

Evaluation of pain in the pediatric patient by nurse in the hospital

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Abstract. To understand the way pain is produced and perceived is very important for its relief. In recent years, important advances have been made regarding the evaluation of pain, with the validation of objective criteria such as Oucher pain scales, body diagrams, numerical scales, verbal descriptive scales and visual analogue scales. The objective evaluation of pain is of special importance in pediatrics given the difficulties inherent to the patients of this group. The purpose of this study was to determine how nursing professionals evaluate pain in hospitalized children. We employed a questionnaire to nursing professionals (nurse technicians, practical nurses and registered nurses) that work in the pediatric service of a teaching hospital. Fifty-six professionals (100% women) answered the questionnaire. Of these, 55 (98.2%) stated that they knew the methods and cited vital signals, physical examination and patient behaviors as items for evaluation. Although the majority of professionals (98.2%) have reported knowledge of objective methods (scales) for pain assessment in children, there was a predominance of behavioral observation as a method of choice (prevalence ratio 2.27; 95% confidence interval: 0.9 to 2.38). No significant associations or differences were observed between professional category, time of experience, other variables, and the type of method employed. The selected professionals do not use scales or other objective methods to measure pain in children. Therefore, it is necessary to habilitate and train nursing professionals working with pediatric patients in pain so that they will be able to assess their pain in an adequate manner.

Keywords: Pain measurement, nursing care, quality of health care

1. Introduction

The International Association for the Study of Pain defined sign/symptoms of pain as an unpleasant sensory and emotional experience associated with or related to real or potential tissue damage [1,2]. McCaffery and Pasero [3] better defined the term pain as “what the

person says he/she feels, existing when the person says that it exists”. Another definition of pain identifies pain as a concept that involves “a personal and particular sensation of physical suffering; a noxious stimulus that indicates current or imminent tissue injury or damage; a pattern of responses that act in order to protect the organism against damage” [4]. However, understanding how pain is produced and perceived is of fundamental importance for finding mechanisms of relief.

Pain is a complex mixture of physical, emotional and behavioral reactions [5]. To better understand the

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experience of pain, we must describe its three physiological components: reception, perception and reaction. The system involving reception and perception of and reaction to the stimulus is called nociceptive system [6]. The sensitivity of the components of the nociceptive system can be affected by various factors and may differ among individuals, i.e., not all persons exposed to the same stimulus experience the same pain intensity. Among these factors are the pain-transmitting mechanisms, the pain pathways, the systems of treatment, and the age, gender, culture, meaning of pain, attention, anxiety, fatigue, previous experience, coping style and family support of affected individuals [7].

Important advances have been made over the last few years regarding the evaluation of pain, with the validation of objective criteria that today can be applied in different settings and can permit comparison of different studies [8]. Particularly important was the standardization of pain as the fifth vital sign [9] by the Joint Commission on Accreditation of Healthcare Organizations, which started to assign priority to the evaluation, intervention and re-evaluation of pain in the process of hospital qualification [10]. According to the Joint Commission on Accreditation of Healthcare Organizations, the evaluation of pain involves: localization and intensity based on a numerical or verbal scale or on other scales; time of onset, duration and pattern of the complaint, relief factors, aggravating factors, effect of pain on daily activities and quality of life, the efficiency of analgesics or the relief provided by another intervention.

Only the patient can describe and evaluate exactly his pain and therefore several instruments for the assessment of the symptom may be necessary for this purpose. These instruments can be used to document the need for alternative or additional interventions if the initial intervention is ineffective in relieving the complaint [5,11]. To be useful, an instrument for the evaluation of pain should be easily understood, should require little effort on the part of the patient, should be easily scaled and should be sensitive to small changes in pain intensity. Some examples of these instruments are: (a) the Oucher pain scales [11]; (b) the COMFORT scale, which is composed of six behavioral dimensions (alertness, calmness, muscle tone, movement, facial tension and respiratory response) and two physiological dimensions (heart rate and mean arterial pressure) [12,13]; (c) the Pain Observation Scale for Young Children (POCIS) scale [14]; (d) the facial tension scales [11]; (e) the body diagrams to localize the pain of the patient [11]; (f) the

numerical scales [11]; (g) the verbal descriptive scales [11]; and (h) the visual analogue scales [11].

The evaluation of pain in pediatric patients is inversely proportional to their age, i.e., an older child is able to verbally express his painful experience and even quantify it, whereas in younger children the evaluation depends on a careful and sensitive observation by the person who provides care [15].

In young children (infants, neonates), the most common pain assessment tools used are behavioral, including crying, facial expressions, body posture and corporal movements. Several scales are available to assess behaviors as indicators of pain in neonates and infants, such as: The Neonatal Facial Coding System, The Neonatal Infant Pain Scale, The Premature Infant Pain Profile, The Crying Requires Increased Vital Signs, The Maximally Discriminate Facial Movement Coding System, etc.

For children, hospitalization is related to at least partial separation from the parents, test collections, presence of unknown persons and machines, exposure to a brightly lit and noisy environment, and to interruption of the physiological sleep-wake cycle, generating anxiety and greater susceptibility to pain, and possibly interfering with the efficacy of treatment [15,16].

Avoiding and relieving pain are basic human necessities and, even though a person can survive with this symptom, the constant presence of pain interferes with his well-being and quality of life. Pain is one of the conditions that most frequently lead people to seek health care institutions, and it is imperative for health care professionals not to underestimate the complaints of the patient and to have a holistic and individualized vision of the problem. Nursing professionals, by spending more time close to the patient, have ample and important functions in the care of patients in pain, especially hospitalized ones [17]. Empirical observations suggest that in most cases the basic procedure of the nursing staff is simply to relieve pain by administering analgesics prescribed, but often underestimate the patient's pain complaint. This has been mainly observed in pediatrics due to the difficulty in effectively evaluating pain in individuals who do not report verbally what they feel. In this respect, the objective of the present study was to determine how nursing professionals evaluate pain in hospitalized children since this information is of great relevance to the efficacy of treatment and consequently to the improvement of the quality of care provided.

2. Materials and methods

This was a cross-sectional study conducted in the pediatrics sector of a Teaching Hospital affiliated with a Federal University in the Southeast region of Brazil from June to August 2008. In Brazil, the practice of nursing is realized by three levels of professionals: the nursing assistant (practice), which has wider powers care with patients, provide care such as bathing, washing clothes, notes complaints of pain management medicines, etc; the technician nurse, which has functions similar to nursing assistants, but performs more complex tasks; and finally the top-level nurse (registered nurses), who has a college degree and is responsible for overseeing, coordinating and educating assistants and technicians. Thus, 70 nursing professionals (practical nurses, nurse technicians and registered nurses) assigned to the pediatric service of the hospital in the three work shifts were included in the study.

For data collection, the professionals responded to a questionnaire with closed and open questions involving the following variables: age, sex, occupation, time of work in the pediatric area, knowledge of methods for the evaluation of pain, the method they use, whether the method they use is efficient, and how they treat their own pain (See appendix 1).

2.1. Ethical aspects

The research project was approved by the Research Ethics Committee of the Institution (Universidade Federal do Triangulo Mineiro (UFTM)/1083_08), and all subjects included in the study gave written informed consent to participate.

2.2. Statistical analysis

Data were analyzed statistically by the chi-square test and/or the Fisher exact test to calculate the differences between proportions, by the Student's *t*-test to determine the differences between measurements of central tendency in the analysis of the means, and by the Kruskal-Wallis test in the analysis of medians. The prevalence ratio (PR) and its 95% confidence interval (95% confidence interval [CI]) were used to determine the association between variables. The level of significance was set at 5% ($P < 0.05$) in all analyses. The Epi-info 6.04, Medcalc 5.1[®] and SPSS 10.0[®] programs, were used for data storage and analysis.

3. Results

Of the 70 nursing professionals currently working in the pediatric service of the Hospital, 14 did not answer the questionnaire because they were on vacation or on sick leave, or because they did not wish to, and 56 answered it, corresponding to 80% of the entire team. The characteristics and the replies of the professionals who participated in the study are listed in Table 1.

All professionals interviewed were women, with a mean age of 31.6 yr and more than 58% of them had been working with pediatric patients for more than 3 yr. Regarding their professional category, seven were registered nurses (12.5%), 35 were practical nurses (62.5%) and 14 were nurse technicians (25%).

Fifty-five professionals stated that they knew the methods for the evaluation of pain in the patient (98.2%) and that they used vital signs, physical examination and behavior of the patient (facial expressions, body movements, vocalization, crying) as forms of assessment (Fig. 1). One professional stated that she uses the complaints of patient and family as a form of evaluation, and only six (11%) stated that they

Table 1
Distribution of the characteristics and of the replies of selected nursing professionals from the pediatric service of a teaching hospital in the Southeast Brazil

Characteristics	n (%)
Sex	
Female	56 (100)
Male	0 (0)
Professional category	
Nurses	7 (12.5)
Practical nurses	35 (62.5)
Nurse technicians	14 (25.0)
Time of work in pediatrics	
Less than 1 year	11 (19.6)
1 to 3 years	12 (21.4)
3 to 5 years	14 (25.0)
5 to 10 years	12 (21.4)
More than 10 years	7 (12.5)
Knowledge of the methods for the evaluation of pain	
Yes	55 (98.2)
No	1 (1.8)
Do they consider their way to evaluate pain to be efficient?	
Yes	30 (53.6)
No	26 (46.4)
What do they do when they feel pain?	
They take an analgesic	48 (85.7)
They tolerate it, without an analgesic	8 (14.3)

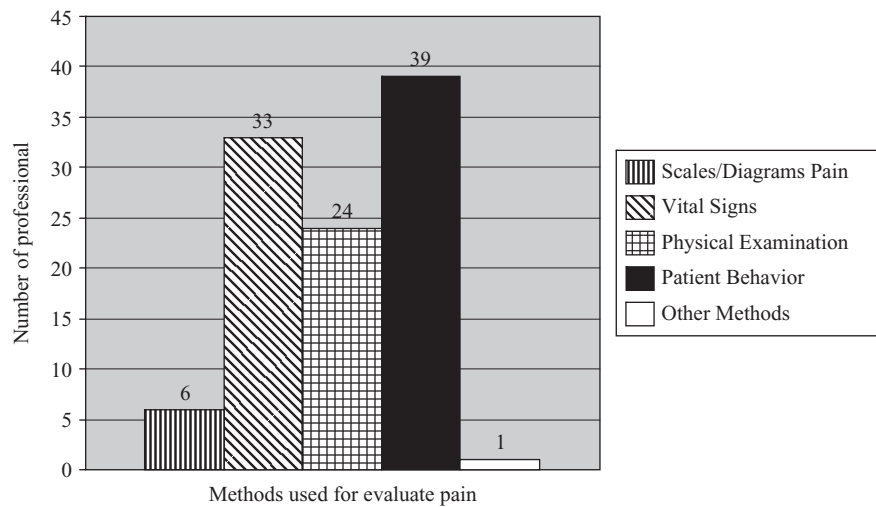


Fig. 1. Distribution of the methods used to evaluate pain in pediatric patients according to the replies of the nursing professionals of a teaching hospital in the Southeast Brazilian.

use pain scales (scales of facial expressions of the child and numerical scales) or diagrams. One professional stated that she did not know methods for the evaluation of pain, and that she assessed pain based on the complaints of patients or relatives. When comparing the use of scales (as reference) with other methods, we observed the use of vital signs PR 1.3 (95% CI: 0.3 to 5.9); physical examination PR 0.75 (95% CI: 0.41 to 1.38); patient behavior 2.27 (95% CI: 0.9 to 2.38); other methods PR 1.43 (95% CI: 0.99 to 2.07).

When asked if they consider the way they evaluate the pain of their patients to be efficient, 26 professionals replied that they do not consider it efficient (46.4%) and 30 replied that they do consider it efficient (53.6%).

When asked about their attitude towards their own pain, 48 nursing professionals (85.7%) responded that they take analgesics and eight (14.3%) that they tolerate pain without using any type of relief.

Analysis of possible associations between variables revealed no significant differences in the replies given by professionals belonging to the different categories (Table 2).

4. Discussion

The evaluation of pain in children hospitalized or not as a field of research has made important advances over the last 10 to 20 years and various tools have

been developed such as self-report for older children, and physiological and behavioral measures among other methods [16,18]. However, some evidence suggests that there is little practical use of this broad arsenal of resources, with no clear explanation for this fact. Pain in infants and children can be very difficult to evaluate which has led to the proposal of several pain evaluation tools and scores in pediatrics. In children, pain should be measured with reliable and valid self-report measurement instruments. Mainly for pain measurement in preverbal children, who are not able to provide self-reports, reliable and valid pain behavioral observation instruments should be used, so that pain behavior is observed in the same way by every individual nurse.

The population studied here consisted exclusively of women, as explained by the fact that the nursing profession still is almost exclusively a female profession, as also reported by others [19,20]. When analyzing time of service, we noted that 58% of the professionals had been working in the pediatric sector for more than 3 yr. This is relevant information since studies on pain and on the importance that should be given to this sign/symptom in the evaluation of the nursing staff are recent. Thus, one possible explanation is that people who graduated years ago or who already work for a long time do not receive adequate training to assess pain effectively [21]. In the present study, we also observed no significant association between the time of service reported by the professionals of all

Table 2
Bivariate analyses of the parameters studied for the determination of associations in the evaluation of pain of hospitalized children by nursing professionals of a teaching hospital

Variable and associations	Prevalence ratio	95% confidence interval	P
Do you consider the way you evaluate pain to be efficient?			
Registered nurses	1.0 (Reference)	-	-
Practical nurses	2.25	0.65–7.70	0.18
Nurse technicians	1.18	0.72–1.94	0.74
Do you consider the way you evaluate pain to be efficient? <i>versus</i> Do you know the methods for the evaluation of pain?	0.95	0.23–3.89	0.72
Which methods do you use to evaluate pain? <i>versus</i> Do you consider the way you evaluate pain to be efficient?			
Scales and diagrams	1.0 (Reference)	-	-
Vital signs	1.33	0.30–5.90	0.64
Physical examination and vital signs	0.75	0.41–1.38	0.13
Patient behavior (facial expressions, body movement, crying etc.)	2.27	0.90–2.38	0.34
Other methods reported	1.43	0.99–2.07	0.10
Do you know methods for pain evaluation?			
Registered nurses	1.0 (Reference)	-	-
Practical nurses	0.90	0.69–1.18	0.33
Nurse technicians	0.94	0.70–1.27	0.60
When you are in pain what is your attitude? (Outcome = she takes an analgesic)			
Registered nurses	1.0	-	-
Practical nurses	1.01	0.76–1.35	0.66
Nurse technicians	0.82	0.54–1.25	0.54

categories and the knowledge of adequate methods for the evaluation of pain in children, a result also reported by others [17,22].

The option to include in the study the entire nursing staff in all its categories (nurse technicians, practical nurses and registered nurses) was due to the fact that all of these professionals, although presumably differing in theoretical knowledge, are in direct contact with the patients and are the first to diagnose a situation of pain, thus having the duty to relieve the symptoms. Obviously, registered nurses have more theoretical knowledge about the management of pain than middle-level professionals, although this does not necessarily mean that they can apply this knowledge in practice. This observation was made in the present study in which the results obtained did not show association between professional nursing class and the response, knowledge and application of objective and conventional methods for the evaluation of pain in children, in agreement with data reported by others [23]. When we determined how the nursing professionals evaluated pain in pediatric patients, we concluded that the knowledge and applicability of the

methods used should be reconsidered since one of the most effective ways of evaluating pain in pediatrics is by using appropriate scales and diagrams. Indeed, children do not demonstrate their pain in a verbalized manner since in this age range the symptom appears as a subjective sensation. On this basis, we emphasize the pressing need to habilitate this large number of professionals to evaluate patient pain in an efficient manner, believing in the care they are providing.

It was also observed that most of the subjects studied have an effective attitude in the presence of their own pain sensations, i.e., they take analgesics when they feel pain. This leads us to believe that, by valuing their own complaints, they should do the same for their patients who are in pain.

The objective of the present article is to call attention to the fact that pain should be considered to be the fifth vital sign in children, be evaluated in a systematic manner and treated by previously established protocols, with these procedures being incorporated into the daily practice of the units and not simply applied in specific situations. Once this pattern of

behavior becomes widespread, it would be a transgression not to assess or treat pain in such fragile patients so frequently exposed to painful and stressful procedures. Thus, it is necessary to habilitate and train the nursing professionals who provide care for pediatric patients in pain so that they will be able to evaluate their patients in an adequate manner. We suggest a more extensive approach to this topic in undergraduate and postgraduate nursing courses, as well as in courses for practical nurses and nurse technicians.

We consider that this study is limited by the inclusion of a small number of nurses, in addition to the diversity of schooling for them. This could be seen as a bias, perhaps, selection bias or analysis bias or measurement bias; however, we do not believe that this may invalidate the findings.

In conclusion, after analysis of the results obtained in the present study, we noted that most nursing professionals evaluate pain by simply using non-conventional criteria or based on the complaints of patients or of their families, while very few use objective and universally accepted criteria, such as pain scales and diagrams, to quantify this symptom.

Appendix 1

Questionnaire used to interview nurses about the knowledge of methods to assess pain in children

Age:
 Gender:
 Professional category:
 Year of graduation / training:
 Working time in pediatrics:
 Weekly workload:
 Work shift diary:
 Do you know methods for pain evaluation? ___Yes ___No
 Do you consider the way you evaluate pain to be efficient?
 ___Yes ___No
 Which methods do you use to evaluate pain?
 1.
 2.
 3.
 4.
 5.
 6.
 7.
 8.
 9.
 10.
 When you are in pain what is your attitude?

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