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ORIGINAL PAPER

PAIN COPING STRATEGIES IN PEDIATRIC DENTAL CARE

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Abstract

Aim: To determine pain coping strategies used by children during dental treatment. *Design:* A single cross-sectional survey with a questionnaire carried out in 199 children aged 10–17 years. *Methods:* The Waldron/Varni Pediatric Pain Coping Inventory was used. Interpretation of the results was preceded by exploratory factor analysis and Varimax orthogonal rotation. Statistical analysis of results concerning coping strategies was performed with descriptive statistics methods: the mean, standard deviation and median. Quantitative parameters were compared with the two-sample t-test, Mann-Whitney and Kolmogorov-Smirnov tests. All the tests were performed at a level of significance of $\alpha = 0.05$. *Results:* The results were interpreted based on analysis of 25 items structured into five factors of the modified questionnaire, revealing strategies used by children to cope with pain and perceived as effective by them. The most frequently reported strategies were cognitive self-instructions. Younger children preferred the use of social support; passive relaxation and cognitive self-instructions were preferred by girls and boys, respectively. Hospitalized children needed social support more often than outpatients, and so did children undergoing dental treatment with parental accompaniment. *Conclusion:* Differences in the use of coping strategies were noted, particularly with regard to children's age category, gender, hospitalization and parents being present during treatment. Routine recommendations of how to effectively cope with pain during dental treatment without considering the child's individuality and particular situation are not advisable.

Keywords: pain, coping, child, dental treatment, factor analysis.

Introduction

Dental procedures are frequently associated with experiencing fear and pain. Dental pain and fear are anticipated not only by adults but also by children (Langthasa et al., 2012; Milson et al., 2002; Murtomaa et al., 1996). However, pain intensity during the procedure may not correspond with children's expectations (Mareš et al., 1997a; Sine, 2012). In their literature review, Klingberg and Broberg (2007) reported prevalence of dental fear and anxiety to range from 6% to 12% in children and adolescents.

According to Kilian (1996), pediatric dental fear may stem from the reportedly unpleasant procedures, scary dental office and negative past experiences with dental care. However, dental fear and anxiety are influenced by many other factors, from socio-demographic, to psychosocial and behavioral, to genetic (Coric, 2014; Milgrom et al., 1994).

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Dental examinations and procedures are carried out in one of the most sensitive parts of the human body using metal instruments. Therefore, preparation of hard dental tissues and transmission of vibrations to the neighboring tissues may be unpleasant for patients but not necessarily painful (Mazánek et al., 1999). The supine position during dental treatment may also be perceived as uncomfortable by pediatric patients. Perception of pain in childhood reflects the immediate comprehensive integration of behavioral changes, cognitive, affective and psychological components of an individual in the context of their personality development and socio-cultural environment (Liossi, 2006; Mareš, 1997b; Stinson et al., 2006; Versloot et al., 2004; Walco et al., 2008).

Even though pain prevention and relief are used in pediatric health care, pain often cannot be completely eliminated during dental treatment. Pain may already be present as the child comes to a dental office (more frequently acute pain) or it may occur during dental treatment (procedural pain). This may either arise from the tooth or it may be felt by the child in the facial or cranial region (Mareš et al., 1997b). The basic task of health professionals and parents is to cooperate with children in preventing dental pain,

both acute pain associated with tooth damage, in particular dental caries, and procedural pain.

Long-term preventive measures aimed at lowering the incidence of dental caries and the associated pain mainly include adequate oral hygiene, regular dental check-ups prompted by patterns of parental behavior involving positive attitudes, and preferred tooth-friendly diet low in sugars (Mazánek et al., 1999; Merglová, Ivančaková, 2010). The preventive strategies and interventions influencing children's perception of dental pain intensity include their preparation for the dental procedure, adequate communication, psychotherapy techniques (tell-show-do, modeling, Ginott's method, abreaction, implosion, etc.), pharmacological therapy and prophylaxis (Fialová, Nováková, 2000; Ščigel et al. 2007; Walco et al., 2008). The American Academy of Pediatric Dentistry (2011) adopted recommendations to educate health care providers about behavior guidance techniques in pediatric dentistry that may promote effective cooperation with children. Among others, the guideline suggests that coping strategies used by children receiving dental care should be mapped and the effective ones should be accepted and supported. According to Versloot et al. (2004) and Curry (1985), coping strategies used during dental visits are specific. In pediatric patients, they are determined by their mental, social and emotional development and dependent on intellectual abilities of particular children; they are usually different from adult individuals' coping strategies (Mareš et al., 1997b).

Pain coping strategies, as cognitive and behavioral responses made by patients coping with painful episodes, may be either an adaptive (coping with a situation, pain management and emotional calming) or a maladaptive process (a change in an individual's functional status). In the process, both simple strategies, with a short term effect, and complex strategies, with a long-term effect, may be used (Mareš et al., 1997b). Factors affecting the selection of these strategies include personality aspects (mental development level, gender, ethnicity, individual personal experiences), mental level, factors stemming from the context of long-term or current social (presence of parents or peers) or physical influences (Medveďová, 2004).

To evaluate pain coping strategies in children, various assessment tools have been developed, such as the Child Version of the Coping Strategies Questionnaire (CSQ-C) (Gil et al., 1991; 1993), Pain Coping Questionnaire (PCQ) (Reid et al., 1998) or Dental Cope Questionnaire (Cuthbert et al., 1982).

Aim

The survey aimed at determining how children cope with pain and stressful situations during treatment for dental caries.

Methods

Design

A single cross-sectional survey with a questionnaire was carried out between January and June 2012.

Sample

The sample comprised 199 children (100 boys and 99 girls) aged 10–17 years (M = 14 years) who presented to the Stomatology Department of the 2nd Faculty of Medicine, Charles University and University Hospital Motol in Prague with the diagnosis of dental caries (K029). Of those, 100 children were treated as outpatients and 99 were hospitalized. A total of 127 children were accompanied by their parents (88 outpatients and 39 inpatients). One hundred nine children had been treated for dental caries previously.

Data collection

Given the objective of the survey, the Waldron/Varni Pediatric Pain Coping Inventory (PPCI) (Varni et al., 1996) was selected; the instrument had been translated into the Czech language by Marešová and Mareš (1997). Respondents (i.e. children) indicated their responses on a 3-point Likert scale (0 = *I never do it*, 1 = *I sometimes do it*, 2 = *I often do it*), expressing their agreement with the effectiveness of a particular strategy leading to pain relief. The questionnaire was supplemented with demographic data on children and their previous experiences with dental treatment.

The PPCI consists of 41 items in the following 5 scales: (i) Cognitive Self-Instruction, 7 items; (ii) Seek Social Support, 10 items; (iii) Strive to Rest and Be Alone, 9 items; (iv) Cognitive Refocusing, 9 items; and (v) Problem-Solving Self-Efficacy, 6 items.

Data analysis

The analysis of results of coping strategies was preceded by exploratory factor analysis of the PPCI which had not been published in the Czech literature. Appropriateness of the factor analysis was verified by Bartlett's test of sphericity (test criterion value = 2217.20; p = 0.000). The NCSS 9 statistical software was used to analyze frequencies of individual responses. Subsequent transformation of data aimed at finding a simple structure was performed using Varimax orthogonal rotation. The factors were determined by the PPCI.

Statistical analysis of results concerning coping strategies used by children was performed with descriptive statistics methods: the mean, standard deviation and median (50th percentile). To compare quantitative parameters, individual defined factors between groups where hypotheses of agreement were tested against the alternative disagreement, two-sample t-tests were used, or the Mann-Whitney and Kolmogorov-Smirnov non-parametric tests of statistical significance, in cases of significant non-normality of the two samples. All the tests were performed at a level of significance of $\alpha = 0.05$.

Results

Exploratory factor analysis

Exploratory factor analysis represented results of communalities expressed by values obtained by analysis of the basic sample in individual factors for variables 1 to 41 (Table 1) and showed 34 increased factor loadings, thereby reducing the original set of items in the inventory from 41 to 34.

Table 1 Factor analysis – overview of the communalities

PPCI items	Factor				
	1	2	3	4	5
1 I go to bed.	0.00	0.00	0.04	0.00	**0.21**
2 I ask for medicine.	0.00	0.01	0.02	0.00	0.06
3 I ask for a hug or a kiss.	0.06	0.00	0.08	**0.25**	0.03
4 I ask for someone to understand how I hurt.	0.04	0.05	**0.21**	0.03	0.01
5 I cry or yell.	0.00	0.02	**0.25**	0.01	0.00
6 I think about going away on vacation or a trip.	0.00	0.08	0.02	**0.18**	0.00
7 I play with my friends.	0.00	0.08	0.00	**0.21**	0.00
8 I watch TV.	0.05	0.00	0.00	0.06	0.07
9 I play a game.	0.01	0.04	0.00	**0.34**	0.01
10 I eat or drink something.	0.00	0.00	0.00	0.06	0.02
11 I rub the sore spot.	0.00	0.03	**0.22**	0.01	0.05
12 I tell myself to be brave.	0.02	**0.33**	0.03	0.02	0.00
13 I have my mother, father or a friend sit with me.	0.12	0.01	0.12	**0.25**	0.02
14 I try not to think about the pain or hurt or ignore the pain or hurt.	0.09	**0.24**	0.03	0.00	0.01
15 I take deep breaths.	0.00	0.14	0.08	0.00	0.01
16 I think about happy things.	0.00	**0.19**	0.00	0.05	0.00
17 I play with my pet.	0.03	0.01	0.02	**0.33**	0.00
18 I read a book or color in a coloring book.	0.04	0.06	0.00	0.08	0.01
19 I talk about what I did today.	0.00	0.14	0.04	0.12	0.00
20 I think it will just get worse.	0.00	0.02	**0.34**	0.01	0.00
21 I wish for it to go away.	0.03	0.02	0.08	0.01	0.03
22 I imagine I can make the pain or hurt disappear by myself.	0.02	**0.30**	0.00	0.00	0.00
23 I pretend I don't have any pain or hurt.	**0.34**	0.00	0.00	0.00	0.02
24 I tell myself that it will be all right.	0.00	**0.26**	0.00	0.01	0.06
25 I try to be brave and not say anything.	0.06	0.00	0.09	0.12	0.00
26 I sit quietly.	0.02	0.13	0.01	0.00	0.01
27 I lie down.	0.00	0.00	0.02	0.02	0.15
28 I tell my mother or father.	0.13	0.03	0.01	**0.20**	0.05
29 I ask to stay by myself.	**0.24**	0.00	0.00	0.01	0.01
30 I ask to go to the doctor.	0.05	0.10	0.04	0.02	0.04
31 I know that I can do something to make the pain or hurt feel better.	0.00	0.10	0.00	0.00	0.00
32 I know I can ask for something that will make the pain or hurt feel better.	0.01	0.12	0.00	0.03	0.01
33 I ask someone to explain to me why I hurt.	0.03	0.17	0.07	0.03	0.00
34 I put ice or heat on the sore spots.	0.01	0.12	0.04	0.00	0.04
35 I go to sleep until it feels better.	0.01	0.03	0.02	0.01	**0.41**
36 I get mad or be mean to other people.	0.06	0.01	**0.20**	0.01	0.00
37 I squeeze someone's hand or something else.	0.01	0.00	**0.25**	0.13	0.02
38 I ask someone to tell me that the pain or hurt will go away and I will feel better.	0.07	0.05	**0.27**	0.10	0.01
39 I pray, meditate, or ask God for help.	0.03	0.04	0.11	0.00	0.00
40 I pretend that the pain or hurt doesn't hurt as much as it really does.	**0.35**	0.02	0.00	0.00	0.01
41 I think that I can't do anything to stop the pain.	0.02	0.04	0.01	0.11	0.08

Moreover, variability of the variables (factor loadings higher than 0.18) reduced the inventory to 24 items suitable for the Czech version of the tool and interpretation of results. The following five identified factors characterize five different pain coping styles: Factor 1 – Self-Control, Rejection of Social Support, loaded by 3 variables; Factor 2 – Cognitive Self-Instruction, loaded by 5 variables; Factor 3 – Emotional Response, Seek Emotional Support, loaded by 7 variables; Factor 4 – Seek Social Support, Distraction, loaded by 7 variables; and Factor 5 – Passive Relaxation, loaded by 2 variables.

The assignment of items to individual factors following factor analysis and reduction with respect to item variability is shown in Table 2. Cronbach's alpha for the questionnaire was 0.78.

Table 2 Structure of the inventory items after factor analysis with respect to factor loadings

Factor				
1 Self-Control, Rejection of Social Support	**2 Cognitive Self-Instruction**	**3 Emotional Response, Seek Emotional Support**	**4 Seek Social Support, Distraction**	**5 Passive Relaxation**
40	12	20	9	35
23	22	38	17	1
29	24	5	13	
	14	37	3	
	16	11	7	
		4	28	
		36	6	

Coping strategies

The effective strategy most frequently used by pediatric patients to cope with pain was *I try not to think about the pain or hurt or ignore the pain or hurt*, marked by 105 (53%) children (*I often do it*). The second most frequently used strategy was *I think about happy things* (84; 42%). Both strategies load onto Factor 2 – Cognitive Self-Instruction. This coping style also comprises the strategies *I tell myself to be brave* and *I tell myself that it will be all right*, both of which were selected by more than 30% of children, contributing to the high mean scores for Factor 2, the coping style most frequently used by pediatric patients.

Other frequently used strategies were those loading onto Factor 5 – Passive Relaxation, in particular *I go to sleep until it feels better*. Relative frequencies of the coping strategies are shown in Graph 1. The least frequently used strategies (i.e. most often marked as *I never do it*) were *I yell or cry* and *I get mad or be mean to other people*.

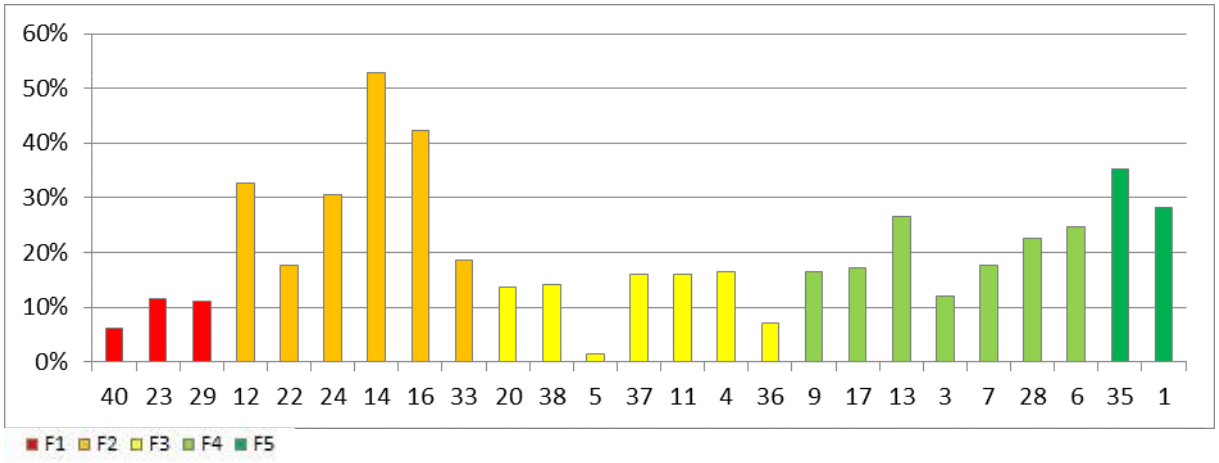

Figure 1 Frequencies of strategies used to cope with dental pain (PPCI items after factor analysis)

Comparison of coping strategies

When comparing the use of coping strategies between boys (n = 100) and girls (n = 99), the most frequently selected strategies were those loaded onto Factor 2 – Cognitive Self-Instruction (M = 1.08; SD = 0.45) and Factor 5 – Passive Relaxation (M = 1.25; SD = 0.52), respectively (Table 3). The Factor 5 strategy *I go to sleep until it feels better* was marked (*I often do it*) by 32% of boys and 38% of girls and *I go to bed* by 21% of boys and 35% of girls. The Factor 2 strategies more frequently used by boys were *I tell myself to be brave* (35% of boys vs. 30%

of girls), *I try not to think about the pain or hurt or ignore the pain or hurt* (55% vs. 51%) and *I think about happy things* (43% vs. 41%). The Factor 2 strategies more frequently selected by girls were *I imagine I can make the pain or hurt disappear by myself* (17% of boys vs. 18% of girls) and *I tell myself that it will be all right* (25% vs. 36%). The Factor 4 strategies used more frequently by girls than boys were *I play with my pet* (16% of boys vs. 18% of girls), *I have my mother, father or a friend sit with me* (22% vs. 31%) and *I tell my mother or father* (22% vs. 23%). The other Factor 4 strategies were more often used by boys. The coping strategies least frequently used by boys and girls were those loading onto Factor 3 – Emotional Response, Seek Emotional Support and 1 – Self-Control, Rejection of Social Support, respectively.

Table 3 Comparison of pain coping strategies used by girls vs. boys and outpatients vs. inpatients

	Girls n = 99			Boys n = 100			p	Outpatients n = 100			Inpatients n = 99			p
Factor	**M**	**SD**	**Med**	**M**	**SD**	**Med**		**M**	**SD**	**Med**	**M**	**SD**	**Med**	
1 Self-Control, Rejection of Social Support	0.56	0.47	0.67	0.69	0.50	0.67	0.05*	0.63	0.50	0.67	0.61	0.48	0.67	0.86*
2 Cognitive Self-Instruction	1.06	0.45	1.00	1.08	0.45	1.00	0.79*	1.03	0.46	1.03	1.11	0.44	1.17	0.22*
3 Emotional Response, Seek Emotional Support	0.66	0.43	0.57	0.52	0.38	0.43	0.02*	0.51	0.40	0.43	0.67	0.41	0.57	0.00*
4 Seek Social Support, Distraction	0.76	0.46	0.71	0.75	0.50	0.71	0.84**	0.69	0.45	0.57	0.82	0.50	0.71	0.06*
5 Passive Relaxation	1.25	0.52	1.50	1.04	0.53	1.00	0.01*	1.07	0.54	1.00	1.21	0.53	1.50	0.06**

M – Mean, SD – standard deviation, Med – Median, *Mann-Whitney test, **equal variance t-test

The greatest difference in the use of coping strategies between pediatric inpatients (n = 100) and outpatients (n = 99) were noted for the Factor 3 strategies *I think it will just get worse* (17% of inpatients vs. 10% of outpatients) and *I ask someone to tell me that the pain or hurt will go away and I will feel better* (22% vs. 6%). For the other pain and stress coping strategies, no statistically significant difference was observed between pediatric inpatients and outpatients (Table 3). When comparing outpatients accompanied by their parents with those not accompanied, no statistically significant difference was noted for Factor 3 (p = 0.52). Similarly, there was no significant difference between the two subgroups of hospitalized children (p = 0.09).

In both children accompanied by their parents (n = 127) and those not accompanied (n = 72) when receiving dental care, the most frequently used coping strategies were those loaded onto Factor 5 – Passive Relaxation (Table 4); patients not accompanied by their parents more commonly used the strategies I go to sleep until it feels better (42% of unaccompanied vs. 31% of accompanied) and I go to bed (35% vs. 24%).

The Factor 1 strategies more frequently marked by children not accompanied by their parents were I pretend that the pain or hurt doesn't hurt as much as it really does (58% vs. 43%), I pretend I don't have any pain or hurt (47% vs. 36%) and I ask to stay by myself (49% vs. 37%). Pediatric patients not accompanied by their parents also more frequently used most of the Factor 2 – Cognitive Self-Instruction strategies, the only exception being I ask someone to explain to me why I hurt. The most common Factor 4 coping strategies were I have my mother, father or a friend sit with me in children not accompanied by their parents (62%) and I think about going away on vacation or trip in unaccompanied patients (74%).

Both younger respondents aged 10 to 12 years (n = 67) and those aged 13 to 17 years (n = 132) were consistent in that they most frequently used Factor 5 coping strategies (p = 0.87) (Table 4). The greatest differences in the use of coping strategies between the two subgroups were noted for the Factor 4 strategies I play with my pet (37% of younger vs. 7% of older), I have my mother, father or a friend sit with me (54% vs. 13%) and I ask for a hug or a kiss (24% vs. 6%) and the Factor 3 strategy I ask someone to tell me that the pain or hurt will go away and I will feel better (25% vs. 8%).Previous experiences with treatment for dental caries had no significant effect on the selection of pain coping strategies. Children with previous experiences with treatment for dental

caries (n = 110) least frequently used Factor 3 coping strategies (M = 0.58; SD = 0.40) whereas those without such experiences (n = 89) marked Factor 1 strategies as the least commonly used (M = 0.63; SD = 0.48).

Table 4 Comparison of pain coping strategies used by children accompanied vs. unaccompanied by parents and aged 10–12 years vs. 13–17 years

	Accompanied n = 127			Unaccompanied n = 72			p	Age 10–12 years n = 67			Age 13–17 years n = 132			p
Factor	**M**	**SD**	**Med**	**M**	**SD**	**Med**		**M**	**SD**	**Med**	**M**	**SD**	**Med**	
1 Self-Control, Rejection of Social Support	0.56	0.48	0.67	0.73	0.48	0.67	0.01*	0.51	0.51	0.33	0.68	0.47	0.67	0.01*
2 Cognitive Self-Instruction	1.02	0.45	1.00	1.17	0.43	1.17	0.03*	1.08	0.45	1.17	1.07	0.45	1.00	0.85*
3 Emotional Response, Seek Emotional Support	0.58	0.42	0.57	0.61	0.41	0.57	0.51*	0.72	0.43	0.71	0.52	0.39	0.43	0.00*
4 Seek Social Support, Distraction	0.83	0.50	0.71	0.62	0.41	0.57	0.02***	1.09	0.46	1.14	0.58	0.69	0.57	0.00*
5 Passive Relaxation	1.08	0.52	1.00	1.25	0.54	1.50	0.03**	1.15	0.52	1.00	1.14	0.55	1.00	0.87**

M – Mean, SD – standard deviation, Med – Median, *Mann-Whitney test, **equal variance t-test, ***Kolmogorov-Smirnov test

Discussion

Pain management is one of the essential skills needed by health professionals caring for children. The prerequisites for effective pain relief are its identification and determination of its intensity and location. It is also necessary to find out how a particular individual copes with pain. Pain coping strategies may vary depending on the child's age category corresponding with their mental development (Frydenberg, 2008). According to Curry and Russ (1985), increasing age is associated with more frequent use of cognitive coping strategies by children undergoing stressful dental treatment. Brown et al. (1986) reported that with increasing age, more effective pain coping strategies were employed by children. Pain perception, however, is an individual matter at any age. In children, it is dependent on age, the presence of fear and an accompanying adult (the presence of a mother increases the intensity of pain perceived by the child), as stated by Fung et al. (1993).Mareš et al. (1997b) claimed that in children, the development of coping with stressful situations is considerably influenced by their parents and siblings. Young children see them as role models of how to behave in painful situations. Nervousness, anxiety and distress about their children's present or future pain is transferred to the children, potentially resulting in maladaptive behavior, particularly in young children. In the present survey, younger children mainly tended to seek social support, emotional support and emotional response while older children preferred passive relaxation and cognitive self-instruction strategies. The findings are consistent with what is known about children's mental development and their ability to cope with stressful situations (Brewer et al. 2006). With respect to developmental psychology, younger children are known to select simpler, short-term coping strategiesnot requiring mental effort. With the development of cognitive processes during childhood, they begin to employ more complex coping strategies with long-term effects, that is, cognitive processes leading tothe feeling that they are able to oversee and control the order of things (Mareš et al., 1997b). Young children usually respond to pain and painful procedures by escape, objections or radical changes in behavior. However, they will learn through experience that these strategies are unlikely to give them control over painful situations. Therefore, they gradually proceed to secondary pain and stress coping strategies.

When comparing coping strategies used by boys and girls, the present survey revealed differences in the use of strategies, in particular for the coping styles Emotional Response, Seek Emotional Support and Passive Relaxation, more frequently used by girls, and Self-Control, Rejection of Social Support as well as Cognitive Self-Instruction, more frequently marked by boys. Mareš et al. (1997a) found no differences in pediatric pain coping styles with regard to gender. On the other hand, they pointed to the fact that the two genders were treated differently by health professionals, leading to subsequent differences in coping with stress (while girls were

reassured and comforted, boys were manipulated into the role of "the brave ones" who would "surely manage and cope with it"). The comparison of inpatients and outpatients coping with stressful situations during dental treatment showed differences in the style Emotional Response, Seek Emotional Support, with hospitalized children tending to use it more frequently. This may be explained by the unfamiliar hospital environment and subsequent uncertainty perceived by children in the new setting. Thus, hospitalization itself may be a stressful situation (Bakri et al., 2014; Salmela et al. 2010).

The present survey also found differences in children's coping strategies with respect to the presence of their parents during dental treatment. Children not accompanied by parents were more likely to use most of the strategies (self-control, cognitive self-instruction, passive relaxation) but less likely to seek social support. These findings are consistent with those published by Weekes et al. (1993). The mere absence of parents in the health care environment full of unknown people may produce fear in children (Gullone, 2000) and promote greater variability of coping strategies they use. Yet nurses should provide children with help by offering some forms of active coping (e.g. relaxation, bringing one's own music recordings, being accompanied by a friend) and describing the procedure; in younger children, games and humor may be of help (Salmela et al., 2010). It is advisable to create space for children's questions. Educating parents before their children's visit may be also helpful (American Academy of Pediatric Dentistry, 2011). In the present survey, previous experience with dental treatment had no effect on preferred coping strategies, consistently with a study by Fung et al. (1993). The present survey, however, did not distinguish between positive and negative past experiences.

When providing children with dental treatment, suggesting stereotypical gender-specific pain coping strategies (e.g. manipulating boys into the role of the strong or brave ones) should be avoided. In younger children (aged 10–12 years), parental accompaniment should be recommended as the present survey showed that these children prefer passive stress coping strategies and seek help from others, most frequently from persons they trust. Since older children declared the use of more active self-oriented strategies, their active involvement in the examination and treatment process should be recommended. A suitable approach may be situation-specific coping, characterized by Hampel and Petermann (2005) as a strategy in which an individual gains control over a stressful situation by analyzing it and its causes and by planning measures to improve the status quo and become actively involved in the situation. Palyzová et al. (2006) spoke of the experience of self-control. Health professionals may strengthen these feelings by providing children with an option to have their treatment divided into several options or interrupted and to leave the office, asking children to consent to dental treatment, offering a break during treatment, talking openly with children about their worries and fears, allowing them to bring their own CDs, showing them the technique of controlled breathing, using local anesthesia, showing children the tools to be used, etc. (Sine, 2012). The above approaches were classified as non-pharmacological methods of pain suppression and treatment by Palyzová et al. (2006), who also encouraged health professionals to use other methods such as an adequate therapeutic environment, muscle relaxation, operant conditioning, modeling, play or distraction. If dental treatment needs to be performed in hospitalized children, the above recommendations are of even greater importance.

Conclusion

The survey was concerned with styles and strategies used to cope with pain during pediatric dental care. Analysis of the results showed a considerable variability in their use, particularly with regard to children's gender, age category and parents being present during treatment. The most frequent coping strategies were cognitive self-instruction. Emotional response and need for emotional support or passive relaxation were more frequently reported by girls andchildren aged 10–12 years; cognitive self-instruction was more frequently used by boys. Hospitalization was shown to be a factor associated with children's greater desire to have parents by their side who support them in effectively coping with stress from dental treatment. The findings may contribute to a better understanding of children's dental pain perception and promote better cooperation between health professionals and children as well as performance of dental procedures with help from informed and prepared parents, particularly in younger children (10–12 years of age). According to Mareš (1997b), the key principles leading to successful dental examination and treatment are reassuring the patient, explaining what will be done, assuring the patient that the health professional wants to be helpful and beneficial, helping to overcome negative past experiences, letting the patient have a certain control over the situation in the office, distracting the patient's attention from the procedures, constantly promoting trust, displaying a personal interest in the child, etc.

Ethical aspects and conflict of interest

In the survey, recommended ethical principles were adhered to. Both participants and their parents were informed about the objectives. Respondents' anonymity was safeguarded. The authors claim that they are unaware of any conflict of interests.

Author contribution

Conception and design (LS, LR), data analysis and interpretation (LR, LS), drafting the manuscript (LS), critical revision of the manuscript (LS), finalization of the manuscript (LS).

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