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## A PROFILE OF THE ORO-FACIAL INJURIES IN CHILD PHYSICAL ABUSE AT A CHILDREN'S HOSPITAL

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### ABSTRACT

**Objective:** The aim of the present study was to determine the head, face and neck injuries associated with child abuse cases in the Cape Peninsula, Cape Town, South Africa.

**Method:** A retrospective, record-based analysis ( $n = 300$ ) of non-accidental injuries at a Children's Hospital over a 5-year period (1992–1996) was carried out.

**Results:** The mean age of the sample was 4.75 years—54.3% were boys and 45.7% were girls. Most of the crimes were committed in the child's own home (88.7%). Crimes were reported by mothers (48.7%), grandmothers (11.7%) and day hospitals (13%). Ninety percent of the perpetrators were known to the victim. The majority of the perpetrators were male (79%)—20% the perpetrators were the mother's boyfriend; 36% the father or step father, and in 12% the mother was responsible. Thirty-five percent of perpetrators were under the influence of alcohol or drugs when they committed the offence; 64.7% of cases suffered serious injuries, 48.7% had to be hospitalized, four children were critically injured and died. The head, face, neck, and mouth were the sites of physical injury in 67% of the 300 cases reviewed. 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 hematomas, retinal hemorrhages, bruises, burns, and lacerations. Injuries to the mouth included fractured teeth, avulsed teeth, lacerations to the lips, frenum, tongue, and jaw fractures.

**Conclusions:** The main conclusions of this study were (i) under 2-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%); and (iii) no dentists participated in the examination of any of the patients. Intra-oral injuries may be overlooked because of the medical examiner's unfamiliarity with the oral cavity. Oral health professionals should be consulted for diagnosis, advice and treatment. © 2000 Elsevier Science Ltd.

**Key Words**—Child physical abuse, Oro-facial injuries.

### INTRODUCTION

THROUGHOUT THE WORLD there is an awareness that child abuse and neglect is a serious and growing problem. Child abuse is prevalent in every segment of society and crosses all social, ethnic, religious, and professional strata. Although legislation in South Africa, has been in place since 1983, reporting by dentists, doctors and nurses has been virtually non-existent. The purpose of the present study is to highlight the importance of head, face and mouth injuries seen in child abuse cases. It is only through increased awareness of its importance, that health care workers will assume their role in diagnosing and reporting this pervasive problem. For the purpose of this study, Johnson's (1990) definition of child abuse is used: "An injury to a child caused by a parent or caregiver, for any reason, including injury resulting from a caregiver's reaction to unwanted

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**Table 1. Crimes Against Children (Under 18 yrs) 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

behavior. Injury includes tissue damage beyond erythema or redness from a slap, to any area other than the hands or buttocks.”

## LITERATURE REVIEW

Prevalences on child abuse have been reported in different countries and reflect multifactorial social and cultural differences. In the 1980s at least four children in Britain (Creighton & 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 & Vesterby, 1984). In Britain at least 1 child in every 1,000 under the age of 4 years of age suffers from severe physical abuse, for example fractures, brain hemorrhage, severe internal injuries, or mutilation (Creighton, 1988); in the USA more than 95% of serious intracranial injuries during the first year of life are the result of abuse (Billmire & Myers, 1985).

Conservative estimates indicate that almost 2,000 infants and young children die in the United States each year from being abused by parents and caregivers. Furthermore, 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 [DHHS], 1996). According to a 1996 report from the Department of Health and Human Services, more than 1 million children were victims of substantiated child abuse and neglect in 1994, an increase of 27% from 1990. Most estimates place the real number of reported cases of child abuse at almost 3 million annually (Department of Health and Human Services [DHHS], 1996).

The study of child abuse in Africa has been limited, largely due to the lack of resources and the paucity of research (Lachman, 1996). It is reasonable to assume 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; as women join the work force in increasing numbers and as civil unrest, economic disruption and war displace families from their homes and cultural moorings (Winship, 1984).

There is mounting public concern over the extent of child abuse and neglect in South Africa. Table 1 shows the crimes against children handled by the Child Protection Unit of the South African Police Services nationally, for the Western Cape Province and the Cape Peninsula. The numbers indicate only the number of cases investigated and proven by the Child Protection Unit.

Over the years, a variety of conditions have been mistaken for child abuse. It is important that mandated reporters know these conditions and make an effort to identify them. Failure to consider these possibilities and eliminate them can result in a false diagnosis. Differentiating accidental injuries from inflicted injuries is important in the management of injured children.

Various studies have shown that as many as 50–75% of all cases of child abuse involve trauma to the mouth, face and head (Becker, Needleman, & Kotelchuk, 1978; da Fonseca, Feigal, & ten Benschel, 1992; Jessee, 1995). Head injury from abuse is a significant cause (40–70%) of disability and death in children.

There are no hard and fast rules and no easy answers for diagnosis. In evaluating injuries, the age of the child is crucial. The child's behavior, 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. Repeated injuries, multiple bruises, or injuries with uncertain explanations may signal instances of abuse.

Child maltreatment is influenced by many factors, the most common of which is substance abuse (Mouden, Lowe, & Dixit, 1992). Other common factors include economic problems, stress, lack of family support network, and the cyclic problem of abuse as a learned behavior, that is, perpetrators of abuse are likely to have been abused themselves as children (Blain, 1991).

By being aware of the warning signs and knowing how to diagnose and report suspected cases of abuse and injury health care workers may help to break the cycle of child abuse and neglect.

Reporting systems have been developed in numerous countries to ensure that children who have been abused are brought to the attention of service providers. In South Africa the problems of under-reporting and a lack of systematic research, a co-ordinated record keeping system and a centralized register means that the true extent of child abuse is unknown. The Child Care Act of 1983 (Child Care Act, Act 74, 1983) does not provide a clear definition of child abuse, nor is there a generally accepted definition of abuse in its different forms which makes reporting problematic.

Several reasons have been proposed for the failure to report child abuse (Mouden & Bross, 1995). They include (a) inadequate training to diagnose the problem, abuse may be overlooked; (b) the examiner may not want to get involved or interfere in what he/she believes is, a family situation with the risk of alienating/stigmatizing the family; (c) the problem of defining child abuse; (d) fear of legal involvement; (e) effect on practice—personal, legal & financial risks; (f) fear of confrontation; (g) disruption of doctor-dentist/patient relationships; (h) fear of physical and/or verbal reprisals; (i) in general, people tend to believe what they are told and base decisions on that belief; and (j) finally, perhaps most often, when the severely injured child presents to the emergency room staff members concentrate on the problem at hand—respiratory arrest, cardiac arrest, shock, or convulsions—and miss the large question of overall etiology.

To plan prevention and intervention programmes in South Africa, it is necessary to document the incidence and if possible the prevalence of the problem and develop standard methods of collating data. The purpose of this study is to highlight the importance, diagnosis and recognition of the head, face, and mouth injuries associated with child abuse.

The aim of the present study was to determine the head, face, and neck injuries associated with physical child abuse cases in the Cape Peninsula using a retrospective, record-based analysis of the non-accidental injuries at a children's hospital over a 5-year period (1992–1996). Using the Informatics Department, a search was conducted for all child abuse cases that had any record of a head, neck, face, and mouth injury. These records were examined and then corroborated by social worker records of the same case.

The objectives were 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 and the nature and cause of the injury.

## METHOD

The study site was a university affiliated children's 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 3 million people in metropolitan Cape Town and also functions as a primary care facility for many children in Cape Town (Strebel, Lachman, Painter, Stander, & Ireland, 1992). The sampling frame comprised hospital records of proven non-accidental injuries with oro-facial trauma from 1992–1996 ( $n = 860$ ) and the random sample  $n = 300$  (35%) was

selected. The inclusion criteria was patients presenting with proven non-accidental injuries and with oro-facial injury(ies). 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.

After the pilot study was done on 10% of the patient medical records ( $n = 30$ ), it became apparent 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. In addition, hospital record folders are destroyed after 5 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 data capture sheet was developed for the record-based study. The following information was collected: demographics, perpetrator, the location where the abuse took place, the reporter, the relationship between the victim and the abuser, oro-facial injuries sustained, other injuries sustained, treatment provided recorded, and the instrument used to inflict the injury(ies). 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).

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.

## 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 study consists of a record of 300 cases. The mean age of the sample was 4.75 years. 56% occurred in 0–4-year-olds and 44% in 5–14-year-olds; with the boys outnumbering the girls marginally—54% were boys and 46% were girls ( $SD$  4.0, *range* 1 month–14.25 years).

As a rule, only one victim and one offender were involved per crime. Victims usually made contact with the perpetrator in their own homes (88.7%). Most crimes were committed in the child's own home, 4.7% occurred in a deserted spot near home, 3.3% in the offender's home, or in a public area (3.3%). Crimes were mostly reported by mothers (48.7%), grandmothers (11.7%), and personnel at the day hospitals (13%).

Ninety percent of the perpetrators were known to the victim. The majority of the perpetrators were male (79%). Twenty percent 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.

From the data shown in Table 2, the association is statistically significant as indicated by the  $p$ -value which shows that parents are more likely to abuse children at a younger age, and that children are more prone to abusers out of home once they are older.

This information could influence the types of programmes that need to be developed. They need to impact on the parenting skills of the younger child and the teaching of safety skills for the older

**Table 2. Association Between Parental Abuse and Age of Child**

	Perpetrator	
	Parent	Other
Age		
<2 years	82	25
>2 years	128	65
Total	210	90

$p = 0.03$ .

child. Thirty-five percent of the perpetrators were, in terms of the records, under the influence of alcohol or drugs when they committed the offence.

### *Nature of the Injuries*

Analysis of the injuries of the cases examined showed that 65% of the child victims suffered from serious injuries, 49% had to be hospitalised, and four children were critically injured and died. Head, face and mouth injuries included skull fractures, subdural hematomas, retinal hemorrhages, bruises, burns, and lacerations.

Analysis of the location of the upper body injuries found showed that 30% 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 two injuries. Bruising was the most common type of injury found (Table 3).

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 remainder of the results presented.

**Table 3. Frequency Distribution of the Types of Injuries**

Injury	Number	Percentage
Bruising	156	35
Fracture	95	21
Laceration	88	20
Subdural Haematoma	74	17
Burn	17	4
Wet	14	3
Total	444	100

**Table 4. 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

### *Types of Injuries*

The different types of injuries that were seen are shown in Table 3. The total number (444) 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 Table 3 were calculated for the total number of injuries recorded (i.e.,  $n = 444$ ). Bruising was the most common injury. Nondescript bruises become suspicious as abuse when they occur on the soft parts of the body (e.g., cheeks, arm, buttocks, etc.)

### *Frequency of Injuries*

The frequency of injury to each part of the body is shown in Table 4. The face was the most often injured area of the body. Table 5 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.

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 6). Eye injuries included retinal hemorrhage and periorbital bruising. Retinal hemorrhages are often indicative of subdural hematomas, but may also occur without clinically important intracranial hemorrhage in children with sudden compression of their chests.

Retinal hemorrhages usually last 10 to 14 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 7 shows the number of times each part of the mouth was injured. The following types of

**Table 5. Frequency Distribution of Head and Neck Injuries**

Location	Number	Percentage
Face	231	59
Head	93	23
Mouth	41	11
Neck	24	6
Total	389	100

**Table 6. Frequency Distribution of Facial Injuries**

Location	Number	Percentage
Cheeks	94	30
Eyes	81	25
Forehead	71	22
Nose	41	13
Ears	32	10
Total	321	100

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.

#### *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 8) 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 (13%). Children were burned 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.

## DISCUSSION

#### *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 (Adelson, 1961; Cameron, Johnson, & Camps, 1966; Lauer, ten Broeck, & Grossman, 1974; Macintyre, Jones, & Pinckney, 1986; O'Neill, Meacham, Griffin, & Sawyers, 1973; Sperber, 1981; Symons, Rowe, & Romaniuk, 1987; ten Bensel, 1975). The National Society for the Prevention of Cruelty to Children (Creighton & Gallagher, 1988) survey showed that 52% of cases occurred in under 4 years old, and 48% in the 5–17-year age group.

Many studies (Giangregio, 1986; Miller, Fine, & Adams-Taylor, 1989; O'Neil, Clark, Lowe, & Harrington, 1989; Sperber, 1981; ten Bensel, 1975; ten Bensel, King, & Bastein, 1975) have

**Table 7. Frequency Distribution of Mouth was Injuries**

Location	Number	Percentage
Lips	22	54
Oral mucosa	6	15
Teeth	5	12
Gingiva	5	12
Tongue	3	7
Total	41	100



**Table 8. Frequency Distribution of Instruments Used to Inflict Injury**

Instrument	Number	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

reported a preponderance of boys in their samples. Other authors (Adelson, 1961; Cameron et al., 1966; da Fonseca et al., 1992; Jessee, 1995) 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 (Creighton & Gallagher, 1988).

### *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 etiology of child abuse is based on the interaction of the personality traits of the parents or the abusing adult, the child's characteristics, and the environmental condition (Green, Gaines, & 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 & Arendorf, 1989).

Contributing factors to abuse include drug and alcohol abuse, financial stress or poverty, unemployment and marital problems (Welbury & Murphy, 1998). 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.

### *Nature of 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 and colleagues (1978), the medical records of 260 cases of child abuse admitted to the Children's Hospital in Boston, MA, between 1970–1975 were reviewed.

Becker and colleagues (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 and colleagues (1992) in a study of 1,248 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.

### *Location of Injury*

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

In smaller, less random population studies, Cameron and colleagues (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.

### *Types of Injuries*

Needleman (1986) 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 hematomas.

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 (Beatz et al., 1977; Becker et al., 1978; O'Neill et al., 1973). Beatz and colleagues (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 hemorrhaging due to an increase in intracranial pressure.

Schmitt (1986) reported that among nonfatal 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. In the four deaths found in this present study, all were attributed to some form of intracranial injury.

O'Neill and colleagues (1973) considered skull fractures a late stage of abuse while soft tissue trauma was the earliest sign of physical abuse. Lauer and colleagues (1974) reported that 22.3% of the cases had skull fractures and 8.4% had subdural hematomas. Becker and colleagues (1978) found in their study that 16% had injuries to the head such as skull fractures, subdural hematomas and contusions. In the present study, 22% of the cases were found to have skull fractures and 17% subdural hematomas. However, Jessee (1995), in his survey of 266 physically abused children, reported a higher prevalence of 58% for skull fractures and 21% subdural hematomas.

### *Number of Injuries and Instrument Used to Inflict Injuries*

As in other studies (Becker et al., 1978; da Fonseca et al., 1992; Jessee, 1995) 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 (Table 8). 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 (Schwartz, Woolridge, & Stege, 1976; Symons et al., 1987).

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.

### *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 and colleagues (1978) and da Fonseca and colleagues (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 and colleagues (1992) who found that the cheeks had the highest number of injuries followed by the eyes, ears, nose, and lips and Jessee (1995), where the cheek was 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 (Cameron et al., 1966; Schwartz et al., 1976) consider injuries to the lips and the presence of blood clots or a deviated septum of the nose to be important findings (Kittle, Richardson, & Parker, 1981). In their hospital survey, O'Neil and colleagues (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 (Becker et al., 1978; da Fonseca et al., 1992; Jessee, 1995). 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, thus a fair amount of minor trauma resulting from abuse may be seen by dentists.

### *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 hematomas, which in 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 two 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 and colleagues (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 (Ellerstein, 1979; Wilson, 1977). As O'Neill and colleagues (1973) pointed out, the identification of those injuries in the dental surgery will prevent further and more serious damage to the child.

### *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 multidisciplinary teams around the country, no participation by dental professionals were recorded (Kaminer, Crowe, & 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 cooperation among medical, social, and legal organisations, since it is such a complex issue that no individual can handle it alone.

## CONCLUSIONS

The most prominent findings from the present study are:

- Under 2-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 South Africa has not been determined—and may be indeterminable—the statistics available present a grim picture in our society: a picture that health professionals cannot ignore (Child Protection Unit, 1998). This study has shown 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. It is hoped that policymakers will respond by lobbying to place child abuse on the public health agenda of researchers, policy makers and politicians, for action and to demand a coordinated response to this silent epidemic.

In addition, evidence from this report will hopefully provide 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 greatly increase the awareness of health professionals to the importance of oral and facial injuries in child abuse, and have an impact on health policy, medical and dental school training, and 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 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 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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