemed adequate as the majority of them never received instructions on oral health practice.

Knowledge of oral health among teachers of children with autism was not adequate. The study found that teachers had poor knowledge regarding the cause of dental caries, and however, the majority knew about good practice of oral hygiene, i.e. how many times a day should brush their teeth. The majority of teachers had a negative attitude towards children's oral health, this could link to factors such as lack of adequate knowledge regarding oral health and that a majority of them never received any instructions on oral health practice.

5.8 Recommendations

There should be the training of caregivers/ parents and teachers in basic oral health education through workshops.

A need for a larger study that will include the clinical examination of children with ASD and assess dental caries decayed, missing, filled and treated (dmft), gingival diseases and plaque accumulation in relation to the KAP study of teachers and parents.

Another study that will look at experiences and challenges faced by parents in the dental waiting room area, before and after treatment due to fear, anxiety and lack of cooperation by children when visiting a dentist, as well accessibility challenges in finding dental care should also be explored in the future studies.

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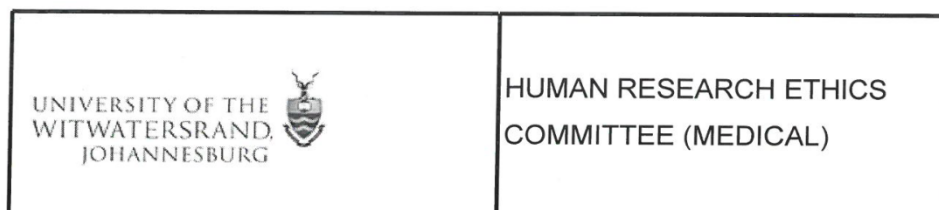
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Appendix I Ethical Clearance Certificate



Office of the Deputy Vice-Chancellor (Research and Postgraduate Affairs)

TO: Dr SN Ngema
School of Oral Health Sciences
Department of Community Dentistry
Dental School
University

E-mail: Simphiwe.Ngema@wits.ac.za

CC: Supervisor: Dr Y Kolisa; Profs V Yengopal & S Nmutandani
<Yolanda.Kolisa@wits.ac.za>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2021/05/14

REF: R14/49

PROTOCOL NO: **M201128** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *Knowledge, attitudes and practices of oral health care amongst caregivers, parents and teachers of autistic disorder children in Randburg Clinic School*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.



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Appendix II Permission letter from Gauteng Department of Education



GAUTENG PROVINCE

Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	10 September 2020
Validity of Research Approval:	01 February 2021 – 30 September 2021 2019/605
Name of Researcher:	Ngema SN
Address of Researcher:	3 Flute Street Rynfield Benoni
Telephone Number:	011 717 2005 / 082 622 8872
Email address:	Simphiwe.ngema@wits.ac.za
Research Topic:	Knowledge, Attitude and Practice of Oral Healthcare among caregivers ,parents and Teachers of Autistic Disorder children in Randburg Clinic School
Type of qualification	M Dent
Number and type of schools:	LSEN School
District/s/HO	Johannesburg North

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

1. Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.

Making education a societal priority

Office of the Director: Education Research and Knowledge Management

7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalaia@gauteng.gov.za
Website: www.education.gpp.gov.za

Appendix III Permission letter from Randburg Clinic Autism School



Randburg Clinic School

Emis No. 151290 / Gauteng Department of Education

Tel: 011 886 1280
Fax: 011 789 8346 / 086 402 7322
Email: admin@randburgclincschoo.co.za

51 Milner Road
RANDBURG
2194

Date: 26 February 2021

To: Dr SN Ngema
7 York Road, Park Town, Johannesburg,
Tel (011) 717-2005
Cell 0826228872
Simphiwe.ngema@wits.ac.za

Re: Re: Approval in respect of request to conduct research at Randburg Clinic School

Research Topic: Knowledge, attitude and practice of oral health care among caregivers, parents and teachers of autistic disorder children in Randburg Clinic School

I hope this letter finds you well. The school management team has reviewed your request to conduct a survey involving both teachers and parents of our autistic children. This letter seeks to indicate that approval is hereby granted for the above mentioned research topic. We would require you to provide our school with a copy of the research protocol and ethics clearance for our records. We wish you well for your research and thank you again to you and to your team at Wits for all the good work you are doing in our school.

Type of qualification: MDent (Community Dentistry) Wits.

Hope this is order.

Regards


Randburg Clinic School Principal/ Management
LSEN School
Johannesburg North



Appendix IV PARTICIPANT INFORMATION LEAFLET



Title of Study: Knowledge, attitudes and practices of oral health care among caregivers, parents and teachers of autistic disorder children in Randburg Clinic School

Good day, my name is Dr SN Ngema; I would like to invite you to take part in this study. I am required to do a study as part of my studies at the University of the Witwatersrand, Faculty of Health Sciences, in the Department of Community Dentistry. The aim of the study is to find out your knowledge, attitude and practice of oral health care in your children autistic children in at your Randburg Clinic School

What are the side effects or risks of taking part?

There are no side effects or risks or dangers in participating in this study.

What are the benefits for participating in the study? There are no direct benefits to participants in this study.

Is there money to be paid for participating in the study?

You will not be paid to participate in this study. There will be no costs to you.

Do I have to take part?

Your participation in this study is entirely voluntary. It is up to you to decide whether or not to take part.

Will my taking part in this study be kept secret?

All information obtained during this study will be kept confidential. All information may be reported to appropriate or relevant bodies and will not include any information that identifies you as a participant in this study. The information will be kept for two years if published or six years if not published, after this period the will be destroyed. In the event of information sharing with other researchers for learning purposes written permission will be sought from relevant authorities.

Who is organizing and funding the research?

I have organised the study, as stated above this study is for study purposes.

Whom do I call if I have questions or problems?

If you would like more information, have any problems, concerns or questions about the study; please contact the principal investigator Dr SN Ngema at 0826228872 or alternatively my Supervisors Dr Malele-Kolisa at Yolanda.kolisa@wits.ac.za or Prof V Yengopal at Vyengopal@uwc.ac.za or the Human Research Ethics Committee (Medical), University of the Witwatersrand: Ms Z Ndlovu/ Mr Rhulani Mkansi/ Mr Lebo Moeng Administrative Officers 011 717 2700/2656/1234/1252 zanele.ndlovu@wits.ac.za; Rhulani.mkansi@wits.ac.za; and Lebo.moeng@wits.ac.za

Appendix V QUESTIONNAIRE For caregivers and parents only: Self-administered Questionnaire



QUESTIONNAIRE: Knowledge, attitudes and practices of oral health care among caregivers, parents and teachers of autistic disorder children in Randburg Clinic School

Please answer all questions

Please tick only where appropriate

Please tick only one answer

Section A: Socio-Demographic Data	
1. Age (Parent/Caregiver)	Years (data cleaned)
	20-30
	31-40
	41-50
	51-60
	>60
2. Sex(Parent/Caregiver)	Female Male
3. Employment status (Parent/caregiver)	Employed
	Unemployed
	Student
	Retired
4. Is the child on Medical Aid?	Yes
	No

	Do not know
5. What is your child's age?	
6. What is your child's School Grade?	Grade R-1
	Grade 2-5
	Grade 6-12
	Other
7. How long was the autism diagnosis made in your child?	
SECTION B: Knowledge	
8. Does the health of mouth and teeth affect the overall health of the child?	Yes
	No
	Do not know
9. When should your child consult a dentist or clinic about his or her teeth?	Once in 3 months
	Once in 6 months
	Once a year
	When in pain
	Don't know
10. Have you ever been informed/taught about the oral health care?	Yes
	No
	Do not know
11. If yes, where did you hear about oral health?	TV
	Newspaper
	Family/friends

	Church
	Clinic
	Other
12. In your view, what is the reason(s) for tooth decay in your child or children [may choose more than 1]	Irregular brushing
	Born like that
	Bacteria
	Eating food high in sugar
	Don't know
Section C: Attitude	
13. In your view, is it important to look after your child's baby teeth?	Yes
	No
	Don't know
14. In your opinion, is it important to seek treatment for your child/children milk /baby teeth?	Yes
	No
	Don't know
15. If your child complains of tooth pain where do you go to?	Doctor
	Dentist
	Clinic
	Do not take them to clinic, Dentist or Doctor
16. Do you think it is necessary to take your child for treatment for rotten teeth?	Yes
	No
	Don't know
17. Do you think it is necessary to take	Yes

your child for treatment for cleaning teeth?	No
	Don't know
18. If treatment is preferred, would rather have the tooth/teeth saved or taken out Please tick (Yes for tooth/ teeth saved) or (No for tooth/ teeth taken out)	Yes (saved)
	No (taken out)
	Don't know
Section D: Practice	
19. If your child has toothache, how do you manage it?	Leave it
	Take medication
	Go to a Dentist
	Go to Clinic
	Don't know
20. If you did not choose 'dentist'; what may be the reason of not going to a dentist if your child has toothache? (Follow up question from Question 18).	Scared
	No time
	No pain
	Cost
	Other
21. Is your child's able to brush his/her teeth by himself/ herself?	Yes
	No

22. If the answer is no, who helps the child to brush his or her teeth	Mother
	Father
	Helper/ Maid
	Siblings
	Other
23. How many times per day does your child brush his or her teeth?	Once a day
	Twice a day
	Three times a day
24. When does your child brush his or her teeth?	In the morning only
	At night only
	Both morning & at night
	Any time
	Don't know

Thank you for your time😊

Appendix VI QUESTIONNAIRE C For teachers only: Self-administered Questionnaire



QUESTIONNAIRE: Knowledge, attitudes and practices of oral health care among caregivers, parents and teachers of autistic disorder children in Randburg Clinic School

Please answer all questions

Please tick only where appropriate

Please tick only one answer

Section E: Educators Only	
25. Type of job you do	Temporary job
	Permanent job
26. Have you ever advised the parents of a child with ASD to brush their child' teeth?	Yes
	No
27. Have you ever advised parents on where to refer a child with ASD for oral health care should a need arise?	Yes
	No
28. Do you think you have a role to play in the oral health care of children with ASD in your school?	Yes
	No
29. At what age do you believe that children with ASD should have their first dental visit?	Between 1 and 3 years
	Between 3 and 6 years
	6 years and up
	Only in the event of pain
30. In your opinion, how many times should children with ASD (brush their teeth) practice good OH per day?	Never
	Irregular cleaning
	Once per day

	Twice per day 3 or more per day
31. In your opinion, if the child is unable to practice oral hygiene, who should help him or her?	The mother or father
	Any of the siblings
	Any family member
	A nanny or house helper
	A teacher or trainer
	Do not know
	Anyone can help
32. Have you ever received instructions for oral hygiene practice?	Yes
	No
33. If so, from which source?	Dentist
	Media (such as, TV, radio, newspapers or magazines)
	Professional brochures and leaflets
	Friends or relatives
	Other sources
34. In your opinion, what is the cause of dental cavities?	Bacteria
	Hereditary factors
	Irregular OH practices
	Do not know
	Combination of factors

Thank you for your time😊