

CHILD INJURIES AT HOME

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CHILD INJURIES AT HOME

– Prevention, Precautions and Intervention with focus on scalds

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*"Powerful ways of acting spring from
powerful ways of seeing"*
(Marton & Tsui, 2005, s. 5)

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ABSTRACT

The overarching aim of this PhD-thesis was to increase the knowledge concerning children's (0-6 years old) exposure to accidents at home by describing parents self-reported precautions taken at home to decrease the risk of child injuries (I), the extent of burn and scalds (II), the parents' opinions about the course of events in child accidents (III) and in an intervention study investigate the effect individual-based extended information has on mothers' attitudes towards child injury and injury prevention (IV) and to taking precautions at home (V).

The data collected in the five papers all comes from a city in southern Sweden. The study (I) has a cross sectional survey design. The data in paper I were collected from the answers by parents of 10 month old children to a questionnaire. The questionnaire prompted responses related to parents' background and socio-economic factors as well as questions about any precautions they had taken to decrease accident risks in their home. The questions focused on actions parents had taken after receiving advice concerning child accident prevention given to them during the eight-month Child Health Care-nurse assessment in which they had taken part. Thirty-two percent of the parents complied with less than half of the suggested precautions. Univariate odds ratios (OR) and 95% confidence intervals (95% CI) were calculated to investigate the associations between compliance and the parents' different background and socio-economic characteristics. The variables: foreign born, low occupational level, 12 years education or less, rented housing and information provided by Child Health Care-clinics proved to be statistically significant for the non-compliant group. Multiple logistic regression analysis was performed in order to adjust the estimated odds ratios for the influence of potential confounders such as parents' nationality, educational and occupational level, where they had received the information and their type of habitation. After adjustment, the variable nationality and educational level remained significant. The data in paper II was collected from medical records from a retrospectively designed register study.

Children injured by burns (0-6 years old) consulting a University Hospital or one of the Health Care Centres (n=21), during the year 1998 and the year 2002, were included. The chi-squared test was used to analyse differences in nominal data and cross-tables were used to analyse the proportions between the characteristics of the injuries and the sex, age and nationality of the child.

There were 148 children injured by burns of which 80% suffered scalds, caused by hot liquid (71%) or hot food (29%). The largest group was boys between one and two years old. Children of foreign born parents were more frequently affected and the extent of their injuries was often greater. The data collection method used in paper III, was tape-recorded interviews with a qualitative interview study design, analysed by content analysis, with parents of 20 children (0-6 years old) who had recently suffered from scalds. Parents spoke of their perceptions about the causes of the scalds. The analysis resulted in eight categories and two themes. One theme was 'Deviation from the normal' and could be described as when something unusual happened like a sudden visitor or when a family member was tired, stressed or ill. It could also be when something had broken in the kitchen or routines were changed. 'Misjudgement of the child's capabilities' was the other theme; this concerned the children's preventive capacity, rapidity and reach. It was noted that it can be hard for the parents to keep up with the speed of the development of their young children (9 month- 2 years). The parents expressed that they often didn't realise their child's capacity until the accident occurred. The intervention study with a comparison group has a quasi-experimental design (IV, V). Individual-based extended information, with empowerment as the approach, was given to a group mothers at home-visits and workshops, living in two separate areas of the city and with a low level of education. In total, 99 mothers of children under the age of seven months participated. The mothers were selected through the local Child Health Care authorities. Observations were made and bivariate analyses were established to see if the intervention had an influence on the mothers' attitudes towards child injuries and injury prevention at home (IV) and the precautions they took against child accidents at home (V). Mothers who received the intervention significantly improved their attitudes toward the first question that asked were child injuries happen this also compared with the mothers in the comparison group (OR=2.3, CI=1.3-4.3). However, no significant improvement of attitudes toward child injury prevention was noted neither in relation to the mothers' SOC-scores (IV). The results showed that the intervention had a significant impact on improving the precautions the participating mothers introduced to protect their children against burn and scald injuries in the home and further, in relation to a comparison group (V).

ORIGINAL PAPERS I-V

This PhD thesis is based on the following papers which are referred to by Roman numerals:

I. Carlsson, A., Dejin Karlsson, E., Håkansson, A. & Udén, G. (2006) Compliance with child accident precautions by the Child Health nurses. *Journal of Child Health Care*, 10 (2): p. 149-59.

II. Carlsson, A., Udén, G., Håkansson, A. & Dejin Karlsson, E. (2006) Burn injuries in small children, a population-based study in Sweden. *Journal of Clinical Nursing*, 15 (2): p. 129-34.

III. Carlsson, A., Udén, G., Håkansson, A. & Pilhammar Andersson, E. (2009) Parents' perceptions of influencing factors related to scald accidents among children. *Pediatric Nursing* (submitted).

IV. Carlsson, A., Bramhagen, A-C., Jansson, A. & Dykes, A-K. (2010) Mothers' Attitudes towards Child Injuries and Injury Prevention at Home – an intervention study. *Journal of Clinical Nursing* (submitted).

V. Carlsson, A., Bramhagen, A-C., Jansson, A. & Dykes, A-K. (2010) Precautions taken by Mothers to Prevent Burn and Scald Injuries to young Children at Home – an intervention study. *Scandinavian Journal of Public Health* (submitted).

Papers I and II have been reprinted with the permission of the respective journals. Anna Carlsson contributed to the publications by taking part in the planning of the four studies, collecting all the data in three of the studies (I-III), collecting the majority of the data and made the intervention in the fourth study (IV-V) and further, wrote the five manuscripts with support from the co-authors.

ABBREVIATIONS

CH	Child Health
CHC	Child Health Care
CI	Confidence interval
GNP	Gross National Product
HCC	Health Care Clinics
OR	Odds ratio
SOC	Sense of Coherence
UMAS	Malmö University Hospital

DEFINITIONS

Accident and injury

The terms accident and injury are used in accordance with the definitions adopted at the first World Conference on Accident and Injury Prevention, Stockholm 1989 (WHO, 2004). An accident is defined as an unintentional event that results or could result in an injury, whereas injury is a collective term for health outcomes from intentional or unintentional traumatic events.

Burns

Injuries to tissues caused by contact with heat, steam, chemicals, electricity or the like.

Scalds

Injuries to tissues caused by contact with hot liquid.

Compliance

In this PhD-thesis compliance describes to what extent parents followed advice given by the Child Health Care-nurses on how to decrease the risk of child injuries in the home.

Origin

If one or both parents were born in Sweden they were considered as Swedish born and if both parents were born in any other country than Sweden the parents were considered to be foreign born (I, II, III). In paper IV and V only the mother's origin was requested and she was considered to be Swedish if born in Sweden.

Empowerment

The definition of empowerment used in the present PhD-thesis is according to TEngland's (2007a) definition: We achieve empowerment (in a combined sense) when a person (or group) A; acts towards (in relation to) another person (or group) B; in order to support B (by creating the opportunity and environment, and giving 'expertise' (support) in gaining better control over (some of) the determinants (those relevant for the situation or profession) of her ('quality of life') through (necessarily) an increase in B's knowledge (self-knowledge, consciousness raising, skills development or competence), or health (e.g. autonomy, self-confidence, self-efficacy, or self-esteem) or freedom (positive and negative), and this action of A towards B involves minimizing A's own 'power' (or influence) over B with regard to goal/problem formulation, decision-making and action, and B seizes (at least) some control over this situation or process (goal/problem formulation, decision-making and acting).

INTRODUCTION

This PhD-thesis aims to increase the knowledge concerning children's (0-6 years old) exposure to accidents at home by describing parents self-reported precautions taken at home to decrease the risk of child injuries (I), the extent of burn and scalds (II), the parents opinions about the course of events (III) and in an intervention study investigate the effect that individual-based extended information has on mothers' attitudes towards child injuries and injury prevention (IV) and also on precautions taken at home (V). In the Child Health Care (CHC), advice and recommendations are tailored to the parent's need for information regarding suitable precautions to take to decrease the risk for child injuries in the home in relation to their child's development. The advice is offered continuously throughout the child's first six years. The content of the advice is regulated in a National Programme that all children in Sweden are offered from birth until they start school.

Few studies describe to what extent parents are following the advice they are offered and which factors influence the parents' compliance and further which factors influence the risk for child accidents. In this PhD-thesis the examples of burns and scalds given (II, III, V) are described as being two of several possible injuries that can happen to children at home.

BACKGROUND

Child accidents

Child accidents and society

In an international perspective, an obvious connection is found between gross national product (GNP)/per capita and mortality resulting from accidents. In step with an increasing GNP in low-income countries, the risk of child accidents increases due to increasing industrialisation and transport traffic etc. The frequency of child accidents culminates when the low-income countries reach the same financial level as the average countries in the world, and then decreases in step with increasing welfare. In contrast to other health risks, accidents have during the last three centuries played a continuous and important role as a cause of child mortality (WHO, 2009; Mölsted et al, 1999).

Seen from an international perspective, Sweden has a low incident of child accidents and child mortality. However, injuries are the main cause of child mortality in Sweden among children between 1 and 14 years old (WHO, 2009). Most accidents to children between 0-3 years old occur in the home (Swedish Rescue Services Agency, 2007). In a survey made in southern Sweden, scalding was found to be the most common cause of burn injuries among young children (Freccero et al, 2000). In a recently published study from Turkey (Balseven-Odabasi et al, 2009) scalding was also found to be the cause of 77.7% of the burns among children. In a descriptive study by Carlsson et al (2006a) it was shown that boys aged 1-2 years were those who most frequently suffered from burn and scald injuries, related mostly to cooking or eating. Most often the accidents occurred when an adult was close by and were due either to a lapse of parental supervision or a lack of precaution (Reis et al, 2009; Carlsson et al, 2006b; Drago, 2005). For immature children the pain and trauma of treatment, hospitalisation and emotional adjustment, plus long-term rehabilitation and the

cosmetic disfigurement makes burn and scalding injury prevention an important matter (Ramakrishnan et al, 2007; Mukerji et al, 2001).

Child accident risks

A study by Kendrick et al (2007) investigated the association between the development in children and the risk for accidents. The findings revealed that the physical development in young children together with their gradually maturing preventive capacity up to the age of 10-12 years was associated with a higher risk for accidents. The study also showed that the child's developing sight field and hearing affects their preventive capacity. Further the young child's limited capacity for understanding language also has a negative influence on their possibility to cope with eventual risk situations in their environment.

The relationship between the children, their carer, the risks in the home and the circumstances occurring prior to the accident all play a part if an accident will occur. If there is a lack of co-ordination between these factors the risk for accidents increases (Andersson 2002). The personal risk for the child varies depending on the risk for accidents in the home but also depending on the personal variations of handling the risks.

Questions to be asked concerning the personal risk to the child are; if the child noticed the risk, if the child knows how to avoid the risk and if the child is able to avoid an accident. The personal risk factor is also influenced by the question; was there any warning signal immediately before the accident? Any warning signal will initiate one or more of the human senses of sight, hearing, feeling, taste or smell. A premonitory sign of the danger can be influenced by individual factors such as tiredness, illness and stress (Andersson, 2002).

A Swedish study by Gustafsson (1975) found that one important reason for why children aged around 2 years suffer more often from accidents is the difficulty parents have to compensate for the child's lack of understanding of the danger. Gustafsson (1975) also states, that the parents' capabilities to tailor their knowledge towards the individual child, and furthermore, the personality of the child and the risks present in the child's environment are vitally important for preventing the risk for accidents.

According to Sand (1991), psycho-social factors have a great influence on the risk for child accidents. Sand claims that the most important psycho-social factors are that of the family's traditions, living habits, the capability of the carer to

handle menacing situations and solve conflict, cultural characteristics (especially the opinion about the child's ability to socialise and also how to bring up a child) and psychological characteristics such as the attitudes and personalities of the child and the parents.

Child accidents, the course of events

Andersson (2002) claims that to be able to prevent future accidents it is important to have detailed knowledge concerning the course of events of historical accidents. Factors influencing the course of events and factors influencing the building up of the risk situation prior to an earlier accident are important to know. Using this information, the course of events behind an historical accident be analysed and used to prevent future accidents and to discern any specific risk groups to whom special accident prevention consideration should be given.

When studying the child and the carer's behaviour during the course of events the risks can be seen as characteristics regulated by natural law. In this way the occurrence of accidents does not appear to be by chance but rather as the logical effect of the situation. An accident's course of events is characterised by its sudden occurrence however, there is always some consequential extension over time that can be studied. The course of events can be analysed with the help of questions concerning what were the factors that gave notice of the danger, if the danger was noticeable and if the danger could have been avoided. Because the course of events in the case of an accident is a very fast process it is the timing that is the factor that determines if an accident will result in an injury or not (Andersson, 2002).

Prevention

Health theories

Nordenfelt (1991) looks upon the human being as an active creature within social relations and he takes a holistic approach. From this point of view, health and illness can be seen as a phenomenon that influences a human beings ability to act within a social context. Already in 200 B.C. Galenos expressed a similar definition of health which he saw as: 'a state in which we neither suffer nor are prevented from the functions of daily life'. Most of the followers of the holistic health theory stress the feeling of wellbeing and the ability to act. There is an obvious connection between wellbeing, suffering and the ability to act and those who feel strong also contribute to their own strength. A cause of reduced ability to act is pain or other forms of suffering but the opposite is not always valid. An example of this is a person with a clearly reduced ability to act but

who does not always experience suffering. This is an important distinction to make in health theories within the health care professions. It is from this distinction the holistic equilibrium theory arose. The theory was introduced by Caroline Whitbeck and further developed by Pörn (1993). The balance in the equilibrium theory means the balance between a human's ability to act and her goal for the action. A consequence of this reasoning will be that ill-health and disease are different concepts. Ill-health may occur without disease if a person's ability to act is limited compared to her/his goals. A disease can be the cause of an ill-health occurrence but is not ill-health in itself. Other causes of ill-health can, in the same way as disease, lead to ill-health, for instance injuries and defects. Apart from disease, injuries and defects, personal problems can also be the cause of ill-health.

'Quality of life'

Brülde (1998) argues that the following questions are vital in order to find a useful and almost complete theory of 'quality of life': 'What is it that has a final positive or negative value to an individual?; How should one decide if the circumstances are finally good or bad for a specific individual?; How should one decide where on the 'quality of life' span an individual is at any certain moment? That is to say, how good is life for a specific individual, as a whole, at that certain moment?'

According to traditional philosophical language, the term 'quality of life' is seen as a term in value and means that the 'quality of life' for an individual is high, only if she has a good life (according to her own judgement). The question of value can be divided into instrumental value (the means to fulfil 'quality of life') and final value (goals for 'quality of life'). The philosophical view means that the 'quality of life' has mostly to do with to what extent we are exposed to positive or negative final values. A formal definition of the term 'quality of life' can be expressed as an individual's final values. Within Medicine, concepts like health and 'quality of life' have a tendency to float together which makes it harder to divide the instrumental from the final values. The different opinions about the meaning of the concept 'quality of life' lead to practical consequences especially in health care. In health care there does not seem to be any need for implementing the concept 'quality of life' in a scientific theory (Brülde, 1998).

Tengland (2006) states that the health professional's goal for health care is the health-related 'quality of life' and longevity. Other goals for health care are the concepts; well-being, welfare, reducing disease and illness but these are only

relevant to health professionals if the concepts are health-related. 'Health-related' according to Tengland (2006) must be connected with the individual's experiences of a positive 'quality of life'.

According to Brülde (2003) the traditional concept analysis is not suitable as a method to answer the 'quality of life' question because this question has a dimensional concept. Through an alternative concept analysis focusing, instead on lifestyle changes and comparing 'quality of life' rather than focusing on 'quality of life' levels, a weaker but interesting connection arises between the two concepts of health and 'quality of life'. Further, Brülde (2003) notes that a reasonable evaluative theory would better answer the question of what makes life worth living. A systematic reflection on the theory values would be a reasonable evaluative theory if it is well in accordance with our intuitions about what is considered by a person as being good. A single dimensional approach makes the level measurement harder but for focusing on changes and comparison it is relevant. The relevant question to be asked is; what is finally good or bad to an individual? The original question; 'what is 'quality of life'? can now be extended to: what is it that makes a life good to the person who lives it and how can it be measured? There is a clear distinction between the terms value and empirical relations. Empirical variables such as causal connections can be valued differently from person to person due to the complexity of the human being.

Welfare

There are four different kinds of health-related welfare; well-being, health as offering ability, inner sources and external circumstances. Many welfare measures increase health within public health and health promotion interventions. Welfare is closely connected to health and the 'quality of life' but there is a distinction between them. Tengland (2007b) defined welfare work as a factor that contributes to the positive quality of life (well-being or desire-fulfilment) of an individual or a factor that increases the quality of life in a population. A welfare measure is as Tengland (2007b) explained any measure taken to change a factor that will increase the quality of life of an individual, or of a population.

Changes in society

Childrens' upbringing conditions and the views on working with children are like a mirror of the contemporary conditions and values within society. One of the Swedish health requirements states that the most important task is to secure care and develop equal conditions for all children to be brought up in. To reach this

goal a parental national insurance system, cash child benefits, day nursery care and the Child Health Care was established.

In the last few decades, one huge change in the conditions for children's upbringing has been the way we look upon family relations. The classical way to describe family relations is that the individuals own interests are subordinate to the collective interests of the family. In today's society there is a greater amount of variety and ambivalence (concerning the choices in life). Industrialisation has resulted in family constellations being more open. These more open constellations have a great impact on children and family life. Many parents separate and more couples have children outside marriage and today separations are three times more common in Sweden among parents who are not married compared to those who are.

Divorce often leads to the situation where the children follow their mothers into a new family and find themselves with stepbrothers and sisters. Another change in society is the increasing number of single parents. Independent of the family constellation, children's need of love, care, stability and the possibility to trust still remains (Bäck-Wiklund & Lundström, 2001).

In a PhD-thesis, Lassbo (1988) investigated children's development and socialisation in relation to the family constellation and found no significant differences in the children's development and socialisation that were dependent on what type of family constellation the children were brought up in. However, Lassbo (1988) found significant differences in the children's development and socialisation related to the families' socioeconomic position and to what extent the family had a social network but found that the family constellation in itself made no difference.

During the late-modern period education has also increased among the population, whereas earlier this was a privilege for only a few. Women started to work outside the home more and more and the children were taken care of through official day nursing to a growing degree. In a complex society, where there is a modern (individual related) and a traditional (family related) mix in the family and at work, the possibility for families to take rational decisions become more difficult (Bäck-Wiklund & Bergsten, 1997).

Commonly agreed rational decisions are also influenced by the number of possible choices available for those individuals within the family and the stress many

parents experience. This can lead to consequences for the children's security and safety (Bäck-Wiklund & Bergsten, 1997; Trondman, 1999).

Mobility in the world has increased which has led to a greater increased immigration into Sweden. During recent years, the immigrants have come mostly from Lebanon, former Yugoslavia, Afghanistan, Iran, Iraq and Somalia. The differences in culture and language are large between both the different immigrant groups and in comparison with the traditional cultures within Sweden. Many of these differences have an important affect on the risk of child accidents. Differences can be; the parent's view of their child's growing capabilities throughout its development period, their views on the children's socialisation and their domestic traditions, for instance cooking (Trondman, 1999).

Public Health work

The main focus of the Swedish public health care is to increase the motivation to prevent risks and to promote healthy and secure conditions within society rather than simply taking countermeasures against disease and injury, as was the situation in earlier times. It means that the questions must be made visible and communicated to those at risk, and also to the politicians and others who may have an influence on these conditions. Within public health, as in many other areas, it is important to explore new knowledge through ongoing activities in order to make the practise better (Bäck-Wiklund & Lundström, 2001).

The concept 'New Public Health' was founded by the Englishmen Mc Donald and Bunton (1995) and it means a change in focus on the impact of structures and the environment on human health and also the need to include individual factors such as life style. This revised view on promotion and preventive work leads to a holistic order, with different effort from different actors that together complement each other. The spectrum of child injuries is divided in two main areas, 'traffic' and 'home and leisure'. The two main principles for preventive work within the area of home and leisure are the 'security of products' and 'safe communities'. The 'security of products' principle is built on designing products so they will not be dangerous for the user or for a child who unintentionally reaches them. If the dangerous qualities of a product cannot be fully eliminated then accurate written information must be given with the product specification. The other model within child accident prevention area is 'a secure and safe municipality' which means an integrated population with focused actions from the leaders in the municipality, the county, local trade and industry associations, voluntary organisations and the health care services.

The fundamental idea of this model is 'help to self-help' where through the democratic process citizens needs for a secure and safe environment can be canalised. In this model humans are considered to act of their own free will rather than as objects, subject to the protecting care of experts (Klassen et al, 2000; Forsberg & Starrin, 1997).

Development and goals in Child Health Care

During the 19th century views about children's upbringing changed in Sweden from the earlier strong influence of religion to becoming more influenced by a scientific approach. The religious approach was focused on the child's soul and morals whereas the scientific approach focuses on the child's body and its physical development. This changed approach has been of vital importance in the establishment of Child Health Care. In order to improve children's physical development it was important to prevent ill-health and to this end public health information was introduced. In the light of the high mortality rate among children and the low rates of childbirth in Sweden during the beginning of the 1900's, the interest for prevention of ill-health among children and improvement of the welfare services increased. In 1901 the first CHC-centre was established, in Stockholm. It was called 'Mjölkdroppen' (the Milk drop) and the main task was to give milk to poor mothers who were unable to breast feed their babies themselves. Nurses and physicians were employed and the main work consisted of what we today call 'social work'. In 1950 the name 'Milk drop' was changed to Child Health Care-centre. The tasks for the CHC were extended to involve vaccinations, accident prevention and sight and hearing checks. The number of children involved in regular health checks increased rapidly from the beginning to the middle of the 1900's (National Board of Health and Welfare, 1979).

A study by Hallberg et al (2005) identified four different periods within the Swedish CHC. The first period (1930 till 1950) was characterized by the giving of information and education to the mothers and by the control of children's development. During the second period (1950 till 1970) the concept of health guidance was created including codes of honour. The objective was to identify risks and to discover poor development in children. During the third period (1970 till 1990) the CHC's became focused on the identification of health and social related risk groups. At present, since 1990, the Swedish CHC is directing its attention on the environment surrounding of children and on the family as a whole and strives to support the parents' self esteem and competence. The mode of responsibility for children's health has changed much over the four periods and today it is rather the responsibility of the parents whereas earlier it was

considered to be the responsibility of society in general. The focus of the CHC's has also changed from being general to being more selective. At the same time the CHC work with physical health has decreased to the benefit of handling psychosocial problems within families.

A continuous increase in participation up to the end of the 1900's has led to the situation where approximately 99% of all children in Sweden (0-6 years old) now participate in the CHC programme. This large number is unique in the world. In 1978 the opportunity for parents, with newborn children, to participate in parent education was regulated by law and at the same time the CHC became responsible for the health care at nursery schools (National Board of Health and Welfare, 1979). A national health control programme was initiated 1991 by the National Board of Health and Welfare. This was called 'the Base Programme' or 'the National Programme' and regulates the work done at the CHC-centres even today. The National Programme offers repeated opportunities to build a relationship between the CHC and the families (National Board of Health and Welfare, 1994; Victorin & Mårild, 1992).

According to Galal (1999) the CHC-nurses have the best opportunity to obtain knowledge about the risks of child accidents through their home-visits. The CHC-nurses continuously offer information to the parents with extra focus when a child reaches 8 months old, about suitable precautions to take to decrease the risk for child injuries at home. In 2000, approximately 60 % of the families (in the city under study) received preventive information during home-visits while the remainder received the information at a CHC-centre either individually or in parent groups. At this time approximately 16,884 barn, aged 0-5 years lived in the city. Although the population of the city increased from the year 2000 until 2003, the home-visits by the CHC-nurse decreased by 27% (Malmö City, 2003). At the same time the total number of accidents to children in Malmö aged between 0-14 years old increased by 13% from 2001 till 2005 (Malmö City, 2006).

The main task for the CHC-nurses today is to reduce mortality, ill-health and handicap and further to support and activate parents in their parenthood. The preventive work constitutes the largest part of the CHC-nurses work and it involves among other things preventing risks in children's immediate environment and in society and further, to help reduce the harmful strain on parents and children these problems can cause and by doing so create advantageous conditions for the

comprehensive development for children. The overarching goals for the CHC are regulated by specific rules and regulations e.g. SFS 1982:783 and SFS 2001:453, (National Board of Health and Welfare, 1991). These include regulations for the assessment of children's development, medical examinations, vaccination programmes and child accident prevention.

The CHC-nurses work has two sectors, one social- and family-political and one health-political. It means that the work that has to be done needs to achieve results in both directions for both the individual and their family and also among the relevant authorities and decision makers at different levels. For the CHC-nurses the two positions are parallel and compliment each other. The preventive work includes all the health related work done at the CHC centres. Based on the overarching goals the CHC-nurses tasks can be divided, described and documented as *promotion* – to further the children's health, *primary prevention* – to avoid the appearance of ill-health and injuries, *secondary prevention* – early discovery of ill-health and to take precautions to avoid development of disease and *tertiary prevention* –by meeting a manifest problem with adapted services, support and care (National Board of Health and Welfare, 1991).

Empowerment

The process of empowerment can be concluded as creating a professional relationship so that individuals or communities can take control over the developing process. Some health care professionals' use the term empowerment but it is not so well defined whether the meaning held by the different professions is the same. The reason for discussing the definition of empowerment is also to make it clear why some professions may work with empowerment and others may not. Empowerment is something you may have more or less of and therefore the focus in a study by Tengland (2007a) was to try to find increasing and/or decreasing factors. Empowerment can be seen as an increasing property given to an individual or a community, but also for professionals to use as a tool or skill and as a relation between individuals or communities. Adequacy criterions are required in order to argue any definition of empowerment and one of those criterions is language. The language criterion means that the words and the meaning in the definition should not differ much from the way the language is normally used. The word 'empowerment' is a 'new' word and not much used except by health professionals and therefore the definition must be the same when used by anyone in any of the involved professions. Empowerment might sometimes be strongly connected with terms like health, well-being, 'quality of

life', autonomy or freedom, but they are not synonymous. Another important criterion required to make the definition adequate is the value criterion. This means that all values independent of whether they are positive or negative have to be considered. Homogeneity is also a criterion which means that there needs to be some homogenous characteristic. To know what belongs and what does not belong to the term empowerment requires some sort of theory or principle (theory criterion). To be aware of the requirement for simplicity and precision in a definition is also important. As the last criterion Tengland (2007a) adds the goal criterion, where the way the different professions, work to reach the goals will be described. There is a need for a compromise between the various criterions and some of the criterions will become stronger by stipulation. This will make the definition more useful both in practise and in science. The general idea of empowerment is to reduce the influence of the professionals and instead allow the individuals or communities to take the responsibility for the development process.

Empowerment as a goal

According to Tengland (2007a) there are three main goals found in the literature, stating: empowerment should increase an individual's control of their own health and increase their ability to control their own life and further to increase her ability to change the world. Tengland (2007a) is critical of the WHO when health promotion is used synonymous with empowerment because it is limiting the goals for the individual to control their health and it is not open to involving the individual's control over their own life. To control one's own health is only one part of controlling one's life. What then can than be involved in the term 'life'? Tengland (2007a) points out six areas in 'life' where empowerment may have an influence. It is in one's health, one's home, one's work, one's close relationships, one's leisure time and one's values (political, religious, sexual, moral etc.). These are general and have an impact on the 'quality of life'. To control one's life means, according to Tengland (2007a), that one can influence the determinants of one's own quality of life in the areas mentioned. An increased control in any of the areas above results in an increase in empowerment. Many health professionals are working on increasing empowerment among individuals and groups, for example teachers, doctors, nurses and social workers. According to some authors (Adams, 2003; Laverack, 2004) there is also a possibility to reach self-empowerment through acquiring an education that offers the tools for a better living standard. In some countries most of the people are empowered to a rather high level and also have the opportunities of self-empowerment. For professionals to work

on increasing empowerment to help vulnerable groups' exert control over their lives, people such as the underprivileged, unemployed, homeless, delinquent, disabled and the poor is very important also in a country where most people are empowered to a high degree. To have control over one's 'quality of life' is the essential feature of empowerment but there are other important terms that need to be considered. Autonomy is one factor that influences empowerment. Another factor implicit for increasing empowerment is the knowledge required to raise consciousness and to develop skills (Rodwell, 1996). To raise consciousness is for a person to be aware of any situation they find themselves in and to know what may influence the situation. Raising consciousness is often sufficient enough to increase empowerment and gain control over a situation. If you don't realise that things are bad or dangerous, for yourself or your family, you are not motivated to make changes. Because not all kinds of raising consciousness leads to increased control it is not sufficient for empowerment. The development of skills, just as knowledge, is also required in order to gain control over one's life. Examples of such skills that are important are learning to take better care of one's health, home and family (to better understand the needs of the children), (Rodwell, 1996). As with raising consciousness, developing skills is not sufficient in itself to increase empowerment (Brulde & Tengland, 2003). What is not covered in these two terms is self-knowledge such as the personal experiential self, personality and talents. Self-knowledge sometimes has an increasing effect on a person's control over their life. Knowledge is considered as a very important factor for empowerment but it is not sufficient in itself. Most education is in a way empowering because it increases the possibility to take control. Ability can be seen as competence and influences the empowerment. Ability can have a place in the concept of knowledge.

Tengland (2007a) explains the term 'self-esteem' as the attitude a person takes towards their own holistic self ('how one values oneself as an individual') and the term 'self-confidence' as 'a belief in one's general capacity to handle situations and tasks in life'. The term 'self-efficacy' is about 'an individual's beliefs about her own capacity to handle specific situations or tasks in life'. Increasing a person's general self-confidence promotes an increase in empowerment. Increasing self-efficacy or self-esteem might help but does not necessarily increase empowerment. Freedom is a concept that overlaps with empowerment as a goal and has to do with the fact that 'having control over the external environment that influences one's actions and choices in life' also has an impact on a person's control over their life. Freedom in this situation should be seen as 'having increased opportunities to reach valued

goals' (positive freedom). In this meaning it also influences empowerment. The control over one's health is also important as it is a part in the quality of life. Empowerment as achieving control over one's health can be seen as an important goal for health professionals working with health promotion, public health, nursing, medicine and rehabilitation. Working towards increasing control over one's health also increases empowerment.

Empowerment as a means

If one looks upon empowerment as being relational as a process, a method or an approach involving both professionals and an individual needing support it might be seen as a compliment to empowerment as a goal. Many professional relations are often paternalistic and not empowering, for example when a health educator identifies risk behaviour and suggests changing that behaviour. In empowerment the professional must retreat from a paternalistic position and reduce the power, control, influence, or decision-making they exert over the individual while at the same time promote an increase in the power of the individual or the group being supported. To promote the power of the individual requires that the individual first describes the problem, finds a solution then acts to solve the problem. The professional steps down from the dominant role and encourages the individual in describing the problem and finding a solution. To do this, professionals can make use of methods with plausible empirical, theoretical and ethical underpinnings (Rogers, 1977; Freire, 1970).

According to Tengland (2007a), the definition used in the present study may be used for health professionals but also among groups and communities e.g. ethnic minorities, the unemployed, delinquents, drug addicts, the homeless, the disabled and the aged.

Empowerment as health promotion

In a paper, Tengland (2006) discusses empowerment related to health promotion. Two questions discussed were: 'What is empowerment?' and 'Is empowerment a goal or a means for health promotion?'

Tengland (2006) also presented some of the goals of health promotion. Health promotion can be seen as an activity (organised or professional) enhancing and sustaining the health of the population. The general goals for health promotion are good health and 'quality of life'. It is firstly a matter of the 'quality of life' because health promotion is an activity mostly carried out by the state and other official authorities. To be a health promoting scheme it has to increase or

maintain health. This health relation differentiates health promotion from those other professions also working with empowerment such as social workers and teachers. There are also other forms of 'quality of life' not involved in health promotion.

There are basically three different theories for stating health 'absence of disease', 'the well-being theory' or 'the ability theory'. There are also theories involving different combinations of those above. Tengland (2006) uses the pluristic health theory, stating that health has two dimensions; health related well-being and health-related ability. It covers what can be called as healthy. The health-related well-being has to have 'its cause within the person'. Basic abilities (disposition) like walking and talking are health aspects but it is not only to have the ability or disposition it is also to utilise the abilities.

Tengland (2006) also discusses the distinction between internal and external welfare. Internal welfare has to do with things like knowledge, skills and ability that contribute to the 'quality of life'. External welfare has to do with everything else that contributes to one's health, like schools, the law and the social security system.

Tengland (2006) means that empowerment involves the 'quality of life', welfare and health. There are parts within those three concepts that are not involved in empowerment and there are some other parts that are not only overlapping each other but also have a part in all the three concepts. One example that is shared is autonomy because 'it is a typical ability (or disposition) in most cultures, i.e. it constitutes health, it is desired for its own sake, i.e. it constitutes 'quality of life' (desire-fulfilment), and it furthers future 'quality of life', i.e. it constitutes (internal) welfare'.

Empowerment can be used in health promotion as a goal for individuals, groups and larger populations providing the goal is health-related. Empowerment can also be used in health promotion as a process (method or approach) for individuals or groups but hardly on a societal level because to use the approach there is a need for personal encounters. Tengland (2006) concludes that adjusting empowerment as an approach in health promotion is superior to a paternalistic, top-ruled approach and is also ethically more attractive. To use empowerment as an approach and (method or process) requires the courage by the professionals to reduce their power and facilitate their client's possibility to formulate their

problem, find a suitable solution and decide the measures to be taken. According to some authors (Chaoniyom et al, 2005; National Board of Health and Welfare, 1991) there is also a possibility to reach self-empowerment through receiving an education that provides tools for better living.

Sense of Coherence

Self-empowerment influences the human's inner strength. In the concept of 'Sense of Coherence' (SOC) Antonovsky (2007) defined the human's inner strength as, quote: 'The extent to which one has a pervasive, enduring though dynamic, feeling of confidence that one's environment is predictable and that things will work out as well as can reasonably be expected'. According to Antonovsky (2007) there are connections between a human's inner strength and their education level.

Compliance

To prevent child accidents is a long term process. One of the CHCs goals is to decrease the risk for child accidents at home. The preventive work to reduce the risks required repeated contact with the parents of young children. Throughout these repeated contacts it was important for the families to receive feed-back regarding the precautions they have reported. Repeated exchange of information is required in order to solve problems related to the precautions taken against child accidents in the home. Examples of this are passing on information regarding where to purchase child safety appliances how to properly anchor a cooker to the wall (National Board of health and Welfare, 1994). This long term process assists in motivating change directed towards preventive actions (Corrarino et al, 2001; McClure & Douglas, 1996; Arborelius, 1993; Lassen, 1993).

In a RCT-study from Germany, Schoetzau et al (2002) studied parent's compliance to dietary advice in an allergy prevention programme for children. The result showed that the parents who followed the advice to a lesser amount had more often a foreign background (both parents being born outside of Germany), were young mothers and had more often a lower level of education compared with the parents who complied with the diet recommendations to a greater extent.

In a British study by Kendrick et al (2001), parents were asked on three occasions over the period before the children had reached the age of 4 years, about precautions, they had taken at home to reduce the risk for child accidents. The participating parents in the British CHC's accident prevention programmes took

precautions to decrease the risks of child accidents to a significantly higher degree than did parents who did not participate.

In a randomized double blind control study, Howell et al (2000) using two groups, investigated mothers' compliance to the CHC-nurses advice for reducing the exposure of babies to tobacco smoke. The mothers all came from low income families. The independent group of mothers received individual information and support, on seven occasions during a period of three months designed to motivate them to avoid their babies being exposed to tobacco smoke. The dependent group of mothers received, the same information but on only one occasion. The independent group of mothers took the advice and reduced their babies' exposure to tobacco smoke whereas the dependent group of mothers paid significantly less attention to the advice they had been given.

The studies in the current PhD-thesis are important due to the need for increased knowledge regarding influencing factors for child accidents in the home environment and how to prevent them.

AIMS

The overarching aim of this PhD thesis was to increase the knowledge about children's exposure to accidents at home by describing parents' self-reported precautions they had taken in their home in order to decrease the risk of injury, the extent of burn and scald accidents, the parents opinions related to the course of events and further, in an intervention study, investigate the effect individual-based extended information had on mothers' attitudes towards child injuries and injury prevention and also the number of precautions against accidents the parents had taken at home. The specific aims were to investigate:

To what extent parents followed advice given by the Child Health Care-nurses, regarding child accident prevention at home (Paper I).

The characteristics of burn injuries to children (0-6 years old) who consulted primary care or hospital-based care in Malmö Sweden (Paper II).

Parents' perceptions of the influencing factors and how to avoid scalding injuries among children at home (Paper III).

The effect individual-based extended information had on mothers' attitudes towards child injuries and injury prevention at home and further, to test if their Sense of Coherence had any influence on their behaviour in this matter (Paper IV).

To what extent individual-based extended information given to mothers improved the precautions taken by them to prevent burn and scald injuries involving young children in the home and further to compare the results with a group of mothers who had not received the extended information (Paper V).

METHODS

Design

The data in paper I were collected through questionnaires in a cross sectional designed study and in paper II from medical records in a retrospective designed register study. Paper III which has a qualitative interview study design was analysed by content analysis. The purpose of the method chosen was to find the variety in the parents' perceptions in order to better understand those factors influencing scald injuries. The intervention study (IV, V), using a comparison group, has a quasi-experimental design. A random assignment study design was considered, however, it was abandoned due to the risk that the control group of mothers could be influenced by the intervention group of mothers if sampled at the same CHC centre (the Hawthorne effect), (Polit & Beck, 2006, p. 185).

Setting

Studies (I, II, III, IV, V) were performed in Malmö, during 2003-2009. Malmö is the third biggest city in Sweden with 286 535 inhabitants in the year 2009 (Malmö city, 2010). Of these 21 142 were children at the age of 0-5 years old (7%). The first study (I) was performed at a CHC in one of Malmö's ten city areas. The area was chosen as the inhabitants there show similar characteristics as Malmö on the whole in relation to age, nationality, education, socio-economic and living circumstances. At that time 31 466 inhabitants lived in the city area chosen and of them 1 854 (5.9 %) were children (0-5 years old), (Strategic development, 2007).

About a third (37.8%) of the 90 parents in the study (I, 57% in study (II), and 91 % of the mothers in the study (IV, V) had a foreign background. The parents with foreign backgrounds came mostly from Lebanon, former Yugoslavia, Afghanistan, Iran and Iraq.

There were twenty-one Health Care units and one University Hospital in Malmö (UMAS), at the time study I was performed. The parents of children suffering from burn and scald injuries could voluntarily choose to consult either the Health Care units (including the doctor-on-duty centre) or the UMAS (II, III).

Papers IV and V focused on families with a low level of education living in two separate areas of Malmö, a city in southern Sweden. Eighty-two percent of the inhabitants in both areas of the city had less than 12 year's education. The city areas chosen also shared similarities in the occupational levels of the inhabitants (38 respectively 39 % worked part or full time) and with the majority of the inhabitants living in rented flats. Two CHC centres, one in each city area with the highest number of children registered, were chosen for the study, one to be the intervention group (IG) and the other the comparison group (CG).

Data collection

Parents of 10 month old children (N=90) filled out a questionnaire approximately two months after they had received information from a CHC-nurse (I) suggesting suitable accident precautions to take in order to decrease the risk of child accidents at home. The 90 children chosen to participate in the study were from the six nurse-run districts (all the CHC districts in one of the ten city areas in Malmö) and had all reached the age of 10 months during a specific three month period. The parents were asked to participate in the study in connection with an assessment of their child's development that took place at their CHC centre. Of the participating children 44 were girls. The parents were given eleven questions to answer all related to precautions taken in their homes in order to decrease the risk of child accidents. The questions asked such as things as whether the cooker was firmly anchored to the wall, if the high chair was stable, the proximity of sharp knives, kitchen tools whether plastic bags, cigarettes and detergents were hidden, if an anti-slip carpet was used in the bath, if all electrical cords were safe and out of the way and if precautions had been taken against injuries caused by pinching or crushing. The questionnaire also prompted responses by asking if the parents felt that any information regarding child accident prevention was missing in the material they received from the CHC and further they were asked if their children had suffered from any previous injury that had led to a medical consultation.

In the studies (II, III) the age, sex and diagnosis of all patients was reviewed by the 1st author (AC) to identify the children (0-6 years old) whose parents had

consulted the HCC and the UMAS, during a three month-period (II) and the UMAS during a one year-period (III), for a burn or scald injury to any of their children. Approximately 10,000 incoming patients per year are registered at the emergency clinic at the University Hospital. Children admitted for treatment during the study period for any type of burn-related injury were selected after a review of their medical records, in study II.

In study III the first author (AC) visited the emergency clinic at the UMAS, regularly throughout a one year period, in order to collect relevant data from the unit's medical records. It was planned that the interviews would take place within one week after a scalding accident. However, in practice four of the interviews took place within 2 weeks after the injury due to practical reasons. Twenty interviews were carried out by the first author (AC) and 19 of them took place in the participating parent's home and one took place at the office of the author (AC). The interviews lasted between 30 to 70 minutes and were all transcribed verbatim (total of 158 pages). The first open question in the interview was: How did the accident happen? Other areas covered by open questions were: How do you look upon your child's capability to understand risks in their environment, for example hot liquid or hot food? What do you think was the primary cause of your child's accident? Seventeen of the twenty children were between 0-3 years old, sixteen of the twenty were boys and twelve of the twenty had foreign born parents on both sides, all according to the available medical reports. The inclusion criteria for the participants were established by a former study and required that the participating parent's child was 0-6 years old and had been injured in a scald accident at home and been admitted to the emergency burn unit at the University Hospital in Malmö, Sweden (Carlsson et al. 2006a).

The fifty mothers in the intervention group and the 49 in the comparison group filled out the baseline questionnaire (IV, V). The questionnaire had five questions concerning the mothers' educational level, country of birth, number of years domiciled in Sweden, number of children they had, and further, if their children had previously suffered an injury in the home, (if yes, what kind of injury). This baseline questionnaire also had six questions regarding what precautions the parents had taken at home to decrease the risk of child injuries (with focus on burns and scalds), (V). The questions asked were: Has your cooker any additional child protection? Is the cooker securely anchored to the wall? Is the cooker door secured against being opened by a child? Have any eventual climbing possibilities adjacent to the sink and cooker been removed? Is warm liquid in the kitchen

within the reach of a child? Are any electrical cords to the iron or coffee and water heating appliances within the reach of a child?

This questionnaire also had three questions regarding the mothers' attitudes towards child injuries and injury prevention at home. The statements offered possible scores from 0-10 (disagree-agree) and were asked as follows: 'Many child injuries happen at home'; 'I have good knowledge regarding suitable precautions to take to decrease the risk of child injury at home'; 'I have taken sufficient precautions to decrease the risk of child injury at home' (IV).

The mothers also filled out an instrument with the 13-item Sense of Coherence scale (SOC-13), related to questions about their life (Antonovsky, 2007; Feldt et al, 2007), (IV, V). This is a reliable and valid instrument with a stability coefficient of 0.81. The mean SOC-scores of the mothers' in the present study were compared with the mean of samples from other Nordic countries (SOC-13, mean=65), (Rumbaut et al, 1983). In the SOC-scores a seven-item Likert Scale (0-7; very seldom or never – very often) with the criteria $SOC \leq 64$, was used. The questions assessed the mother's level of comprehension, ability to manage and ability to find meaning in handling questions related to life (Antonovsky, 2007).

The baseline questionnaire and the SOC-instrument were written in Swedish and translated into English (SOC-13 in its original version was used). The Albanian and Arabic languages were back-translated by a second translator. These languages were the most common among the study group (IV, V).

Intervention (IV, V)

The mothers in the intervention group were invited to participate in a workshop together with other mothers of 4-7 month old babies. The first author together with two bilingual health communicators presented the workshops in Arabic and Albanian. The workshops focused on discussing how to prevent scald and burn injuries at home. In the workshops the mothers were asked to reflect on what precautions to take in order to decrease the risk of child injuries at home and to discuss opportunities and obstacles for injury prevention which they could also later discuss with their family. The mothers in the intervention group received a home visit where individual-based extended information regarding child injury prevention in the home was offered by the first author. The mothers determined the content of the discussion in the workshops and the home-visits. Empowerment was used as a pedagogic approach to support the mothers in their knowledge

regarding child injury prevention. The intervention's objective was to 'find the mothers where they stand' and to build on the mother's existing knowledge in order to increase their motivation to reflect on child injury prevention. Together with the first author the mothers described the problem or need, found a solution and suitable preventive actions to take as suggested by Tengland (2007). As in other studies the home visit was in itself considered to be a part of the intervention (Babul et al, 2007; Kendrick et al, 2008; Jansson et al, 2002).

Analyses

The statistical analysis of the data in the present PhD-thesis was meant to describe (I, II) and investigate associations (I, II, IV, V), and to estimate the precautions taken against child accidents in the home environment (I). Statistical significance was estimated at $p < 0,05$. The statistical analysis was performed using the Statistical Package for the Social Sciences programme (SPSS) for Windows 14.0 (Norusis, 2002) and 16.0 (Norusis, 2008). The data was analysed using the chi²-test (I, II, IV,V) to gain knowledge about similarities in the parents background characteristics compared with the precautions they had taken (I, V), the injuries children suffered from (II), and the mothers' attitudes towards child injuries and injury prevention at home (IV).

Univariate odds ratios (OR) and 95% confidence intervals (95% CI) were calculated to investigate the association between parents' compliance (I), risk burn or scald injuries to a child (II), mothers' attitudes towards child injury prevention (IV), mothers' precautions taken at home (V) and the parents' different background/socio-economic characteristics. In study I multiple logistic regression analysis was performed in order to adjust the estimated odds ratios for the influence of potential confounders such as parents' nationality, educational and occupational levels, place of information and habitation. When parents actively implemented 50% or more of the suggested precautions they were defined as compliant. In the studies (I, II, IV, V) variables were analysed as dichotomous.

In studies IV and V individual-based information was used as the independent variable and the mothers' attitudes as the dependant variable (IV) and the precautions taken as the dependant variable (V). The Mann-Whitney (IV) and the McNemar (V) and the χ^2 were used to assess dichotomised answers before and after intervention assessment and for the comparison of groups.

Study (III) was analysed with qualitative content analysis, inspired by Morgan (1993). The analysis started with a naive reading to gain an understanding of the whole. Sections of the interviews were highlighted by two of the authors AC and EP-A reading and re-reading the text. The process started with identifying all the parents' perceptions associated with the influencing factors for scald injuries or how to avoid scald injuries. All of the expressed perceptions in the study were labelled as meaning units. These meaning units in the text were coded, separated, grouped into categories and placed into separate files. When the data were categorised the authors (AC and AP-A) took each folder and read the data clippings. When the authors (AC and EA-P) agreed that the categories represented the cases a summary for each of the categories was written down. The categories were also judged by the authors (AC and EA-P) according to their internal and external homogeneity. The internal homogeneity was determined by looking for all the data in the folder that reflected the category. Also the relationships between the categories were considered so that they were separated and clear. The categories were then checked by the authors AC and EA-P to ensure they made sense and gave a correct picture of the complete data. When looking for any relation between the categories in the data, the main relations kept recurring. Among the relations between the categories, two themes were found to run throughout the data. The two themes elucidate the parents' perceptions of influencing factors to scald injuries in children. The two authors (AC and EA-P) had continuous discussions during the different steps in the analysis to further strengthen the results and reliability. Saturation was reached by the 17th interview; the other three interviews strengthened the themes and did not reveal any new category.

Ethical aspects

Many decades ago health care professionals raised the question about the three primary principles in ethics. The three principles are autonomy, beneficence and equality. In order to foster autonomy, health care professionals must stay involved and spend sufficient time, characterised by respect with the person concerned (Bergum & Dossetor 2005, p. 67-101).

Although a scald injury to a child often leads to a huge tragedy for both the child and parents, the participant parents were willing to talk about their experiences (III). For the parents to tell about their child's accident that led to injury was supposed to be sensitive for the parents and the authors were worried that the interviews would be characterised by feelings of agony and guilt. Many parents

expressed satisfaction from having an opportunity to talk about the accident. The parents also expressed that they felt both relief and a decreased feeling of guilt after the interviews (III). This effect of the interviews appears to have been beneficial to the parents.

The selected parents were contacted by telephone and asked to participate in the study (II, III). To ensure equality all the parents within the inclusion criteria were asked to participate in study I while they visited the CHC for medical assessments of their child. All participants were informed of the objectives of the studies and that their participation was confidential. At the CHC the parents received written information and were requested to participate and were then asked to sign a form, stating their informed consent to participate (I, II, III, IV, V). Studies (I, II, III, IV, V) have been approved by the Regional Ethics Board of Lund University, Sweden.

Pre-understanding

Pre-understanding is a part of the analysis and therefore important to be aware of in qualitative research (Neuman, 2000). The first author (AC) has many years of experience working as a CHC-nurse within accident prevention. The other authors ACB, AH, AJ, AKD, EDK, and GU all have extensive experience in research in the field and of working with parents and children. The other author (EPA) has extensive experience in pedagogic research.

RESULTS

The sample size in study I consisted of 90 children with almost equal distribution between girls (n=44) and boys (n=46). Thirty-two percent (n=29) of the parents complied with less than half of the suggested precautions. More than 50% of the parents used stable high chairs, secure electrical sockets and stored sharp tools, and held detergents, plastic bags, cigarettes and matches out of reach of the children. Statistical analyses of the non-compliant group showed that the parents' background and socio-economic characteristics showed significant associations. The variables, foreign-born, low occupational level (unemployed/sick-listed), 12 years education or less, rented housing and information provided at CHC units proved to be statistically significant for the non-compliant group. Through logistic regression analysis, parental non-compliance of the recommended precautions was used as the dependent variable, and the dichotomous variables from previous analyses were used as the independent variables. Non-compliance with the suggested preventive advice decreased for the variables 'unemployed/sick-listed', 'rented flat' and 'information provided at CHC units' and became statistically non-significant after adjustment, while nationality (OR=13.3, 95% CI=4.0-44.3) and education (OR=4.3, 95% CI=1.1-16.7) remained statistically significant.

Approximately one third (34%) of the parents received the information concerning child accident prevention while at the CHC unit and approximately two thirds (66%) at a home visit (I). Parents with only one child requested a home visit by the CHC-nurses to a greater extent than parents with several children. Information about child accident prevention was given by CHC-nurses during home-visits to 67.8% of the Swedish-born parents and to 48.4% of the foreign-born parents.

Twenty-one child accidents leading to child injuries had occurred among the 90 children (I) whose parents answered the questionnaire (unpublished findings in paper I). In three families, one child had repeatedly suffered from fall injuries. The fall accidents occurred from falling out of bed, hitting a table or a high chair. The accidents led to commotio for three of the children and to an arm fracture for three other children. For four of the children the accident led to teeth injury or/and a wound to the face. Three poisoning injuries were the result of children eating soap, cigarettes or drinking cleaning detergents. The two scald injuries happened when the parents drank hot tea or coffee while having the child in their arms ('the tea-pot syndrome'). One child swallowed a sharp metal object and one child suffering from suffocation after they had both swallowed an elder siblings' broken toy.

The parents of the 90 children offered, in total, 24 suggestions for improvement of the CHC-nurses information regarding child accident prevention. Most of the suggestions concerned life saving actions; for instance, when a child had something stuck in their throat and was unable to breathe (unpublished findings in paper I).

The results in the second study (II) showed that the children injured by burns amounted to 148 and that 80% of these were scald injuries. The greatest number of injured children were boys between one and two years old ($p < 0.001$). Children to foreign-born parents were more frequently affected ($p < 0.001$) and the extent of the injuries were often greater ($p < 0.04$). Almost all the accidents (96%) occurred in the home environment and while a family member was in close proximity to the child. The Health Care Clinics (HCC) received children who were affected by injuries to a hand/arm and by causes such as hot food more often than the University Hospital (UMAS), ($p < 0.04$). In the second study (II) the children's burn injuries were caused by the children putting a hand on a hot stove, a foot immersed in hot wax, a hand placed on a lighted lamp and a child who sat on an outdoor grill. The scald injuries in the study (II) were most often caused by hot liquid like coffee or tea (71%), ($p < 0.001$). In 29% of the scald injuries the cause was hot food. These accidents occurred most often when the children tried to climb up to the sink or cooker in order to reach a pan or something else that was hot. The children who suffered from scald injury caused by hot liquid more often received extended injuries in comparison with the children injured by hot food ($p < 0.01$). Most of the injuries occurred in the child's home while a child minder or parent was present. Fifty-one percent of the parents

in the study (II) consulted the UMAS and 49% the HCC when their child had suffered a scald injury. Children injured outdoors, children with injuries to the face, children with injuries involving several body parts and children with severe injuries, consulted the UMAS to a greater extent, whereas the children of those parents who consulted the HCC suffered mostly from injuries to the arms and hands caused by hot food ($p < 0.03$).

The results from the third study (III) showed that the parent's perceptions of influencing factors related to scald injuries among children can be elucidated in 8 categories and in two themes: 'Deviation from the normal' and 'Misjudgement of the child's capabilities'.

'Deviation from the normal' concerned both in what way and why the environment surrounding the child differed. For example, such a deviation from the normal could be the distraction caused by someone visiting or an urgent telephone call. Such a spontaneous distraction could cause the parents to reduce their concentration on their child. A deviation from the normal could also arise when a family member was ill or tired, by which their level of observation became reduced. Also mental or physical stress was among the parents' perceptions of factors influencing scald accidents, all of which could cause reduced observation of their child's activities. Other reasons expressed for a deviation from the normal process was the sudden failure of kitchen utensils or machines not functioning correctly or the placement of furniture that enabled the child to reach dangerous areas or objects. The participant parents agreed that by maintaining a regular pattern each day, with few changes and interruptions from the normal routines and habits, the risk of accidents to children in the home would decrease.

Parents often misjudged their child's capabilities concerning their preventive capacity, rapidity and reach. Children's capabilities for causing accidents progresses faster in some stages of their development than others, making it sometimes hard for the parents to keep up. The parents expressed that they were not always aware of the rate of their child's physical development. Often they did not expect them to have become so physically advanced. Several parents noted that their child had never shown any interest in the cooker until the accident occurred. Further, several parents expressed that because they had not understood the level of their child's physical abilities they had therefore not taken sufficient safety precautions in due time.

Background variables in papers IV and V were collected and concordance was found between the mothers in both groups (IG and CG) concerning; educational level, country of birth, how long time they had lived in Sweden, how many children they had and their total SOC-scores. Out of the 99 participants, sixty-seven mothers had a low educational level (of which 7 were illiterate). The 67 were divided into two groups 35 mothers in the IG and 32 mothers in the CG. The mothers came from 25 different countries. In both groups the mothers were most frequently from Iraq and Lebanon and had been living less than 5 years in Sweden. The number of historical injuries any of their children had suffered from (prior to the baseline assessment) was the only characteristic where there was a significant difference between the two groups. Children of the mothers in the intervention group recorded a significantly higher number of historical injuries ($n=17$) than those of the comparison group ($n=3$), ($p<0.001$). In both groups children had suffered historically, mostly from burn and scald injuries 10 (50%), followed by falls from furniture 6 (30%) and 4 (20%) of the children had suffered from either an eye injury, a crushed hand a head injury by a heavy lamp or a poisoning by medicine (IV, V).

No significant differences were found in a comparison between mothers' attitudes towards child injuries and injury prevention in the home at baseline (IV) and the precautions taken by the mothers at baseline (V), to mothers with or without experience of historical child injuries in the family (IV, V).

In one of the three assessed attitudes, towards child injuries and injury prevention at home (IV), the mothers in the IG had improved their attitudes ($p<0.025$) after the intervention. The mean/median score of the mothers' attitudes toward the fact that most injuries to young children happen at home, rose significantly from 5.68/5.00 to 6.89/7.00. The mothers who received the intervention had also improved their attitudes when compared with the mothers in the comparison group (OR=2.3, CI=1.3-4.3). No significant differences were found in the answers to the two questions were the mothers were asked to relate their personal knowledge about suitable precautions to take. Individual-based extended information given during home-visits and workshops, supported by health communicators and combined with empowerment used as a pedagogic approach, was not found to have a strong effect to improve the participant mothers' attitudes towards child injury prevention at home (IV).

The influence of high/low SOC-scores on the mothers' attitudes to child injuries and to prevention at home (IV) and the precautions they took (V), was not proven in the baseline assessments, nor in a comparison between the IG and the CG of mothers at follow-ups.

In four out of five precautions against child injuries in the home assessed before and after individual-based information, the mothers in the intervention group had significantly improved their preventative activity (V). Seventy-six percent (n=19/25) of those who had a cooker with child protection after the intervention had not had this protection fitted at the time of the baseline assessment ($p<0,001$). After the intervention, action had been taken to properly anchor the cooker ($p<0.02$), to remove the possibilities for a child to climb up to the sink or cooker ($p<0.001$) and to ensure that the electrical cords to the iron, coffee and water heating appliances were secure and out of reach for a child ($p<0.001$). In two of the five objectively assessed precautions, mothers in the intervention group child had protected their cooker (OR= 3.08, 95% CI=1.1-8.7) and removed the possibility for a child to climb up to the sink (OR=4.4, 95% CI=1.5-13.1) significantly more often than the mothers in the comparison group (V).

DISCUSSION

Methodological considerations

In a non-response analysis, background characteristics were estimated in the group of mothers who were, regarding follow-up, to be compared with mothers completing the whole study (IV, V). The number of children, the educational level of the mothers, number of historical injuries among the children, the mothers SOC-scores and their country of birth were assessed and no significant difference was found between the mothers who participated throughout the whole study and those who dropped out.

In studies I and II the variable 'origin' was observed using the parents' country of birth and not the child's country of birth. When one or both parents were born in Sweden they were considered as Swedish-born and if both parents were born in another country than Sweden they were considered as foreign-born. In studies IV and V only the mother's origin was asked for and she was considered Swedish independent of the father's origin. By dichotomising the variable 'origin' according to the definitions above, severe variations occurred within the groups of parents, respectively.

The parents in study I answered the questionnaire about precautions they had taken at home in order to decrease the risk for child accidents. The questionnaires were self-reported by the parents who completed them during a visit to a CHC unit and here there might have been a risk that parents did not always write what precautions they had taken in reality. The pressure of the expectations put upon them could have influenced the parents to report taking more precautions than they actually did. However, in that case the parents would, in reality, have taken even less precautions than shown in the results of study I. The pressure of expectation might have been decreased by the fact that the CHC-nurses could

make a home-visit in the future. Self-reporting is commonly used as a data collection method in Health Care research however the results can have been affected by different demographic variables not noticed in the study (Banerjee et al, 2009). The self-reported precautions were considered compliant if the precautions were taken to the level of 50% or more. The data were analysed at 40% and at 60% with a low variation of the result.

The second study (II) has a retrospective register study design with data collected from medical records. The internal loss was largest in study II, due to the fact that all the prompted responses were not to be found in the medical journals. One disadvantage of collecting data from medical record is the huge variation of the amount of information in them. This can mean that a large amount of internal missing as was shown in the second study (II). This methodological limitation has probably influenced the results. A strength in the present study (II) was the achievement of the goal to reach both the children consulting the UMAS and the children consulting the HCC's the result of which indicated obvious differences.

The parents of 23 children fulfilled the inclusion criteria during the study time (III). The internal loss of three child subjects was due firstly to one father not wanting to participate as he could see no clear benefit to his own child. The remaining two children were on a short visit to Sweden and therefore could not be interviewed. In the third study (III) it was planned that the interviews would take place within one week after a scald accident. However, in practice four of the interviews took place within 2 weeks after the accident due to practical reasons. This might have had an influence on the parent's possibility to reflect and perhaps they constructed a different picture than the true course of events. The 1st author's former experience of encounters with parents and children might have facilitated the interviews (III) but also when using questionnaires (I, II, IV, V) and in interventions (IV, V). However, the pre-understanding probably coloured the 1st author's analysis of the data but in order to reduce this risk, the co-author (EP-A), who did not have such pre-understanding, was strongly involved in the analyses (III). Several studies indicate the need for multifactor explanations for child accidents (Andersson, 2002; Sand, 1991; Gustafsson, 1977). In this study (III) the parents were asked for their perceptions related to the course of events. This could have been understood as if there had only been one reason for the accident however the parents' perceptions indicated multifactor explanations for the course of events. In addition the perceptions of the 20 parents gave a picture of the variations in the multifactor explanations for the course of events. The

parents' perceptions illuminated factors influencing child accidents at home in all the four, according to Gustafsson (1977), influencing factors: environmental hazard, propensity for accident, supervision and education. Another possible method to use to facilitate multifactor explanations could be through the Fault Tree Analysis. This method has been frequently used in traffic accident research (Muttram, 2002). With the accident fault tree method you may insert evidence into the fault tree branches and infer which events were active in the accident. Hereby the actual root causes become clear. It also provides a visual model and may list the scenarios under consideration (Ericson, 1998).

According to Bergum and Dossetor (2005), researchers have to be aware of the risk that participants do not understand the questions/instrument due to language and/or cultural obstacles. To overcome this obstacle (IV, V), the baseline questionnaire and the SOC-instrument were offered in the four most common languages used by the participants. However, despite the strength language and/or cultural obstacles had in the present study (IV, V) the aim was to include all the mothers with all the different language spoken. Health communicators were also used as language and cultural facilitators. The baseline questionnaire had not been used before therefore a pilot test was established to improve its validity. The two groups presented similar characteristics except for the number of historical injuries to children in their family. Although there was a difference in the types of historical injuries, there where no significant difference in to what extent the mothers had taken precautions at the baseline assessment. However, one shortcoming might be that the characteristics compared were limited to the educational level of the mothers, the number of children they had, the number of injuries the children had suffered historically, the mothers origin and their SOC-scores (IV, V). The mothers who had already taken precautions had naturally only a limited possibility to take further precautions at the time of the post-intervention assessment (V). However, the assessment of changes in the precautions taken was counted as one precaution or more, and all the mothers who were assessed in post-intervention observations had the opportunity to take precautions. A shortcoming in study IV could have been the low number of questions concerning the mothers' attitudes towards child injuries and injury prevention at home. Only in reaction to one of the three questions was there any improvement after the intervention. However the question about where child accidents occur most often might have been important in order to increase the precautions taken and assessed after the intervention (V). The two questions which did not resulted to any improvement due to the intervention in study IV, which were ('I have good

knowledge about suitable precautions to take to decrease the risk of child injuries at home' and 'I have taken sufficient precautions to decrease the risk of child injuries at home') could have been misleading for some of the mothers due to the mothers' interpretation of the words 'sufficient' and 'good'.

In the baseline questionnaire several mothers wrote that they had their cooker door made secure however, when assessed during follow-up home visits it was noted that in reality the catch meant to secure the cooker door was often not working properly. This meant that some mothers lived in a false sense of security, believing that their cooker door was secure against interference by a child (V).

The list of mothers lost for follow-up was larger in the comparison group than in the intervention group (IV, V) and the reason for this might be the longer time between the first and the last contact regarding the comparison group. The mothers in the intervention group had contact with the 1st author throughout the course of the study. The characteristics possible to assess in the non-responding group of mothers were found to be of a low variety and no significant differences were found when compared with the responding group. The variable 'Warm liquid placed out of reach for a child' was hard to objectively assess if it wasn't noticeable during the home visits and was therefore excluded in the results of the follow-ups.

A focus on the mothers' attitudes and the precautions they had taken was considered important in this study (IV, V) based on the fact that the mothers, in comparison with the fathers, are more frequently in the same surroundings as the younger children. However although the fathers did not actively participate in the study they probably had an impact on the precautions taken in the home possibly following any reflections made by the mothers after the intervention. According to Fägerskiöld (2006), fathers noted a desire for greater attention towards them from the CHC nurses and wished to have a closer relationship with them. By excluding the fathers in the present study the intervention has probably had less effect compared to how the results would have been if both parents had participated. According to the Swedish National Board of Health and Welfare, (1991) one of the main principles of the CHC's work is its focus on parental participation in order to strengthen their ability to take responsibility for the health and safety of their children. In their efforts to meet parents' needs in a health dialogue and increase their own knowledge, the nurses in a study by Golsäter et al (2009) experienced a need for further education in health

counselling. In addition Baggens (2004), showed that the nurses in the CHC initiated the conversation to a great degree and determined the topics that were to be discussed with the parents, and thereby controlled the conversation. Instead, in the present study the mothers were prompted to dominate the conversation by the 1st author empowering them to do so. In a study by Gaffney & Altieri (2001), mothers with a limited education ranked clinical strategies highly for promoting child health. These mothers had a preference for individual-based interventions and support. According to Tengland (2007b) empowerment as an approach, gives an opportunity to 'meet people where they stand'. Tengland (2007a) also stated that raising consciousness and knowledge is often sufficient enough to increase empowerment and it gives individuals control over their situation. Not realising that there are potentially dangerous situations in the home naturally limits any motivation for change. The studies IV and V show that to focus on individual-based extended information given during home-visits and workshops, supported by health communicators and combined with empowerment used as a pedagogic approach, regarding child injury prevention appears to have had only a minor impact on the mothers' attitudes towards child injuries and injury prevention at home (IV) but resulted in stronger motivation to take precautions to decrease the risk to child accidents at home (V).

The hypothetic research question that the SOC-score should have an impact on the mothers' attitudes towards child injuries and injury prevention at home was not proven in the present study. However except for the explanation that mothers' attitudes towards child injuries and injury prevention do not increase with higher or lower SOC-scores, there is also a possibility that the sample size in the present study was too small, for associations. Another explanation for why no difference was indicated between the mothers low/high SOC-scores and their attitudes towards child accident prevention might be that mothers with low SOC-scores perhaps act more over-protectively and therefore reported high scores in the attitude questions and mothers with high SOC-scores reported high scores on the attitude questions due to their knowledge about child injuries and injury prevention at home. In this explanation the mothers with high and low SOC-scores, in the present study, will not be noticed by any differences in their improved attitudes towards child injuries and injury prevention at home.

Several different methods were used in the present PhD-thesis. All methods have their limitations and strengths. However by using several different methods (mixed-methods) the knowledge in the area of child injuries at home

has increased and it has probably improved the results of quality and scope (Greene et al, 1989).

Ethical considerations

To reflect on ethical relations, is indeed important when studying the circumstances within a Health Care environment and when meeting individuals (Bergum & Dossetor, 2005, p.67-101). To reflect deeply on ethical relations is even more important when the studies involve vulnerable people. Children always belong to this group and sometimes also the parents. Lack of communicating skills, like for instance language problems, lack of education and feelings of depression can be some of the reasons for feeling vulnerable. Using empowerment as an approach (Tengland, 2007a) in my doctoral studies gives me an opportunity to 'meet people where they are'. To focus on the needs, knowledge and wishes of the parents (IV, V) in relation to child accident prevention but also to make them think about where do child accidents happen. Empowerment is based on a having a strong sense of respect for the other person and their abilities. The aim of the intervention was to have the goals for child accident prevention defined by the parents. The intervention facilitated the parents in reaching their goals by offering them practical advice and information.

Bergum and Dossetor (2005, p. 67-101) describe the huge importance of the relationship itself in health care ethics. By also asking ourselves, who are active in the health care profession, 'How should I act?' we become open not only to what we do but also to who we are. Who we are has to do with our self-respect and our respect for others. Respect for one another is the basic ground in relational ethics. There are many different perspectives for respect; consideration, honour, esteem, defence, a feeling of self-worthiness, regard, love, allowance of space and privacy, honouring the dead and personal value. The concept used by Bergum and Dossetor (2005, p. 67-101) is 'Mutual respect' where mutual is described as the interactive and reciprocal nature of respect. The Latin word 'spex' means 'he who observes' and to actually see the other person is also what respect is about. In mutual respect the health care professionals need to involve themselves in the other person with both heart and mind. A mutual and developing respect is the best assurance against paternalism. According to Donchin (1995, p. 44-55) the self is 'shaped by both social experiences and individual choice' and vulnerable people are in a specific risk situation toward paternalism. In order to understand shared meanings about what should be done, all those involved should be free to accept or not accept the interpretation that others offer, until they reach a mutual

agreement about the meaning. According to Austin (2001a) human rights are based on the belief that all humans share an intrinsic human nature that connects them and that nurses contribute to this by working across diversity and caring for all. Austin's (2001b) view on moral actions is that they are interpersonal and that there is a need to work towards an understanding of the other person's situation, perspective and vulnerability. In relational ethics we must be responsive toward the other party. It encourages us to really see the individual before us. The increasing attitude of nurses being a market commodity brought might have an effect on the important concept of trust. Can a patient fully trust a nurse whose influence within the health care with decreasing power in the organization or a nurse who will receive a bonus achieving a specific goal? Mutual respect is also about caring for ones-self and that includes growing in self-understanding.

Autonomy influences empowerment and has a huge impact on ethical relations. Bergum and Dossetor (2005, p.69-70) use the concept 'mutual respect', which occurs in an atmosphere of interdependence. Mutual respect involves not only respect for the other person but also for the different kinds of knowledge, religious and cultural values that person has. There are many different perspectives of respect but the meaning of respect used in the intervention study (IV, V) is about the sense of value. This means to fully value the mothers' goals and knowledge concerning child accident prevention and to facilitate reaching the goals through mutual solutions. According to Tengland (2007a), another term implicit in increasing empowerment is the knowledge of how to raise consciousness and to develop skills. To raise consciousness is to be aware of the situation in which a person is and what may influence this situation. Raising consciousness is often sufficient to increase empowerment which helps to give a person control over their situation. If a person does not realise that things are bad or dangerous for them or their family they will not be motivated to make changes (Rodwell, 1996).

Discussion of the findings

Although the frequency of child accidents has decreased over the past decades and is relatively low in Sweden there is no reason to believe that child accidents will disappear. On the contrary we can, according to Andersson (2002), expect new risk factors leading to child accidents which are connected with new technology, political conflict, and the sensitivity of a complex society. In a complex society there are specific risks for accidents to children (Bäck-Wiklund & Lundström, 2001). Within child accident prevention it is practice to prioritise primarily according to the risk for injury. So even if burn and scald injuries are

not statistically the largest type of injuries to children this type of injury was chosen for the studies (II, III, V) due to the fact that these injuries often lead to pain and the trauma of treatment, hospitalisation, emotional adjustment, long-term rehabilitation and the often cosmetic disfigurement (Ramakrishnan et al, 2007; Mukerji et al, 2001).

In contrast to many other types of accidental injuries to children, scald injury is increasing in Sweden (Freccero et al, 2000). The cost to society is huge and also aggravated by the many treatment scenarios, for example, the surgical operations a scald injured child has to go through. Learning to what extent parents take precautions to decrease the risks for child accidents at home (I), the characteristics of child scald injuries (II) and parents perceptions related to the course of events in scald accidents to children (0-6 years old) at home (III), increases our knowledge about the risks and how to deal with them.

In the statistical summaries we can have answers to the question of how and where in paper (II) and in paper III we have answers to why child accidents occur at home. The answer to this question gave us sufficient information to be able to make an intervention programme (IV, V).

Andersson (2002) came to the conclusion that accidents always have real causes and that we must learn about them and understand them to be able to prevent them. Common explanations, which Andersson (2002) rejected, are that accidents are caused by negligence or carelessness. The famous expression 'the human factor' is also rejected by the author (Andersson, 2002) who claims that these explanations are often used when no better explanations have been found and/or to hide other more obvious explanations. If these concepts are to be used, one has to go behind the scene and see what the real cause could have been, for instance was stress or tiredness the cause. Stress and tiredness have been indicated among the parents' perceptions to be the reason why a scald accident had happened to one of their children (III). The concept 'be born under an unlucky star' comes from the psychoanalytical Freudian view that accidents in reality happened to the one who seeks misfortune and that this was a way of self punishment (Freud, 1991). Nor is the expression 'a pure accident' very fruitful as a starting point in child accident prevention. As shown in papers II and III there are several factors influencing the occurrence of child accidents. Also according to Gustafsson (1975) and Sand (1991) child accidents often occur due to several influencing factors.

Thirty-two percent of the parents in the study (I) stated that they followed the recommendation and advice given them by the CHC-nurses to a rate of less than 50%. The advice not followed concerned precautions related to the kitchen and the cooker that is to say those precautions that reduce the risk for scald injuries to children. The intervention study (IV, V) showed that mothers who received individual-based extended information during home-visits and workshops where an empowermental approach was used, improved their attitude towards the problems related to where child injuries most often take place. The results indicate that the mothers increased their precautions in concordance with the views of Turner et al (2004) and concerning empowerment, according to Tengland (2007a).

The results from papers I, II, IV and V showed connections between the parents with a low level of education (≤ 12 years) and their compliance to the advice relating to accident precautions they could take (I, IV). Connections were also indicated concerning mothers' attitudes towards where child injuries happen most often (IV) and a higher frequency of child injury by scalds (II). Schoutzau et al (2002) also found the same situation in their studies related to compliance levels for dietary advice where a low level of education among the participants in their study reduced the level of compliance to the advice offered.

The baseline assessed characteristics of the mothers were limited (IV, V). However concordance was found in the two groups of mothers (IG and CG) in five of the six characteristics. The characteristic that differed between the two groups of mothers was 'The number of injuries that had happened to any of the children in their family, prior to the present study'. According to Vladutin et al (2006) the parents' experiences diminish the influence of attitudes as the parent's behaviour becomes more influenced by experience and expected outcomes. Marton and Tsui (2004) also argue that to understand the relevance of situations we need to relate to our experience to be able to realise what is the critical part in a situation. In our study this was not the case. Although the IG of mothers had more experience of historical injuries there was no other significant difference, at baseline in the IG of mothers' attitudes towards child injuries and injury prevention compared with the CG of mothers. This strengthens the fact that it was the intervention that improved the mothers' attitudes towards where child injuries happen most often, which was assessed in the follow-ups.

The parents in papers I, II, III and the mothers in papers IV and V had more often a foreign background and the parents with a foreign background complied with the suggested precautions by the CHC-nurses to a significantly lesser extent than the Swedish-born parents in paper (I) did. Information about suitable precautions that can be taken can be tailored more individually when given during a home-visit (Kendrick et al, 2008; Jansson et al, 2002). The age and quality of the apartment blocks vary in the different city areas. In addition the safety level in the children's environment varies from one city area to another. In the city areas chosen in papers IV and V for the intervention most of the buildings were built during the 1970's and the cookers often had doors where the security catch did not function at the time of the home-visits made in connection with the study.

The foreign-born parents (I) and the parents with a low level of education requested home-visits to a significantly lesser degree than did Swedish-born parents and parents with a higher level of education. According to Navaire-Waliser et al (2000) the views on home-visits vary in comparison with the cultural patterns of the subjects. The knowledge gained from various views on home-visits could be beneficial to explore further for the child injury prevention programmes.

A low level of education was significantly more common among the foreign-born parents (I, II, IV, V) and can be explained by what Hippisley-Cox et al (2002), Hjern et al. (2001) and Laflame & Engström (2001) express as a socioeconomic risk factor in the cause of child accidents. An especially clear connection occurred between lower socioeconomic levels in families and the high risk for child accidents that Hippisley-Cox et al (2002) found among the younger children (0-2 years old). A significantly common factor in papers II and III was the age of the children who were prone to accidents. Preventive efforts to decrease the risk for child accidents could therefore be increased concerning home-visits to families with children aged less than 2 years (II), and to parents with a low level of education (I, II, IV, V). According to Drago (2005) and Pickett et al (2003) the parent's knowledge regarding their child's development is of vital importance for the level of risk for child accidents.

The answers to the two questions concerning the mothers' attitudes toward child accident prevention at home (IV) indicated that there were no significant differences in the assessments at baseline compared with the assessments made after the intervention. Some mothers even expressed that they had less knowledge after receiving the information from the CHC-nurses. One explanation for this

may be that during the intervention they became aware of what they had not known prior to the intervention. The intervention may have led to the mothers understanding that they thought they had more knowledge about child accident prevention than they really had and therefore overestimated their own knowledge at the baseline assessment. This explanation is strengthened by the fact that the mothers who expressed decreased knowledge (IV) had taken significantly more precautions against child accidents at home after the intervention compared to the situation at the baseline assessment (V). For those individuals who are not motivated to change their attitudes after contact with CHC accident prevention programme there remains the possibility that they can be influenced for example, by the media, political debate, population movements and by the law. The Public Health approach is no longer so focused on actions against illness and injuries but more focused on motivating the population to work against the risks for disease and injury and to promote a healthy society with secure conditions. Lack of knowledge about the children's capabilities was a point also raised by the parents during their interviews (III). A possible conclusion is that through increased knowledge among the parents relating to children's development, the risk for accidents and injury to children will decrease (IV, V).

Because it is humans who both create the dangers to children in the daily living and are the ones who handle the problems these dangers cause it is important that people have sufficient knowledge and abilities to handle the risk situations that arise (Andersson, 2002). According to Klassen et al (2000) to improve the attitudes and behaviour toward security among its citizens the municipality has an important role to play by creating opportunities for its citizens to participate in the planning and introduction of child accident prevention programmes within the municipality.

Through the local CHC's general information was given to all the parents but in certain cases specific individual-based efforts were made by the CHC-nurses, for instance when personally discussing solutions on how to decrease the risk for child accidents in the home with the parents. Together with the parents the CHC-nurses can find solutions for how to make the children's surrounding environment safer and the suggested precautions could, in future be more focused on the specific circumstances in each individual home where there are young children (IV, V).

Marton and Booth (1997) described the importance of training and performing actions in order to learn. They stated that this is one of the pedagogical mile stones.

The CHC's tasks are, among others, to support the parents in their parenthood and to give information about child accident prevention. All parents with young children should have a conversation with a CHC-nurse where they receive advice that is related to their knowledge and specific needs in order to motivate them to learn how to protect their child's security at home (IV,V). The parents learning might than become more effective if the CHC-nurse and the parents together discuss the opportunities and the obstacles to take the precautions. Marton and Booth's (1997) theories of how we learn and what is needed to be able to learn seem to have an influence on the preventive work and on the educational function of the CHC-nurses (IV,V).

According to Marton and Booth's (1997) view 'thinking contact' (transformed into the CHC environment) will be achieved between the nurse and the parent only if the nurse takes the parent's perspective, collects relevant information and uses the variables that are available for preparing individual child accident prevention programmes. By starting out from the parents and the children's ordinary/daily activities, their own thoughts, and to a great extent from their own questions, the parents will see a relevant that will facilitate the nurse's possibility to meet the parents and to achieve 'thinking contact'.

One part of the individual-based intervention was the home-visits (IV, V). Initially, discussing attitudes related to the prevention of child injuries at home had a low impact on the mothers' attitudes (IV). However the discussions became more relevant for the mothers when they included consideration for the living circumstances of the family and when related to the mothers' knowledge about child injury precautions taken at home (V). The home visit is considered to be an important tool for the injury prevention work of the CHC (Kendrick et al, 2008; Jansson et al, 2002) and a change in people's behaviour is difficult to affect using workshops alone (Cagle et al 2006). Therefore home visits were chosen as a method to be used in the intervention and also the collection of objective post-intervention data. To carry out the intervention at home appeared to increase its effect, as Babul et al (2007) also found in their studies. In this study (V), home visits facilitated discussions around suitable precautions that could be taken and how to deal with any obstacles against fulfilling them. Although there are good arguments for increasing the number of home-visits by the CHC-nurses, the number of home-visits to families with children, 0-6 years old has actually decreased by 14% from 76% to 62%, since 1980. Most often the CHC-nurses explain the decreasing numbers of home-visits as being caused by lack of time (Jansson et al, 2002). Beside the home-visits, the intervention consisted of giving

individual-based extended information and workshops using the empowerment approach however the present study does not reveal what part of the intervention had the most effect.

One principle in education is also to use a variation of tools. This can be seen from the CHC-nurses own understanding and what the parents can connect to the content. For example could a joint visit by the CHC-nurse and the parents to the landlord of an apartment where a family live with young children be of any help for seeking assistance for accident prevention, from the property owners (Kreuter & Wray, 2003).

Gedda (2001) described, in a PhD-thesis, the nurse's pedagogical function in the CHC as an 'official secret' and claimed the CHC-nurses preventive work, to a great extent, is about pedagogic because the nurses communicate knowledge and capability. According to Gedda (2001) the nurses' pedagogical function isn't visible, problemised or reflected upon either by the nurses themselves or by their management. Although the nurses in the study by Gedda (2001) described education, information and giving advice as a major part of their work, the nurses did not state that their work with education was rather implicit in the nurse role.

When the nurses expressed a wish to develop and increase their competence it was rather connected with the content of facts than to mediating knowledge. The pedagogic function and the pedagogic work were not reported and were not asked for in the annual reports. By using ordinary concepts like guidance, talk, information, advice etc. the inclination to reflect on knowledge mediation as a pedagogic task decreased, according to Gedda (2001). Probably the parents' inclination to follow advice and suggestions from the CHC-nurses about how to decrease the risk for child accidents at home could be increased if the nurses reflected more on mediating the knowledge in itself and thereby becoming more open to individual variations when mediating knowledge (IV,V).

According to Marton and Tsui (2004, p. 56) we understand the relevance in a situation in relation to what experiences we have received. To be able to understand the risks in a situation and to be able to be motivated to prevent, for example child accidents, knowledge about what can possibly happen if precautions are not taken is sufficient. Marton and Tsui (2004, p. 57) also claim that in natural powerful action and doing different things in different situations, lie the strongest learning possibilities. Natural powerful actions mean that there is a relevant

experience to connect to the situation and also that there is a possibility to take actions. The learning possibilities might therefore be strengthened if the nurse and the parents together find obstacles and opportunities toward taking precautions at home (IV, V). Marton and Tsui (2004, p. 5) express it as: 'Powerful ways of acting spring from powerful ways of seeing'.

To be able to learn requires the opportunity to think for yourself, find the answers and take responsibility for learning (Marton & Tsui, 2004). To facilitate this there is a need for the nurse to avoid giving complete answers but rather by moderating which helps the parents find the answers. If the nurses give an exact answer as to what precautions the parents' ought to take to decrease the risks for child accidents at home, the conception arises that it is the nurses who need to take the responsibility for the children's security rather than the parents' learning to take responsibility themselves. Empowerment when used as a pedagogic approach (IV, V) was found suitable especially towards increasing the precautions taken by the mothers (V). To relate to the mothers' knowledge and needs in the home environment might be an explanation for the effect the intervention had on the precautions the mother's took in four out of five assessed precautions (V). In the answers to one of the three questions the mothers' attitudes to child injury prevention was found significantly increasing after the intervention (IV). The answer to the question gave the mother's view of where child accidents most often occur and that this was in the home. Perhaps after realising that accidents to young children most often happen at home the mothers increased their precaution activities. In the answers to the two questions about prevention, the mothers' attitudes had not significantly improved in any of the groups, possibly since they were already high at baseline. It might have been misleading for the mothers to assess their own knowledge about suitable precautions to take since some mothers expressed a decrease in their knowledge after the intervention. An explanation for this could be, that by increasing their knowledge through the intervention the mothers realised that they knew less at baseline than they thought they did.

CONCLUSION

Associations were found between the parents with a low level of education and less compliance towards taking precautions, mother's with less insight as to where child accidents occur and a higher number of children who suffered from scalds.

In the question of which children suffered most from burns, the highest number were boys aged between one and two years.

Scalds constituted most of the burn injuries to young children and almost two thirds of these were caused by hot liquid such as coffee or tea.

Children to foreign-born parents were more frequently affected by burn and scald injuries and the extent of their injuries often larger.

Ninety-six percent of the burn and scald accidents occurred in the home environment, most often while a family member was near to the child.

The Health Care Clinics more often admitted children with burn/scald injuries to hand/arm caused by hot food than did the University Hospital (UMAS).

Parents' perceptions of the influencing factors related to scald injuries among children were elucidated in two themes: 'Deviation from the normal' and 'Misjudgement of the child's capabilities'.

'Deviation from the normal' could, according to the parents, be a distraction caused by something unexpected happening for example: someone visiting or an important telephone call, if a family member was tired or ill, suffering from

mental or physical stress or the sudden failure of a kitchen utensils or machines to function correctly. These were examples of what could reduce a parent's observation of their child's activity.

'Misjudgement of the child's capabilities' concerned children's preventive capacity, rapidity and reach. Several parents expressed that they had not understood the level of their child's physical abilities and had therefore not taken sufficient safety precautions in due time.

In one of the three assessed attitude questions, towards child injuries and injury prevention at home, the mothers in the intervention group had improved their attitudes. After the intervention mothers realised that child accidents most often occur in the child's home.

In four out of five precautions against child injuries in the home assessed before and after individual-based information, the mothers in the intervention group had significantly improved their preventive activity.

In two of the objectively assessed precautions, the mothers in the intervention group improved their preventive activity significantly more often than the mothers in the comparison group.

CLINICAL IMPLICATIONS AND FUTURE RESEARCH

Parents with a low level of education were found to take precautions at home against child accidents to a lesser extent and more children suffered from injuries in these families than in other families. To better reach the families that are at risk for child accidents, the Child Health Care-nurses could use more variation in their pedagogic work within child accident prevention.

The results from this PhD-thesis support the proposal that Child Health Care-nurses should meet families in a more individualistic way. Probably the parents inclination to follow advice and suggestions from the Child Health Care-nurses showing how to decrease the risk for child accidents at home would be increased if the nurses reflected more on mediating knowledge in it self and thereby become more open to individual variations when doing so. The parents need different discussions related to their knowledge and specific needs in order to motivate them toward protecting their children.

This PhD-thesis also supports the need for offering more information to parents about children's development and its impact on the risks for child accidents. For the Child Health Care-nurses to be able to improve child accident prevention it is important to realise the risk factors for child accidents. By using individual-based information with an empowermental approach, both in workshops and at home-visits, the families at risk for child accidents at home will be supported in their need for improved knowledge and competence. By trying to 'find the parents where they stand' and build on the parents' existing knowledge, letting the parents describe the problem or need, then find a solution with suitable preventive actions their motivation to take precautions against child injuries at home will probably increase.

For their meetings with families individually, Child Health Care-nurses could increase their cultural and language competence. This could be extended, for instance, through intensified collaboration with immigrant associations and health communicators. Health communicators are health professionals who plan and mediate health care in their respective native languages and work in collaboration with the Child Health Care. To reach those families at risk for child accidents at home, a folder with images of dangerous situations would be useful to have. A standardised feed back that takes place 2 months after the parents have received the child accident prevention information from the CHC-nurse, when their child is about 8 months old, could help to reveal any remaining obstacles for parents to take safety precautions at home. Child accident prevention programmes could also include health promotion and prevention at a municipal level. Many kitchens in newly built or restored houses have an open planning and therefore there are no opportunities to close any doors to the kitchen. Another task for the Child Health Care to work with is the design of a kitchen safe for young children. It is often so that the kitchen drawers are put close to the cooker so that children can use them as steps to climb up to the cooker or sink. Placing drawer units away from the cooker and ensuring that the cooker is properly fixed to the wall behind would eliminate a major risk. If the child accident prevention programmes could include safety advice for interior designers of municipal housing it would in all probability lead to a decrease in child accidents in the kitchen.

It is of great importance that a framework for considering the problems of burn and scald injuries in children is presented from a preventive perspective and in combination with evidence-based interventions used to create injury prevention programmes for implementation by the Primary Health Care.

There is a great need for studies in the Child Health Care in general but also especially specific focusing on child accident prevention. There is a need for research using qualitative methods to further elucidate accident risks for children in the home environment but also intervention studies aimed at reducing the risk of injuries among children. Interesting research for the future includes also the association between injuries to children, the children's development and the parent's views regarding their child's development.

POPULÄRVETENSKAPLIG SAMMANFATTNING

Syftet med avhandlingen var att beskriva barns (0-6 år) utsatthet för olycksfallsrisker i hemmiljö genom att fokusera på föräldrars uppgifter om egen följsamhet till olycksförebyggande råd (studie I), omfattningen av bränn- och skållskador (studie II), föräldrars uppfattningar om påverkande faktorer till olyckshändelser (studie III), samt effekten av individanpassad information om barnolycksfalls (studie IV och V).

Den första studien bygger på enkätsvar från föräldrar och urvalet gjordes så att det skulle vara representativt för Malmö som helhet. Studie II bygger på en granskning av barnens journaler avseende bakgrundsdata och diagnos. I studie III intervjuades föräldrar till barn som skållskadats. Den fjärde studien (studie IV och V) är en interventionsstudie med en jämförelsegrupp och designen är quasi-experimentell.

Drygt 30 % av föräldrarna i studie I uppgav att de till mindre än 50 % följde de förebyggande råden som sjuksköterskan från barnhälsovården förmedlat. Föräldrarnas bakgrund och socioekonomiska situation hade betydelse, särskilt deras utbildning, för i vilken utsträckning de följde råden.

De barn som oftast drabbades av brännskador (studie II) var 1-2 år gamla och pojkar (64 %). Barn till utlandsfödda föräldrar drabbades oftare än barn till svenskfödda föräldrar. 81 % av brännskadorna var skållskador.

Föräldrarnas uppfattningar om faktorer som påverkat att barnen drabbades av skållskador (studie III) kan beskrivas i två teman: ”Avvikelse från det normala” och ”Missbedömning av barnets förmåga”. En av faktorerna som enligt föräldrarna

påverkat att olyckan hände kunde vara att något oförutsatt inträffade, som ett oväntat besök eller att någon familjemedlem var trött eller stressad. Föräldrarna beskrev att de ofta överskattade sina barns förmågor att förstå faror och inte var medvetna om vad barnen kunde förmå att göra förrän barnen hade gjort det. Det handlade om missbedömningar av barnets snabbhet och räckvidd men också av barnets preventiva förmåga. Föräldrarna uppgav att de hade svårt att följa med i barnets snabba utveckling, särskilt under de två första levnadsåren.

Individanpassad utökad information i samband med hembesök, vid behov underlättade av hälsoinformatörer visade sig ha en mindre inverkan på mödrarnas attityder till barnolycksfall (studie IV) men en större inverkan på vidtagna åtgärder i hemmet för att minska risken för barnolycksfall (studie V).

Den viktigaste slutsatsen som kan dras från resultatet av studierna är att mödrarna både underskattar och överskattar barnens förmågor och aktiviteter i hemmet och att riktad och individanpassad rådgivning kan motivera mödrarna att vidta fler olycksförebyggande åtgärder i hemmet. Vidare väcks frågan hur barnhälsovården når och möter föräldrarna med sin information om förebyggande åtgärder. Kunskaperna från dessa studier, stödjer barnhälsovården att arbeta mer individanpassat.

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