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Psychological and family variables in childhood burns. A review

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ABSTRACT

This research analyzes the psychological variables related to patients and their families involved in childhood burns. These injuries are usually the result of a home accident whose main cause in children younger than five are scalds. According to the literature, the variables involved deal with the following issues: 1. The child's psychological and behavioural profile before suffering the accident. 2. The psychological impact of the injuries derived from the burns. 3. Family and socio-demographic variables. The studies that have been carried out point to hyperactivity, attention problems, irritability and anxiety as premorbid conditions. During their hospitalization, the children with burns suffer from fear, anxiety and sleeping disorders. Family functioning style, parent psychopathology and upbringing patterns are some of the variables studied due to their relation to childhood accidents. The characteristics of the injury, that is to say, the burned body surface and depth, the cause and the location, plus the context of the accident determine the prognosis and the psychological scars of the child and his/her family after the accident.

Key words: childhood burns, individual and family variables, psychological consequences.

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INTRODUCTION

The interest shown by Spain in the psychological repercussions of childhood burns on the basis of the circumstances involved, the kind of injury, the associated physical consequences and the strategies to cope with their negative impact is very limited if we compare the number of studies conducted in Spain with the number of those carried out in other countries (Burd and Yuen, 2005).

Spain registers 300 burn patients per 100,000 inhabitants, 14 cases of which require secondary hospitalization (Curiel *et al.,* 2006). Spain has nine major burn units, two of them in the Autonomous Region of Andalusia, in which the most common admissions are of children and adults older than 69. Specifically, 20% of those admitted to the Unidad de Grandes Quemados del Hospital Virgen del Rocío de Sevilla (Unit for Serious Burns at Seville's Virgen del Rocío Hospital) are children younger than eight years old (Gómez-Cía, Mallén, Márquez, Portela and Lopez, 1999). An initial approach to present day knowledge about the psychological and family variables implied in childhood burns derives from some points of interest, namely:

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a) the data available about incidence and prevalence, which in our ambience reveals that burn accidents are to be found most frequently among young children (Carol, Belmonte, Llort and Iglesias, 2000); *b)* the seriousness of the physical and psychological consequences undergone by the minors affected by the injuries. The severity of the subsequent effects of the burns requires paying attention to; as well as reviewing the existing findings and conducting new research on the issue, and *c)* the large amount of research on childhood burns carried out by other countries from the 1970s, which has provided conclusive findings and opened up new research lines in the field.

Bearing in mind the age ranges of the patients attended to, the most common cause for childhood burns in children younger than five is scalds caused by skin contact with hot liquids (water, coffee, or oil, among others), objects and surfaces in the context of a home accident which usually takes place in the kitchen and in the presence of adults. Older children often get burned with direct fire, hot objects, electricity, explosions (e.g. firecrackers) and chemical agents (Lorenzo. 2009).

Burns are lesions caused by any agent which causes total thermal variation. Even though morphological alterations of the burned skin have a similar pattern, the seriousness, prognosis and evolution are usually influenced by the kind of agent involved, the size of the burned area, the length of time exposed to the thermal agent and its temperature

(Lorente and Esteban, 1998).

The issues that characterize burns are extension and depth. Extension is expressed by the percentage corresponding to the body surface affected. The depth of injuries (epidermal, dermal, superficial, deep, sub-dermal and deep sub-dermal) conditions the local prognosis, modifies life prognosis and constitutes the main factor to establish the recommended surgical intervention in each case. Other relevant factors are the patient's age, the cause, the location of the injury, the existence of previous pathologies that might lead to a predisposition of suffering burns and the existence of associated injuries that might negatively influence prognosis (García, Herrera, García, Velásquez and Picó, 2000).

Socio-demographic, personal and family variables have received special attention by burn related studies due to their implication in determining the kind of burn and later treatment. Interest has been paid to economic and social resources, educational practice, parent supervision and unfavourable situations such as unemployment. The age and sex of the patient have proved to be relevant personal factors. As a matter of fact, age is related to the burn type and incidence, and boys are more prone to get injured by burns than girls (Celko, Grivna, Danova and Barss, 2009).

The first studies about effects and reactions from a psychological perspective were conducted in the 1950s. The study by Watson and Johnson (1958) stands out and describes the traumatic reaction of five children with burns. During the 1970s new research studies were conducted which showed interest in child and youth burns and their long term effects. Since that time the research studies have focused on one or some of the following issues:

1) The child's psychological and behavioural profile before suffering the accident.

The question set out is whether children with emotional disorders are more prone to burns or rather it is severe burns that provoke disorders in minors. Piazza-Waggoner *et al.* (2005) used the *Behavioral Assessment System for Children* multidimensional behaviour scale (Reynolds and Kamphaus, 1992) in order to assess the behavioural and emotional difficulties observed in 94 children aged 2.5-18 years before their hospitalization due to burns. The data from parents provided information that indicated that the youngest children showed hyperactivity, anxiety, aggressiveness and attention problems before the accident. In the case of school age children these problems were linked to depression related symptomatology and behavioural problems. It is well known that hyperactive children find it difficult to foresee the consequences of their behaviour and to anticipate risks. Lighting matches, manipulating electric appliances or playing with firecrackers are some of the events involved in accidents and subsequent burns (Badger, Anderson and Kagan, 2008). Apart from this study, Andersson, Sandberg, Rydell and Gerdin (2003) dealt with social competence and behavioural problems in a sample of burned children in comparison to a control group. The results showed differences between both groups in the dimensions assessed. The authors, furthermore, alluded to the possible influence of the child premorbid characteristics.

2) Psychological impact of the injuries caused by the burns.

The studies conducted reveal that children experience fear and anxiety in face of the treatment and the medical staff, whom they perceive as responsible for the pain they suffer (Delgado, Moreno, Miralles and Gómez-Cía, 2008).

The severity of the burn may on occasion require lengthy invasive treatment whose nature, duration and derived complications may bring about alterations and adverse psychological reactions, even if such effects seem to be conditioned by psychopathology previous to the injury, psychological disorders brought about by the accident itself and the subsequent injuries. In this sense, the pain provoked by the injuries contributes to the child's psychological disturbance (Henry and Foster, 2000). Rivlin and Faragher (2007) studied 44 children aged 11-16 who had suffered burns 3-14 years before. The participants were grouped by age, sex, burned body surface and location of the injury. The results obtained show that in spite of the length of time that had passed after the accident, the variables mentioned affected the social performance, depression and anxiety experienced by the children at the time the research was being conducted.

The studies also reveal that the children who have suffered from burns can experience depression, anxiety, fear and body image alterations after hospitalization. These effects are, in any case, related to the physical consequences of the injury and to the way the affected people cope with their everyday difficulties and with their peers (Liber, Faber, Treffers and Van Loey, 2008). In this sense, Landolt, Buehlmann, Maag and Schiestl (2009) allude to post-traumatic effect after the burns. Thomas, Blakeney, Holzer and Meyer (2009), have studied psychological alterations in teenagers who got burned when they were children. The results show that 52% of the teenagers meet the criteria of going through one or more psychiatric disorders and 22% were diagnosed with one or more comorbid disorders. Noronha and Faust (2007) found that some variables related to the injury (such as the location and extension of the burned body surface, the pain felt, or admission into the intensive care unit, etc), age, childhood premorbid psychological performance, that is, previous psychopathology and coping styles, visible sequelae of the accident, family socio-demographic variables, parent psychological adjustment and social support, among other variables, affected the psychological impact associated to burns in children.

3) *Family variables*.

The published studies reveal the influence of a number of family variables in childhood burns, for instance among others, family emotional imbalance, parent psychopathology, disfunctional families and adverse family environment with educational practices far removed from the supervision and follow-up of child behaviour (C. Van Aken, Junger, Verhoeven, Van Aken and Dekovic, 2007).

In order to emphasize the need to provide psychological support to parents of burned children while they are hospitalized, Phillips and Rumsey (2008) studied the psychological disorders detected in

a sample of parents of burned children. Given the close affective relationship with the child and his or her conditions during hospitalization, the mother figure has received special attention and interest. Some studies show mothers with emotional alterations, such as anxiety and depression, who manifest strong criticism and distrust about the effectiveness of the medical treatment recommended and about the health care practices adopted in the care of their children.

Kent, King and Cochrane (2000) assessed mother anxiety in three groups of children, namely with serious illness, with fractures and children who had suffered burns. The results showed that the mothers of children with burns maintained a high anxiety level in the six months after the accident.

Hall *et al.* (2006) described post-traumatic stress episodes in parents of injured children three months after the accident (approximately 47% of the sample population). Finally, Phillips, Fussell and Rumsey (2007) also found that the normalization of family reactions after the accident, the family's support of the children in face of possible sequelae and the social support received, positively affected the psychosocial adjustment of the child and their family after the accident.

DISCUSSION

In spite of the unequal data on the incidence of burns, the fact is that due to their characteristics, effects and consequences, they are regarded as one of the most serious and adverse kinds of injuries experienced by the human being. The concern increases if we consider that burns affect especially the child and youth population, specifically children aged 1-15.

The scientific interest in the psychological repercussions of these injuries during hospital admission, the post-hospitalization period and the later adaptation (sequelae) has increased over the last few years due, in part, to the high number of incidents recorded and to advances in medical treatment, and this has significantly contributed to guaranteeing the survival of many patients. The studies conducted to find out the origin and extent of childhood burns have revealed that they take place in the home environment and in the presence of adults. Hence, over the last decade a number of studies have emphasized the opportunity to develop prevention programmes and to disseminate the available knowledge in order to avoid risk situations. The studies reviewed focus on socio-demographic, economic and educational variables in the family environment and on those related to the children who suffer these accidents, such as age, gender or psychological profile, etc. The findings show that the variables involved in the circumstances of the accident coincide in most studies, irrespective of the origin of the children and the relatives affected.

In addition to the above, the research studies are interested in determining the psychological and behavioural profile of the burned child. The works published reveal some premorbid conditions related to impulsiveness, hyperactivity, little awareness of risk and the consequences of certain behaviour. There is no doubt that identifying and learning about emotional and behavioural variables prior to the accident will allow for the development of further prevention strategies and provide more information to parents, as well as enhancing effective coping styles.

So far, the study on the psychological impact of childhood burns has basically focused on the hospitalization period. The existing studies have drawn attention to the role of the family, especially the mother's, as much at the origin of the accident, during hospitalization and after discharge. Special attention has been given to the mother's psychological characteristics and personal variables, which, according to research studies, determine the reaction after the accident and the family's coping ability. When the affected child goes back home after hospitalization, family adaptation to the new situation, adequate or inadequate styles in coping with likely visible scars and the need for lengthy surgery treatment constitute another area of study in this field. The interest in these issues seeks to develop intervention programmes in an attempt to alleviate the impact of the accident on the family and to encourage children and youths to take part in children's and young people's, relating to each other activities, in order to improve their psychosocial adjustment.

The scientific attention to and findings on the psychological effects observed on burned children and on their families have encouraged interest in psychological interventions addressed to these patients and their relatives. Cognitive behavioural techniques to cope with anxiety and to reduce stress as well as the application of new technologies such as virtual reality to control pain, relaxation techniques, counselling, and so on, are some of the important options.

Finally, it is worth indicating some limitations related to the study of this problem, namely *a)* the constraint coming from the child's assessment, carried out through the reports provided by parents and form teachers. Due, on occasions, to the severity of the burns and the young age of the children under study, the information obtained in the research studies frequently comes from people alien to the family environment. *b)* The study on variables sparking off or on a predisposition to suffering this kind of accident is a retrospective one. This is a fact recognized by the researchers on the issue, who admit the limitations derived from determining the psychological profile of those children who will suffer burns in the future (Armstrong, Gay and Levy, 1994). Nevertheless, the prospective character of the studies published up-to-date seems to be associated to the very object of the research. The works carried out with this goal have been conducted with the availability of the subjects of study, that is to say, patients who have actually suffered from burns. In spite of the recognized limitations, the findings obtained have permitted the proposal of initiatives and the carrying-out of research studies with prophylactic goals, in other words, studies seeking to determine socio-demographic, personal and family characteristics which are considered to be at risk of suffering burn accidents (Joseph, Adams, Goldfarb and Slater, 2002).

CONCLUSIONS

Starting from the abovementioned, we conclude that childhood burns, which usually take place

at home, are most often scalds affecting children younger than five years old. The prognosis is related to the size and depth of the burn, as well as to the location of the injury, the cause, the patient's age, previous pathologies and associated injuries.

During the hospitalization period, children with burns are observed to show anxiety and fear associated to the pain produced by the injuries and the treatment. The child's emotional response is related to the seriousness of the pain and previous psychopathology.

The family variables involved in childhood burns include unfavourable or dysfunctional family environments, little supervision of the child's behaviour, family emotional imbalance and parental psychopathology.

To end, it is worth suggesting further research lines. The interest in specifying the correlation between the conditions and psychological variables aforementioned and the risk of suffering burn accidents is likely to be consolidated. The correspondence between behaviour disorders, specifically attention deficit hyperactivity disorder and accidents by burns, is one more area of attention for further research studies. Furthermore, some studies are still pending, among others, new contrastive studies between burned children and various groups of hospitalized children with different pathologies, in order to determine the extent of the psychological impact experienced by one or the other.

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