# A PROFILE OF THE ORO-FACIAL INJURIES IN CHILD ABUSE: A HOSPITAL RECORD-BASED STUDY

by

SUDESHNI NAIDOO BDS (Lon), LDS.RCS (Eng), MDPH (Lon), DDPH.RCS (Eng)

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THIS THESIS IS DEDICATED TO

THE CHILDREN WHO HAVE SUFFERED

ABUSE AND NEGLECT

AND TO THE PEOPLE WHO CARE


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## SUMMARY

Child abuse and neglect has been globally recognised as a serious and growing problem. Defined as non-accidental injury, sexual abuse, emotional abuse, or trauma inflicted on a minor by a parent or other care-giver, child abuse and neglect are growing at an alarming rate here in South Africa. In addition, child abuse services in South Africa are fragmented with no record of the number of cases seen or diagnosed. Many parts of the country (especially rural areas) are left under-resourced and under-serviced.

The purpose of this report is to highlight the most prevalent oral and facial signs of child abuse. The research aimed to determine the head, face and neck injuries associated with physical child abuse cases in the Cape Metropole. A retrospective, record-based analysis of the non-accidental injuries at Red Cross Hospital over a 5 year period (1992-1996) was carried out. These records were examined and then corroborated by social worker records of the same cases.

In the present hospital record-based study of 300 cases, the mean age of the sample was 4.75 years, 45.7% of whom were girls. Victims usually made contact with the perpetrator in their own homes (88.7%). Most of the crimes were committed in the child's own home (88.7%), the rest in the offender's home (3.3%), a deserted spot near home (4.7%) or a public area (3.3%). Crimes were mostly reported by mothers (48.7%), grandmothers (11.7%) and the day hospitals (13%). Most of the perpetrators (90%) were known to the victim and the majority were male (79%). Of all the perpetrators, the mother's boyfriend accounted for 20%; the father or step father 36% and in 12% the mother was responsible for the act. Over a third of the perpetrators (35%) were under the influence of alcohol or drugs when they committed the offence.

The head, face, neck and mouth were the sites of physical injury in 67% of the 300 cases reviewed. This concurs with the various studies abroad where 50-75% of child abuse cases involved trauma to the mouth, face and head. In the present study, a high proportion of the children suffered serious injuries (64.7%) and 48.7% had to be hospitalised. Four children were critically injured and died. The face was the most frequently injured (41%) part of the body, with the cheek being the most common site for the injury. The range and diversity of the oro-facial injuries included skull fractures, subdural haematomas, retinal haemorrhages, bruises, burns and lacerations. Injuries to the mouth included avulsed teeth, lacerations to the lips, fraenum, tongue and jaw fractures.

The main conclusions of this study were (i) that under two year old children were most at risk from abuse (36%); (ii) the number of the reported injuries to the oral cavity was extremely low (11%), especially when taking into consideration that the face was the most often injured part of the body and (iii) no dentists participated in the examination of any of the patients - so there is potential for dental professionals to take a more active role in the hospital examination of children suspected of having been abused.


## LIST OF FIGURES AND TABLES



# CHAPTER 1 INTRODUCTION

Throughout the world there is a general awareness that child abuse and neglect is a serious and growing problem. Child abuse involves every segment of society and crosses all social, ethnic, religious, and professional lines. The definition of child abuse can range from a narrow focus, limited to intentional inflicted injury, to a broad scope that covers any act that impairs the developmental potential of a child. Included in the definition are neglect (acts of omission) and physical, psychological, or sexual injury (acts of commission) by a parent or caregiver.

Child abuse is a hidden problem in many countries, because data is lacking and the issue is laden with shame and denial. It is a problem in both developed and developing countries. There is every reason to believe that child abuse and neglect will become even more prevalent as countries make the transition from regulated economies to more open market economies with fewer structures for social welfare; as urban expansion exceeds medical and social services; as rural to urban migration disrupts social and family networks; and as women join the work force in increasing numbers. In addition, civil unrest, economic disruption and war displace families from their homes and cultural moorings (WHO, 1994). There is mounting public concern over the extent of child abuse and neglect in South Africa. Apart from abuse in the immediate surroundings of home, school and neighbourhood, child abandonment, child labour and the commercial exploitation of children are also widespread problems on our society. At the same time, South Africa's child protection system has many gaps in service delivery and confusion exists among service renderers as to which system to follow (HSRC, 1996). This is a situation which places our children at high risk of secondary abuse. Ensuring the well-being of children is a stated fundamental of the transformation process and to the reconstruction and development of our country.

The crimes against children handled by the Child Protection Unit of the South African Police nationally, in the Western Cape Region and in the Cape Peninsula are shown in Table 1 and reflect the hard facts of this growing problem in South Africa (CPU, 1998). The numbers indicate *only* the number of cases handled by the Child Protection Unit and this is thought to represent about 20% of all cases. The extent of the problem is unknown because there is no centralised data base, no co-ordinated reporting system and no clear, common definition in place, on which to base the data. However, the overriding impression is of a child abuse and neglect problem that is increasing in size and complexity on a daily basis.

**Table 1: Crimes Against Children (Under 18yrs) in South Africa**

| YEAR | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|
| SOUTH AFRICA | 17 194 | 23 664 | 28 482 | 35 838 | 37 517 |
| WESTERN CAPE | no data | no data | 7 721 | 15 453 | 15 848 |
| CAPE PENINSULA | 734 | 1 069 | 1 464 | 1 760 | 1 954 |

Child abuse is not a phenomenon new to the 20th century. It has become a subject of national attention during the last few years and it is now a legal responsibility of health care workers to report all cases where the signs and symptoms suggest abuse. Despite this, there is evidence that knowledge of signs and symptoms, and prognosis of child abuse and neglect is inadequate (Armstrong and Wood, 1991) and that a lack of confidence in the service delivered consequent upon a report, leads many to actively decide not to report cases which are suspected.

Dental professionals seem to be in a useful position to detect child abuse because the traumatic oral and facial injuries caused by abuse may be the first to present. Often these are easily identifiable and about 65-75% of all cases of child abuse involve trauma to the mouth, face and head (Jessee, 1995; Da Fonseca, Feigal and Ten Bensel 1992; Becker, Needleman and Kotelchuck, 1978). In addition, literature abroad has demonstrated that while abusers rarely take the child to the same physician, they can often return to the same dentist (Becker et al., 1978). However, this may not necessarily be the case in South Africa, where, in the poorer communities there is a lack in the continuity of care and at day hospitals and state dental clinics there is more than one dental professional on hand so the child may not be seen by the same examiner at each visit.

As Sanger and Bross (1984) wrote, 'the identification of oro-facial injuries per se should present little difficulty to the astute dental clinician'. However, the reporting incidence by dentists is still low. Several authors (Hazelwood, 1970; Becker et al., 1978; Kittle, Richardson and Parker, 1981; Malecz, 1979) have described reasons that prevent dental professionals from getting involved with the problem, such as ignorance about abuse, lack of awareness of legal mandates to report, fear of dealing with the perpetrator and fear of economic damage to the practice by loss of patients.

The fragmented conceptualisation of child abuse as a legal and welfare issue and the 'social myths and taboos' surrounding it, have prevented child abuse from being addressed in a comprehensive manner both in terms of prevention and intervention. The health sector has a crucial role to play in conjunction with other sectors such as justice, social services and the police to facilitate action against child abuse. As a sector that regularly interfaces with children of all ages, the health sector is crucially placed to respond, but it is not well-prepared to identify, diagnose, manage and appropriately refer children who have been abused.

The study of child abuse and neglect has proliferated over the past twenty years. Although child abuse and neglect has been a phenomenon throughout the ages, it has become an issue of the late 20th century for a number of reasons including the growth of the children's rights movement, changed attitudes within society, and economic development. Numerous theories have been postulated to explain the causation of child abuse. These range from concentrating solely on the characteristics of the individual, to those focussing primarily on societal issues. Causes may vary from society to society, but the fundamental issue is how society regards women and children and the power differentials within the society.

## 1.1 The rationale for this study

It was with this background that the present study was undertaken. The study aims to address the problem of child abuse in the dental arena, and to provide data to add to existing knowledge on the oro-facial injuries sustained in child abuse. The central message of this thesis will be on 'breaking the silence' around child abuse as a Public Health issue. It will focus on the oro-facial manifestations and their implications of their detection for health care workers. The broader purpose of the study is to place child abuse issues on the public health agenda for action and demand a co-ordinated response to this silent epidemic.

Despite the fact that the focus of this research is on the oro-facial injuries sustained, it needs to be contextualised within the broader understanding of family violence as a significant barrier to children's ability to participate in all aspects of society. The political commitment to addressing this silent crime is enshrined in human rights documents - the challenge now is to translate these policies into reality.

## 1.2 Structure of the report

The importance of oral and facial injuries in child abuse is well established, but there is still an enormous need for further research in order to understand and deal with the issues of child abuse better. This thesis presents findings from a record-based study of oro-facial injuries associated with child abuse. It's central tenet deals with the importance, diagnosis and recognition of the oral and facial injuries associated with child abuse.

It will report on the demography of the sample; the location where the abuse occurred, the nature and cause of the injury, describe the oro-facial manifestations, who the perpetrator(s) are and the relationship between the victim and the abuser.

Chapter Two discusses the nature of the problem of child abuse and considers aspects of the response to child abuse in the developed world, in Africa and in South Africa. Chapter Three reviews existing literature with respect to methods of diagnosing and recording injuries, with a focus on oro-facial injuries. Chapter Four examines the issues related to the reporting of child abuse. This is followed by a synopsis of the methodology (Chapter Five) before presenting the results of the study (Chapter Six) and concludes with an interpretation and discussion of what these results mean in Chapter Seven.

It is hoped that the data arising from this study, may be used to increase the awareness of health care workers to the issues of child abuse and assist them to identify and report suspected child abuse and neglect. Perhaps it can help planning of prevention and intervention programmes, and in documenting the incidence and prevalence of the problem.

# CHAPTER 2 THE EPIDEMIOLOGY OF CHILD ABUSE AND NEGLECT

## 2.1 Introduction

Relatively scant societal attention and resources have been directed to the study of human violence. While societal awareness of interpersonal violence has been raised by various groups who have come forward and identified it in their own lives, children are a largely silent group. Because of this, our ideas of human violence are seriously flawed as the links between child maltreatment and human violence are ignored.

This chapter will describe the cycle of abuse. It will also discuss the reported prevalence of child abuse from Europe, the United States, Africa and South Africa. In order to understand the present child protection system in South Africa and the role dental professionals might play in this, Chapter Two outlines how attitudes to child abuse have evolved and the current principles and values underpinning child care legislation. This is done in the hope that a better understanding of the *Child Care Act* (Government Gazette no. 9765 Pretoria, 1983) and child protection systems might encourage greater dental professional involvement in child protection, and provides the context for understanding the child abuse encountered in this study.

## 2.2 The problem of child abuse and neglect

We live in a violent society. Children are often the targets of that violence. The violence is most likely to occur in the home and be perpetrated by a family member. Some studies suggest that people who were abused as children are more likely as adults to become perpetrators of abuse than those who were not abused as children. Social factors such as poverty, unemployment, and isolation are major factors to which the increasing risk of child abuse are attributed (Gelles, 1982).

Effective strategies to deal with and prevent abuse seem to need a multi-sectorial approach. No one individual, whether pediatrician, radiologist, psychiatrist, nurse, social worker or oral health worker, can have all the answers and consistently make correct decisions without the input from other professionals on the team (Argent, Bass and Lachman, 1995; Kivlahan, Kruse and Furnell, 1992).

## 2.3 The cycle of abuse

Family violence is not entirely mysterious. To a large degree it is understandable and predictable. When unchecked, its costs reach far beyond the tragedy of individual families. Child protection has varied with the value society has placed on the lives of children.

Successful intervention first requires recognition that abused children exist and then a social commitment to respond to their suffering. Revelations that children are battered or denied the necessities of life evoke contradictory and complex mixtures of denial and horror, disgust and fascination from the professionals, media and the public. Children remain essentially invisible and society has great difficulty acknowledging them (Williams, 1994).

Historically, the widespread recognition of violence between family intimates is a modern phenomenon. Certain family functions, such as how children are disciplined and how spouses react to anger and frustration, have been only recently addressed in western societies, exposing problems that have probably always existed.

Paradoxically, the increased recognition has come in the same social context that attempts to minimise spouse abuse. Apart from the obvious physical differences between the sexes, systems of social inequality ensure that most women and children remain vulnerable targets for men in family violence. Child abuse exploded into public awareness in the late 1950's and early 1960's (Caffey, 1946; Silverman, 1953; Kempe et al., 1962) and has been championed by the child protection movement.

## 2.4 Prevalence of child abuse

Child abuse is now recognised as an international issue and has been reported in many countries. While research into the incidence and prevalence has mainly taken place in Europe and the United States, most countries have experienced a growth in research into child abuse. Not surprisingly, different prevalence scores have been reported in different countries, and this seems to reflect an array of multi-factorial, social and cultural differences. As awareness of child abuse rises throughout the world, the number of studies reporting prevalence scores can also be expected to rise. In the 1980's, at least four children in Britain (Creighton and Gallagher, 1988) and 80 children in the USA (Schmitt, 1986) died weekly as a result of abuse or neglect. In Scandinavia the estimated frequency of mortality from child abuse is lower than 10 child deaths a year (Gregersen and Vesterby, 1984). In the USA more than 95% of serious intra cranial injuries during the first year of life are the result of abuse (Billmire and Myers, 1985).

### 2.4.1 Child abuse in the United States of America

Conservative estimates indicate that almost 2000 infants and young children die in the United States each year from being abused by parents and caregivers. In addition, each year more than 18 000 serious disabilities and more than 141 000 serious injuries result from child abuse and neglect (Department of Health and Human Services, Washington, 1996).

According to a 1996 report from the Department of Health and Human Services, more than one million children were victims of substantiated child abuse and neglect in 1994, an increase of 27 percent from 1990. About 26 percent suffered from physical abuse and the remainder suffered from other forms of maltreatment, sexual or emotional abuse. However, most estimates place the real number of reported cases of child abuse at almost three million annually.

### 2.4.2 Child abuse in England

Child abuse is five times more common than it was a decade ago in England. In Britain at least one child in every 1000 under the age of four years of age suffers from severe physical abuse that includes serious injury such as fractures, brain haemorrhage, severe internal injuries or mutilation (Creighton, 1988).

The names of 35 000 children in England are listed on child protection registers (Meadow, 1997). However, determining whether there is a true increase of child abuse or whether current figures merely reflect increased awareness rests to some extent on the definition of child abuse and the process by which it is now reported.

### 2.4.3 Child abuse in Africa

When compared to the research on child abuse in the United States and Europe, research in Africa is limited. In Africa, child protection is overshadowed by political instability and economic problems experienced by the people. These include war, poverty and economic deprivation. The publication of reports has been restricted to a few articles of qualitative and some quantitative research that has taken place. This does not imply that there has not been research or documentation of the problem, but rather that the lack of resources has resulted in the paucity of reporting and a relative absence of research (Lachman, 1996).

One of the difficulties of defining child abuse in the African context, is that cultural attitudes towards abuse vary greatly. In addition, there is a misconception that child abuse is not a common occurrence in Africa as children are valued and loved as part of African culture and tradition. This is questioned by Okeahialam (1984) who highlights some child rearing problems in the area of disability, female circumcision, the treatment of children of multiple pregnancy and the effects of breakdown of the extended family. Khama (1993) comments on the difficulty in defining child abuse in the African context in Botswana. Khama notes that the cultural attitude to abuse is variable and often the distinction between abuse and discipline is blurred. One of the major factors is the belief in the infallibility of the male in the family structure. Advocacy for the rights of women is central to any action against child abuse (Khama, 1993).

In Tanzania, Omari (1993) provides the alternate socio-political perspective, indicating that poverty, the effect of AIDS and the breakdown in the structure of the family with increasing urbanisation, are major factors.

Ebigbo (1992) conducted a situation analysis on child abuse for UNICEF, that does not provide prevalence figures but rather an analysis of the attitudes of Nigerians to differing forms of abuse. Whilst this shows an increasing recognition of the problem, it is not conclusive as the attitudes are mixed. The study, however, does tend to support the theories put forward by Omari.

Nowrojee (1993) provides an analysis of physical abuse in schools in Kenya and concludes that the culture of acceptable violence should not be a barrier to developing a movement against corporal punishment of children. Nowrojee notes the virtual absence of any statistics on abuse in Kenya, and the difficulties of providing universal definitions despite the approval of the United Nations *Conventions on the Rights of the Child* (United Nations, 1989).

Research in Nigeria has been sporadic, though a number of papers have been published. Wilson-Oyelaran (1986) reported on child labour and physical abuse in Nigeria and noted that research is not systematic. The role of poverty as the sole factor is questioned and it is suggested that a multi-dimensional approach must be adopted including culture, social environment, and the family and individual. This approach was suggested by Asogwa (1986) in an analysis of child labour and its effects on children.

A few reports from Mozambique have concentrated on the effects of the civil war on family life. The war destroyed the fabric of society, and the experience of the children of Mozambique is probably replicated in all societies which have undergone prolonged periods of war (Boothby, Upton and Sultan, 1992). The political instability of much of Africa and the ongoing civil wars implies that the research in Mozambique could have important lessons for children in other parts of Africa.

### 2.4.4 Child abuse in South Africa

#### (a) Historical perspective

There is no fixed definition of what constitutes child abuse or indeed of how children are seen or what rights children have within society. How abuse has been viewed within societies has depended upon the wider social mores in particular societies at particular points in time. Every piece of social legislation contains values and assumptions reflecting the dominant ideology of the time (Murphy and Welbury,1998).

In the colonial era before the Union in 1910, the Cape Province, Transvaal and Natal had child protection legislation that was consolidated in 1913 into the *Child Protection Act*. Legislation on adoption was added in 1923, and these were supplemented in 1937 with the *Children Act*. The legislation was replaced by a new *Child Care Act* in 1960 that emphasised the role of the family in child care, but did not mention child abuse. In 1983, the *Child Care Act number 74* was passed and it reflected the development in child care with emphasis on the parent's role in child care. It emphasised improving welfare of children already in care by a shift from residential to foster care. This Act covered many different areas of child care, including adoption, fostering, children's homes, etc., but failed to define child abuse.

An innovation was *Section 42*, which made it a criminal offence should doctors, nurses and dentists fail to notify the Regional Director of Health and Welfare if they examined a child "in circumstances giving rise to suspicion that the child has been ill-treated or suffers from injuries, the cause of which may be deliberate."

The aim of the amendment was to facilitate discovery of child abuse, but the absence of a protocol for reporting and clear definitions of abuse made this provision easy to ignore. When the Act was revised in 1993, this was not addressed. However, social workers were added to the list of mandated reporters.

Child abuse and neglect are growing at an alarming rate here in South Africa (CPU, 1998). In addition, child abuse services in South Africa are fragmented with no record of the number of cases seen or diagnosed, under-resourced and many parts of the country (especially rural areas) are left un-serviced (Argent et al., 1995). The standard of services varies greatly and there is a shortage of suitable qualified and trained staff. Serious financial difficulties are experienced by organisations. Because of a lack of policy guidelines regarding management protocol, there is no guarantee that a child entering the system will be dealt with in terms of acceptable procedures or protected against further abuse. No co-ordinated and comprehensive preventive strategies exist (HSRC,1996).

### (b) Child protection system

In most parts of the country, all components of the child protection system, including the social welfare system, police child protection units, the court system, residential care and hospitals are under-resourced and over-stretched. Amid the escalating needs, child protection services have been struggling to deliver an effective service with limited resources. Child protection workers are constantly faced with issues like no vacancies in places of safety; long waiting lists for placements; no alternative care facilities and the lack of specialised services, e.g. psychological treatment for traumatised children.

In addition, overloaded prosecutors; an over stretched court system and the lack of funds to implement appropriate programmes to prevent child abuse and neglect compound the situation. This is very demoralising for all parties involved in the child protection system (HSRC, 1996).

This desperate situation gives rise to a high burn out and turnover rate among social workers which is compounded by low salaries. For example, experienced social workers are leaving the profession at an increasing rate, leaving young, inexperienced workers to do the job. These workers lack specialised, in-service training because funds and time are not available. Allegations of child abuse and neglect are not easy to investigate and inexperienced social workers, if not adequately trained and supervised, can add to the trauma being experienced by the child and the family (HSRC, 1996).

The Child Protection Unit (CPU), within the South African Police Service (SAPS), was established in 1986 to prevent and combat crimes against children. The primary task of the CPU is to proactively and reactively police crimes against children, ensuring that a sensitive service is rendered to the child victim. Since it's existence the CPU has dealt with 140 000 cases of crimes against children.

In 1995, the SAPS Child Protection Unit dealt with 28 484 cases of abuse against children, which represented an average increase of 28% per year since 1993. During the period 1993-1994, officially reported rape cases increased from 4 736 to 7 559 (60% increase), common assault cases from 2 364 to 3 246 (37% increase), offences under the Child Care Act 74/1983 from 1 969 to 2 694 (37% increase) and serious assault from 1 339 to 1 905 (42% increase). In comparison with crimes against adults during the same period (1993-1994), the increase in offences against children is unprecedented. In general, crimes against adults (burglary, theft, rape, murder, robbery etc.) increased by 2.7% compared to the 37% increase in crimes against children.

## 2.5 Summary

The study of child abuse and neglect has proliferated over the past twenty years and it has become an issue of the late 20th century for many reasons including the growth of the children's rights movement, changed attitudes within society and economic development. Numerous theories have been postulated as to the causation of child abuse. Research is leading clinicians to speculate on the possibility that there exists a cycle of violence for victims of abuse. Although limited in scope and predictive power, available studies suggest that sexual abuse in childhood appears to increase the risk for later sexual aggression (Longo, 1982; Gaffney, Laurie and Berlin, 1984; Becker, 1988). The greater the trauma of abuse the more likely the experience will be deflected from awareness, perhaps to reappear as abusive activity in the future.

Although the limited research available cannot reliably predict who will become abusive, there is ample evidence of the damaging influence of abuse. In addition, causes may vary from society to society, but the fundamental issue is how society regards women and children and the power differentials within society (Gelles, 1982).

This chapter also discussed the prevalence of child abuse as reported in the literature and concludes that the overriding impression is of a child abuse and neglect problem that is increasing in size and complexity on a daily basis.

In Chapter Three, the diagnosing of child abuse injuries, especially the more commonly reported oro-facial injuries, will be discussed. This will provide the background to the subsequent chapter on the reporting of these injuries, and validate the method by which oro-facial injuries have been identified and recorded for this study.

# CHAPTER 3 DIAGNOSING CHILD ABUSE INJURIES

## 3.1 Introduction

Various studies in Europe and the United States (there are no documented studies from the African continent), have shown that as many as 65-75% of all cases of child abuse involve trauma to the mouth, face and head (Jessee, 1995; Macintyre, Jones and Pinckney, 1986; Needleman, 1986; Giangrego, 1986; Becker et al., 1978 ). In addition, although abusive parents may avoid taking the child to the same doctor or hospital, they usually return to the same dental practice (Becker et al., 1978). Oral health workers can be in a valuable position to identify and report child abuse and neglect.

The diagnosis of the classic battered child who presents with multiple injuries in different stages of healing is easy for the experienced health care worker. Determining, with certainty, whether a single injury is accidental or intended, is difficult. Inflicted injury is diagnosed when the health care worker is certain that a single injury in a child could not have been the result of the circumstances described by the parent or caregiver. This decision is based on the health care worker's clinical experience and reliance on studies in the literature.

The role which health care workers must play in the diagnosing and reporting of child abuse is complicated by the multiple medical, dental as well as the environmental determinants involved. The high number of injuries to the head and face supports the idea that their easy accessibility and psychological importance make them frequent targets for abusers (Symons, Rowe and Romaniuk, 1987; Schwartz, Woolridge and Stege, 1976). Hopefully this can also lead to early detection and intervention.

The dental professional must ascertain to the best of his/her professional ability whether the physical injuries being evaluated are the result of accidental, non accidental or self-inflicted trauma. Physical abuse is not always an absolute diagnosis even for the most astute and informed clinician.

A broader understanding of the range of injuries that can occur and their defining characteristics is therefore important. This review will briefly discuss the normal development of the child, other conditions that may be confused with abuse and accidental versus inflicted injuries. The primary intention, however, is to draw to the attention of the reader those injuries which are commonly documented in the literature, and which if present in a particular child, may alert them to the possibility of child abuse.

In addition, another reason for reviewing the most prevalent general signs and symptoms of physical child abuse is that they exemplify the kind of injuries that can be found in the oro-facial region. These include bruising, burns, bite marks, tooth trauma, eye injuries and fractures.

## 3.2 Normal child development and behaviour

In evaluating injuries, the age of the child is crucial. Infants who are immobile and who are receiving good care rarely suffer injury. When they reach the mobile stage and are learning to crawl or walk, single bruises are generally found as a result of their many falls. Multiple bruises, involving multiple body areas, require multiple impacts and the history should reflect multiple incidents (Monteleone and Brodeur, 1994), if child abuse is to be excluded.

With few exceptions, a child cannot roll over until at least four months of age, often not until about six months of age. A child will not crawl until about ten months or walk until about a year old. He/she will not run well until the age of two, and cannot ride a tricycle until about three. It is also about this time that the child climbs stairs with alternating feet. Accidental injuries require specific motor skills on the part of the child. A fall from a bed is not possible before the child can roll over and a fall down the stairs is not plausible until the child can crawl (Monteleone and Brodeur, 1994).

Occasionally an injury is blamed on a sibling. This explanation is feasible, since children often abuse their siblings. However, the evaluator must determine if the injury could have occurred as described and if the sibling is developmentally mature enough to have initiated the injury. Explanations of injuries must be evaluated using common sense and a sound knowledge of the consequences of routine accidents in the home.

### 3.3 Conditions that may be confused with abuse

Over the years, a variety of conditions have been mistaken for child abuse and have been reported to state protection services. Appendix One is a list of those conditions that have been reported (Bays, 1993; Wheeler and Hobbs, 1988; Oates, 1984). It is important that mandated reporters know these conditions and make an effort to identify them. In diagnosing child abuse, it is important to keep in mind several congenital and acquired diseases that mimic the bony lesions of non accidental injury. Failure to consider these possibilities and eliminate them can result in a false diagnosis. These disease entities can usually be differentiated from child abuse by careful physical examination and a thorough history. Certain laboratory tests may also be required to eliminate them from the differential diagnoses (Monteleone and Brodeur, 1994).

## 3.4 Accidental versus Inflicted injuries

Some cases of abuse lie in the doubtful zone between accidental and negligent injury, with possible subconscious desires of the parent or carer to injure the infant (Sopher, 1977). These cases are often difficult to categorise, and intent is impossible to establish. Differentiating accidental injuries from inflicted injuries is important in the management of injured children. If an inflicted injury is not recognised, the child is left in the care of persons who may injure him/her again.

In order to diagnose abuse, one must first believe that abuse is a possibility and effectively eliminate the probability of an accident having produced the presenting injury(ies). In children, most accidental injuries involve only one plane of the body, the frontal plane. Specific frontal locations affected are the forehead, nose, chin, palms, elbows, and shins - areas where the bone is close to skin (Monteleone and Brodeur, 1994).

Palmar hand injuries can be accidental. However, both the palms and backs of the hand are common areas where punishment is inflicted, and the health care worker should be alert to the possibility of abuse when there are injuries in these areas. Injuries to the buttocks, genitalia, abdomen, back and lateral areas of the body, especially the sides of the face, are frequently indicative of abuse. Abdominal bruising is unusual even with blunt trauma (Monteleone and Brodeur, 1994).

The evaluator must be able to determine if the injury could have occurred as described. Then it must be determined if this particular child is developmentally mature enough to have caused the injury.

If the parent/caregiver states that the child sustained the injury by doing something that he/she is not developmentally able to do or if the injury is too severe to be caused by the incident described, then the history given is suspect and the evaluator must conclude that the injury was non-accidental (Monteleone and Brodeur, 1994).

## 3.5 Background to interpreting oro- facial abuse injuries

The head is a common area of injury; approximately 50-75% of abused children have head or facial injuries (Jessee, 1995; Da Fonseca et al., 1992; Becker et al., 1978). The reported incidence of intraoral injuries is low, most likely because the mouth is not examined. Adelson (1961) stated that blows to a child's head produce extensive skull fractures because children have fragile osseous structures (though facial bone fractures are uncommon). Cameron, Johnson and Camps (1966) analysed 29 fatal cases of abuse and showed multiple injuries of which 79% were inflicted on the scalp, 52% on the forehead, 49% on the cheek and 48% on the mandible.

Becker et al., (1978) after reviewing 260 cases of abused children hospitalised at a Children's hospital, found that 49% of the patients presented with oro- facial trauma and 16% had head injuries. O'Neil, Clark, Lowe and Harrington (1989) conducted an emergency room survey over a two-year period to determine the prevalence of dental injuries and found that child abuse accounted for 1.4% of all the cases studied, whereas intentional dental injuries were reported in 7.2%.

Bernat (1992) described the detailed dental examinations that were performed on 170 physically and sexually abused children who presented to a pediatric emergency department over a four- month period. Approximately 25% of the physically abused children and 15% of the sexually abused children demonstrated injuries in and around the mouth. The injury patterns differed between the two groups of children.

The most common oro-facial injuries reported in the literature are fractured teeth, laceration to the labial fraenulum resulting from forced feeding, missing teeth without obvious explanation, displaced teeth, abnormality of appearance and mobility of the tongue, fractures of the maxilla and mandible, and bruised or scarred lips (Da Fonseca et al., 1992; Macintyre et al., 1986; Davis, Domoto and Levy, 1979). Burns of the oral mucosa resulting from forced ingestion of hot and caustic liquids have also been reported (Macintyre et al., 1986). It is therefore not surprising that a number of studies have also highlighted the importance of the dental professional in the differential diagnosis of child abuse (Carotte, 1990; Wright and Thorton, 1983; Primrosch and Young, 1980).

Cameron et al., (1966) called attention to the fact that bruises on the head, face and neck were obvious in more than half of the cases they studied. Fabian and Bender (1947), surveyed predisposing factors for head injury in 86 children, found that 57% had evidence of skull fractures.

O'Neill, Meacham, Griffin and Sawyer (1973) considered skull fractures a late stage of abuse and soft tissue trauma was the earliest sign of physical abuse. Lauer, Ten Broeck and Grossman (1974) reported that 22.3% of the cases had skull fractures and 8.4% had subdural haematomas. Becker et al., (1978) found 16% of the children had injuries to the head such as skull fractures, subdural haematomas and contusions. Their data reported that soft tissue injuries, most frequently bruises, were the most common injuries sustained to the oro-facial structures in child physical abuse. As in other studies (Jessee, 1995; Da Fonseca et al., 1992) patients usually presented with more than one injury, and different parts of the body were affected at the same time.

Buchanan and Oliver (1977) found that three per cent of the 140 mentally handicapped children they studied were normal before violent abuse. Becker et al., (1978) reported that head, face and intraoral trauma was found in 65% of the cases they reviewed, twice the number of injuries found in other parts of the body. Da Fonseca et al., (1992) in a study of 1248 cases of abuse, found that when considering all cases together, 37.5% presented with injuries to the head, face, mouth and neck, but more importantly, the percentage doubled (75.5%) when physical abuse episodes were reviewed alone.

Schmitt (1986) reported that among non-fatal cases in their first year of life, 95% had serious intracranial injuries resulting from vigorous shaking in an attempt to make the baby stop crying. Kittle et al., (1981) suggested asking children to raise their hands. If patients have been injured in the ribs and clavicle, this movement causes pain. It is very important to examine the hands because children use them to protect other parts of the body from abuse.

## 3.6 A Review of commonly reported oro-facial injuries

As mentioned in the introduction, the primary intention of this part of the literature review is to draw to the attention of the reader those injuries which are commonly documented and which if present in a particular child, may alert them to the possibility of child abuse. The most prevalent oro-facial signs and symptoms are discussed in detail. These include bruising, burns, bite marks, tooth trauma, eye injuries and fractures. These injuries exemplify the kind of injury that one might expect to find in the oro-facial area and are also those that are recorded in this study.

### 3.6.1 Bruising

Children receive normal bumps and bruises in accidents: foreheads, chins, hands, feet, elbows and knees typically get injured in childhood accidents. Bruises and welts may, however, indicate abuse. Bruises on the face, scalp, or neck of a child are significant lesions that should be noted on physical examination. Fewer than 1% of children who die of accidental causes have bruises unrelated to the lethal injury. In contrast, 65% of children with lethal injuries have bruises in areas other than those involved in the fatal injury (Case, 1994). Bruises tend to occur in areas where there are bony prominences, while softer areas, such as the cheeks, abdomen or thigh do not bruise as readily (Macintyre et al., 1986). Extensive bruising on the face with a history of minimal trauma, particularly if old bruises are combined with more recent ones, is strongly diagnostic of abuse (Symons et al., 1987).

The presence of more than one unexplained bruise on a child's head correlates highly with abuse. Multiple bruises or bruises in inaccessible places are indications that the child has been abused. In addition, babies who are not mobile do not usually have bruising. The toddler who is learning to walk typically has frontal bruising but severe bruising is unlikely. Bruises, ecchymoses, and haematomas are the result of abuse when they occur in areas of the body that are unlikely to be injured accidentally. Multiple bruises and bruises on the genitalia are almost certainly not accidental (Monteleone and Brodeur, 1994).

Bruises in different stages of healing are the result of repeated trauma and indicate abuse when the parents/caregiver give a history describing a single incident. A significant discrepancy between physical findings and the history is the cardinal sign of abuse (Monteleone and Brodeur, 1994).

Bruises that take the shape of a recognisable object are generally not accidental. Loop marks are caused by a flexible object, such as a belt, electric cord folded on itself and used to beat the child. Multiple curvilinear loop marks on the child are pathognomonic of abuse. These bruises are usually ecchymotic, but can also be lacerations or abrasions (Monteleone and Brodeur, 1994).

The human hand can leave various types of pressure bruises: grab marks or finger-tip bruises, linear mark or finger-edge bruises, hand prints, slap marks and pinch marks. The most common types are grab marks or squeeze marks which leave oval shaped bruises that resemble finger prints. Belt buckles and other synthetic objects used to inflict punishment leave recognisable imprints on the child's skin. Rope burns, bruises or scars around the arms, ankles, neck or waist are evidence that the child was tied. Many of these injuries leave long-lasting scars (Monteleone and Brodeur, 1994).

Parents can claim that a child suspected of abuse bruises easily. Coagulation studies, including platelet count, prothrombin time and partial thromboplastin time, should be requested in an abuse work up when the child presents with such cases. Bleeding time is a good screening test for patients with platelet dysfunction. In general, coagulation studies should be ordered for all children presenting with marked bruising (Monteleone and Brodeur, 1994).

A bruise or contusion is an impact site on the skin's surface over subcutaneous or deeper bleeding. Small blood vessels are torn by the impact, yielding the site of haemorrhage. The accumulation of blood under the skin will be evident for a number of days, changing colour as it ages. Table 2 shows how to date bruises and will assist in evaluating the history of injuries (Mouden, Lowe and Dixit, 1992).

A fresh injury is red to blue; in 3 to 5 days it becomes deep black or purple; in 5 to 7 days the colour changes to green; in 7-15 days it passes from green to yellow to brown to faded and it finally disappears. The younger the child the quicker the colour resolves (Wilson, 1977). Although individuals may differ slightly, knowing the progression of a bruise's appearance may help determine if the history received co-incides with the date of the bruise. When injury is inflicted by belts, cords, hands, bites, or hairbrush bristles, bruises appear in distinctive patterns.

**Table 2 : Guide to dating of bruises**

| Age | Colour |
|---|---|
| 0-2 days | Swollen, tender, red |
| 3-5 days | Red, blue, purple |
| 5-7 days | Green |
| 7-10 days | Yellow |
| 10-14 days or longer | Brown |
| 2-4 weeks | Cleared |

### 3.6.2 Fraenulum and lip injuries

These occur through two mechanisms. There may be a direct blow to the mouth. In this case one may see a linear or ragged tear. Besides the torn fraenulum there may be contusions, broken teeth and facial fractures. At feeding time the parent or caregiver may force or jam a spoon or bottle into the baby mouth, ripping the fraenulum. Other trauma rarely accompanies this injury. A fraenulum tear can happen accidentally if the child falls and strikes a sharp edge, as is common among toddlers. When a fraenulum tear is found in a nonambulatory infant, the case should be evaluated for other evidence of abuse (Monteleone and Brodeur, 1994).

Lip injuries are frequently seen oral injuries and appear as contusions, lacerations, abrasions or burns. These injuries are caused when the lip is caught between a blunt force and the teeth. Lip burns are caused by hot liquid or objects such as utensils or cigarettes.

### 3.6.3 Burns

The incidence of abusive burns ranges from 4% (Stone, Rinaldo, Humphrey and Brown, 1970) to 10% (Showers and Garrison, 1988; Lenoski and Hunter, 1977). During a 12-month period, 84 out of 431 burned children (19.5%) were suspected to be due to abuse (Rosenberg and Marino, 1989). During a 6-year period, 142 of 872 (16.3%) cases of children admitted to a Burn Centre were found to be non-accidental (Hight, Bakalar and Llyod, 1979). Comparing it to other forms of abuse, maltreatment by burning has ranked as high as 28% against other types of abuse (Feldman et al., 1978).

Children who are abusively burned are marked or branded with the outward manifestation of parental violence, emotional imbalance, educational and cultural deprivation and poverty. Fowler (1979) suggested that to intentionally burn a child implies a sustained anger or hostility and appears to be a controlled, premeditated or even sadistic action.

In terms of severity among varying forms of abuse, abusive burns should be handled as a priority. The severity of subsequent injuries in burned children suggests that the abusive pattern may be well-ingrained by the time of the burning episode.

The literature attests to not only the physical and emotional trauma but also to the psychological sequelae of abusive burning (Hammond, Nebel-Gould and Brooks, 1989; Tarnowski, Rasnake, Linscheid and Mulick, 1989; Weimer, Glodfarb and Slater, 1988; Benians 1988; McLoughlin and Crawford, 1985; Green, 1984; Libber and Stayton, 1984; Berstein and Cahners, 1979; Leeder, 1979). Many victims of house fires die, but victims of scalds often survive with permanent disfigurement, motion disabilities due to contractures and psychological sequelae. Depression, withdrawal and other behavioural problems are all aspects of post-treatment adjustment in severely burned children, which was described by a study from the Burn Unit, Cape Town, that studied children up to 11 years after the burn event (De Wet et al., 1979). The stigma of the burn does not end when the child is removed from the home of the abusing parent or discharged from hospital but it may persist for years.

From a review of the literature it is apparent that the victim of abusive burning is usually a young child, 3-4 years of age or younger. In one study of 142 inflicted burns (n= 872), the average age of the intentionally burned child was 32 months (Hight et al., 1979).

Various studies have also linked educationally or culturally deprived maternal background, single or divorced marital status, unemployment, physical abuse of the mother (wife battery) to increased incidence of abusive burning of children (Rosenberg and Marino, 1989; Libber and Stayton, 1984; Rosenberg, Meyers and Shackleton, 1982; Ayoub and Pfeifer, 1979; Hight et al., 1979; Joseph and Douglas, 1979). Most burns (70% - 90%) occur in the home (Feldman, 1980).

There are six categories of burn injuries: flame, scald, contact (with hot object), electrical, chemical and ultraviolet radiation (McLoughlin and Crawford, 1985). Abusive burns are generally concentrated in the scald and contact categories, although rarer reports of flames (matches, cigarette lighters or stove), chemical, microwave or even hair-dryer inflicted burns have been reported (Prescott, 1990; Reece and Grodin, 1985; Alexander, Surrell and Cohle, 1987; Ayoub and Pfeifer 1979).

Scald burns result from exposure to hot liquid. They can be superficial, partial or full thickness; however, the presence of full thickness, sharply demarcated or symmetrical burns on the buttocks, perineum, genitalia and distal ends of limbs should alert the health care worker to the likelihood of child abuse. Cigarette burns on the palms of the hand or elsewhere, or multiple circular burn marks should be a red flag in an examination. Burns by immersion in scalding water can produce characteristic sock-like or glove-like patterns on the feet and hands (Mouden, 1996). Burns of the oral cavity may result from forced ingestion of hot or caustic liquids

### 3.6.4 Human bites

Human bites are intentional and are common injuries in abuse. Trube-Becker (1977) reported 48 autopsied child abuse cases and noted that 11 of the 48 showed human bite marks. Trube-Becker (1977) found bites on the limbs, abdomen, and cheeks. Recognising human bite marks is particularly important in child abuse cases because forensic dentists can study them and help determine the perpetrator of these injuries (Levine, 1984). Sims, Grant and Cameron (1973) reported three cases of human bite marks occurring in child abuse that were used to identify the perpetrator.

The anterior teeth give the human bite mark its configuration, which is the shape of the dental arch. Generally, no one tooth stands out (in contradistinction to the canines in animal bites), and the marks are irregular in size, shape and position. The incisor teeth leave narrow rectangles, the canines leave triangular shapes, and the premolars make circular marks (Herschaft, 1995).

Early recognition of a human bite mark is critical to preserve valuable information. The body should not be washed before the marks have been photographed. A ruler should be placed in the field to be photographed so that the size of the mark can be documented. A child's bite can be distinguished from an adult's bite by measuring arch and tooth widths (Herschaft, 1995).

Moorees (1959) found that the difference between a 5 year old child's arch width and an adult is approximately 4.4mm for the maxilla and 2.5mm for the mandible. The cumulative widths of the six upper anterior teeth of the child was 10mm smaller than those of an adult. In the lower arch the difference is approximately 7mm. If puncture marks from the canines are visible in the bite, it is possible to distinguish bites of the permanent teeth from the primary teeth because the distance of separation is greater than 30mm.

### 3.6.5 Tooth trauma

Blows to the mouth can cause missing teeth or fractures to the mandible or maxilla. Nasal septal deviation may result from direct trauma to the nose. The only clinical sign may be haemorrhage from the nose (McNeese and Hebeler, 1977).

Traumatic injuries to the teeth of children are common and often accidental. Teeth injuries can fall into four categories (Monteleone and Brodeur, 1994):

1. A *luxated* tooth is loosened but remains in the socket. The tooth may be displaced by more than 1mm in any direction. If one tooth appears to be luxated, all of the teeth must be examined to determine mobility. The patient should be referred to a dentist as soon as possible in cases of luxated teeth.

2. An *intruded* tooth has been forced into the alveolar bone, and on examination it appears shorter than the rest of the teeth, or, if the causative blow is extreme, the tooth may be driven completely into the alveolar bone and may not be visible. Intrusions result from a severe blow to the biting surface of the tooth. Radiographs reveal the extent of the injury.

3. In *avulsion* the tooth is removed from the socket. This is caused by a blow to the facial surface of the tooth and occurs more commonly with permanent teeth. The examiner must try to locate the missing tooth; it my have been swallowed or aspirated. An oral radiograph may be required to determine if the tooth has been intruded; a chest and abdominal radiograph may necessary to rule out aspiration or ingestion. The tooth must be saved and the patient referred to a dentist.

4. *Fracture* of the anterior teeth in children is common and usually not intentional. Fracture may be caused by a sharp blow to the teeth with a hard object and can occur during a fall or when struck. An oral radiograph should be obtained to determine the extent of the injury and locate any missing pieces, which may have been aspirated.

### 3.6.6 Eye injuries

Soft tissue injuries around the orbit called "black eyes" may look identical to the "racoon eyes" in basilar skull fractures. Retinal haemorrhage is a specific finding in child abuse not easily explained by impact and is a well described result of shaking. Specifically subdural haematomas with retinal haemorrhage should be regarded as the shaking syndrome of child abuse unless another plausible aetiology can be determined (Swischuk, 1992; Alexander et al., 1990; Rekate, 1985).

If a black eye is present, the history must detail an appropriate injury to that side. It is unlikely that a child will sustain two black eyes as the result of a fall unless the nose is also broken. If the child falls on the centre of the face, injury to the nose will occur. Bilateral suborbital bruising can occur secondary to blood seepage into loose tissue areas where there has been a blow to the forehead (Monteleone and Brodeur, 1994).

Haemorrhage to the upper eyelid often results when blood seeps down into the periorbital tissues after an injury to the forehead or a subgaleal haematoma. Haemorrhage around the entire eye concentrically positioned as the result of a forehead injury is unlikely. Health care workers should be aware of the spontaneous black eye that occurs with malignant neuroblastoma, which may be associated with bony abnormalities palpable on the forehead. There are also rare occurrences of black eye(s) associated with certain blood dyscrasias (Monteleone and Brodeur, 1994).

### 3.6.7 Head Injuries

In a 1946 paper, Caffey brought attention to the findings that correlated the incidence of multiple skeletal fractures and subdural haemorrhage in children Caffey believed to have suffered inflicted trauma (Caffey, 1946). Kempe stressed the same correlation Caffey found, and the term "battered child syndrome" was applied to describe the medico sociological phenomenon discovered (Kempe et al., 1962). Since the early 1960's, considerable data has accumulated concerning abusive pediatric head injuries. The recognition of inflicted versus accidental injuries and can now be accomplished in the light of a vast body of literature and knowledge.

Head injury resulting from abuse is a significant cause of disability and death in children. It is the leading cause of death from abuse, playing a role in 40-75% of abusive deaths. The head is the commonest form of assault in a young child. In the first year of life, 98% of serious intra-cranial injury is the result of abuse. Children with nonfatal head injuries often suffer permanent neurological impairments (Oliver, 1975).

### 3.6.8 Skull fractures

Unexplained facial fractures in infants and children suggest abuse (Merten and Carpenter, 1990; Kleinman, 1987). Approximately 50% of children with fatal abusive head injuries sustain skull fractures (O'Neill et al., 1973).

Accidental injuries in children that produce skull fractures can be divided into two categories: significant event injuries and trivial falls (O'Neill et al., 1973).

- Children may be injured as passengers or pedestrians in motor vehicle accidents, falls from second story or higher windows, etc. These injuries produce skull fractures comparable to what is seen in abusive injury, but the well documented accidental nature of an event shows that it is not abuse.

- Falls occur frequently in and around the home. Such falls are commonly from tricycles, bicycles, beds, cribs, tables or couches. Minor falls should not produce major injury, and the health care worker must be certain that the damage correlates with the reported fall. Studies have shown that fewer the 1% of children involved in these trivial home falls sustain a skull fracture. Fractures that do occur are small, linear, and usually parietal; they generally cause no loss of consciousness, seizures, or intracranial injury.

Two recent studies reviewed skull fracture characteristics to distinguish between accidental and abusive origins (Meservy et al., 1987; Hobbs,1984). Hobbs concluded that it was possible to predict an inflicted injury if one or more of the following were present when a minor fall was alleged:

- Depressed fracture
- Diastatic fracture
- Fracture width greater then 3 mm
- Complex configuration fractures
- Multiple fractures
- Bilateral fractures
- Nonparietal fractures
- Spiral fractures
- Associated intracranial injury

Fracture dating is of obvious medico legal importance. The table below (Kleinman, 1987) sets out peak times, although the earliest changes are sometimes seen a few days before this.

**Table 3: Guide to staging of healing fractures**

| Diagnostic image | Time |
|---|---|
| Resolution of soft tissue change | 4-10 days |
| Periosteal new bone formation | 10-14 days |
| Loss of fracture line definition | 14-21 days |
| Soft callus | 14-21 days |
| Hard callus | 21-42 days |
| Remodelling | 1 year |

**The following should be noted** (Kleinman, 1987):

- A fracture without periosteal new bone formation is usually less than 7-10 days and seldom more than 20 days old.
- A fracture with definite but slight periosteal new bone formation could be as recent as 4-7 days.
- A 20 day old fracture will always have well defined periosteal reaction and typically soft callus.
- A fracture with well developed periosteal new bone or callus is more than 14 days old.
- Injury to the same (untreated) fracture may prolong healing and callus and fresh refracture may coexist.

Appendix Two describes other important oro-facial injuries associated with child abuse.

## 3.7 Summary

The primary aim of management should be to ensure the safety and treatment of the child; and the secondary aim should be to provide help to parents or carers so that they stop injuring the child (Macintyre, 1986). If a health care worker suspects a case of child abuse, a good personal history should be taken, emergency dental treatment provided, a thorough history of the trauma meticulously documented and, should a prosthesis or restorative procedure be indicated, impressions for records and study purposes should be taken. Ideally, photographs, preferably in colour, and radiographs should be taken on the same day, before healing of the non-accidental injury occurs, thus ensuring the preservation of valuable evidence (Loochtan, Bross and Domoto, 1986).

This chapter highlights the need for health care workers to be familiar with the main characteristics of child abuse, the related injuries and their detection. Since most physical injuries seen in child abuse victims are located in the head and neck, dental professionals may be the first to treat the victim of intentional trauma. It re-enforces the important role they can play in the early recognition and intervention on behalf of the victim. Without intervention, serious injuries or death can result. A summary check-list for child abuse is presented in Appendix Four.

This part of the literature review highlighted the fact that child abuse is a multifaceted problem. It showed that the extent and type of abuse varies considerably, making diagnosis and management of cases difficult and reflects the often-stated need for the involvement of multi-disciplinary teams to deal with it. The types and prevalence of the various oro-facial injuries that may be sustained have been presented. These findings help to clarify the types and location of injuries to be included in the survey questionnaire used in this study.

# CHAPTER 4 THE REPORTING AND MANAGEMENT OF CHILD ABUSE

## 4.1 Introduction

This chapter reviews issues surrounding the recording and reporting of child abuse. It is important for dental professionals to have an understanding of the broad areas influencing child abuse. They need to be able to recognise the clinical features of abuse, diagnose, describe and categorise the various injuries encountered (Chapter 3). Secondly, they must be able to garner relevant information regarding developmental maturity of the child, the perpetrator and explanations for the injury (ies) sustained. This is important for the accurate recording and consequent reporting of suspected abuse. This information will hopefully encourage not only immediate preventive action, but also the promulgation of long term prevention strategies.

## 4.2 Definitions of child abuse and neglect

Over the past twenty years, research has taken place without an agreed conceptual framework of what actually constitutes child abuse and neglect as the evolution of the concept has been a gradual process since it has become a focus of concern in society. This has resulted in difficulty in comparative analysis of research reports in the literature. Gough (1996) emphasised the problems of not having a shared understanding of what is meant by child abuse and neglect. Definitions vary culturally, historically and within different sectors of society. The definition of child abuse can range from a narrow focus, limited to intentional inflicted injury, to a broad scope, covering any act that impairs the developmental potential of a child. The growing concern about the rights of the child was discussed by Marzouki (1997), and has now resulted in a broad definition of the rights of the child.

Identifying and reporting suspected cases of abuse and neglect is not only a moral responsibility of health workers but is also required by law. In South Africa, dentists are required by law (Table 4) to report suspected cases of child abuse and neglect, but recent research has shown that virtually none of the reported cases were made by oral health workers (HSRC, 1996). This important issue has yet to be addressed by the dental fraternity. One of the reasons for the low level of reporting is that health care workers may face constraints because the definition of child abuse is not precise and it is not entirely clear what is considered child abuse and what should be reported (Shor, 1998). The issue of reporting child abuse remains a contentious and unresolved one.

**Table 4: The legal basis of reporting child abuse in South Africa**

| |
|---|
| The Prevention of Family Violence Act, No 33 of 1993, Section 4 read with Section 6, makes it an offence for any person who examines, treats, attends to, advises, instructs or cares for any child not to report any suspicion of abuse to a police official, social worker or Commissioner of Child Welfare. The sentence is a fine, or imprisonment of three months. |
| In terms of Section 42 of the Child Care Act No 74 of 1983, a dentist, medical practitioner, nurse or social worker who deals with a child, commits an offence if suspected child abuse is not reported to the Director General, Welfare or any officer designated by the latter. The sentence is a R4 000 fine or imprisonment for one year. |

Knowledge among dentists about child abuse has been documented in several studies (Adair et al., 1997a; Adair et al., 1997b; McDowell, Kassebaum and Fryer, 1994; Mathewson, 1993; Saxe and McCourt, 1991; Kassebaum, Dove and Cottone, 1991; Becker et al., 1978; Malecz, 1979). Questions about education and experience with child abuse were common to most of those studies. Of the responding dentists, 45-86% indicated that they were aware of their legal obligations as mandated reporters of child abuse, while 28-77% indicated that they knew the appropriate state organisations for reporting such cases. An inadequate education background in child abuse was reported by 25-75%.

Saulsbury and Campbell (1985) noted that physicians have been criticised for neglecting their legal responsibility to report child abuse. In the United States, the first documented evidence of dentists failing to report abuse was reported in 1967 by the American Dental Association, which stated that of the 416 reported cases of child abuse in New York State, none was reported by a dentist. Other reports (Becker et al., 1978; Newberger et al., 1977; Silver, Dublin and Laurie, 1969) further documented the lack of knowledge of dentists in this area and the subsequent lack of reporting.

Unfortunately, recent literature (Adair et al., 1997a) shows that the trend continues, despite the fact that all US states have laws regarding child abuse, and that dentists are mandated reporters of abuse in all 50 states. In addition, continuing education in child abuse is required for renewal of dental licences in several states. Sanger (1984) studied 246 paediatric dentists, a group believed to be more likely than general dental practitioners to see victims of abuse. Only 9% had ever filed a report.

Zellman (1990) examined whether reporting decisions by professionals could be described by a coherent process that was consistent across incidents of suspected abuse. A US national sample of mandated reporters was surveyed using case vignettes of suspected abuse.

Zellman examined relationships between a series of judgements about the cases and the respondent's reporting intentions. The study found that the perceived seriousness of the incident, the abuse label, and the law's requirements were strongly associated with the decision to report. This survey did not include dentists among its sample of mandated reporters.

Adair et al., (1997a) surveyed dentists to examine case-specific perceptions associated with dentists' decisions to report hypothetical suspicious cases, but not conclusive for child abuse. They found that the likelihood of reporting the child abuse vignette was associated with perceptions that the incident was serious, should be defined as abuse, and that reporting is required by law. The perception that an abuse report would have a negative impact on the child was associated with decisions not to report. However, perceptions that an abuse report would negatively impact on the family were common, but were found not to be associated with reporting decisions.

Although reporting by dentists, doctors and nurses has been mandatory in South Africa since 1984 (The Prevention of Family Violence Act, 1993; Child Care Act, 1983), the law has never been enforced and there are major discrepancies in the numbers of cases reported. For example, during 1991, there were 892 new cases of physical abuse and 1139 cases of sexual abuse reported to child welfare societies, while 17 194 cases of child abuse were reported to the Child Protection Unit of the South African Police Services (Patel,1993). There have been few studies on reporting of child abuse in South Africa. Collings (1996) reported on the low level of reporting of child abuse by general practitioners in the greater Durban area. Over 90% of the respondents indicated that they were not trained to carry out their role as mandatory reporters.

It is a well known fact that only a small percentage of crimes against children are reported (HSRC, 1996). In South Africa, under-reporting and a lack of systematic research, a co-ordinated record keeping system and a centralised register means that the true extent of child abuse is unknown. The Child Care Act of 1983 (Child Care Act, 1983) does not provide a clear definition of child abuse, nor is there a generally accepted definition of abuse in its different forms.

Why does an abusive injury or situation go unrecognised? Morris, Johnson and Clasen (1985) cite several reasons for the failure to report child abuse. They include amongst others, an inadequate training to diagnose the problem and personal, legal and financial risks.

## 4.3 Dental management and reporting

Dental professionals may be unable or unwilling to properly identify and report victims of abuse for a variety of reasons (Becker et al., 1978). These may include lack of knowledge of child abuse and neglect, difficulties in diagnosis, effect on practice, disruption of dentist/patient relationships and the fear of physical and/or verbal reprisals (Ten Bensel, King and Bastion 1975; Davis et al., 1979; Malecz 1979).

The steps for dealing with suspected victims of abuse or neglect are easy to learn and incorporate into dental practice. Dentistry's contribution in the management of abuse injuries is the recognition of the possibility of physical abuse, the treatment of oro-facial injuries and reporting to the appropriate authorities. A protocol (see later) in every dental practice is advised to assist in the identification and reporting of child abuse and neglect.

The child's behaviour, medical and dental history, general physical assessment, and oral examination should be evaluated. The warning signs of abuse should be considered every time an injured patient is seen (Mouden and Bross,1995). Repeated injuries, multiple bruises, or injuries with uncertain explanations may signal instances of abuse (see Chapter 3).

The extent and type of abuse may vary considerably, making management and diagnosis difficult. All these injuries have to be considered in the light of the fact that all children get hurt from time to time. Dental and/or facial injuries need to be evaluated carefully to determine their cause. Again, this calls for clinical judgement. It is important to consider the injury, the history and the child's behaviour to help make the diagnosis of suspected abuse.

Health care workers are not the professionals who have to make the final determination of whether abuse and neglect have actually occurred. Their responsibility is to report suspected cases. It may be beneficial to consult with the child's medical attendant to discuss your concerns. If child abuse or neglect is suspected the health professional must provide emergency care immediately and make the report to the authorities (Mouden and Bross,1995). The information needed for the report is listed in Appendix 3. Privileged doctor-patient communication (confidentiality) does not apply in situations involving known or suspected cases of child abuse nor as an excuse for not reporting a suspected case.

## 4.4 What to report

With regard to reporting, the interests of the child should be paramount and the object of reporting is the detection in order to promote the interests of the child, to reduce the risk of further assault and in a few cases, the securing of a conviction (Bevan, 1975).

Clear guidelines for recognising and reporting child abuse in all institutions can assist the process. No numerical system or laboratory test is currently available to objectively evaluate abuse.

While it may be relatively easy to determine some indicators, assigning a value to each is difficult. What is clearly abuse, what is probable abuse, and what is possible abuse cannot be easily separated by a numerical system. The human factor remains in the equation, affecting what is reported and what is not. Knowing what and when to report, requires sound knowledge of what child abuse is, a familiarity with child development and behaviour, an acquaintance with the child protection system, a knowledge of adult behaviour, common sense and a smattering of physics and bio mechanics.

Appendix 4 gives an overview of situations which may constitute child abuse and require the health care worker to report to the authorities.

## 4.5 The protocol

Every surgery needs a protocol on how to address cases of child abuse and neglect (Mouden and Bross, 1995). Behaviour needs to be evaluated along with patient history, general physical assessment and the oral examination. Behaviour assessment is only useful as part of patient evaluation. The warning signs of abuse should be considered every time an injured patient is seen. Repeated injuries, multiple bruises or unexplained injuries may signal instances of abuse. Abused or neglected children may be extremely apprehensive, and inordinately fearful of an oral examination. On the other hand, some abuse victims are extremely eager to please - they have learned that less than perfect behaviour may result in more abuse (Mouden and Bross, 1995).

## 4.6 Steps to follow when abuse is suspected

The following steps may be followed when abuse is suspected (Mouden and Bross,1995):

- Obtain histories about an injury from the child and the parent or carer separately.
- Determine if any discrepancies exist in how and when the injury occurred.
- Determine if the injury is consistent with the explanations.
- Document any discrepancies and your opinion that the physical findings are inconsistent with the history provided (McDowell et al., 1994).
- Provide any emergency dental treatment and arrange for further treatment if required.
- Inform the appropriate authorities.

## 4.7 Summary

This chapter dealt with the reporting of child abuse and showed that it is fraught with potential problems and this is clearly summed up by Besharov (1987) who stated "Although the mandate to report may seem straight forward, definition vagueness and evidential ambiguities combine to make the decision to report (or nor report) a difficult and stressful one". The issue of reporting child abuse as a means of defining the problem and initiating the response to it, is not as simple as it may seem.

The dental professional's contribution to the management of child abuse includes the ability to recognise the possibility of physical abuse; to provide essential emergency treatment and arrange further treatment if required and inform the appropriate authorities of his or her suspicions (Macintyre et al., 1986).

# CHAPTER 5 RESEARCH DESIGN AND METHODOLOGY

## 5.1 Introduction

This study arises out of the urgent need for epidemiological data and out of academic interest. As the country undergoes transformation, it is clear that a fresh approach to the issues surrounding child abuse is required. It has been noted from a review of the literature that research has concentrated mainly on the treatment of child abuse, but research in the areas of epidemiology and prevention have been lacking. For the purpose of this study, Johnson's (1990) definition of child physical abuse was used. He defines physical abuse as: "An injury to a child caused by a caregiver, for any reason, including injury resulting from a caregiver's reaction to unwanted behaviour. Injury includes tissue damage beyond erythema or redness from a slap to any area other than the hand or buttocks. Physical discipline should not be used on children who are under 12 months of age".

In order to set up this study, meetings and liaison with groups and established structures that deal with child abuse issues were held. These included the Community Dentistry Department of the University of the Western Cape, the Trauma Unit and Social Work Department at the Red Cross War Memorial Childrens Hospital, Resources aimed at the Prevention of Child Abuse and Neglect (RAPCAN) and the Medical Research Council's National Trauma Research Programme.

This chapter presents the study design, sample, inclusion and exclusion criteria. In addition, the survey method, how the questionnaire was piloted, data entry and method of analysis is described.

## 5.2 Aims and objectives

The aim of the present study was to determine the extent and degree of physical abuse to the head, face, mouth and neck of children who, during their treatment at a major metropolitan peadiatric hospital in Cape Town, were suspected to have been victims of child abuse.

The objectives of this study were to examine the records of head, face and neck injuries associated with physical child abuse in order to determine:

- the demography of the sample;
- the location where the abuse occurred;
- who the perpetrator/or alleged perpetrators were;
- the relationship between the victim and the abuser;
- who reported the injury;
- the nature of the injury and
- the instrument used to inflict the injury.

## 5.3 Study design

The study was a retrospective record-based analysis of the non-accidental injuries treated at Red Cross War Memorial Children's Hospital over a five year period (1992-1996). The hospital's protocol directs physicians to request a consultation with a staff social worker, if following examination, there is reason to believe that a child has been abused.

Following an oral report, a caseworker is assigned by the social work department to investigate the case. Documentation from the attending physician regarding the injuries and treatment provided are entered into the patient's file. The social worker's report is kept separate and confidential. The Red Cross Hospital's Informatics Department database was searched for all physical child abuse cases that had any record of a head, face, neck or mouth injury. These records were examined (both the patient's chart and the structured trauma form) and the information supplemented and corroborated by social worker records of the same case (see Pilot Study).

The Red Cross War Memorial Children's Hospital (RCWMCH) is a University affiliated hospital, located in the Cape Metropole and is the only comprehensive children's hospital in South Africa. It is the major pediatric referral centre for approximately three million people in metropolitan Cape Town (Bridgman et al., 1992) and also functions as a primary care facility for many children in Cape Town (Strebel et al., 1990).

A Child Abuse Management Team (CAMT) was established at the hospital in 1982. It consisted of ten social workers, two pediatricians, a trauma surgeon and a psychologist. No extra staff were allocated specifically to the service and all members of the team fulfilled their commitments to the team over and above their normal work load. Since then there has been a steady increase in the number of patients with suspected or confirmed child abuse seen at the hospital.

**The sample**

Of the 860 reported cases of physical child abuse during the five year period, a random sample of 300 cases were selected (35% sample). Data of the most recent episode of abuse was recorded.

The sampling frame comprised all the hospital clinical/medical records of children with suspected and proven non-accidental injuries 1992-1996. The inclusion criterion was all records of patients presenting with proven non-accidental injuries sustained from physical abuse. Records of children who were believed to have been victims of other types of maltreatment such as sexual abuse, neglect or emotional abuse were excluded from the study.

## 5.5 Instrument

A structured questionnaire was the method chosen for collecting data in this study (Appendix Six) the purpose of which was to collect factual data for measurement. The questionnaire for this study was designed to ensure that it suited the aim of the study, was clear, simple and unambiguous, minimised potential errors from the researcher and coder and enabled efficient, meaningful analysis of the acquired data.

### 5.5.1 The development of the study questionnaire

Planning of the questionnaire began in June 1997. It was developed from discussions with colleagues working in the Trauma Unit at the Red Cross Hospital, RAPCAN and the Trauma Unit at the Medical Research Council.

Formulation of the questions and the generation of the questionnaire took about six months after a thorough review of the literature and of existing questionnaires. For the purpose of the study, the data gathered were divided into demographic and physical findings. Demographic information was further subdivided into categories that included the age and gender of the child, place of occurrence of the abuse, reporter of the abuse, suspected perpetrator(s), and instrument used to abuse.

Physical findings included type(s) of injury sustained, location(s) of injury (lower body - neck down; upper body - head, face, mouth, neck); whether the child was hospitalised and any reported deaths.

The proposed questions were written down on separate cards and collated into the selected broad topics to be put in order. The rules for the questionnaire design, described above, were adhered to as closely as possible with regard to the wording and design of the questions.

### 5.5.2 Piloting the questionnaire

In January 1998, the completed questionnaire was piloted on 10% of the patient records sample (n=30). The pilot study was done to:

- test the suitability of the method of collecting the data;
- test how long each record took to complete;
- check the adequacy of the questionnaire:
- check that all the questions were clear and unambiguous;
- ensure that no major topic had been omitted and
- remove any items that did not yield usable data.

### 5.5.3 Preparation for the final draft

After the pilot study, irrelevant or problematic questions were identified and consequently deleted or reformulated. This resulted in important improvements to the questionnaire and a general increase in the efficiency of the enquiry.

It became apparent that all the information required for completeness of the questionnaire, would not be obtained from the patient's medical record alone and other sources would have to be found. In addition, hospital record folders are destroyed after five years. Consequently, the social work department were approached and asked if their confidential records could be used to corroborate and supplement the medical records. The extra information enabled the study to achieve 100% completion rate of the questionnaires. A final draft of the questionnaire (Appendix 6) with 18 questions was then printed. Its design and construction having taken six months to complete.

## 5.6 Data collection

The Red Cross Hospital Informatics department database was searched for records with known or suspected abuse and physical injury(ies). Medical records, including the structured trauma sheet, which documented the injury(ies) and the treatment provided were examined and supplemented with information from social worker records of the same case, which provided a detailed account of the incident and the socio-demographic factors.

## 5.7 Validity and reliability

The author was the only investigator involved in the record reviews and the gathering and interpretation of the data, thereby assuring the standardised recording of all information presented. To ensure validation of the data capture sheets, the instrument was subjected to a test-retest procedure (by repeatedly administering the scales to the same sample within a short period).

## 5.8 Data analysis

All cases were referenced by the hospital chart number and the quantitative data were coded by giving each question variable a numerical figure and this was entered into a computer utilising Microsoft Excel software (Redmond CA) and analysis was done using the Epi-Info package for frequency distributions and for assessing associations (using the Kruskal-Wallis test). The Excel data file contained 300 cases each consisting of 60 variables.

Where variables were easily categorised, analysis of the results used the *child* as the case, but because the analysis of the injury variables were associated in a different manner, the *injury* was used as the unit of analysis for the rest of the results presented.

## 5.9 Ethical considerations

The protocol was submitted to the Faculty Research Committee, University of the Western Cape for approval. Permission to inspect records was made initially by letter to the Red Cross War Memorial Children's Hospital Medical Superintendent who granted permission to proceed with the study. An introduction of the researcher and the aims and objectives of the study were explained in the letter. Strict confidentiality was maintained at all times. The results are presented in a manner that ensures anonymity.

## 5.10 Summary

A random 35% sample consisting of 300 cases were selected for the record-based study. The instrument developed to collect the data is described in this chapter. The instrument chosen was a focussed, structured questionnaire. This was considered to be the most appropriate method of obtaining the information required which was to ascertain both demographics and physical findings of child abuse cases. Two sources of data were used to obtain the information required: the hospital medical records and the social worker files of the same cases resulting in a 100% response rate.

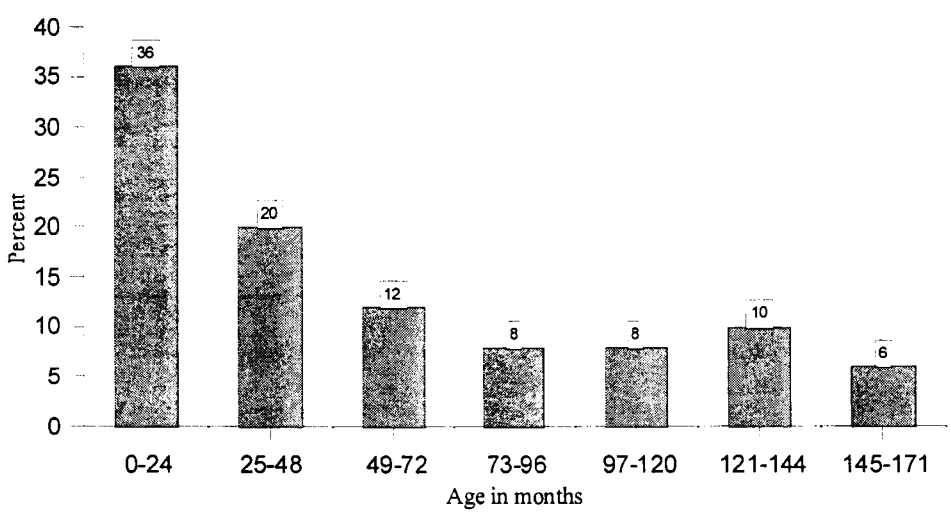
# CHAPTER 6 RESULTS

A retrospective analysis of the records of known child physical abuse cases for a five year period from 1992-1996, forms the basis of the results. The validity of the results is dependent on the accuracy of the hospital records, which were in turn corroborated with social worker records. Hospital records provided detailed information about the injury, it's location and the treatment provided. Social worker records were more comprehensive with regard to the demographic details and the history of how the injury occurred.

## 6.1 Demography of the sample

The study analysed the records of 300 cases of known physical abuse against children. There were 163 (54%) boys and 137 (46%) girls in the sample aged between one month and 14.25 years. The mean age of the sample was 4.75 years. More than a third (36%) of the sample were in the 0-24 month age group and 64% in the 25-171 month group. Figure 1 presents the age distribution of the children.

**Figure 1: Age profile of the sample**



Only one victim and one offender were involved per crime. However, in more than half of the cases (62%) the victims were in the presence of others when the abuse took place. In more than a third (36%) of the cases, the assault took place in the presence of other children such as brothers/sisters, friends or playmates. It could thus be surmised that the psychological damage to child victims was thus not limited to the victim alone but also affected other children who were present and who witnessed the abuse.

### 6.2 Location where the abuse occurred

Most of the crimes were committed in the child's own home (88.7%), the perpetrator's home (3.3%), in a deserted spot near home (4.7%) and in a public area (3.3%).

### 6.3 The perpetrator and his/her relation to the victim

The myth that children are victimised by faceless strangers lurking in dark corners could not be substantiated by the findings of this study because 90% of the perpetrators were known to the victim (Table 5). In fact many cases of child abuse are perpetrated by the child's parent or by persons known to the child. The majority of the perpetrators in this study were male (79%). Twenty one per cent of the perpetrators were the mother's boyfriend. In 36% of the cases the father or step father of the child and in 12% of the cases, the mother was responsible for the act. In the present study, 35% of the perpetrators were, in terms of the records, under the influence of alcohol or drugs when they committed the offences.

**Table 5 : Frequency distribution of perpetrator(s) of the abuse**

| Perpetrator | Number | Percentage |
|---|---|---|
| Father | 92 | 31 |
| Mother's boyfriend | 61 | 21 |
| Mother | 36 | 12 |
| Neighbour | 31 | 10 |
| Relative | 30 | 10 |
| Step father | 16 | 5 |
| Carer | 13 | 4 |
| Other | 21 | 7 |
| **TOTAL** | **300** | **100** |

**Table 6: Association between parental abuse and age of child**

| | | Perpetrator | |
|---|---|---|---|
| | | **Parent (%)** | **Other (%)** |
| **Age** | **< 2 years** | 82 (39%) | 25 (28%) |
| | **> 2 years** | 128 (61%) | 65 (72%) |
| | | 210 | 90 |

p value = 0.03

From the data shown in Table 6 above, the association is statistically significant as indicated by the *p* value which shows that parents (mother, father or both parents) are more likely to abuse children at a younger age, and that children are more prone to abusers out of home once they reach the older age group. This information could influence the types of programmes that need to be developed. They need to impact on parenting of the younger child and on the teaching of safety skills for the older child.

## 6.4 The reporter of the abuse

The *Child Care Act* specifies dentists, doctors, nurses and social workers to be mandated reporters of child abuse. In Table 7 the reporting patterns of mandated (in bold italics) and other reporters is given. Crimes were mostly reported by mothers (49%), day hospital personnel (13%), police (13%) and grandmothers (12%). As noted in the literature review, this provision for mandated reporting in the *Child Care Act* has generally been ignored. The reporting system allows for other potential reporters to use it, though it is not widely advertised. The data shown in Table 7 emphasises the failure on the part of the mandated reporters (only 17% of cases reported by health workers) to report cases of child abuse and the fact that family members are the major providers of information.

**Table 7: Frequency distribution of who reported the abuse**

| Reporter | Number | Percentage |
|---|---|---|
| Mother | 146 | 49 |
| ***Day Hospital Personnel*** | ***39*** | ***13*** |
| South African Police | 39 | 13 |
| Grandmother | 35 | 12 |
| Neighbour | 12 | 4 |
| ***Social Worker*** | ***9*** | ***3*** |
| Father | 8 | 3 |
| Relative | 7 | 2 |
| ***General Practitioner*** | ***5*** | ***1*** |
| ***Dentist*** | ***0*** | ***0*** |
| **TOTAL** | **300** | **100** |

*(Mandated reporters in bold italics)*

## 6.5 Nature of the injuries

Analysis of the injuries suffered by the children, showed that 64.7% of the child victims suffered from serious injuries, 48.7% had to be hospitalised and four children were critically injured and died. Head and neck injuries included skull fractures, subdural haematomas, retinal haemorrhages, bruises, periorbital ecchymoses or haematomas, burns and lacerations.

Analysis of the location of the upper body injuries found showed that 21% were head and neck injuries, 59% facial and 11% were intra-oral. For the upper body, 82% were single injuries and 18% multiple injuries. Of the multiple injuries to the upper body, 96% were on the face. The frequency of injury to the lower part of the body (neck down) was 31%. Of these injuries 58% had single injuries and 42% multiple injuries. Due to the multiple injuries incurred by some of the children, the mean number of injuries for each child was on average, about 2 injuries. Bruising was the most common type of injury found (see Table 12).

The maximum number of body parts injured in the lower body was five (n=5), with the hand and leg being injured in all five cases. The maximum number of parts injured in the upper body was three (n=4), with the face being injured in all four cases The maximum number of injuries a child sustained was four (n= 4), with bruising occurring in all four cases.

Cross-tabulations to assess associations between variables were difficult to analyse due to numerous possibilities in each variable (except for the Age and Instrument Used variables). It was also difficult to collapse variables into appropriate categories as they were often unique and unrelated.

Consequently, analysis of the results up to this stage uses the child as the case, but because the analysis of the injury variables are associated in a different manner, the injury is used as the unit of analysis for the rest of the results presented.

## 6.6 Frequency of injuries

The frequency of injury to each part of the body is shown in Table 8. The face was the most often injured area of the body.

**Table 8: Frequency distribution of injury by body part**

| Location | Number | Percentage |
|---|---|---|
| ***Face*** | ***231*** | ***41*** |
| ***Head*** | ***93*** | ***17*** |
| Hands | 47 | 8 |
| Legs | 41 | 7 |
| ***Mouth*** | ***41*** | ***7*** |
| Back | 36 | 6 |
| ***Neck*** | ***24*** | ***4*** |
| Chest | 17 | 3 |
| Buttocks | 13 | 2 |
| Abdomen | 13 | 2 |
| Shoulder | 11 | 2 |
| Thorax | 5 | 1 |
| **TOTAL** | **572** | **100** |

***(Body parts of relevance to oral health workers in bold italics)***

Table 9 documents the number of times each part of the head and neck were injured. The parts that were most frequently injured were in decreasing order, face, head, mouth and neck.

**Table 9: Frequency distribution of head and neck injuries**

| Location | No. of times | Percentage |
|---|---|---|
| Face | 231 | 59 |
| Head | 93 | 24 |
| Mouth | 41 | 11 |
| Neck | 24 | 6 |
| **TOTAL** | **389** | **100** |

The cheek incurred more trauma than any other facial area and, as a soft tissue that does not cover a bony prominence, any bruising here should be carefully investigated as possible abuse (Table 10). Eye injuries included retinal haemorrhage and periorbital bruising. Retinal haemorrhages are often indicative of subdural haematomas, but may also occur without clinically important intracranial haemorrhage in children with sudden compression of their chests. Retinal haemorrhages usually last ten to fourteen days. Children who have been hit about the eyes with an open or closed hand present with massive swelling and bruising of both eyelids. Most periorbital bruises caused by accidents only involve one side.

**Table 10: Frequency distribution of facial injuries**

| Location | No. of times | Percentage |
|---|---|---|
| Cheeks | 94 | 30 |
| Eyes | 81 | 25 |
| Forehead | 71 | 22 |
| Nose | 41 | 13 |
| Ears | 32 | 10 |
| **TOTAL** | **319** | **100** |

Table 11 shows the number of times each part of the mouth was injured. The following types of injuries were sustained: Seven fractures to the mandible and maxilla, 22 lacerations to the lips, six injuries to the oral mucosa, five to the teeth, five to the gingiva and three to the tongue. Loose and missing teeth were reported but no details given in the records.

**Table 11: Frequency distribution of mouth injuries**

| Location | No. of times | Percentage |
|---|---|---|
| Lips | 22 | 54 |
| Oral mucosa | 6 | 15 |
| Teeth | 5 | 12 |
| Gingiva | 5 | 12 |
| Tongue | 3 | 7 |
| **TOTAL** | **41** | **100** |

## 6.7 Types of injuries

The different types of injuries that were seen are shown in Table 12. The total number exceed the number of cases because so many children had multiple injuries. Twenty one percent had multiple injuries associated with the lower body and 18% had multiple injuries to the head and neck region. The percentages shown in the table below, were calculated for the total number of injuries recorded (n = 444). Bruising was the most common injury. Nondescript bruises become suspicious as abuse when they occur on the soft parts of the body (eg. cheeks, arm, buttocks etc.)

**Table 12: Frequency distribution of the types of injuries**

| Injury | Number | Percentage |
|---|---|---|
| Bruising | 156 | 35 |
| Fracture | 95 | 21 |
| Laceration | 88 | 20 |
| Haematoma | 74 | 17 |
| Burn | 17 | 4 |
| Welt | 14 | 3 |
| **TOTAL** | **444** | **100** |

## 6.8 Instrument used to inflict injury

In the majority of cases no weapon or instrument was used against the child. The hands, legs or fists were used in 56% of the cases. If an object was used (Table 13) by the offender to inflict their abuse, it tended to be a blunt object such as a piece of wood, pipe or stick (19%) or a sharp object such as a knife, an axe or broken bottle (16%).

**Table 13: Frequency distribution of instruments used to inflict injury**

| Instrument | No. of times | Percentage |
|---|---|---|
| Hand, Leg and Fist | 167 | 56 |
| Sharp (bottle, axe, knife) | 49 | 16 |
| Stick, Broomstick | 32 | 11 |
| Pipe, Iron Rod, Spade | 25 | 8 |
| Belt, Sjambok | 13 | 4 |
| Other | 14 | 5 |
| **TOTAL** | **300** | **100** |

Children were burnt with hot liquid or a hot object such as a cigarette, in 3% of the cases. Other objects used included stones, guns and shoes. Bruising was the most common injury seen when the hand and fist were used, while lacerations were more frequently seen when sharp instruments were used.

## 6.9 Summary

This chapter has reported on the findings of this record-based study. The most prominent findings include the high incidence of physical abuse at a very early age; the father or step father representing 36% of perpetrators. A high percentage of children presented with injuries to the head, face, mouth and neck of which the face was the most frequently injured area (of the body), with the cheeks sustaining the highest number of injuries. Of the soft tissue injuries, bruises were the most common finding. The upper limbs were injured 80 times and the hand or fist were the most often reported instrument of abuse.

The findings of the study highlight the magnitude of the problem and provide some answers to questions regarding the importance of oro-facial injuries, the victims, the perpetrator and the patterns of reported crimes against children. The results are remarkably similar to studies done abroad with regard to the age and gender of the sample, the perpetrators and the types of injuries sustained (see Discussion).

The validity of the results was dependent on the accuracy of hospital records, which were in turn supplemented and corroborated by the social worker records of the same case. The pilot study revealed that the information required for completeness of the questionnaire, would not be obtained from the patient's medical record alone and other sources would have to be found. Social work department records were effectively used to corroborate and supplement the medical records.

It is hoped that the findings will provide an opportunity for health care workers to gain an insight into the nature and importance of these injuries. This study, one of the first in South Africa, provides data that contributes substantially to the current knowledge of child abuse injuries in South Africa.

# CHAPTER 7 DISCUSSION AND CONCLUSIONS

## 7.1 Demography of the sample

This study reports on child abuse in South Africa. Children of all ages are subject to child abuse, but the majority of cases occur in younger children (Creighton, 1984). The age distribution of the sample in this study demonstrates that the age group 0-4 year old were most at risk from abuse (56%). This finding is consistent with most studies (Symons et al., 1987; Macintyre et al., 1986; Sperber 1981; Ten Bensel 1975; O'Neill et al., 1973; Lauer et al., 1974; Cameron et al., 1966; Adelson 1961). The National Society for the Prevention of Cruelty to Children (NSPCC) survey showed that 52% of cases occurred in under four year olds and 48% in the 5-17 year age group (Creighton and Gallagher, 1988).

Many studies (Miller, Fine and Adams-Taylor, 1989; O'Neil et al., 1989; Giangrego, 1986; Sperber, 1981; Ten Bensel et al., 1975; Ten Bensel, 1975; Fabian and Bender, 1947) have reported a preponderance of boys in their samples. Other authors (Jessee, 1995; Da Fonseca et al., 1992; Cameron et al., 1966; Adelson, 1961) suggested that there is no gender predilection, nor a significant difference in the incidence of physical abuse between male and female children by either male or female perpetrators. In this study the gender ratio reflected the tendency shown by The National Society for the Prevention of Cruelty to Children (NSPCC) survey and boys slightly outnumbered the girls.

## 7.2 Perpetrator

In a review of cases of child abuse seen at Addington Hospital, Durban over 4-year period, Winship (1984) reported that parents are most likely to be abusers, with the mother being implicated in 50% of cases. However, step-parents, foster-parents, relatives and even siblings may be offenders. Kenney and Clark (1992) stated that biological mothers and fathers were implicated almost equally in physical abuse cases, but rarely collaborated in such acts. Gallo (1983) found that one parent is usually the abuser, while the other parent takes a passive position, thus allowing the abuse to continue. In the present study, only 12% of the cases found the mother to be responsible for the act, while the mother's boyfriend represented 21% and the father or step father, 36%. In only four cases were both parents implicated.

The aetiology of child abuse is based on the interaction of personality traits of the parents or abusing adult, the child's characteristics and the environmental condition (Green, Gaines and Sandgrund, 1974). Because of the wide variation of behavioural characteristics, personality traits and psychiatric symptoms among abusive adults, a specific abuse personality does not exist. Child abuse encompasses all social classes; but more cases have been identified in lower socio-economic groups.

Young parents, often of low intelligence are more likely to be abusers. This is especially true if they have been exposed to such behaviour during their own childhood (Pollock et al., 1990). Modern urban life imposes severe stresses on the family, especially when parents have poor coping mechanisms (Mills and Arendorf, 1989).

Contributing factors to abuse include drug and alcohol abuse, financial stress or poverty, unemployment and marital problems (Welbury and Murphy, 1998). In the present study, 35% of the perpetrators were under the influence of alcohol or drugs when they committed the offences.

## 7.3 Nature of the injury

The high percentage of children who presented with injuries to the head, face, mouth and neck is similar to that of other reports in the literature. Many of the findings in this study are in agreement with previous hospital surveys regarding the incidence of head, face, intra oral and neck injuries. The types and prevalence of oro-facial injuries were reviewed by Welbury (1994) and in the largest most detailed study by Becker et al., (1978), the medical records of 260 cases of child abuse admitted to the Children's Hospital in Boston, USA between 1970-1975 were reviewed. Becker et al., (1978) found head, facial and intra oral trauma in 65% of the cases documented, twice the number of injuries found in other parts of the body. Da Fonseca et al., (1992) in a study of 1248 cases of abuse, found that when considering all cases together 37.5% presented with injuries to the head, face, mouth and neck, but the percentage doubled (75.5%) when physical abuse episodes were reviewed alone.

## 7.4 Location of the injury

In this study, analysis of the location of the injuries demonstrated that 30% were head and neck injuries, 59% facial and 11% were intra-oral. Becker et al.,(1978) documented in their study 33% head, 61% facial and 6% intra-oral injuries.

In smaller, less random population studies, Cameron et al., (1966) called attention to the fact that bruises on the head, face and neck were obvious in more than half of the cases they studied, while Skinner and Castle (1969) found that 43.5% of such injuries occurred in the facial area. The astute, well-informed dental professional may use such clinical findings to his or her advantage when viewing suspicious head, facial, intra oral or neck injuries.

## 7.5 Types of injuries

Needleman (1994) stated that soft tissue injuries, predominantly bruises, are the most common form of injury incurred in cases of physical abuse. Other injuries found in decreasing frequency of occurrence were fractures, burns, lacerations and subdural haematomas.

In the present study, the injuries found were bruising (35%), fractures (21%), lacerations (20%), subdural haematomas (17%), burns (4%) and welts (3%). Schmitt (1986) reported that trauma to the bone is found in 10-20% of all physically abused children. Lenoski and Hunter (1977) pointed out that burns are present in approximately 10% of physical abuse cases. These findings are similar to those found in other studies ((Becker et al., 1978; Baetz et al., 1977; O Neill et al., 1973). Baetz et al., (1977) commented that the fact that bruises and fractures are seen far more often than burns suggests that most physical abuse is the result of a spontaneous loss of control rather than an act of premeditation.

Buchanan and Oliver (1977) found that 3% of 140 mentally handicapped children were normal before violent abuse. Fabian and Bender (1947) surveying predisposing factors for head injuries in 86 children, found that 57% had evidence of skull fractures. In this study, 95 (22%) had evidence of skull fractures. In many cases this injury is the result of the child having been violently shaken in an effort to stop his or her crying and may also result in retinal haemorrhaging due to an increase in intracranial pressure.

Schmitt (1986) reported that among nonfatal cases in their first year of life, 95% had serious intra cranial injuries resulting from vigorous shaking in an attempt to make the baby stop crying. In the four deaths found in this present study, all were attributed to some form of intracranial injury. O'Neill et al., (1973) considered skull fractures a late stage of abuse while soft tissue trauma was the earliest sign of physical abuse.

Lauer et al., (1974) reported that 22.3% of the cases had skull fractures and 8.4% had subdural haematomas. Becker et al., (1978) found that 16% had injuries to the head such as skull fractures, subdural haematomas and contusions. In the present study, 22% of the cases were found to have skull fractures and 17% subdural haematomas. However, Jessee (1995) in his survey of 266 physically abused children, reported a higher prevalence of 58% for skull fractures and 21% subdural haematomas.

## 7.6 Number of injuries and instrument used to inflict injuries

As in other studies (Jessee, 1995; Da Fonseca et al., 1992; Becker et al., 1978) patients usually presented with more than one type of injury, and different parts of the body were affected at the same time; thus there was a larger number of types of injuries (444) than cases (300) in this study. The face was harmed more often than any other part of the body (see Table 8 earlier). In this study, bruising (35%) had the highest overall incidence of occurrence. This was true not only for the body, but the face as well. The high number of injuries to the head and face supports the idea that their easy accessibility and psychological importance make them frequent targets for abusers (Symons et al., 1987; Schwartz et al., 1976).

Considering this evidence and the finding that the hand and the fist were the most often reported instrument of abuse may explain why both are so often mentioned in child abuse literature. The fact that it is socially acceptable to discipline a child with physical force (hitting) may also contribute to the high frequency of bruising.

## 7.7 Dental injuries

The primary dental injuries found in cases of child abuse include fractures to the teeth, bruises, lacerations, fractures of mandible and maxilla, and burns (Malecz, 1979). The most common intra oral features seen in this study were injuries to the oral mucosa, teeth and gingiva, in agreement with the findings of Becker et al., (1978) and Da Fonseca et al., (1992).

There were also jaw and tooth fractures, tongue and lip lacerations. Loose and missing teeth were also reported but no details were given in the records.

The face was the most frequently injured area of the body. The cheek incurred more trauma than any other facial area and any bruising here should be carefully investigated as possible abuse. In the present study, the cheeks had the highest number of injuries, followed by the eyes, nose, ears and lips. Similar findings were reported by Da Fonseca et al., (1992) who found that the cheeks had the highest number of injuries followed by the eyes, ears, nose and lips. Jessee (1995) reported the cheek as the site of the most common facial injury followed by the eyes, lips, nose and ears. Bruises on the ears (usually present on both earlobes) are rarely accidental (Macintyre et al., 1986). Some authors (Schwartz et al., 1976; Cameron et al., 1966) consider injuries to the lips and the presence of blood clots or a deviated septum of the nose to be important findings (Kittle et al., 1981). In their hospital survey, O'Neil et al., (1989) found that laceration of the lips to be the most common injury to the oral cavity.

For the head and neck, 82% were single injuries and 18% multiple injuries. Of the multiple injuries to the upper body, 96% were on the face. However, the present study concluded that despite the high number of serious injuries to the head and face, reported injuries to the mouth were very low (11%).

Similar results were obtained in other hospital studies (Jessee, 1995; Da Fonseca et al., 1992; Becker et al., 1978). It is inconceivable how, when more than 60% of the facial trauma reported in this study, occurred to either the cheeks, nose or lips, structures which directly overlie the mouth, so few intra oral injuries could have resulted.

This finding raises speculation that (i) the number of intra oral injuries may be higher than reported due to the high frequency of harm to the head and face (ii) intra-oral injuries may be overlooked because of the medical examiner's unfamiliarity with the oral cavity and (iii) cases with intra-oral trauma do not come to hospital, but might be seen by private dentists and doctors. Oral health professionals should be consulted for diagnosis, advice and treatment. It is not clear how many cases of head, face and mouth trauma would have gone to a private practitioner first, but it is a reasonable assumption that only the most serious cases come to the Children's Hospital, a fair amount of minor trauma resulting from abuse may be seen by dentists.

### 7.8 Other parts of the body that were injured

The neck presented with bruises, ecchymoses, abrasions and scratches among other injuries. Such trauma is usually the result of a child being strangled or choked with either the hand or an instrument such as a cord or rope. These injuries should always be viewed with suspicion (Schmitt, 1986). The neck is difficult to harm; injuries may present life-threatening situations that should be reported for further evaluation. In addition to skull fractures, injuries to the head and to the scalp included lacerations and cephalo haematomas, which many cases may be hidden by braids.

All these injuries can be detected easily if the dentists run their fingers through the hair, palpate cranial and facial bones, enquire about visible wounds and check the exposed skin and extremities.

Over 30 % of the total injuries in this study were to the lower body (neck down). Of these injuries 58% had single injuries and 42% multiple injuries. On average each child had about 2 injuries. The most common injuries were bruising, fractures, lacerations, haematomas and burns.

Exposed areas of the body should be carefully examined for signs of unusual or multiple injuries. Such areas should always include the arms and the eyes, which in this study, were found to have been subjected to a high frequency of trauma as a result of physical abuse. Kittle et al., (1981) suggested asking children to raise their hands; if patients have been injured in the ribs and clavicle, the movement will cause pain.

In this study, the upper limbs were injured 80 times. It is very important to examine the hands because children use them to protect other parts of the body from abuse. Johnson (1990) reported a case in which the parent burned the child's thumb to stop him from sucking it. Bruises in various stages of healing or bruising that resemble objects that may have been used to inflict the injury should arouse suspicion (Wilson, 1977; Ellerstein, 1979). As O'Neill et al., (1973) pointed out, the identification of those injuries in the dental surgery will prevent further and more serious damage to the child.

## 7.9 The role of different health professionals

It was striking to note that of the 300 records reviewed, no dentists participated in the examination of any of the patients, despite that fact that there is a maxillo facial registrar on 24 hour call. In a national survey done in the US in 1988, on the characteristics of multi disciplinary teams around the country, no participation by dental professionals were recorded (Kaminer, Crowe and Budde-Giltner, 1988). The only reference in the literature regarding the presence of a dental professional in a child abuse management team was made by Badger (1982). The involvement not only of dental professional but dental students on multi- disciplinary management teams would be beneficial in many ways: they would become more aware of their role and they would aid in the education of physicians and other professionals who in turn would "benefit from consultations with dentists, especially those having experience or expertise with children in evaluation of abuse or neglect".

Teams need professionals of all fields to achieve "greater levels of competence" serving as "a source of support so that no one person need grapple with such heavy issues in isolation" (Mundie, 1986). Fontana (1986) suggests the problem of child abuse would be best approached with the full co- operation among medical, social and legal organisations, since it is such a complex issue that no individual can handle it alone.

## 7.10 Summary

This chapter provided an interpretation and discussion of the results presented in Chapter Six. The study showed that children aged between 0-4 years old were most at risk from abuse. Fathers and step fathers represented 36% of the perpetrators. Perpetrators under the influence of alcohol or drugs were reported in 35% of the cases.

Analysis of the location of injuries demonstrated that 59% were facial, 30% head and neck and 11% intra-oral. Bruising (35%) was the most common type of injury seen. As in other studies, patients usually presented with more than one type of injury on different parts of the body. The face was harmed more often than any other part of the body, with the cheek incurring more trauma than any other area of the face. However, despite the high number of serious injuries to the head and face, reported injuries to the mouth was low. The dental injuries found were injuries to the oral mucosa, teeth and gingiva, jaw and tooth fractures and tongue and lip lacerations. Some reasons for this were discussed.

Other parts of the body that were injured were also discussed and the importance of their recognition highlighted, as identification of those injuries in the dental surgery may prevent further and more serious harm to the child. Finally, the need for a multi-disciplinary approach to child abuse was recommended.

## 7.11 Conclusions

The most prominent findings from the present study are:

- Under two year old children were most at risk from abuse (36%);
- The head, face, neck and mouth were the sites of physical injury in 67% of the 300 cases reviewed;
- The number of the reported injuries to the oral cavity was extremely low (11%), especially when taking into consideration that the face was the most often injured part of the body;
- No dentists participated in the examination of any of the patients. Dental professionals need to take a more active role in the hospital examinations of those children suspected of having been abused.

While the actual incidence of child abuse in the wider South African population has not been determined – and may be indeterminable - the statistics available from this study present a grim picture in our society, a picture that health professionals cannot ignore (HSRC, 1996; CPU, 1998). This study has contributed to the knowledge of child abuse in South Africa by showing conclusively that the oro-facial area is a significant location for child abuse injuries. It has provided detailed information of the various types of injuries sustained and has described ways of systematically diagnosing the most common injuries. Dental and other health professionals cannot afford to ignore this information and have to be made aware of this important relationship. If they equip themselves with these guidelines they will be in a useful position to competently address the trauma of child abuse.

It is hoped that policymakers will be moved by the findings of this report and respond by lobbying to place child abuse on the public health agenda. Researchers, policy makers and politicians, need to take action and demand a co-ordinated response to this silent epidemic. The evidence from this report provides the motivation for activists to promote child abuse issues and bridge the gap between human rights policies, which set out to protect children and the destruction of those rights through child abuse. It should help to increase the awareness of health professionals to the importance of oral and facial injuries in child abuse, and will hopefully have an impact on health policy, dental school training, continuing education courses for health care personnel in the training, recognition and reporting of child abuse.

Training of health care workers should be interactive and, as elucidated in the literature review (Chapters 2,3 and 4), be designed to address the following critical areas if better care is to be provided for child abuse victims: the recognition of oro-facial trauma; the importance of diagnosing, documenting and reporting suspected and known cases of child abuse; an awareness of legal responsibilities, channels of reporting and of the services investigating reports of child abuse that are available at a district level and day hospitals and clinics.

The South African Government has proved its commitment by signing and ratifying the U.N. Convention of the Rights of the Child (U.N. General Assembly, 1989) Ratification means that the State is now compelled to carry out the stipulations of the U.N. Convention. The State has in effect undertaken to *"protect all children from any form of discrimination and to take positive action to promote their rights; to provide the child with adequate care when parents, or others charged with that responsibility fail to do so; to protect the child from all forms of maltreatment by parents or others responsible for the care of the child and will establish appropriate social programmes for the prevention of abuse and for the treatment of victims; to provide special protection to a child deprived of the family environment and to ensure that*

*appropriate alternative family care or institutional placement is available I such cases; to make the principles and provisions of the Convention widely known among adults and children in the community; and to establish a committee for the Rights of Children composed of ten experts of national standing who will consider the reports that the state has to submit two years after ratification and every five years thereafter* (U.N. General Assembly, 1989).

Finkelhor (1993) stressed that most prevalence studies have focussed on the occurrence of the problem rather than on the extent of its effects. It would be useful to determine the characteristics of children who are at risk of abuse so that intervention can be planned. The development of appropriate Child Protection Services, based on the needs of the children of the country, and not on the perceived needs gleaned form the research in other countries, is an urgent need for our country. The temptation to evolve a service based on the models currently practised in Europe and the United States is great, as these models have been the inspiration of our services in the past, however, elements of experience from these countries can be incorporated in a programme for South Africa, that is based on a foundation of prevention.

There should be underlying principles, visions and missions for a uniform national child abuse and neglect strategy. A national strategy should ensure that South Africa's child protection system be child-centred and should:

- recognise children as individuals as well as members of families and communities
- give primary attention to their best interests, as reflected in their needs and experiences
- respond to the diversity of their cultural backgrounds and of the circumstances in which they find themselves.

In addition, the vision underlying the strategy should be:

> A society in which children are enabled to achieve their full potential by growing in a safe, stable and loving environment which ensures adequate nutrition, good health, physical and emotional security, and the opportunity to develop physically, intellectually, emotionally and socially. For this purpose it is necessary to eliminate the causes of child abuse and neglect and eradicate conditions in which child abuse flourishes, so as to achieve a child abuse-free society.

> The mission of the strategy should be one that:

> Protects children against all forms of abuse and neglect through accessible, integrated and co-ordinated services that focus on primary, secondary and tertiary prevention, intervention and rehabilitation, based on a multi disciplinary and inter sectorial approach, that takes cognisance of the particular context of each South African child. The family should be recognised as the primary context in which the child should normally develop healthy childhood.

The social and political transformation of South Africa towards democracy needs to include the systematic challenge of violence against children. It is hoped that from this study tangible action will be taken by role players and that it will have a meaningful impact on the health, welfare and future of our children.

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# APPENDICES

## Appendix 1: Conditions which have been mistaken for abuse

(From: Bays, 1993; Oates, 1984; Wheeler and Hobbs, 1988)

| **Conditions manifested by unusual skin lesions or burns** | **Conditions manifested by bone abnormalities** | **Self-Inflicted Injuries** |
|---|---|---|
| * Mongolian spots<br>* Phytophotodermatitis<br>* Ehlers-Danlos Syndrome<br>* Car seat burns<br>* Chickenpox<br>* Impetigo<br>* Chemical burns | * Congenital syphilis<br>* Fatigue fractures<br>* Cardiopulmonary resuscitation<br>* Vitamin C or D deficiencies<br>* Copper deficiency<br>* Rickets<br>* Caffe's disease | * Depression<br>* Mental retardation<br>* Cornelia DeLange syndrome<br>* Lesch-Nyhan syndrome<br>* Familial dysautonomia<br>* Facititious illness<br>* Temper tantrums<br>* Head-bangers<br>* Toddler's fracture |
| **Conditions which cause easy bruisability** | **Conditions manifested as eye haemorrhages** | **Conditions manifested as CNS haemorrhages** |
| * Vit K deficiency<br>* Type 1 Ehlers-Danlos syndrome<br>* Salicylate toxicity<br>* Osteogenesis imperfecta<br>* Bleeding disorders<br>* Schonlein-Henoch purpura<br>* Erythema multiforme<br>* Platelet aggregation disorders<br>* Disseminated intravascular coagulation | * Aneurysm<br>* Motor vehicle accident<br>* Thoracic compression<br>* Hypoxia<br>* Valsalva effect with subconjunctival haemorrhages<br>* "Red eye" | * Aneurysm<br>* Brain tumour<br>* Hemorrhagic disease of the newborn |

## Appendix 2: Other important oro-facial injuries associated with child abuse

### Ears

Injuries to the ear often involve the pinna. Subgaleal haematomas or cephalhaematomas may result from severe hair-pulling (Merten and Carpenter, 1990; McNeese and Hebeler, 1977; Kleinman, 1987). Many different injuries can be seen in the abused child. Accidental injuries to the face are usually frontal, involving the forehead, nose, chin and incisor teeth. However, not all frontal injuries are accidental, and a careful history is needed to evaluate the plausibility and consistency with the physical injuries. Lateral injuries to the face, which are found on the ears, cheeks, temporal and parietal areas, are highly suspicious for abuse. Haemorrhages around the ear and ear lobe or inside the ear canal are also important indicators of abuse. Lacerations, haemorrhage, redness of the soft tissue membranes lining the external auditory canal, or swelling of its cartilage may be evidence of a severe blow to the ear. Such a blow may cause rupture to the tympanic membrane, with residual hearing loss or infection secondary to opening of the middle ear chamber.

The tin ear syndrome results from a slap or other blunt force to the ear (Hanigan et al.,1982). It is identified by bruising and haemorrhage in the helix and antitragus. If sufficient force is generated by the blow, unilateral haemorrhage retinopathy, cerebral oedema and ipsilateral subdural haematoma may result. The findings of the tin ear syndrome are similar to those found with whiplash or shaken infants (Caffey, 1972).

## Hair Loss

Hair loss (alopecia) can be a manifestation of child maltreatment. Traumatic alopecia occurs when parents/caregivers pull the child's hair, frequently using the hair as a handle to grab, jerk or drag the child. Pulling can cause haemorrhage under the galea aponeurotica. This accumulation of blood can be an important clue in differentiating between abusive and nonabusive loss of hair. Alopecia can also be a sign of latent syphilis.

## Burns

Care for the burn patient's primary medical need are devoted to the treatment of the burn. Once these needs are met, the HCW should devote efforts toward obtaining a careful history outlining the time, nature, extent and location where the burn occurred. Photographs should be obtained early and a radiographic skeletal survey performed if abuse is suspected. The HCW should attempt to determine if the burn is abusive or accidental, comparing the history offered with physical evidence. First, the patient's developmental skills must be evaluated. Second, the physical aspects of the burn should be analysed with respect to body anatomic location and compared to the reported cause of the burn. Scald burns on the buttocks usually occur from forced immersion in hot water, so history of an accidental fall into the bathtub is suspect. Full-thickness scald burns with a stocking or glove pattern of sharp demarcation on a limb or immersion lines with circular or ovoid patterns on the buttocks are not likely to be accidental.

**Falls**

In most cases, a trivial injury occurs when a child has a routine fall in the home. Occasionally a single skull fracture, most often parietal, is sustained. None of these fractures is bilateral, diastatic, or greater than 1mm in width. Intracranial pressure is not increased.

A child reported to have had a routine fall, may present with a skull fracture, cerebral oedema, retinal haemorrhage, subdural haematoma or epidural haemorrhage. These severe injuries are incongruous with a routine fall, and the inconsistency indicates child abuse. The health care worker should always suspect child abuse whenever a child presents with a serious head injury, with or without skull fracture, as a result of a reported fall from a bed, sofa or crib.

A fall down the stairs, will cause a series of bruises the size and shape of the stair edge. The bruises are usually on multiple body surfaces. Joffe and Ludwig (1988) studied 363 children who fell down stairs and reported that the falls resulted in bony injuries in 7%, head and neck injuries in 73%, extremity injuries in 28% and truncal injuries in 2%; injury to more than one part of the body occurred in 2.7%. No patients had life-threatening injuries and none required admission into an intensive care unit.

**Closed Head Injury - Shaken Infant Syndrome**

In 1946, Caffey's initial report of the association of multiple fractures with chronic subdural haematomas in infants initiated the recognition of shaken infant syndrome. This syndrome is responsible for at least 50% of the deaths of children caused by nonaccidental trauma and also yields the most severe sequelae of abuse.

In the early 1970's, Guthkelch (1971) and Caffey (1972) concluded that the subdural haematoma, interhemispheric subarachnoid haemorrhage and cerebral contusions in abused children were the result of a whiplash injury to the brain. This form of abuse is comparable to those injuries seen in car accidents that result from acceleration/deceleration phenomena. The shaking produces a differential motion between the skull and the intracranial structures as the head rotates the neck. The differential motion causes stretching and tearing of the bridging vessels and the possibility of cerebral contusion or laceration as the brain moves within the skull.

Impact injury probably plays a major role in many closed head injuries. Scalp and subgaleal haemorrhages are often found in children who have died of abusive head trauma, and skull fractures, usually linear, are also common. Hahn et al.,(1983) reported findings on 77 children, seen over a ten year period, who suffered abusive injuries ranging from concussion to irreversible injury and death. Eight percent were believed to have been caused by shaking, 48% were caused by direct trauma to the face and head, and 35% resulted from dropping throwing or falling. 50% had skull fractures, mostly parietal linear fractures. The intracranial injuries noted were 30 subdural haematomas, of which 22 were bilateral, 23 cerebral contusions and seven concussions.

The low incidence of shaking as an aetiology in this group and the frequent finding of concealed impact injury in fatal cases of abuse raise questions about the biomechanics of inflicted head injury. Holbourn (1943) provided the first basis for analysing head injuries secondary to impact phenomena of the head, but did not evaluate the effects of acceleration-deceleration forces. Ommaya, Faas and Yarnell (1968) noted that rotational injury without direct impact to the head could cause significant injury to the brain and followed a distribution suggested by Holbourn that corresponded to the regions of injury seen in abused infants diagnosed with the shaken infant syndrome.

The degree of acceleration needed to cause a given injury is related to the duration of impact. Short duration impacts produce effects dependent on velocity change, not accelerational change alone.

In the 50 years which have elapsed since Caffey's landmark study, much attention has focussed on his syndrome. Nowadays, it appears that we have changed Caffey's syndrome and broadened it to include those caused by shaking alone, those caused by impact, and those caused by both (Lazoritz and Baldwin, 1997).

**Cranio-Facial Injuries**

Intracranial sequelae are the most serious and significant findings in child abuse. The incidence varies from 10% to 44% depending on the study, on the children studies, and the modality used (Sato et al.,1989). Central nervous system injury may be the only manifestation of abuse; however, 70% have associated skeletal injuries.

The majority of fatalities in child abuse involve head injury. Morbidity and mortality are most significant in children less than 2 years old (90%). Residual changes can be seen in nearly 80% of those surviving intracranial injury. It is suspected that many cases of mental retardation can be ascribed to child abuse (Merten and Osborne, 1983; Reece and Grodin, 1985; Sato et al., 1989, Ball, 1989)

Important in CNS injury are the ramifications of shaking. As a mechanism of injury, shaking accounts for the presence of intracranial injury in children without apparent external trauma to the head. Acceleration/deceleration and rotational forces result in shearing injury to the intracranial contents. These shearing forces separate structures that have varying degrees of fixation/mobility and can result in retinal haemorrhage, extra-axial fluid collections, haemorrhage/contusion at the grey/white matter junctions, and cerebral oedema (Merten and Carpenter, 1990; McClelland et al., 1980).

Direct blows to the brain can produce the same findings as shaking. In many instances, shaking and direct blows occur together and can also result in bruises on the arms or trunk from fingers grasping the child. In addition, there can be avulsion of metaphyseal periosteum in the arms. Several unique anatomic characteristics of the infant cranium make it susceptible to specific types of injuries. These include the increased elasticity from the calvarial flexibility and sutural patency, as well as the increased plasticity from immature myelinisation. Also, the child's brain floats in a relatively larger cerebrospinal fluid space than that of an adult. This renders the bridging veins vulnerable to tearing, with resultant subdural haematomas (Alexander, Schor and Smith, 1986; Merten and Osborne, 1983).

The higher metabolic rate in children and infants, along with a higher vasoreactivity, makes children more susceptible to cerebral oedema after intracranial injury (Merten and Osborne, 1983). The large head size, combined with the relatively lax musculature of the neck, accentuates the acceleration/deceleration forces in injuries caused by shaking. The brain is also injured secondarily through trauma to circulation and respiration. Direct trauma to the blood vessels supplying the brain and subsequent cerebral swelling may compromise brain vascularisation. Strangulation with resultant asphyxia is another well-described means of producing cerebral oedema (Merten and Osborne, 1983).

**Subdural Haematomas**

Subdural haematoma was among the earliest described indicators of child abuse and is the most important common intracranial sequelae of abuse (Merten and Carpenter, 1990; Cameron, 1978; Sato et al., 1989). A rupture of the bridging veins between the brain and the sinuses of the dura can be caused by either direct blows to the head or shaking, with it's rotational shearing forces.

Subdural haematomas are most common under the age of 24 months of age, with peak occurrence at 6 months (Reece and Grodin, 1985). They are most often located within the interhemispheric fissure, given the frequent involvement of the sagittal sinus veins, and can extend over the cerebral convexity.

The high incidence of bilateral subdurals in child abuse corresponds with the picture expected from the shaking theory of injury. As the child is often grasped symmetrically by the limbs, the shearing forces tend to act symmetrically on the bridging veins (Reece and Grodin, 1985; Guthkelch, 1971).

With time, subdural haematomas have been known to calcify (Kleinman, 1987). Chronic subdural haematomas are not uncommon, being typically located over the frontal convexities and associated with progressive ventricular enlargement. Cerebral atrophy can develop within a month following injury (Sato et al., 1989; Kleinman, 1987).

**Epidural Haematomas**

Epidural haematomas are not often found in the setting of child abuse. If present, they are typically associated with a skull fracture. Large epidural haematomas have a lenticular shape with mass effect. Small epidural haematomas may resemble subdural haematomas.

**Subarachnoid Haemorrhages**

Subarachnoid haemorrhages and subdural fluid collections frequently coexist. It can be difficult to differentiate between the two. The association of subarachnoid haemorrhage with cerebral oedema should raise the possibility of child abuse for the health care worker if no other signs of trauma are present (Alexander et al.,1990; Cohen et al., 1986; Alexander et al.,1986).

**Intracranial Haemorrhages**

Intracranial haemorrhages, though not specific for child abuse, can result from either direct trauma or vigorous shaking. These superficial or deep cerebral contusions/haematomas are not unusual in inflicted trauma and are frequently associated with other intracranial injuries.

**Cerebral Oedema**

In one study of child abuse, cerebral oedema occurred in 65% of patients (Guthkelch, 1971). The overall pattern and appearance of cerebral oedema varies, depending on the time between examination and injury. Initially no findings may be seen; delayed images, days later, may show cerebral oedema with mass effect. Cerebral oedema usually results in obliteration of the ventricles from mass effect and loss of the grey-white matter differentiation. It results from endothelial damage with resultant increased vascular permeability. These oedema patterns may be focal or general. The presence for focal oedema has a higher specificity for abuse. Cerebral oedema or infarction may reflect altered cerebral blood flow as a result of vascular injury, as well as hypoxia from asphyxia, smothering and strangulation (Merten and Carpenter,1990; Kleinman, 1987; Guthkelch, 1971). Shaking appears to be a more common mechanism of injury for the marked cerebral oedema seen without fracture in child abuse (Kleinman, 1987).

## Chronic Sequelae

Intracranial injury can result in focal or diffuse atrophy. Focal atrophy can be seen as ventricular dilatation with ipsilateral enlargement of the extra-axial spaces. Atrophic changes from abuse may be seen one month after the injury, with encephalomalacic and porencephalic changes evident on follow-up, consistent with severe injury. The presence of blood within the ventricles is a marker for severe intracranial injury (Merten and Carpenter, 1990; Kleinman, 1987).

## Skull Fractures

Statistically, fractures to the skull are the second most common bony injury in child abuse. History suspicious for child abuse and the presence of a skull fracture increase the likelihood of intracranial injury (Harwood-Nash,1992). Most skull fractures are linear and nondepressed, with comminuted, depressed, and diastatic fractures being less common. The parietal and occipital bones are most typically involved. Depressed fractures, occiput fractures, and fractures crossing the midline carry a greater specificity for nonaccidental injury than simple linear fractures (Harwood-Nash, 1992; Merten and Osborne, 1983).

## Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) are one of the few objective measures of sexual abuse in preadolescents (McIntyre, 1986). Until proven otherwise, an STD in a preadolscent means sexual abuse (Finkel, 1983; Felman and Nikitas, 1983).

The spectrum of STDs that children acquire mimics that seen in adults. Therefore the practitioner must become familiar with the signs and symptoms of these infections, know how to properly establish the aetiologic agent in these diseases, and know how to effectively treat the patient. STDs may be contracted during oral sexual abuse (Molteno and Polkinghorne, 1984).

A thorough evaluation, including oral, rectal and genital sites, is important if sexual abuse is suspected. The main infections for children who are suspected victims of sexual abuse include gonorrhea, *Chlamydia*, syphilis, genital warts (Human papillomavirus or HPV), herpes simplex, *Trichomonas*, and human immunodeficiency virus. Syphilis, Herpes (type II), gonorrhoea and genital warts in the oral cavity of a child should be viewed with suspicion. Not all children with an STD infection will be symptomatic; therefore, cultures should be obtained from all suspected cases of sexual cases (DeJong, 1986). Fifty percent of gonococcal infections in sexually abused children are asymptomatic. Thirty percent of these infections have been found in locations not reported by the children to have been involved in the abuse.

**Neglect**

While not an injury, neglect is a presenting feature in many abuse cases. The symptoms of neglect reflect a lack of both physical and medical care. If a parent fails to bring a child to a physician when the child has an infection of the skin and there is evidence that the illness has been present for some time, or if the child's condition is not improving with the treatment prescribed, assuming the diagnosis and treatment are correct, the parents/caregiver are probably noncompliant, which constitutes medical neglect.

**Dental neglect** is defined as 'the failure by a parent or guardian to seek treatment for visually untreated caries, oral infections and pain; or failure of the parent or guardian to follow through with treatment once informed that the above condition (s) exists' (Loochtan et al., 1986). It is difficult to define at exactly what point the parent or caregiver is negligent. Sometimes this is an ambiguous area where ignorance and poverty play a major role. When the parent or caregiver does not act after proper education concerning the nature and severity of the child's condition and the consequences thereof, negligence must be considered (Ambrose, 1989).

Some broad guidelines for recognising dental neglect in children are (1) untreated rampant caries easily recognisable by the lay person; (2) untreated pain, infection, bleeding or trauma affecting the oro-facial region, and (3) history of lack of continuity of care in the presence of previously identified dental pathology (Loochtan et al.,., 1986). Identifying and reporting dental neglect must still be based upon the practitioner's clinical expertise in assessing the situation and the possible permanently harmful consequences of the neglect to the child's future health.

**Appendix 3: Essential information for a report** (Mouden, 1996).

1. The name, address, present whereabouts, sex, date of birth or estimated age of child or children and of any other children in the household.
2. The name(s), address(es) and telephone number(s) of the child's parent(s) or other person(s) responsible for the child's care.
3. The name(s), address(es) and telephone number(s) of the person(s) alleged to be responsible for the abuse or neglect, if different form the parent(s).
4. Your name, address, telephone number, profession and relationship to the child.
5. The full nature and extent of the child's injuries, abuse or neglect and any indications of prior injuries.
6. An assessment of the risk of further harm to the child, and if a risk exists, whether it is imminent.
7. If the above information was given to you by a third party, or were there any witnesses, the identity of that person(s).
8. The circumstances under which you first became aware of the child's alleged injuries, abuse and neglect.
9. The action taken, if any, to treat, shelter or assist the child.

**Appendix 4: Summary check-list for child abuse** (Murphy and Welbury, 1998)

| **Five Questions** |
|---|
| 1. Could the injury have been cause accidentally and if so how? |
| 2. Does the explanation for the injury fit the age and the clinical findings? |
| 3. If the explanation of cause is consistent with the injury is this itself within normally acceptable limits of behaviour? |
| 4. If there has been a delay in seeking advice are there good reasons for this? |
| 5. Does the story of the accident vary? |
| **Five Observations** |
| 1. The nature of the relationship between the parent and child. |
| 2. The child's reaction to other people. |
| 3. The child's reaction to any medical/dental examinations. |
| 4. The general demeanour of the child. |
| 5. Any comments made by the child and /or parent that give concern about the child's upbringing or lifestyle. |

## Appendix 5: Situations which indicate abuse and dictate a report to the authorities

**Death of an infant with unknown cause and poor or questionable history**

**Evidence of emotional abuse**

* Hair loss
* Suicide, runaway
* Drug use
* Child perpetrator
* Failure to thrive

**Neglect**

* Medical treatment delayed
* Failure to thrive (no medical condition)
* First drug/toxin ingestion - suspicious history
* Repeated drug/toxin ingestion
* Severe dehydration, underweight ( no medical condition)

**Head Injury**

* Subdural haematoma without appropriate history
* Fracture of the skull with suspicious or no history

**Thermal Injuries**

* Burns that involve neglect
* Burns with poor or no history

**Skeletal Injuries**

* Fractured long bone with no appropriate history

**Bruises**

* Multiple bruises
* Injuries that suggest the use of an instrument
* Injuries resulting from discipline in a child less than 1 year of age.

**Intrauterine abuse**

* Fetal neglect, no prenatal checkups, drug or alcohol abuse, poor nutrition
* Psychotic mother
* Battered mother

**Sexual Abuse**

* Genital injuries
* Child Prostitution

## Appendix 7: Survey Questionnaire - Oro-facial injuries associated with child abuse

| Record No. | |
|---|---|

| 1. Case Number | |
|---|---|

| 2. Date | |
|---|---|

| 3. Gender | |
|---|---|

| 4. Date of birth | |
|---|---|

| 5. Referred by | |
|---|---|

| 6. Case | Known/Confirmed | Suspected |
|---|---|---|

| 7. Alleged Perpetrator | |
|---|---|

| 8. Reason for visit | |
|---|---|

| 9. Reasons given for injury: |
|---|
| |

| 10. Where abuse occurred | Home | School | Other |
|---|---|---|---|
| Specify | | | |

| 11. Type of abuse | Physical | Sexual | Neglect | Other |
|---|---|---|---|---|

| 12. Major injury | |
|---|---|

| 13. Body injuries | Hands | Legs | Chest | Buttocks | Thorax | Back | Abdo | Other |
|---|---|---|---|---|---|---|---|---|
| Specify | | | | | | | | |
| Extent | | | | | | | | |

| 14. Location | Head | Neck | Face | Mouth | Jaws | Other |
|---|---|---|---|---|---|---|
| Specify | | | | | | |
| Extent | | | | | | |

| 15. Mouth | Teeth | Gingiva | Oral mucosa | Tongue | Lips | Other |
|---|---|---|---|---|---|---|
| Specify | | | | | | |
| Extent | | | | | | |

| 16. Face | Cheeks | Nose | Eyes | Ears | Scalp | Forehead | Other |
|---|---|---|---|---|---|---|---|
| Specify | | | | | | | |
| Extent | | | | | | | |

| 17. Type of injury | Bruise | Fracture | Burn | Laceration | Bite | Cuts | Other |
|---|---|---|---|---|---|---|---|
| Specify | | | | | | | |
| Extent | | | | | | | |

| 18. Instrument used | |
|---|---|

Other information: .....

.....

**Ref. a:chdabuse/17.7.97**