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CHILD SAFETY IN DAY CARE CENTRES WITHIN THE WESTERN CAPE

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DECLARATION

I, ...IHADIN JAFFER...., hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other University.

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Feb 1998

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ACKNOWLEDGMENTS

It was shortly after the completion of my data collection, that one of the great patches of darkness which casts a shadow on our rainbow nation viz gang-related violence erupted in the very communities that this study was conducted in. While in some ways that motivated me to complete this dissertation as I could honestly say I'd risked my life to do so, it was also deeply disturbing. The victims this time had included innocent school children caught in the crossfire whilst playing in their school's playground! How ironic it was, that I was investigating child safety in centres of child-care, yet I sensed the futility of trying to protect children who were not even safe ... to just be children.

I dedicate this dissertation to our children of the Cape Flats and those committed women who have truly earned their titles of caregivers.

I wish to thank the following beings (in no order of importance!):

- my colleagues on the course and the staff in the Child Health Unit for dragging me kicking and screaming to this point
- my supervisor, David Bass, for his encouragement, guidance, interest and enthusiasm which extended beyond the call of duty
- my parents Yacoob & Fatima Jaffer and my family for living this through with me
- my fiance' for providing me with the perfect incentive to complete this dissertation
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- Mr R Sayed for his valued assistance with statistical analysis
- my great friends ... for being patient enough to still be my friends 2 years down the line
- Charlene and Audrey for typing
- all the people I've met in the course of doing this project including those working in day care centres, environmental health offices, governmental departments, academic institutions, resource centres, libraries (and those I did not meet who float somewhere in cyberspace) who despite bureaucracy endless meetings and crammed schedules, made time for me

  and finally God Almighty by Whose Grace I am.

TERMS OF REFERENCE

This dissertation was prepared in partial fulfilment of the requirements for the Degree of Masters of Philosophy (Maternal and Child Health).

The briefing was given in March 1996 by the course co-ordinator to all learners to complete a dissertation as a requirement for this attainment of the masters degree.

The undertaking was to:

- Choose a topic covering any child or maternal health issue
- collect relevant background information
- enlist the assistance of a supervisor
- devise a research proposal for submission to the University of Cape Town before 12 December 1996
- to conduct research in a systematic manner according to a work plan
- to liaise regularly with the supervisor and report on progress to the course co-ordinator at the quarterly in-course learning blocks
- to hand in by August 1997 to enable conferrment of the degree at the end of the 1997 academic year

EXECUTIVE SUMMARY

"Accidents will occur in the best regulated families and in families not regulated ... they may be expected with confidence and borne with philosophy".

The sentiment expressed by Charles Dickens' Mr Macawber in the Pickwick Papers reflects the fateful nature of injuries held by many. On the contrary, childhood injuries constitute a child health priority which justifies research because it is so amenable to preventive and interventive strategies.

This dissertation will be summarized as follows:

1) the problem statement and brief background to the problem
2) the overall objective(s)
3) the research procedure
4) basic findings
5) main implications

1) The problem statement and brief background to the problem:

a) the problem statement

Given the current economic climate, many South African urban mothers of small children work. Because of a combination of factors including the lack of adequate maternity benefits and childcare facilities at places of work as well as the decline of the extended family, day care facilities are being utilized with increasing demand.

Not much is known in South Africa about the safety of South African children in day care centres. Injuries in children are a health priority because it is a major cause of mortality and disability yet amenable to intervention and prevention. Interventive and preventive strategies can be determined as a result of adequate research and ongoing education. The environment provided for the education and care of the child should be safe whilst facilitating exploration and the development of new skills.

Even if the study suggests that organized registered day care centres provide a safe environment for children, focusing on the problem in this setting should highlight the issue of child safety in general leading to possible promotion of safer environments in

all settings.

b) Summary of literature reviewed:

(i) child safety issues

Injuries are the major cause of death in children over the age of one in the developed world. Even in the developing world the impact of childhood injury is increasing. In South Africa, injury accounts for 8% of all deaths in children aged between 5 and 14 years, while in the 1 to 4 year old age-group, it is the fifth commonest cause of death.

All children's injuries follow a pattern usually corresponding to their stage of development. Because of the predictable nature of potential injuries based on this developmental model, interventive and preventive measures are possible.

(ii) the day care setting

Children below the age of five are particularly vulnerable to potential environmental hazards because of their exploratory behaviour and limited cognitive ability. Working parents especially may need to entrust children of this age-category to child-care services.

In developed nations, a high percentage of children under five are enrolled in day care programmes. South Africa and other developing nations, demonstrate an increasing utilization of day care services as more women enter the workforce.

(iii) the incidence of injuries in day care centres

These statistics are not always available but the institution of standardized coding and injury registers in day care centres in the USA and Scandinavian countries have enabled the collection of data on injury rates. These range from 1.3 to 2.7 injuries per 100 000 child-hours of exposure.

British data suggests that most injuries under the age of six occur in the home whilst Scandinavian research describes a situation where the risk of injury for children aged 3 to 6 is similar in day care centres and the home.

No comparable information exists for South Africa. Extrapolated figures from the trauma unit at the only exclusively paediatric hospital in the country, suggest that 32% of all injuries seen in the under-sixes could possibly occur in a day care setting.

(iv) the injury setting

The majority of injuries are sustained as a result of falls in the playground. Most injuries are minor but those serious enough to require medical attention include head injuries and fractures.

Information from the South African trauma unit setting suggests a disturbing 12,8% of all injuries seen from a day care setting were caused by assault, either non-accidental injury or child-on-child violence.

(v) interventive strategies

The value of doing research into childhood injury is because of its amenability to prevention at primary (education as protection), secondary (management of the event) and tertiary (rehabilitation) prevention. Primary prevention can be either active or passive.

Intervention can be achieved through education, design of safer products and/or legislation.

The role of education in behaviour modification is controversial. However improved staff training in safety issues seems to be related to a decreasing injury rate in developed nations.

Measures of passive protection are provided by the design of a child-safe environment in the day care centre. As a result of research, design modifications to the playground have occurred in many USA centres.

The role of legislation, also varies between countries from no statutory laws governing day care centre regulation in South Africa to legally binding regulations concerning building standards and safety arrangements in Sweden.

In the Western Cape, a set of recommendations, which include safety criteria, exists to

enable registration of a day care centre and subsequent eligibility for financial aid from the provincial Department of Welfare. In the USA a set of standards, compiled by the American Academy of Paediatrics and the American Public Health Association, is applied with varying stringency in licensed day care centres across the country.

Although inconclusive, research suggests that improved safety standards lead to decreased injury rates.

2. the overall objectives

The aim of the study is to explore aspects of child safety in registered day care centres situated in a lower socio-economic area of the Cape Town Metropole.

This can be achieved by:

a) describing the physical environment in day care centres
b) assessing the infrastructure of day care centres to deal with potential injuries
c) reviewing injury reporting systems already in place
d) highlighting the issue of child safety in the course of conducting the study.

3. the research procedure

a) the study design

This was a cross-sectional descriptive study

b) the study population

The sample comprised all day care centres registered with the Provincial Administration of the Western Cape's Department of Health and Welfare in the areas of Bishop Lavis, Elsies River, Ravensmead, Uitsig and Valhalla Park. A total of 33 centres was studied.

c) the measurement tools

a) direct observation
b) a check-list of environmental safety features
c) a structured interview scheduled to:
i) assess the resources of caregivers to deal with potential injuries
ii) gain insight into the nature and occurrence of injuries
iii) elicit the dissemination of safety information to children.

d) data collection

A list of all centres was compiled. The writer conducted all the research herself. Once permission was granted for inclusion in the study, day care centres were visited, the environmental safety features were looked for and a semi-structured interview was conducted with the principal of the centre. The above was governed by certain constraints.

e) data analysis

The information was captured and analysed using the Epi Info (version 6) software package

4. basic findings

a) characteristics of the centres

All 33 centres were registered. Fees structures ranged from R10 to R40 per week. The median number of children per centre was 60 with a median staff to child ratio of 1:12.

b) environmental safety

The aspects examined were the kitchen, the toilet facilities, the indoor and outdoor areas and the equipment. A scoring system was used for the 31 safety features selected. This demonstrated an average overall safety score of 29 out of a maximum 31 points.

c) the number and profile of injuries

This information was derived from the centres injury - reporting systems for the preceding 6 month period. There was great variation in the standard of record-keeping ranging from no written records in 8 of the centres, to very accurate report forms in 4 of the centres.

The non-standardized record-keeping systems impacts on the validity of information obtained. Nevertheless, the median numbers of injuries per centre for the preceding 6 months in those centres with written records was one per centre and 3.56 injuries per 100 children. Most of these were minor such as lacerations or bruises occurring outdoors as a result of falls.

d) management of potential injuries

Most day care centres had at least one member trained in basic first aid and an adequately stocked first-aid kit. However, many caregivers expressed a lack of confidence in dealing with CPR administration, poisoning and sorting out major from minor injuries.

e) safety awareness

Pertinent findings were:

i) record-keeping of injuries varied greatly

ii) most centres followed safety protocols except for fires

iii) parents were not informed of their children's injuries in more than 20% of the centres

iv) apart from fire-drill, safety issues were adequately taught.

5. implications of findings

Despite the limitations, important factors emerged from the study:

a) The environment provided for the children in registered centres in this community seems to be safe. Unregistered centres, home-based care and registered centres in other communities require investigation.

b) The variation in injury - reporting systems, the rate and nature of injuries all impact on the validity of the data collected. Ideally, detailed injury-reporting systems should be standardized for all day care centres.
Even though most injuries seem to be minor, they should still be reported to parents.

c) Aspects of child safety not investigated in this study such as non-accidental injury have to be the subject of further research. Children also need to be educated about child abuse.

d) Staff are adequately trained to deal with most first-aid situation but lack confidence for some of the essential procedures such as CPR. Access to refresher courses should be available.

e) Fire as a potential cause of injury should be highlighted. Protocols for dealing with fires should be instituted.

The results and their implications should be relayed to all the relevant role-players involved in educare such as:

i) the Department of Health and Welfare
ii) educare training bodies
iii) health inspectors at local government level
iv) the persons in charge of the day care centres studied
v) academic institutions and organizations involved in child safety.

In so doing, this piece of research could in some small way lead to the improved safety of children in day care centres in the Western Cape.

LIST OF ILLUSTRATIONS

GLOSSARY

Day Care Centres: "Any premises maintained or used for the reception, protection and temporary or partial care of more than six children apart from their parents but does not include any establishment for the training or education of children which has been registered or approved by a provincial or state education department". (from Provincial Administration of Western Cape Policy Planning Document on Day Care Facilities[2]). This definition incorporates creches, nursery schools, play-school, educare centres and pre-schools.

Child Care Workers: all adults caring for children in the day care centres irrespective of their level of training.

Injury/Accident: **Accident** refers to "an event without apparent cause, unexpected, unforeseen, unintentional act or a mishap" (Oxford English Dictionary[1]). This implies an inevitability which cannot be prevented. The term **injury** could be more appropriate as it describes the bodily harm incurred in an unforeseen usually unintentional manner.

PAWC: Provincial Administration of the Western Cape.
CAPFSA: Child Accident Prevention Foundation of South Africa.

1. INTRODUCTION

The introduction to the dissertation will focus on the following aspects:

1.1 Background to and motivation for the study.

1.2 Problem statement.

1.3 A statement of the aims and objectives of the study.

1.4 A statement of the objectives of the dissertation.

1.1 BACKGROUND TO THE STUDY

Just over a year ago one afternoon, a distraught mother brought her four-year old son to the rooms where I work with a problem of an inability to move his obviously swollen and painful right arm. He claimed it had been like that since "falling at creche" earlier in the day. The mother's main distress stemmed from the lack of communication from the caregivers to her regarding the injury (which an x-ray confirmed to be a fracture). This anecdotal event raised for me the issue of child safety in day care centres.

Even in developing countries like South Africa, social pressures dictate the importance of addressing child day care health issues such as safety. As Ching-Li, Assistant Director-General of the World Health Organization stated in the opening remarks of The International Conference on Child Day Care Health in 1992[3], the

need arises from:

(i) the lack of adequate maternity benefits and legislation

(ii) the decline of the extended family

(iii) the increase in single-parent households

(iv) the pattern of child-bearing by women who have not yet reached social or biological maturity.

A 1990 report by The United States National Research Council concluded that[3]:

(i) existing child-care services were inadequate to meet the needs of children, parents and society

(ii) many children are cared for in settings that are neither healthy nor safe

(iii) such care is a necessity for many families yet quality care is often inaccessible for those in greatest need

(iv) responsibility for child-care should be shared among families, employers, communities, government and non-governmental organizations.

These factors could be equally relevant to the South African situation. The main problem though, is that not much is known about the safety of children in South African day care centres, especially in lower socio-economic areas.

In the Western Cape, there are recommended minimum physical standards, including

safety features, for child-care centres.[2] Compliance with these recommendations are usually necessary to procure registration with the Department of Welfare's Social Services division - and thus be eligible to receive subsidization.[2,4]

In order for a place of child-care to be registered, a certain procedure has to be followed:

Firstly an applicant has to make an enquiry. The social worker for that area should visit the place of care and provide the applicant with:

- an application form for registration
- a welfare programme format and financial form if the applicant intends applying for a state subsidy
- the document outlining the minimum physical standards required for registration
- a draft copy of a constitution.[2,4]

On receipt of the application, the social worker ratifies the documentation and requests the regional health inspector to visit the centre and provide a health report. The social worker completes the assessment report and the application package (including the health certificate), is forwarded to head office. If successful, a registration certificate is sent to the applicant.[2] The above are recommendations, not legislation, and procedures for registration differ between provinces.[4]

Registered day care centres, it can be assumed, comply with recommended standards of safety. The environment should thus protect children from danger whilst allowing exploration and risk-taking which are integral to the development of new skills.

Injuries in children are a health priority which can result in major disability and death. It is amenable to preventative measures, whether these be active such as behaviour change, or passive as in legislation. Appropriate research and health education should guide intervention aimed at the child, caregivers, parents and the community in order to promote safer environments in all settings.

1.2 PROBLEM STATEMENT

Child safety is an important aspect of child health. Across the world it is a major cause of childhood mortality and morbidity. Safety is an interplay of factors between the host (the child), the environment, and the agent (mechanism by which injuries occur)[5]. Safety assumes even greater importance when it is entrusted to caregivers other than the parents in an environment supposedly designed to accommodate the child.

The problem is that the level of safety in day care centres in South Africa is an unknown factor. At the time of writing, a large study researching health and safety in registered and unregistered centres in Cape Town was being planned[6]. Even if this dissertation concludes that registered day care centres provide a safe milieu for children, focusing on the problem should highlight the issue of child safety and safety-consciousness. Caregivers are then in a position to deliberately or fortuitously pass on messages to children, parents and the broader community which can influence the promotion of safer environments in all settings.

1.3 PURPOSE OF THE STUDY

The aim of the study is to explore aspects of child safety in registered day care centres situated in a lower socio-economic area of the greater Cape Town Metropole.

Objectives

1.3.1 To gauge primary safety measures by describing the environment in day care centres in terms of the basic standards of safety for registration recommended by the Department of Welfare's Social Services division in conjunction with other key stake-holders[2].

1.3.2 To assess the safety awareness of caregivers and their resources for dealing with potential injuries.

1.3.3 To gain insight into the nature and occurrence of injuries by reviewing injury reporting systems already in place.

1.3.4 To highlight the issue of child safety in day care centres and feed back findings of the study to the relevant interest groups within education, health and welfare. These would include day care centre principals' forums, educare training and resources centres, local authorities' environmental health offices, CAPFSA and the PAWC Department of Welfare.

1.4 PURPOSE OF THE DISSERTATION

1.4.1 To report on the nature of the subject to be studied and comment on findings from other studies.

1.4.2 To describe the environment within the day care centres to be studied.

1.4.3 To assess the safety awareness of caregivers by means of a structured interview with principals.

1.4.4 To analyse the results obtained.

1.4.5 To draw conclusions based on the findings.

1.4.6 To recommend action.

2. LITERATURE REVIEW

A review of relevant literature will be conducted under the following headings:

2.1 Child Safety Issues.

2.2 The Day Care Setting.

2.3 The Incidence of Child Injuries in Day Care Centres.

2.4 The Injury Setting.

2.5 Intervention Strategies.

2.1 CHILD SAFETY

Injury in childhood is a major public health issue. In developed nations such as the United States of America and the United Kingdom, injuries are the biggest single cause of death in children over the age of one year[1,7,8,9], eg in the United Kingdom, nearly half of all deaths of children aged 10-15 years are due to injuries[1,9,10]. In 1985, The American National Academy of Science characterized injury as the most important public health problem in America[11]. Approximately 25% of American children annually incur injuries requiring medical care. An estimated 120 000 children are admitted to hospitals in the United Kingdom following an accident every year[1,8], many of whom are left with permanent disabilities[7].

Although malnutrition, infectious diseases and diarrhoeal disease remain major killers in developing countries, the impact of childhood injury is increasing as a consequence of urbanization and industrialization without adequate safety awareness[12]. In South Africa, injury accounts for 8% of deaths in children aged below 15 years and is the leading cause of death between the ages of 5 and 14 years (Kibel, Joubert and Bradshaw, 1990). In the 1 to 4 year age-group, injury is the fifth commonest cause of death in blacks after infectious diseases, gastroenteritis, malnutrition and perinatal complications[13]. The white and Asian population groups display a trend similar to that of developed nations[14].

Although injuries only account for 4% of all deaths occurring in the 0-4 year age range, nationally 90% of all paediatric deaths occur between birth and four years, thus children of this age are at greater risk of damage or death by injury[15]. Data for non-

fatal injuries from a Cape Metropolitan Study returned an annualized injury rate of 90 per 1000 population for this age group[15]. "Coloured" children accounted for the 60% of all childhood injury victims against the 50% of the background population that was "coloured"[15].

Focusing on childhood injury is important because of the amenability to intervention. The epidemiological model of child injury describes:

i) the host, viz. the child,

ii) the agent, i.e. the object which inflicts the injury,

iii) the environment (physical, social and emotional) which provides the setting for the injury[5,9,16].

Haddon's model of injury (The Haddon Matrix) is one of behavioural maturation which states that an event in which the performance is less than the task demands, results in energy release; when the energy release is greater than the threshold for injury, injury results[8]. The vulnerability of the child for injury results not only from physical differences in the threshold for injury but from the fact that performance is age-related.

A developmental approach emphasizes that children have different cognitive, perceptual, motor and language competencies at different stages of development[17]. Using the concept of host, agent and environment, this approach characterizes the child in terms of "how" (the child's behavioural style), "why" (the child's motivation

to accomplish certain tasks) and "what" (the child's competencies at different ages and developmental stages)[17]. The epidemiological evidence confirms that the type of injury falls into a pattern usually corresponding to a child's stage of development[8]. Because this pattern is often predictable, there is a basis for interventive and preventive action.

2.2 THE DAY CARE SETTING

Children below the age of five are particularly vulnerable to potential environmental hazards and dangers because of their developmentally appropriate exploratory behaviour and limited cognitive ability. The care of these children requires time and attention from adult caregivers, usually the parents. However, working parents may need to entrust their children to child care services.

In developed nations, a large proportion of mothers work. In Sweden in 1989, 80% of mothers with children under the age of six worked more than 16 hours per week, approximately 45% worked full time[18]. An estimated 40% of all 2 to 6 year olds were in day care centres[18].

American statistics from 1990 demonstrated that 43% of all children over the age of three years were enrolled in day care centres[19]. In Canada during 1991, there were 330 000 licensed day care spaces for three million pre-school aged children. By implication, the vast majority of children were being cared for by adult relatives or unrelated caregivers in unregulated programmes[18].

Roberts and Pless (1995) describe that employment is financially beneficial to 53% of French and 70% of Danish single mothers of children below five[20]. In these countries, accessibility and affordability of day care is greater than in Britain where only 18% of single mothers with similarly aged children, are employed. In Britain there are publically funded places for day care for only 2% of children under 3 years

compared with 20% in France and 48% in Denmark[20].

The increasing trend towards industrialization in developing countries combined with the break-up of the extended family will increase the demand for day care. The Kenyan government initiated a programme of early childhood education by setting up child-care centres throughout the country in 1984[18]. Only an estimated 30% of eligible preschool aged children are enrolled in these centres[18].

In South Africa, the convention on the Rights of the Child (CRC) recommends the provision of organized day care for children whose parents' work commitments prevent them from looking after their children all the time[21]. Currently in South Africa, provision of child care is largely the responsibility of parents. Governmental subsidization by the Department of Welfare's Social Services division, reaches only a few children in selected registered creches. The current rate of assistance is R4.50 per child per day[4].

Although the estimated South African female population over the age of fifteen and currently in the work force is estimated at 28.2%, 36.1% of urban women are employed and could therefore require child care if they were also mothers of children under the age of six[21]. The results of the October Household Survey of 1995, conducted nationwide in 30 000 households by the Central Statistical Service, suggest that overall 21% of South African children younger than six, and more particularly 39% of all five year olds attend day care centres[22].

Biersteker and Short (1994) estimated that 10.6% of black 0-5 year olds are in day care programmes. The proportion of that number which is registered as opposed to unregistered centres, is unknown[23]. Provision of day care is well below the potential demand which would arise were the employment status of women improved. Reciprocally, provision of affordable and accessible day care would allow more women the choice of entering the job-market. Additionally, the decline of the extended family and an increase in single-parent households would further increase the need for child-care services[21].

It is important therefore to provide affordable and accessible services whilst not compromising in standards of safety.

2.3 THE INCIDENCE OF INJURIES IN DAY CARE CENTRES.

Injuries in child day care are a microcosm of the overall problem of childhood injury.

Accurate statistics of injuries occurring in day care centres are not available. Exact British data on the incidence of injuries in day care are not available but extrapolated figures suggest that most injuries in those under the age of six occur in the home[7]. In total, accidents in schools account for 10-15 percent of all childhood accidents. An estimated 11 000 injuries occurred in British day care centres based on sample hospital data for 1988[7]. The institution of standardized coding and injury registers in day care centres in USA, Canada, Sweden have enabled the collection of data on

injury rates[11,16,24,25,26].

In the USA, Landman and Landman (1987) reported a rate of 7.02% of medically-attended injuries based on reports from day care centres[27]. Rivara et al (1989) demonstrated injury rates of 2.7 per 100 000 child-hours of exposure[28]. Injury reports collected by Sacks et al (1989) among 5300 children attending 71 centres over a one-year period, suggested an injury rate of 1.77 injuries per 100 000 child-hours of exposure[16]. A national estimate of injury risks undertaken by Briss et al (1994) through analysis of medically-attended injuries at centres involving 138 404 children per 8 hours of exposure[29]. Cummings et al (1996) studied 133 day care sites and found an injury rate of 1.9 per 100 000 hours of attendance, these figures being consistent with those from other American studies[30].

Canadian studies of information from the database of the Canadian Hospitals Injury Reporting and Prevention Programme revealed that 4.9% of all injuries of children under 5 occurred in day care settings[26].

In Scandinavian countries, injury rates are lower. Sellström et al (1994) analysed ten injury registry systems covering a 1-2 year period of the total 0-6 year old population. The overall risk of injury was 1.61 injuries per 100 000 child hours exposure[25]. Research amongst 9454 children at Norwegian day care centres indicated a similar injury rate of 1.3 injuries per 100 000 child-hours (Kopjar et al, 1996)[31].

Many studies have compared injury rates in day care settings to that in the home.

Landman and Landman (1987), Rivara, et al (1989) and Sacks et al (1989) all indicated that the injury rate was no more than that occurring in other settings including the home[27,28,16]. In Sweden, Sellström, Bremberg, and Chang (1994) describe a situation where day care centres carry a higher risk of injury than the home[25]. This is refuted by fellow Scandinavians, Kopjar and Wickizer (1996) who suggest that the risk of injury in day care centres and homes are similar for children aged 3 to 6 years. There seems to be an increased risk of injury in the home environment for children older than three years[31].

There are no South African national statistics available on injury rates in day care centres. Figures from the trauma unit at the Red Cross Children's Hospital in Cape Town for the period 1992-1995 demonstrate on average 6% of all injuries seen occurred in school or day care centres. Those aged under six were presumably based in day care centres and by extrapolation, these injuries accounted for 32% of that group and 1.92% of all injuries seen[32].

2.4 THE INJURY SETTING

Nearly 75% of the injuries seen at the Red Cross Children's Hospital trauma unit and which were sustained at day care centres were as a result of falls, whilst running, or from playground equipment. Another 12.8% of these injuries were caused by assault which included sexual assault and child-on-child violence[32].

British data suggest that the playground accounts for 40-50% of all injuries sustained at school[8]. More than half of these include falls and one in five entail collisions. Most injuries at school were trivial such as cuts, bruises, abrasions. However 4-5% of all incidents required medical attention of which the commonest were fractures and head or facial injuries[8].

Studies from the USA confirm falls as the commonest mode of injury (Briss et al 1994; Alkan et al 1994)[29,33]. Landman and Landman (1987) found that blunt head and face trauma, lacerations and fractures occurred most commonly. Running and climbing outdoors were activities implicated in the majority of injuries. The commonest location of injury was a climbing structure[27]. Sacks et al (1989) reported that, of the injuries serious enough to require medical care, 44% were lacerations and 16% were fractures. The head was the site of 68.5% of all these injuries. Forty seven percent of the injuries occurred on the playground, mostly involving falls[16]. Briss et al (1994) specified the playground as the commonest site of injury. The most common injuries were cuts or lacerations while more than half of all fractures and concussions were due to falls from climbing equipment[29]. Mackenzie et al (1994) also cited

lacerations, bruises and abrasions as the commonest types of injuries[26]. Leland and Smith (1993) report that the most common body part affected by serious injuries was the head and the product most cited in the injury setting was playground equipment[34].

The Scandinavian researchers Kopjar (1996) and Sellström, Bremberg and Chang (1994) also demonstrated falls to be the commonest mechanism of injury[31,25].

Some researchers suggest that the nature of the environment and the number of hazardous features in the day care setting were related to the risk of injury (Sacks et al 1989)[16]. However, Cummings et al (1996) conclude that most injuries bear little relation to physical hazards in the centres[30].

Although 3 deaths were extrapolated by Good et al (1994) from 56 000 deaths recorded over a 5 year period as having occurred in day care centres[35], most injuries sustained are minor[11,24,29,33].

2.5 INTERVENTION STRATEGIES

The primary value of research into injuries is the potential for prevention. Prevention can be applied at three levels, namely, primary prevention (education and protection); secondary prevention (management of the event) and tertiary prevention (rehabilitation)[4,9]. Effective primary prevention consists of active and passive methods[4,9]. The active approach relies on positive actions by individual(s) to provide protection on every occasion that a specific risk occurs. The passive approach is to build a measure into the system to minimise the effect of the risk, eg by statutory regulation.

There are three main approaches to injury prevention. These are through (i) education (knowledge leading to altered behaviour), (ii) engineering (design and manufacture of safer products) and (iii) legislation and enforcement of standards[9].

2.5.1 Education (knowledge leading to altered behaviour)

The role of education in ensuring child safety is important. Views exist that education campaigns are ineffective and expensive in ensuring child safety and that preventive strategies have to involve some form of environmental change to be successful[36]. Towner (1995) argues that health education has a wider role to play than merely

trying to change individual behaviour[10]. Education underlies legislative and environmental measures by influencing policy makers by scientific information dissemination. For legislation to be effectively practised, a high level of understanding of the value of the legislation is required. This can be achieved through health education[10].

Education has an important role to play in issues relating to child safety in creches. Safe behaviour taught to the children can be applied to settings outside of day care with possible influence on parents. More directly, training of staff caring for children is important to ensure their safekeeping while allowing them to develop to their full potential by having the freedom to extend their minds and bodies. In developed nations, eg the USA, minimum safety training of paediatric CPR and first aid is often included in the curricula of caregivers[18].

In Sweden, the National Board of Health and Welfare, which bears responsibility for all preschool services, has issued central guidelines to ensure the quality of day care services. One of the requirements is that all staff must have successfully completed training either as paediatric nurses or preschool teachers trained in paediatric first aid. Sellström, Bremberg and Chang (1994) indicate a decreasing risk of injury in Swedish day care centres. They conclude that repeated staff training could be one of the factors responsible for this trend[25]. Lie et al (1994) quote a study from Finland conductred by Ponka (1989) which echoes this pattern. They demonstrate a significant decrease in injuries over a 10 year period and attribute this trend to, amongst other factors, improved staff training in injury prevention[37].

In South Africa at present, training in first aid is recommended for at least one caregiver per centre[3,4]. There is no standardized training curriculum covering aspects of child safety. This information can be obtained in various ways ranging from being included in the basic course, to safety training courses designed for personnel working in day care centres.

2.5.2 Engineering (design of safer "products")

There is a need to provide the child with an environment free of hazards. The most important "design" features affecting child safety have probably been the revision of the playground area, eg. in the USA there are recommendations for provisions of impact absorbing surfaces in the playground as well as lowering of the height of playground equipment. These recommendations have been implemented with varying success. Scandinavian countries have been more stringent with physical requirements, eg. all centres must be fitted out with only child-sized furniture and fittings[24]. Whether these features have made a difference to injury rates, is contentious (see later), but it is important that these measures of passive protection be provided.

2.5.3 The role of legislation and standards

When services are provided for the public, standards serve the public interest by helping the providers and the consumers of the service have knowledge of the correct practices and to encourage their usage either through the threat of punishment or the incentive of reward[38].

Standards, where they exist, vary greatly. The British Children Act of 1989 requires that those who care for children under the age of 8 years in care and recreational settings should be registered with their local authority Social Services Department. Health and safety standards in terms of both the standards of the premises and the application of safety policies is an important aspect of registration criteria[7].

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations Act of 1985 places a legal requirement on authorities to maintain injury records of children and to report details of defined categories of serious injuries to the Health and Safety Executive[8]. The Health & Safety (First Aid) Regulations of 1981 requires that in an educational institution, the employer must ensure that adequate first aid cover exists for all employees at work. The children are therefore not protected in terms of this legislation[8].

Individual countries in Europe have different standards and rules concerning child-care settings, personnel, equipment and the transportation of young children; these are enforced with variable degrees of success[37]. Safety standards in day care have assumed increasing importance especially in Scandinavian countries in the last 25

years, eg. in Sweden the National Board of Health and Welfare has responsibility for all preschool services and allocates state grants for day care services to local municipalities[39]. The Swedish National Board has issued central guidelines to guarantee certain quality requirements are met, eg. physical and staff training requirements[24]. There are also legally binding regulations concerning building standards, maintenance and safety arrangements[24].

In Canada, each province has the responsibility for education, legislation and maintenance of standards related to child-care[26].

Currently in South Africa there is no legislation governing safety regulation in day care centres. In the Western Cape, the Provincial Department of Health and Welfare's Social Services division bears responsibility for the registration of day care centres[2,4]. Members of this department together with role-players from educare training centres, day care centres and municipal health inspectors devised recommendations for the minimum physical standards required for registration of day care centres at a shareholders' forum on August 16, 1996[2]. Some of these are relevant to safety. These are not stringent rules but should serve as guidelines. They were adapted from standards, (which had been in place prior to 1996), devised in a manner which was not consultative[40].

In the United States of America, the American Public Health Association together with the American Academy of Paediatrics (APHA/AAP) have compiled a set of standards for health and safety in day care centres[11,37,41,42]. Injury prevention

standards address a comprehensive range of injury causation, injury agents and safety hazards, eg monitoring of injuries should be recorded in triplicate; requirements for first aid administration are specific and standards about playground equipment include recommended playground surfaces and height of equipment[37].

Each state is responsible for formulating and enforcing regulations and consequently there is great variation, eg in 50% of the states, only 5 of the suggested 36 injury-related criteria are in place (Rivara and Sacks, 1994)[11]. Landman & Landman (1987) described the lack of improvement in injury rates in licensed day care centres in the United States of America[27]. Leland et al (1993) conclude that state standards are inadequate and lack specification as to their implementation[34]. Briss (1995) analyzed the effect of regulation on playground injuries and concluded that lower injury rates were not associated with regulations for playground safety[29].

However, legislation may be important for the reduction of risk factors for those who need it most. A significant risk factor for injuries seems to be poverty[20]. With correct licensing, regulation and enforcement, Rivara and Sacks (1994) demonstrate an equalizing of the environmental safety, regardless of the socio-economic status of the centre[11]. Sellström and Chang (1994) also attribute a decreased rate of injuries from 1984/1985 to 1991/1992 study to improved safety standards[25].

3. PROCEDURE

3.1 STUDY DESIGN

The subject of child safety in day care centres in the Western Cape was investigated by means of a cross-sectional descriptive study using mostly quantitative methods.

3.2 STUDY POPULATION

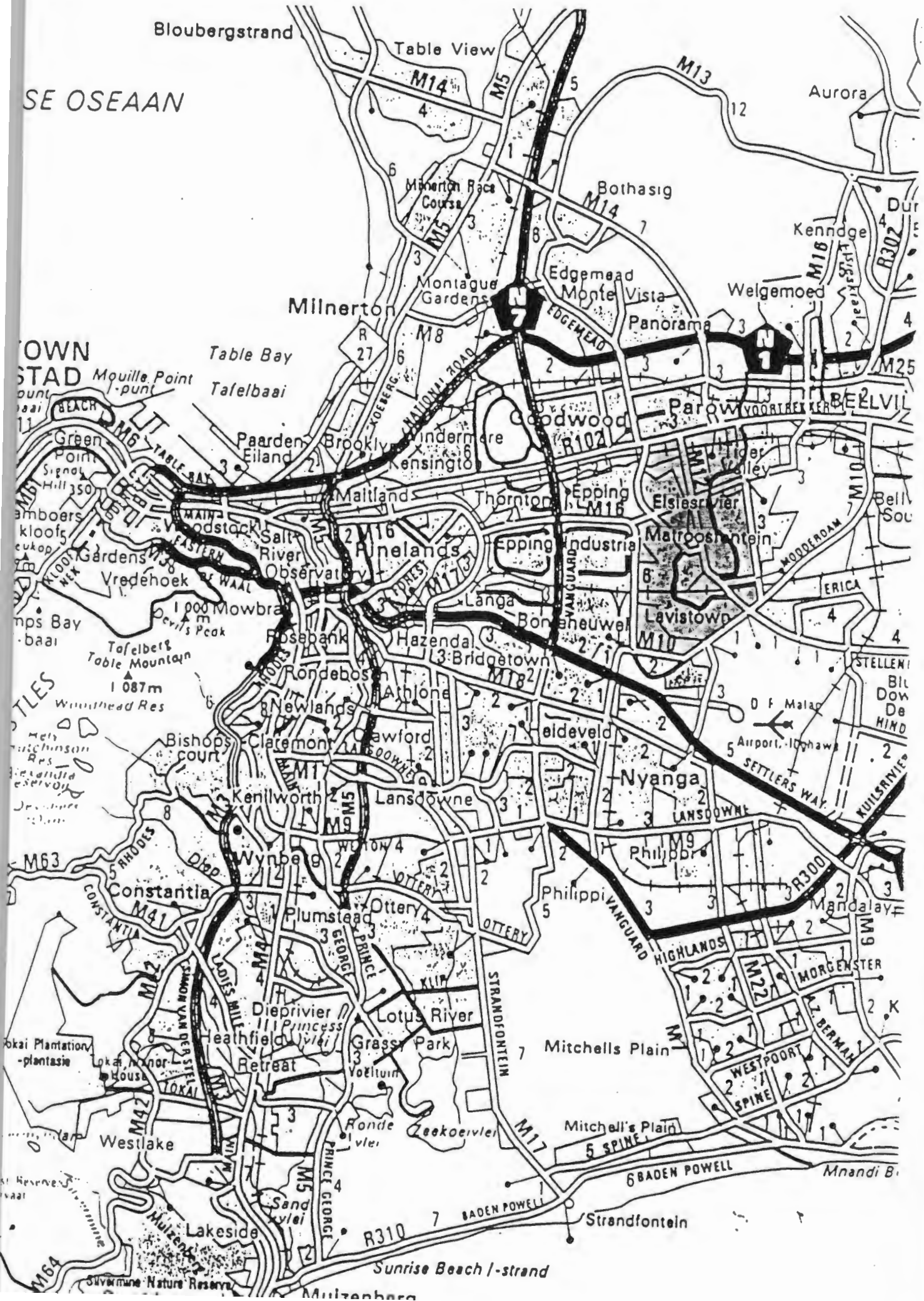
The sample selected comprised all day care centres registered with the Provincial Administration of The Western Cape's Department of Health and Welfare (Social Services Division) situated in the areas of Bishop Lavis, Elsies River, Ravensmead, Uitsig and Valhalla Park (see figure 1). This particular population was chosen because:

3.2.1 By selecting only registered centres, a standard of safety could be assumed, based on guidelines for registration.

3.2.2 The geographical location, while not corresponding to any defined municipal boundaries, was an easily defined area to traverse. The centres were conveniently situated close to the researchers' place of employment thus ensuring accessibility.

3.2.3 Although not necessarily representative of the general population of the Western Cape, this geographical area represented a mostly working class "coloured"

Figure 1: Map illustrating geographical location of day care centres



group.

The number of registered day care centres operating in these suburbs totalled 36. Two centres were excluded from the study as they were really preschool classes situated on the premises of primary schools. The sample for this study therefore consisted of 34 registered centres. Only one centre refused permission to be included in the study as the principal felt it would impede on her already overburdened schedule.

3.3 MEASUREMENT TOOLS

The following methods were employed:

3.3.1 Direct observation

- of the areas the centres were located in
- of the environment
- of the processes occurring at the centres.

3.3.2 A check-list of environmental safety features (see Appendix A)

- this was adapted from the guidelines of minimum physical standards required for registration of day care centres in the Western Cape. These standards had been devised and accepted by a stakeholders' forum on 15 August 1996.
- The check-list provided for demographic data as well as checking on the environment with regard to safety features inside and outside the centre.
- A few safety features which were felt to be relevant to day care centres operating within this urban setting were added to the requirements suggested

by the stakeholders' forum.

3.3.3 A structured interview schedule (See Appendix B)

- Interview conducted with the head of the day care centre
- During the course of the interview, an attempt was made to:
  a) ascertain the ability, knowledge and preparedness of caregivers for managing potential injuries.
  b) where possible, gain insight into the nature and occurrence of injuries.
  c) Determine whether safety issues were being taught to the children.

3.4 DATA COLLECTION

A list of registered day care centres in the areas to be studied was compiled from records supplied by the Department of Welfare's Social Services Division, as well as a mailing list obtained from Grassroots Educare Trust. Telephonic contact was then made with the person in charge of the centre. This person was usually referred to as the principal. She served the function of being educator, administrator and head of staff.

The nature of the research was explained and permission was requested to include the centre in the study. A designated time was agreed upon in order to proceed with collection of information.

Because of incorrect telephone numbers, absence of telephones, or inability to contact

the head of the centre after making more than one telephone call, telephonic arrangements could not always be made.

The proposed method for data collection was as follows:

- to visit the centre at an appointed time with only a brief outline of the nature of the study being given beforehand.
- to meet with the head of staff.
- to leave a copy of a letter containing more information about the study, requesting co-operation and permission to be included in the project.
- to complete the check-list of safety features personally while being accompanied through the centre by any member of staff.
- to conduct the structured interview with the head of staff. To expedite the process, while the safety check was being done, the portion of the interview which read like a self-administered questionnaire, could be answered by the head of staff. Thereafter, to clarify uncertainties and where answers necessitated further probing, the interview would be concluded by the researcher.
- to observe the processes occurring in the day care centre.
- to collect information pertaining to the actual area of indoor and outdoor space available for the children from the local authorities' health inspectors' reports. There were different offices situated in Elsies River, Ravensmead and Belhar where this data was kept in a manual filing system.

This method had to be adapted in approximately half the centres visited so that the information letter, safety check-list and interview schedule were left at the place to be

studied. The reasons for doing this included:

- permission for the study to be conducted was required from the governing body who requested full knowledge of what was to be investigated.
- staff members with whom arrangements had been made were not available on arrival at the centre.
- more time was required by the researcher so that a second visit became necessary to complete data collection.

In these cases the principals were requested to contact the researcher to arrange an alternate meeting time at their convenience. After a few more telephone calls, missed appointments and re-arranged schedules, the process of data collection was completed.

3.5 ANALYSIS OF DATA

The Epi Info Version 6 software package[43] was used to capture and analyse data.

Statistical methods included graphs, descriptive measures, and non-parametric statistics (Willcoxin Sum of Ranks test.

3.6 LIMITATIONS AFFECTING DATA COLLECTION AND ANALYSIS

3.6.1 Relating to the study population

- A convenient population was chosen because of time and financial limitations, the population of day care centres needed to be readily accessible. The demographic profile of this group is not representative of other centres in Cape Town; therefore results obtained cannot be generalized.

- Only registered centres were included in the study. The safety profile of unregistered centres remains unknown.

- The total number of centres eventually included in the study totalled only 33. This could impact on the statistical analysis of the findings.

3.6.2 Data collection

- The researcher relied on information provided by the principals and health inspector records without verification of some of the information.

- The questions could have been subject to variable interpretation by those answering them.

- The study could have demonstrated bias in favour of those principals who had access to the safety check-list and questionnaires before the data was collected. There was thus an opportunity to "improve" the environment in order to gain the approval of the researchers.

- The method of recording and reporting injuries varied between centres thereby impeding the accuracy of comparison.

3.6.3 Time constraints

- The geographical area and the number of centres to be included were limited partially because of time available.

- Time required was underestimated leading to less than optimal time management of work, research and personal commitments.

3.6.4 Financial constraints

- As above, the geographical area and the number of centres to be included in the study were limited partially due to financial restriction.

- In order to pursue the study within a defined period, the researcher needed to take time off from work as unpaid leave.

3.6.5 Socio-political constraints

- Because of the restructuring of local government to comply with new municipal boundaries, some of the areas traversed fell under new local authorities. Certain day care centres' health records had to be requested from neighbouring municipalities' offices, often with limited success. This together with a lack of computer-based recording made collection of this information tedious and incomplete.

- The safety of the researcher could not always be guaranteed and pursuit of research had to be postponed e.g. at times of heightened gang-related violence.

4. RESULTS

Findings of the research project pertain to:

4.1 The characteristics of the centres studied.

4.1 Environmental Safety.

4.3 Number and profile of injuries.

4.4 Management of potential injuries.

4.5 Safety awareness.

4.1 CHARACTERISTICS OF THE CENTRES

The number of day care centres in the study totalled 33. Of these, 20 were situated in Elsies River, 5 in Bishop Lavis, 5 in Ravensmead and 3 in Valhalla Park. All the centres were registered with the P.A.W.C. Department of Welfare's Social Services division.

The fees paid ranged from ten to forty rand per week with a median fee of thirty rand per week.

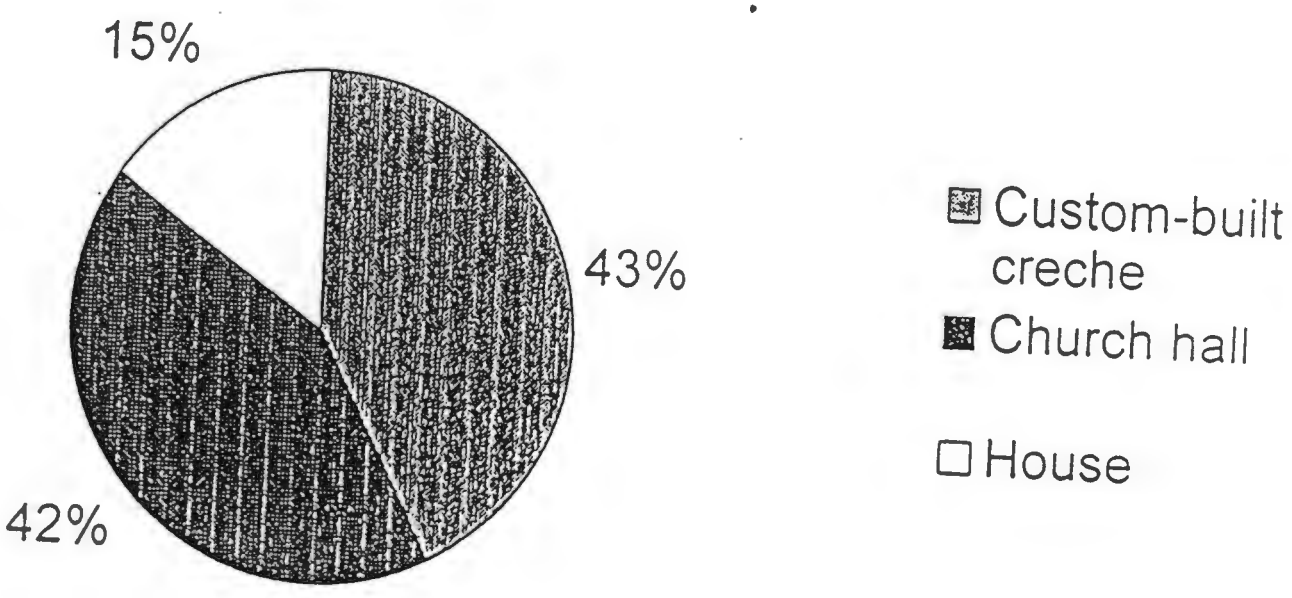
The total number of children in the sample was 2694. The number of children enrolled at the centres ranged from 10 to 555 with a median of 60. In 20 of the centres there were facilities for infants and older children. The remaining 13 centres had only 3-6 year olds on their roles.

The median number of staff members per centre was 5 with a minimum of 2 and a maximum

of 21. The median staff to child ratio was 1:12 overall.

The premises comprised 14 custom-designed and built centres; 14 modified halls and 5 centres operating from houses. (see Figure 2).

Figure 2: Type of premises



4.2 Environmental Safety

The presence of safety features adapted from PAWC guidelines were looked for in every centre studied.

The areas examined were:

4.2.1 the kitchen

4.2.2 the toilet facilities

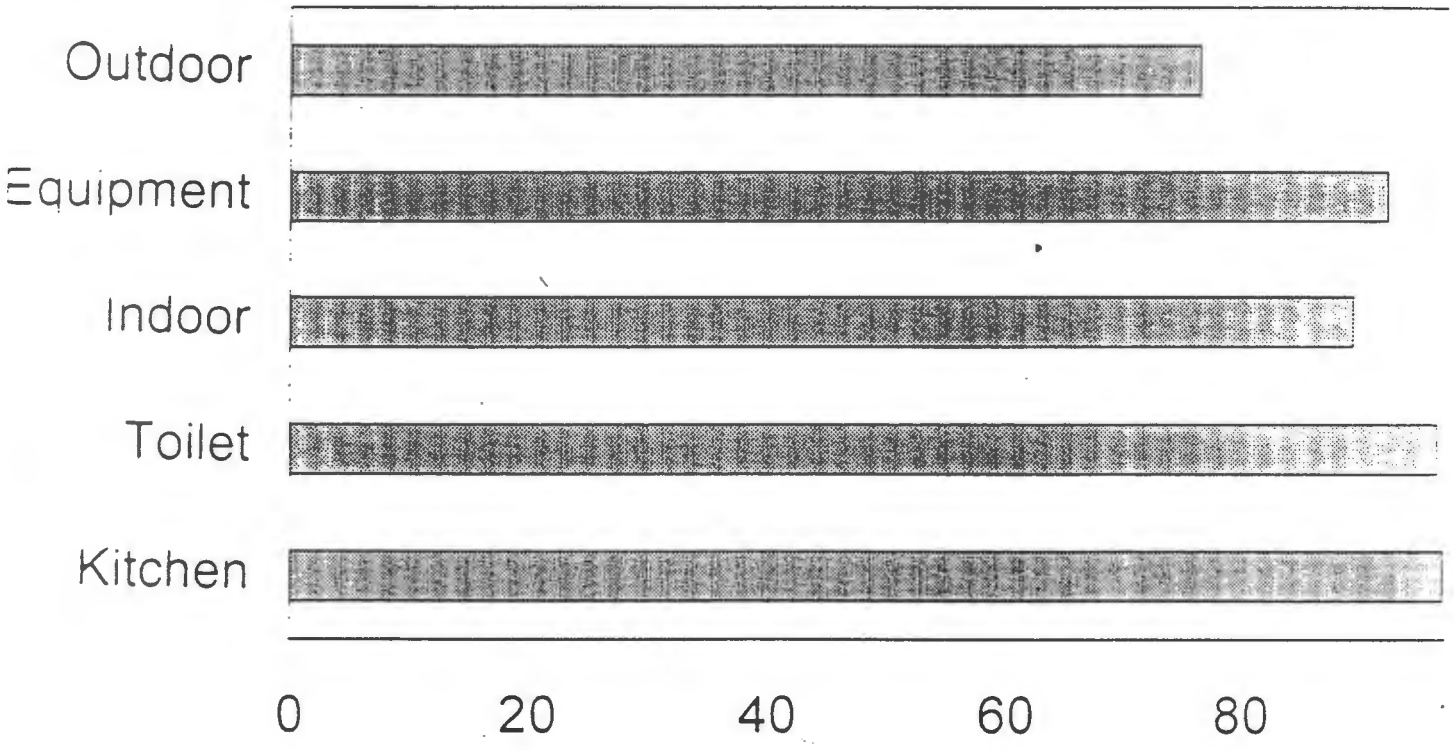
4.2.3 the indoor area

4.2.4 the equipment

4.2.5 the outdoor area

A scoring system was used for the 31 environmental safety features selected (see tables 1 to 5). The presence of a safety feature was scored as one, while the absence of a feature was scored as zero. The average safety score for each day-care centre was determined as well as an average score for the study sample which is represented in Figure 3. The overall median safety score was 29 out of a maximum of 31 points.

Figure 3: Average safety score for various environments (percentage)



4.2.1 The kitchen

All the centres had cooking facilities. The kitchen was a separate room in 51.5% of the centres, and partitioned off from the rest of the facility in the remaining 45.5%.

Kitchens were mostly inaccessible to the children; being a separate facility with a closed door or partitioned off with barriers. Storage of disinfectants and other chemicals were either locked in cupboards or high shelves and floor-coverings were of the non-slip variety. (see Table 1)

TABLE 1 SAFETY FEATURES IN KITCHENS

FEATURE	POSITIVE RESPONSES
Kitchen inaccessible to children	31 (93.9%)
Storage of kitchen equipment adequate	32 (97%)
Non-slip floor coverings	33 (100%)

4.2.2 Toilet Facilities

The maximum number of toilets per centre was 25; the minimum 1 with a median of 6. The

median number of children per toilets was 7. The desired safety features were found in the majority of the day care centres. (see Table 2)

TABLE 2 SAFETY FEATURES FOR TOILET FACILITIES

FEATURE	POSITIVE RESPONSE (/33)
Flush Toilets	33 (100%)
Running water	33 (100%)
Water thermostatically controlled	29 (87.9%)
Safe water disposal	33 (100%)
Toilet activities supervised	33 (100%)
Child-sized toilets or step-ups to toilets provided	30 (90.9%)

4.2.3 Indoor area

The maximum indoor area available per child was 32.5m^2 and the minimum 0.7m^2. The median space available per child was 3.2m^2 (Accurate dimensions were available for 27 of the centres only).

The safety features were adequate in the majority of centres studied. (see Table 3)

TABLE 3 SAFETY OF INDOOR AREA

SAFETY FEATURE	POSITIVE RESPONSE
Solid floors	33 (100%)
Non-slip coverslips	27 (81.8%)
Splinter-free walls	26 (78.8%)
Child-safe windows	32 (97%)

4.2.4 Equipment

Equipment provided was adequate and safe. (see Table 4)

TABLE 4 SAFETY OF EQUIPMENT

SAFETY FEATURES	POSITIVE RESPONSE
Toxic substances stored out of children's reach	29 (87.9%)
First-aid kit present	32 (97%)
Fire-extinguishing system	26 (78.8%)
No obvious hazards indoors	26 (78.8%)
Toys and educational tools storage safe	32 (97%)
Non-toxic art supplies	33 (100%)
Supervised indoor play	33 (100%)
Sturdy tables and chairs	30 (90.9%)
Adequate number of tables and chairs	33 (100%)

4.2.5 Outdoor Area

The maximum outdoor area provided per child was 31.3m^2; the minimum 0.9m^2 with a median value of 10.6m^2 per child. These measurements were available for 22 of the premises. Safety features are summarised in Table 5.

TABLE 5 OUTDOOR SAFETY

SAFETY FEATURE	POSITIVE RESPONSE
Sturdy fencing	31 (96.9%)
Height of fence adequate	25 (75.8%)
Safety gate present	31 (96.9%)
Safety gate locked	24 (75%)
*Sturdy fully functioning playground equipment	17 (65.4%)
Safe sandpit	24 (72.7%)
No obvious hazards in playground	28 (84.8%)
Impact absorbing surfaces in play area	22 (66.7%)
*Soft surfaces below playground equipment	25 (92.6%)

* This refers to centres where playground equipment is present (n=26)

The overall median safety score was 29 out of a maximum of 31 points.

The median fees paid per week was R30,00. There was no significant difference in the safety scores of day care centres where fees paid was less than R30,00 per week compared to those where fees were greater than or equal to R30,00 per week.

TABLE 6

MEDIAN SAFETY SCORES VS. FEES CATEGORIES

Safety Score	FEES CATEGORY	
	R30.00/week n=19	<R30.00/week n=14
Median Safety Score	29.00	27.5
Range	19 - 31	19 - 31

No significant difference

p-value 0.156366 (Wilcoxon Two-Sample Test)

4.3 NUMBER AND PROFILE OF INJURIES

4.3.1 Number of Injuries

The injuries were gauged from the centres' own records for the preceding 6 months. There were written records in 25 of the centres. In the remaining 8, the head of staff being interviewed, gave an estimate of the injuries occurring in the preceding 6 months.

Written records were kept as formal injury reports in 4 of the 25 centres. The nature, mechanism, site, extent and management of injuries (see Appendix C) were listed. In the other 21 centres, injuries were noted in a general health book with varying degrees of detail. The total number of injuries which occurred during the six month period in the 25 centres with written records, was 89. The maximum number of injuries per single centre was 30, the minimum 0 and the median number of injuries per centre was 2. The total number of injuries estimated for the preceding six months in the 8 centres without written records, was 7. The maximum number of injuries per single centre was 2 and the median number of injuries per centre was 1.

It can be presumed that a total of 96 injuries occurred during the six month period in 33 centres. On average, 16 injuries occurred per month. The prevalence of injuries over the 6 month period was 3.56 injuries per 100 children.

Of the 96 injuries, 15 were classified as major, i.e requiring medical attention more than that offered by the centre personnel. 81 injuries were regarded as minor as these could be managed by day care personnel themselves.

4.3.2 The type of injuries

Major injuries were either lacerations requiring sutures, severe bruises or fractures. Fractures occurred thrice. Minor injuries were mostly bruises, abrasions and scratches. There was one recorded superficial burn and one foreign body ingestion. The body parts most frequently injured were the limbs then head/face. The tongue was injured in 3 cases.

4.3.3 The mechanism of injuries

64 of the injuries were thought to have occurred outside. Most of the injuries were as a result of falls sustained either whilst running or from playground equipment. Playground equipment was implicated in 16 of the injuries. Of the reported injuries, 15% involved a fellow child including some of the falls off playground equipment, or falls whilst running.

Comparing safety scores of centres and numbers of injuries occurring, there was no

significant difference. (see Table 7)

TABLE 7

NUMBER OF INJURIES OVER 6 MONTH PERIOD VS

MEDIAN SAFETY SCORES

No of injuries over 6 month period	Safety Score (out of a full score of 31 points)	
	u28 low score	>29 high score
Median	2.0	0-10
Range	2.0	0-30

No significant difference

p=0.771986 (Willcoxin 2-sample test)

There was also no significant difference between the number of injuries and the category of fees paid. (see Table 8)

TABLE 8

NUMBER OF INJURIES OVER 6 MONTH PERIOD
VS FEES CATEGORIES

Injuries (n)	Fees Category (Rands per week)	
	.30 n=19	<30 n=14
Median	2.0	0-10
Range	0-30	0-2

No significant difference

p-value 0.712053 (Wilcoxon Two-Sample Test)

4.4 MANAGEMENT OF POTENTIAL INJURIES

These were assessed by questions pertaining to:

- the presence of protocols to follow in the event of potential crises.

- contact with medical personnel.

- a first aid kit.

- the regular checking and restocking of the first aid kit.

- personnel trained to administer first aid.

- the comfort level of staff members in dealing with specific first aid procedures.

The findings are summarised in Table 9.

TABLE 9 PREPAREDNESS FOR POTENTIAL INJURIES

DESIRED MANAGEMENT	POSITIVE RESPONSE	
Injury recording system present	25	(75.8%)
Report major & minor injuries	25	(75.8%)
Report to parents and head of staff	26	(78.8%)
Protocol to follow in case of injury	27	(81.8%)
Protocol to follow in case of fire	11	(33.3%)
Established contact with trained medical personnel	31	(93.9%)
First Aid kit	32	(37%)
Staff member(s) with first aid/medical training	30	(90.7%)

Of the 33 centres, 32 had first aid kits of which 53.5% were kept in the principal's office. The first aid equipment had been donated to 21 of the centres. These were subsequently checked and restocked by the staff themselves. At 53.1% of the centres the first aid kits were checked on a monthly basis while 28.1% restocked quarterly (see figure 4). Kits stocked with essentials such as bandages, plasters, pain relieving medication, antiseptic ointments were present in 65.6% of the centres while 12.5% were lacking in essential items. (see Figure 5)

Figure 4: First-aid kit inspection

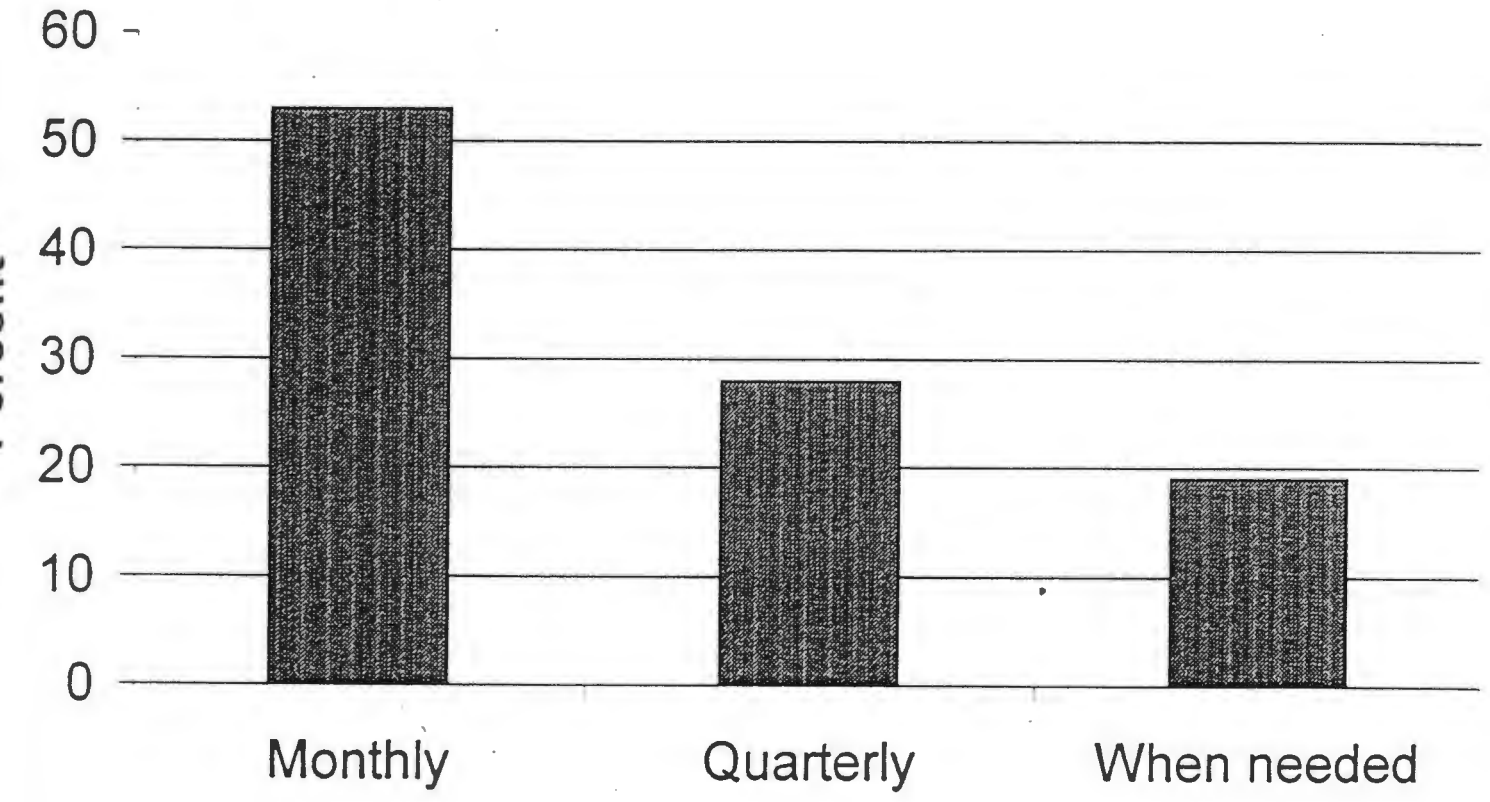
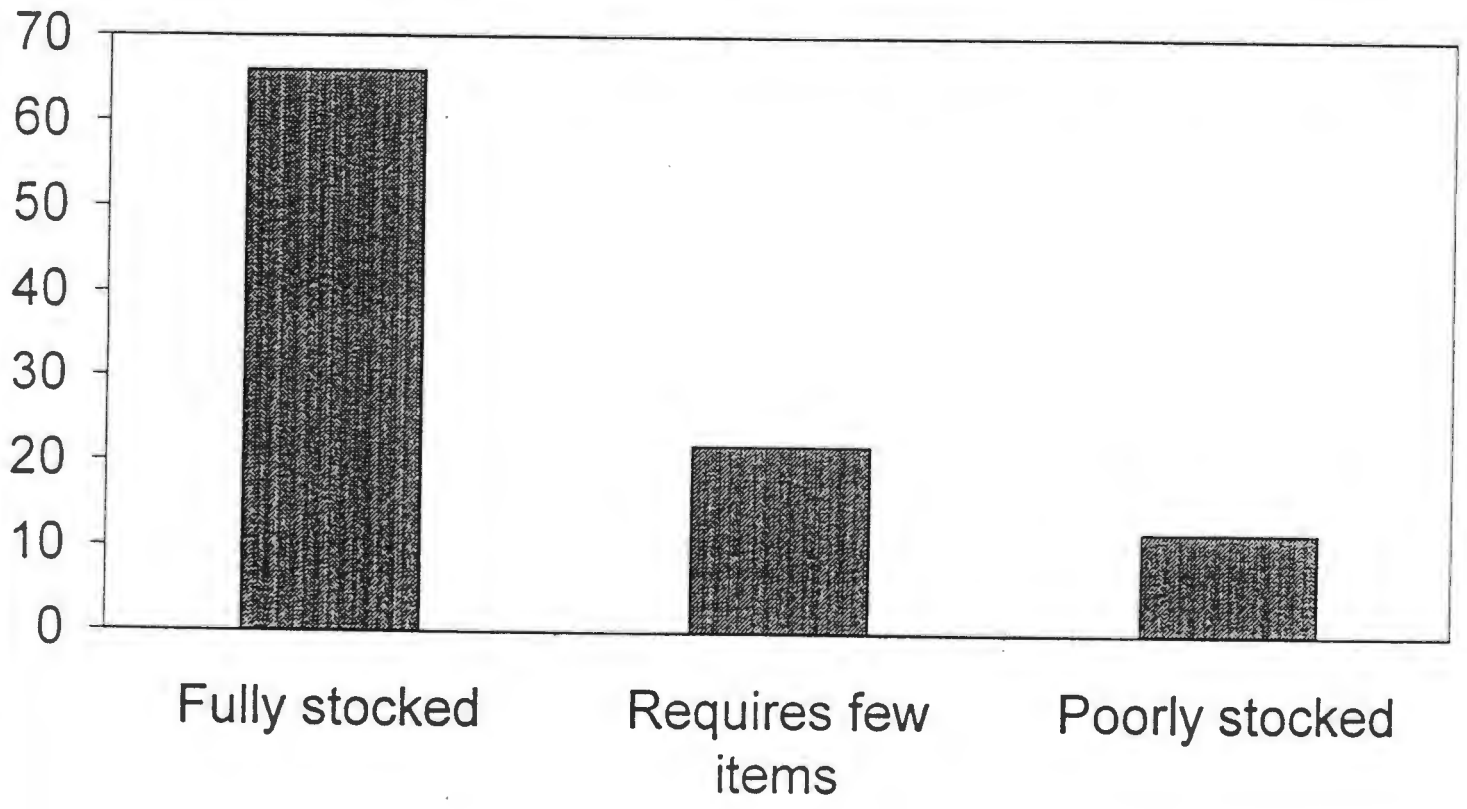


Figure 5: First-aid kit stock



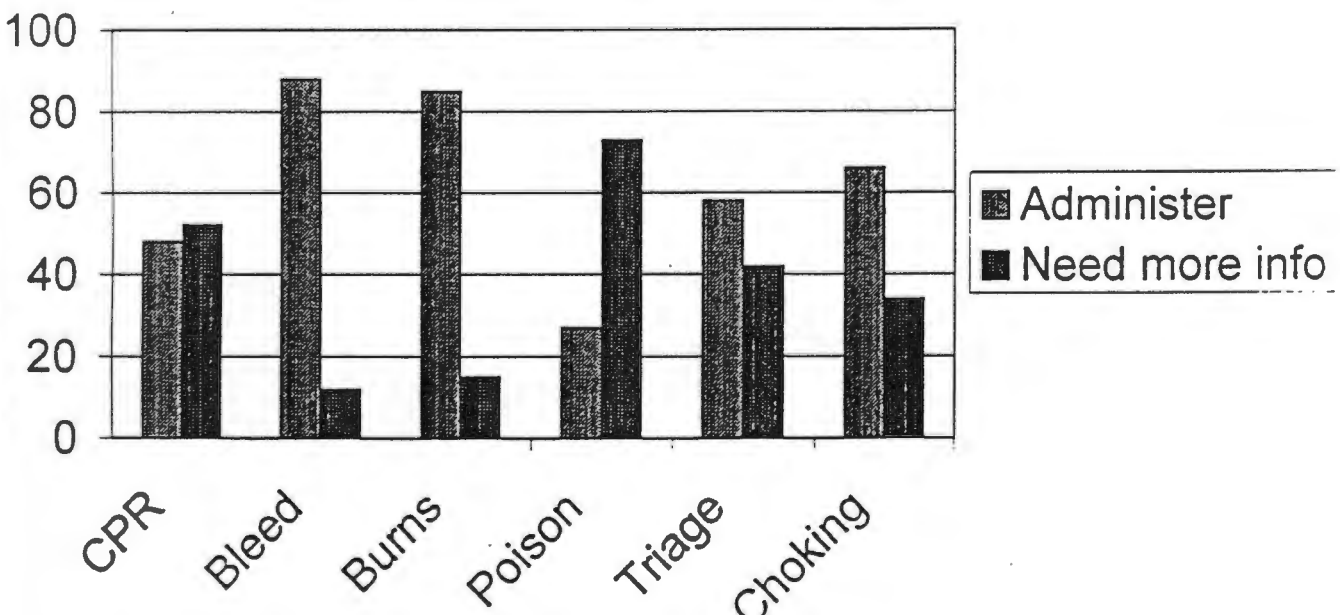
First aid skills were acquired as part of the general educare training in 70.7% of the centres, whilst 23.3% of the centres noted that staff members had supplemented their training with first aid courses offered for child-carers.

The competence of personnel to deal with various first aid situations is illustrated in Table 10 and Figure 6.

TABLE 10 ABILITY OF STAFF TO ADMINISTER VARIOUS ASPECTS OF FIRST AID

1st Aid Condition	Able to administer	Require more Info	Unable to manage
CPR	48.5%	42.4%	9.1%
Bleed	87.9%	12.1%	0
Burns	84.8%	12.1%	3.0%
Poison	27.3%	54.5%	18.2%
Triage	57.6%	27.3%	15.2%
Choking	66.7%	27.3%	6.1%

Figure 6: Perceived staff competence in first-aid situations



4.5 SAFETY AWARENESS

An awareness of child safety was gauged from questions relating to:

- the presence and nature of an injury reporting system.
- the presence of protocols for dealing with emergencies.
- the establishment of regular contact with medical personnel.
- the reporting of injuries to parents and head of staff.
- the teaching of safety issues to the children.

In 25 of the 33 centres, there were written records of injuries. There were injury registers at 4 of the centres. These comprised filed and dated records where details of the nature, mechanism, site, extent and management of injuries were noted. In the remaining 21 centres, injuries were recorded with varying degrees of detail into a general health book. This ranged from an injury description similar to those in the injury registers to a two-worded phrase such

as "Johnny fell".

At all the centres, injuries were verbally reported by staff members. In 25 centres all injuries were reported whereas in 8 centres only major injuries i.e those requiring medical attention beyond that delivered by the centre personnel, were reported. Injuries were reported to the head of staff as well as parents of the injured children at 26 of the centres. The remainder required injuries to be reported to the head of staff only.

Regular contact had been established with medical personnel, usually the primary health care centre sister, in 93.9% of the centres. There were protocols to follow in the event of an injury at 81.8% of the centres. Procedures to be followed in the event of a fire were established in 33.3% of the centres.

Parents were not informed of injuries in 21.2% of the centres.

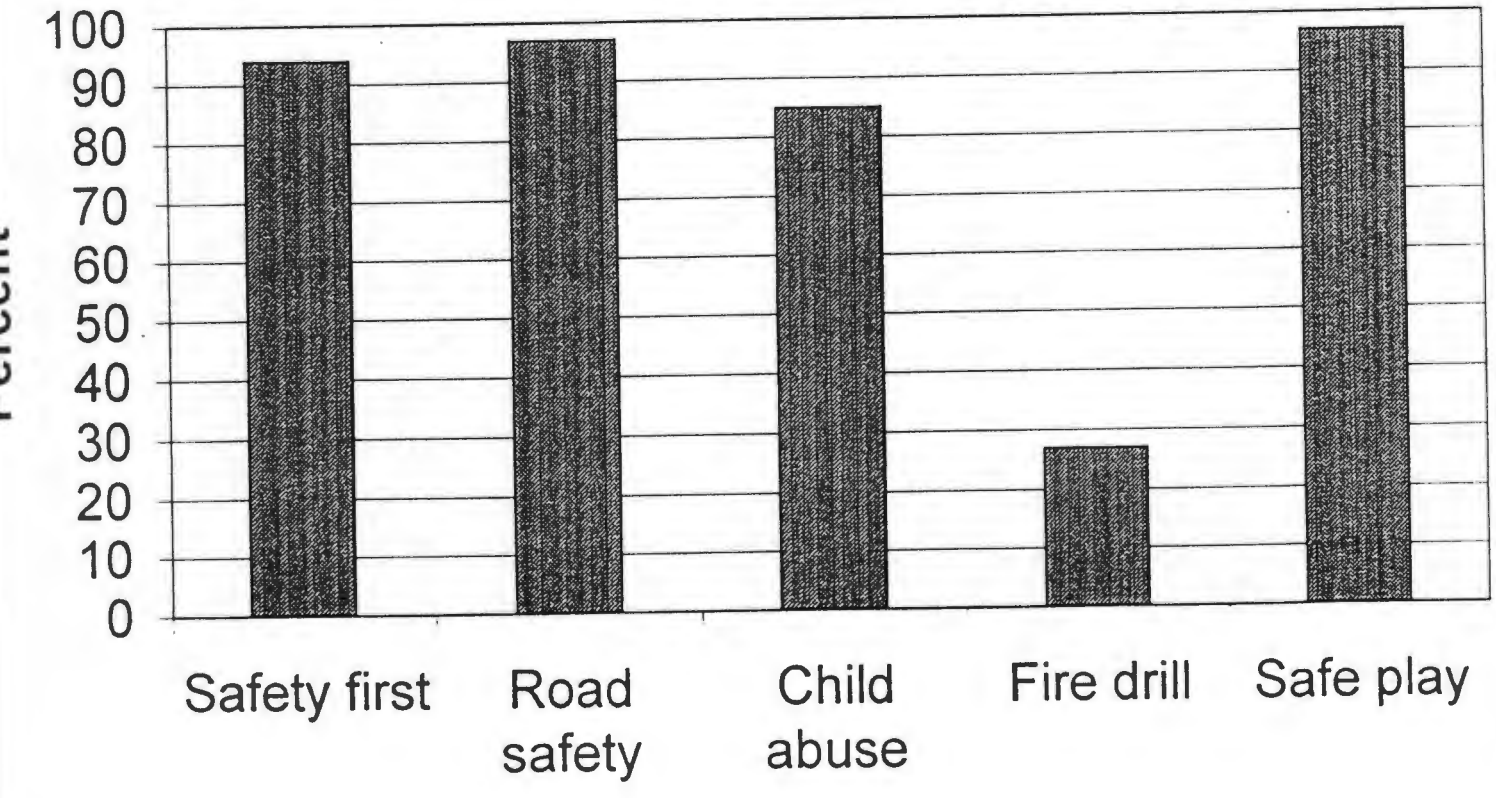
The inclusion of safety issues in the educational process is summarised in Table 11 and figure 7. Apart from fire-drill, aspects of safety such as safe play, road safety, child abuse alert and safety-first are taught to more than 80% of the centres.

TABLE 11 THE INCLUSION OF SAFETY ISSUES IN THE TEACHING PROCESS

TOPICS COVERED	POSITIVE RESPONSE
Safety-first	31 (93.8%)
Safe Play	32 (97%)

Road Safety	32	(97%)
Child abuse alert	28	(84.8%)
Fire drill	9	(27.3%)

Figure 7: Children taught safety issues



5. DISCUSSION

Findings of the research project will be discussed in the view of the original aims, limitations of the study design, and analysis of the results under the following headings:

5.1 Characteristics of the study population.

5.2 Aspects of Environmental Safety.

5.3 Number and Profile of Injuries.

5.4 Management of Potential Injuries.

5.5 Safety Awareness in Centres.

5.6 Findings not subject to analysis.

5.1 CHARACTERISTICS OF THE STUDY POPULATION

The population:

a) comprised only registered day care centres

b) was confirmed by geographical boundaries.

These factors could impact on the validity of the findings.

5.1.1 Registered centres only

In order to obtain registration with the PAWC Department of Welfare's Social Services' division, day care centres are subject to certain procedures. These include visits by environmental health officers to check aspects of health and safety. One can assume that a certain standard of safety is already in place. The safety status of centres which are not registered is entirely unknown. However, adequacy of safety standards and maintenance of safety norms subsequent to registration is also unknown. Therefore a study of safety in registered centres is warranted.

5.1.2 Population confined to a specific area.

This was chosen for practical reasons. Due to time and financial constraints, the study was conducted entirely by the researcher, whose workplace was located in the proximity of the area chosen for study. Centres were accessible; the area was familiar to travel in and research could conveniently be conducted before work or during lunch-breaks.

Residents comprise mainly members of a lower socio-economic class but the spectrum ranged from unemployed to successful self-employed or professional persons. This was reflected in fees paid ranging from R10 to R40 per week. The results thus cannot be generalized to the greater Cape Town with its vastly different communities. This area could however be similar in demography to other working-class "coloured" communities in the urban Western Cape.

5.1.3 Size of study population

There were 33 day care centres investigated for the purpose of this dissertation. A small sample like this could impact on the statistical analysis of the findings.

5.2 ASPECTS OF ENVIRONMENTAL SAFETY

Safety was gauged from the centre's compliance with a check-list of safety features which were adapted from the PAWC guidelines for registration of day care centres in the Western

Cape.

A limitation of the study design was that the safety check-list was adapted from existing guidelines which were formulated by various stakeholders including the PAWC Department of Welfare, local government's Health Department and Educare organizations. The recommendations have not been verified or based on empirical scientific data, but were concluded after consultation, deliberation and adaptations of guidelines put in place by predecessors. For the purposes of this dissertation an assumption was made that the recommendations governing safety were appropriate for the communities targeted.

However, the study also set out to describe adherence to these guidelines in centres where they were alleged to be in place already. There was a high level of positive responses for compliance with safety features as indicated by a median safety score of 29 out of a full score of 31 points. The process of registration could possibly be highlighting safety issues to such an extent, that follow-up in the centres is maintained.

The kitchens displayed the highest level of safety compliance (100%) and the outdoor area the lowest (73.86%). This could be a reflection of a number of factors, eg kitchens are seen as potentially hazardous and thus awareness of safety is heightened for this area. As space is limited and access denied to children, it is also more amenable to stringent control by adults working in the centres.

The playgrounds are perceived as areas for freedom of movement and therefore less likely to be strictly controlled by the caregivers. In addition the space is larger and by its nature

contains potentially hazardous elements such as playground equipment and hard surfaces. In addition, due to accessibility to outside influences, vandalism could be responsible for features such as broken fences, hazardous objects eg. broken bottles in the playground and destruction of playground equipment. Repair of these features requires money which may be in short supply.

Another positive finding was that the indoor and outdoor premises exceeded the recommended $1m^2$ per child in all but one of the centres studied. The median indoor area of $32m^2$ per child and the median outdoor area of $10.6m^2$ per child raise doubts as to the adequacy for outdoor area of only $1m^2$ per child as a recommendation.

There was no significant difference in the safety scores of centres where fees paid per week were in the R10-R25 range as opposed to those where fees paid were R30-R40. This may be due to many factors not actually tested for but the inference one can make, is that from a safety perspective there seems to be no advantage in enroling one's child in a "more expensive" day care centre. In a poor community such as this, where the financial responsibility of educare prior to former schooling, falls mainly on parents this could be an important message to pass on to the parents.

5.3 NUMBER AND PROFILE OF INJURIES

The data obtained can only be seen as indicative of trends, and not as scientifically valid. The study design required a review of existing records kept by the centres of the injuries

occurring in the preceding six-month period.

If the objective of the study was to accurately gain information on injury rates and mechanisms, a standardized recording system should ideally have been in place, or data collected prospectively to enable statistical analysis and comparison. Particular attention should be paid to the details surrounding the child and the injury, where it occurred, extent, mechanism and treatment. There was great variation in the manner in which injuries were recorded in centres where formal records were kept.

5.3.1 Number of injuries

Here, certain patterns become apparent. An estimated incidence in day care centres of 35.6 injuries per 1000 children over a 6-month period seems high when compared to the data for all non-fatal injuries for the Western Cape from a Cape Metropole study which quotes overall an annualized injury rate of 90 per 1000 population for the under 5 age group[15]. However, "coloured" children accounted for 60% of all victims suggesting a higher rate of injuries in this population group which may be reflected by the information in this study which was conducted in a "coloured" community. Unfortunately, no data regarding the overall injury rate for this particular community could be found.

Another feature which emerged is the number of injuries seen in light of the nature of reporting. The written records reflected a median of 2 injuries per centre with a range of 0 - 30. In the centres where the injury figures were based on estimates by principals, the median number of injuries was one injury per centre with a range of 0 - 2. There was a significant

difference in the median injury rate between the two reporting systems for the centres. Also of note is that two of the centres with the highest numbers of recorded injuries viz 10 and 30 were also 2 of the 4 centres where very detailed accounts of all injuries were recorded and filed. The number of injuries per centre could therefore be a reflection of the accuracy of reporting rather than the safety of the centre.

That factors other than environmental safety are responsible for injuries can also be borne out by the lack of significant difference between injury figures for centres with safety scores below and above the median safety score.

Once again the "class" of centre as reflected by the fees paid did not seem to have an impact on the number of reported injuries with "poorer" centres deemed to report as many injuries as the "wealthier" centres.

5.3.2 Type and Mechanism of Injuries

This information was available in varying degrees of accuracy depending on the reporting system and the nature of the injury. Once again, only trends can be commented on.

Major injuries were reported on accurately or, in those cases where there were no written records, recalled with attention to detail. An estimated 84% of injuries were minor i.e were managed by staff in the centre itself. This by definition could also reflect the competence of the staff to deal with injuries. Studies from other countries have echoed the nature of most day care centre injuries being trivial.

Also, similar to studies from other countries and Red Cross Children's Hospital trauma unit figures most of the injuries occurred in the playground and were sustained because of falls[11,16,25,32]. This despite a lesser period of time being spent in play could be because of the hazardous nature of the playground itself, the outside area for all centres ranked lowest in its average safety score. However, this cannot be conclusively stated as other factors could be responsible such as the increased freedom of the play area facilitating increased boisterousness and natural exploratory behaviour. There could possibly be less supervision of outside activities.

The Red Cross Children's Hospital Trauma Unit data on injuries in day care centres deserves comment[32]. It is disturbing that an estimated 12.8% of all injuries were caused by assault, including sexual assault, physical assault and child-on-child violence. In this study an

estimated 15% of all injuries involved a second child for example through direct assault or by being pushed. This project did not specifically address non-accidental injury. Due to the sensitive nature of the subject it is unlikely that such information, which could reflect negatively on the centre would have emerged from the interview setting.

Anectdotally, it was with interest that the researcher received information from a private patient regarding the only registered centre whose principal had requested not to be included in the study. The patient had removed her 4 year old daughter from the centre after the child had allegedly been slapped on two occasions by the principal - this had come to the mother's attention after questioning her daughter about bruises on her arms.

5.4 MANAGEMENT OF POTENTIAL INJURIES

The ability of centres to deal with injuries was gauged objectively from the presence of trained staff, well-equipped first-aid kits and protocols to follow in the event of crisis. Staff were also asked to comment on their own perceived capability of dealing with various first-aid situations. This was obviously subject to interpretation.

The centres were mostly well resourced to manage potential injuries. (see Tables 9 and 10)

Subjectively though, the majority of the staff felt competent to manage only bleeds, burns and choking as reflected in 87.9; 84.8 and 66.7% of the responses respectively. Knowledge about essential first aid procedures such as Cardiopulmonary Resuscitation, poison management and treating minor and major injuries, were regarded as inadequate in 51.5%, 72.7% and 42.5% of the responses respectively (see Table 10 and Figure 6) Perceived inadequacies could be as a result of the lack of experience in those cited first aid situations; lack of opportunities to refresh first aid skills and knowledge or genuine incompetence. This requires follow-up to elucidate the real causes and propose possible solutions.

5.5 SAFETY AWARENESS

This was inferred from questions relating to the infrastructure in place such as injury reporting systems, protocols to follow, communication with parents and the teaching of safety issues to children.

One of the reasons for neither standardizing the injury reporting system nor prospectively collecting statistics in all the centres on injury numbers and mechanism, was to gain insight into the manner in which injuries were reported.

As stated before, this varied greatly amongst the 33 centres with 8 not having any written records and only 4 having detailed injury reports. Besides making interpretation of data for this segment of the study difficult, it also raises concern regarding safety awareness amongst those in charge of centres where children are generally presumed to be safe from danger hazards.

The most important safety issues such as road safety, safe play, safety-first and child-abuse alert seem to be included in the curricula in more than 80% of centres. However, only 27% of centres taught fire-drill. In addition, only 33.3% of centres had a definite protocol to follow in the event of a fire. Even though fire as a mechanism for injuries is not common, the outcome in unprepared situations is potentially disastrous. Furthermore in the current violent climate prevalent on the Cape Flats where the number of innocent victims of petrol bombs, hand grenades and other war-like arsenal is increasing, it is imperative that those entrusted with the safekeeping of children are equipped to cope with the consequences of these explosive attacks.

5.6 OTHER FINDINGS NOT SUBJECT TO ANALYSIS

This research project revealed far more than what an analysis of the findings will demonstrate. It provided me with the opportunity to meet many dedicated people committed to ensuring the safety of children. These ranged from those in provincial government departments, local authorities' offices, educare organizations, child safety bodies, academic institutions and of course the child-carers who proudly deliver a service of a high standard despite less than ideal circumstances. It allowed me access into the deprived world of the Cape Flats child for whom the bright and cheerful environment of the day care centre represents a safe enclave from the harsh realities of a violent society and for whom I was a fêted visitor to be sung and danced for (in exchange for a few sweets!).

6. CONCLUSIONS

This study must be reviewed in the proper perspective i.e that it provides limited insight into aspects of child safety in registered day care centres located within a defined Cape Flats community.

The situation in unregistered day care centres and day care in other communities in the greater Cape Town still remains an unknown entity. This dissertation demonstrates that adherence to the recommended guideline for safety to procure registration is of a high level. However, it fails to demonstrate any superiority in environmental safety of centres demanding higher fees structures over those requiring lesser payments. Similarly, the number of injuries assumed to have occurred over the preceding 6 months is no greater in the centres falling into the lower fees-category. These findings are important to demonstrate to parents in this working-class community who have largely to bear the burden of educare costs, that paying fees does not imply a more safe environment.

The lack of standardized injury reporting is apparent. To heighten safety awareness and compile data which is precise and allows comparisons between centres, a detailed standardized injury reporting system should be instituted. The number and profile of injuries can only be viewed in the light of trends suggested by this research. Numbers of injuries are subject to variation and figures should best not be quoted. In this study the majority of injuries tended to occur outdoors and were of a trivial nature easily managed in the centre.

Day care centres were found to be adequately resourced, both with trained personnel and

equipment to manage most potentially injurious situations. However, the staff's own perceptions of their capabilities revealed a lack of confidence to deliver essential aid in situations requiring CPR, management of poison ingestion and prioritizing the relative importance of different injuries. This aspect warrants further investigation as to the reasons for the perceived inadequacies and presentation of possible solutions.

Finally safety consciousness was gauged indirectly from the interviews conducted. A certain level of awareness seems apparent but the need to improve preparedness for potential fires must be fed back to those in charge of centres. The day care centre as a vehicle for enhancing parental safety awareness should also be suggested.

7. RECOMMENDATIONS

In addition to the recommendations being stated as an essential component of this dissertation, various role players need to be informed of relevant suggestions.

7.1 To those concerned with research into child safety issues the subject of child safety in day care centres require further investigation:

a) in other study population groups.

b) in day care centres currently not registered with PAWC.

7.2 A particular aspect of child safety not covered in this research project viz child abuse needs to be investigated. Statistics from Red Cross Children's Hospital's Trauma Unit, indicate that child abuse accounts for 32% of all injuries presumed to occur in day care centres which present to the hospital. This disturbing statistic demands urgent attention.

7.3 As part of the registration criteria set by PAWC, a standardized injury reporting system should be instituted in day care centres. These should cover aspects of the child's full identity; nature of the injury sustained and the treatment required. Copies of the reports should be signed by the head of the day care centre and the parent/guardian of the child/children injured. These statistics can then be reported to a central recording centre attached to PAWC or to a creche forum operating at district

level which conflicts data.

7.4 Child-care worker training bodies should incorporate first-aid skills into the basic training programme of all child care workers. Opportunities should exist for access to refresher/update courses on first aid skills for child-care workers.

7.5 Teaching children about child safety issues including sensitive issues such as child abuse should be incorporated into educare curricula. This can be emphasised by training bodies and incorporated into registration criteria.

7.6 Day care centres should develop the infrastructure and systems necessary to deal with all potential crises on the premises including fires.

Finally, it can be said that this dissertation has demonstrated that children in the registered day care centres surveyed, enjoy an acceptable standard of safety. Concerns are raised about the level of safety consciousness amongst care-givers and the disregard of issues such as fire awareness and child abuse as safety priorities.

It is hoped that the mere presence of the researcher may have raised the level of safety awareness. In addition, aspects warranting further research such as unregistered day care, home-based care and non-accidental injuries in this setting became apparent.

Feedback to relevant organizations and departments of these findings should hopefully contribute to an improved level of child safety.

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APPENDICES

APPENDIX A: SAFETY STANDARDS CHECKLIST

Tick (where appropriate)

1. **Name of day care centre:** .....

2. **Fees (R/Week):** .....

3. **Children numbers:** .....

   Total .....

   Aged 0-2 years .....

   3-6 years .....

4. **Staff:**

   Numbers of staff members trained in child care .....

   Number of untrained staff/volunteers .....

5. **Premises:**

(i) **Formal structure** .....

   Specify (house, hall, custom built) .....

(ii) **Kitchen(s):**

- **present** .....
- **inaccessible to children** .....
- **cooking facilities:**
  - a) **electric** .....
  - b) **gas/paraffin** .....
  - c) **open flame** .....
- **storage adequate and safe** .....
- **safe floor covering** .....

(iii) **Indoor Space:**

- **area in m^2 (after furniture has been placed)** .....
- **storage safe & adequate** .....

(iv) **Toilets/washbasins:**

- **running water** .....
- **flush toilets** .....
- **step-up to toilets/basins** .....
- **child-sized toilets** .....
- **separate adult facilities** .....
- **safe water waste disposal** .....
- **supervision of toilet activities** .....
- **water thermostatically controlled** .....
- **state number of:**
  - **toilets** .....
  - **potties/commodes** .....
  - **washbasins** .....

(v) **Walls/floors/ceilings/windows:**

- **solid floors** .....
- **non-slip floor coverings** .....
- **walls/floors splinter free** .....
- **child-safe windows** .....
- **burglar bars** .....

(vi) **Fence:**

- **present** .....
  - **type** .....
- **safety gate** .....
  - **locked** .....
- **cannot be climbed over** .....

6. Equipment:

(i) **Safety equipment, precautions:**

- **Hazardous items (poisons, detergents) out of reach** .....
- **Fire extinguishing system:** .....
  - **Extinguishing equipment** .....
  - **Bucket and sand** .....

(ii) **Indoor:**

- **adequate storage of play/educational tools:** .....
- **non toxic and lead free art supplied** .....
- **supervised play** .....
- **no obvious hazardous objects e.g. Exposed heaters** .....
- **adequate number of child tables and chairs** .....
- **splinter-free and sturdy tables and chairs** .....

(iii) **Outdoor (where applicable):**

- **area in m^2** .....
- **state presence of number of:**
  - **jungle gyms** .....
  - **swings** .....
  - **tyres** .....
  - **sand pit** .....
- **presence of:**
  - **safe water-play area** .....
  - **only non-toxic plants** .....
  - **no obviously hazardous objects, e.g. broken bottle** .....
  - **impact absorbing/soft surface below equipment** .....
- **Height of highest item of playground equipment** .....

APPENDIX B : INTERVIEW SCHEDULE

DEALING WITH INJURIES IN THE CENTRE

(To be answered by principal/head of staff)

1. Do you have an injury register/reporting system?

Yes ☐ No ☐

2.(a) If "yes", how many injuries were recorded in the past 6 months?

.....

(b) If "no", can you estimate the injury rate for the past 6 months?

.....

3. State the number and examples of:

a) Minor e.g. cuts, bruises requiring care by yourselves?

Yes ☐ No ☐

b) Major, requiring care by medical personnel?

Yes ☐ No ☐

4. Did they occur:

indoors ☐ playground ☐ other (specify) .....

5. Do you have:

a) Formal protocol to follow in the event of an injury?

Yes ☐ No ☐

b) Procedure for emergencies e.g. fires?

Yes ☐ No ☐

c) Established contact/accessibility to medical assistance e.g. clinic/GP

Yes ☐ No ☐

If yes, specify: .....

6.(a) Do your report:

– **All injuries?**

Yes ☐ No ☐

– **Only major injuries?**

Yes ☐ No ☐

(b) Does your staff report injuries?

head of staff ☐ parents ☐

7.(a) Do you have a First Aid kit?

Yes ☐ No ☐

(b) Where is it kept?

.....

(c) Is it checked regularly?

Yes ☐ No ☐

How often?

.....

(d) Origin of Kit

.....

(e) List the contents as it looks today:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

8.(a) Do you have personnel trained in First Aid?

Yes ☐ No ☐

(b) How many:

.....

(c) How was training received (specify)?

e.g. as part of general training
specific safety programme for child care workers
St Johns type courses

.....

(d) Are your staff comfortable dealing with:

	Yes	No	More info needed
• mouth to mouth resuscitation			
• choking			
• bleeding			
• burns			
• suspected poisoning			
• sorting injuries into major/minor i.e. casualty triage			

9. Do any of the following form part of your educative process?

	Yes	No
• fire drill		
• safety first		
• road safety		
• child abuse alert		
• safe play		

Thank you kindly for your co-operation !

SIDDIQUE JUNIOR MADRESSA

c/o Siddique Mosque, cnr. Market & Salberau str., Elsics River PH: 932-9094

ACCIDENT REPORT

ACCIDENT REPORT OF.....

ON .....

TIME OF ACCIDENT.....

DESCRIPTION OF WHAT HAPPENED.....

.....

.....

.....

STAFF WHO WERE PRESENT AT THE TIME OF ACCIDENT:

.....

ACTION TAKEN:.....

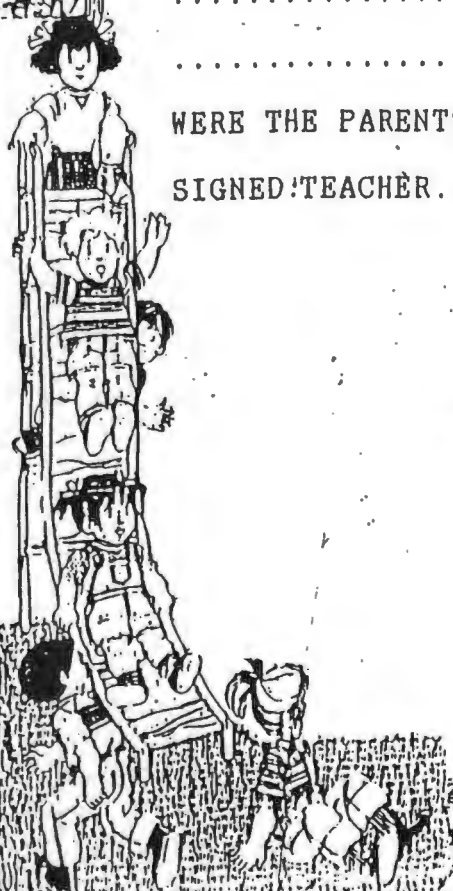
.....

.....

.....

WERE THE PARENTS NOTIFIED:.....

SIGNED:TEACHER.....PRINCIPAL:.....



APPENDIX C

SAMPLE INJURY

REPORT FORM