

Pain during dental care in family health units of Caruaru city, state of Pernambuco*

Dor durante o atendimento odontológico em unidades de saúde da família do município de Caruaru-PE

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ABSTRACT

BACKGROUND AND OBJECTIVES: Fear of pain may delay or prevent people going to the dentist, especially families assisted by Family Health Strategies. So, this study aimed at investigating pain perception of dental patients from Family Health Units of the city of Caruaru (UFSC), state of Pernambuco.

METHOD: This is a transversal, analytical and epidemiological study where socio-demographic data and history of 312 patients were collected through standardized personal interviews. Pain intensity was measured by the 21-point numerical scale (from 0 to 10, with 0.5 intervals), where patients themselves checked the number corresponding to perceived pain during treatment.

RESULTS: Pain during treatment was present in 22.1% of the sample and was more frequent in younger patients who only look for the dentist when they feel pain or who always or almost always have felt pain during previous treatments. Mean perceived pain intensity was 4.1 and was statistically higher for patients who usually only look for the dentist when they feel pain. Pain was more frequent during tooth extractions but its intensity has not significantly varied among procedures.

CONCLUSION: Pain during USFC treatment was less frequent as compared to other studies, however with higher intensity; and was more frequent among individuals who only look for the dentist when they feel pain.

Keywords: Dental assistance, Pain measurement, Pain perception, Primary health care.

RESUMO

JUSTIFICATIVA E OBJETIVOS: O medo de sentir dor pode retardar ou impedir a ida de pessoas ao dentista, sobretudo na

população assistida pelas Estratégias de Saúde da Família. Portanto, o objetivo deste estudo foi investigar a percepção de dor dos pacientes odontológicos em Unidades de Saúde da Família de Caruaru (USFC), PE.

MÉTODO: Trata-se de um estudo epidemiológico transversal e analítico no qual foram coletados dados sociodemográficos e o histórico de atendimentos de 312 pacientes por meio de entrevista pessoal padronizada. A mensuração da intensidade da dor foi obtida por meio da escala numérica de 21 pontos (de 0 a 10, com intervalos de 0,5), em que o próprio paciente assinalava o número que correspondesse à dor percebida durante o atendimento.

RESULTADOS: A presença de dor durante o tratamento totalizou 22,1% da amostra e foi mais frequente em pacientes mais jovens, que costumam procurar o dentista apenas quando sentem dor, ou que sempre, ou quase sempre, sentiram dor durante tratamentos anteriores. A média de intensidade de dor percebida foi de 4,1 e foi estatisticamente maior em pacientes que costumam procurar o dentista apenas quando sentem dor. A dor esteve mais presente nas exodontias, mas sua intensidade não variou significativamente entre os procedimentos.

CONCLUSÃO: A dor durante o atendimento em USFC ocorreu com menor frequência que em outros estudos, porém com maior intensidade, e os indivíduos que foram mais propícios a senti-la foram aqueles que só procuram o dentista quando estão com dor.

Descritores: Assistência odontológica, Atenção primária à saúde, Medição da dor, Percepção da dor.

INTRODUCTION

Pain is often associated to dental care and many dentists may not pay attention to their patients' pain since some degree of pain during dental visits may be reported by more than 70% of patients¹. This dental care pain is influenced by the clinical procedure itself, by patients and by dentists' attitudes and working structure²⁻⁵.

Fear of pain during treatment may be one of the major reasons that delay or even prevent the going of many people to the dentist⁶. This, on the other hand, may result in worse oral health conditions, especially in low income populations, which are in general seen by oral health teams of Family Health Strategies⁷. Considering that a painful experience during treatment increases pain perception of future treatments⁸, oral health team ability and care and basic attention to control pain during

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dental treatment will directly affect patients' perception during subsequent visits, including other levels of attention of the health service.

Notwithstanding the above-mentioned importance of pain during dental treatment in basic health attention, the query of scientific articles in Bireme, LILACS, Medline, Cochrane Library, Scielo, BBO and Pubmed databases – without limitation of language and publication period, using the keywords “pain”, “dental pain” “dental fear” and “dental anxiety”, alone or associated to the words “dentist”, “dentistry”, “treatment” and “odontology” – has not found any article directly evaluating pain perception of patients during dental treatment in basic attention.

So, this study aimed at investigating pain perception during dental treatment in family health units of the city of Caruaru-PE, which has filled a literature gap and may supply elements both to contribute to dental assistance provided and, as a consequence, oral health of the city population, and to the understanding of the subject in international level.

METHOD

Epidemiological, observational, transversal and analytical trial carried out in the city of Caruaru-PE, Brazil. This city has 29 Family Health Units with Oral Health Teams (USFSB), being 20 located in urban areas⁹. It was exactly for the population of adolescents and adults seen in USFSBs of urban areas of this city from March to July 2011 that this study aimed at reaching its results.

The study has used a conglomerate sample (double stage) where USFSBs were the groups. So, USFSBs were selected and, from them, the patients. To calculate sample size, the statistical program PASS (Power Analysis and Sample Size), version 2005 was used. For this calculation, the following parameters were used: size of target-population considered “infinite”, 5% precision, 95% confidence interval and 70% of expected prevalence of painful experiences during treatment¹. As result, total sample size was 312 patients (representing approximately 3.5% of the total universe of the studied population).

USFSBs were chosen by simple randomized sampling being selected 12 units, or 60%. Each USFSB was followed by a researcher with the number of complete shifts needed to interview 26 patients who met the inclusion criteria (adolescents and adults with psychic-cognitive ability to answer the questions). That is, the first 26 eligible patients of each USFSB who agreed in participating in the study were included.

Data were collected in two moments. The first moment was at the USFSB waiting room, where the Free and Informed Consent Term (FICT) was delivered. Data were collected by means of personal standardized interviews and a form. Still before treatment, sociodemographic data and data of patients' dental treatment history were collected.

The second moment was after treatment, at USFSB waiting room or close to it, according to patients' preference. At this moment, data related to treatment, including pain perception, the intensity of it was obtained with a 21-point numerical scale (from 0 to 10 with 0.5 intervals), where patients themselves would check

the number corresponding to perceived pain during treatment. Pilot studies carried out in the preliminary stage of this research have indicated that this scale is easier to understand and to be used by the studied population as compared to the visual analog scale, in addition to being widely used¹⁰.

Data were analyzed by the statistical program SPSS, version 15. In a bivariate analysis, we have tested the association between presence or not of pain and patients' variables (age, gender, education, frequency and primary reason for going to the dentist, in addition to history of pain during dental treatments) and the type of procedure, using Chi-square, Fisher's Exact or Likelihood Ratio tests; we have also tested the difference in pain intensity among patients' variables and types of procedures, using Mann-Whitney or Kruskal-Wallis tests.

We have also carried out a multivariate analysis with linear regression and logistic regression to better understand the influence of dependent variables on the presence or not of pain and its intensity.

This study was carried out according to ethical principles of the Declaration of Helsinki and Resolution 196/96 of the National Health Council, being approved by the Ethics Committee of the Caruaru Association of Higher Education (CEP/ASCES, protocol 135/2010).

RESULTS

Characteristics of the 312 interviewed patients are shown in table 1. It can be observed that most were females (78.5%), aged between 22 and 40 years (47.8%), had from 5 to 9 years of education (47.4%), have reported going to the dentist every semester (37.8%), primary reason for visits was the need for some treatment but not pain (55.8%) and have never felt pain (46.5%) during dental treatment.

As shown in table 2, pain during dental treatment represented 22.1% of the sample. This pain was associated ($p < 0.05$) to age group, primary reason for dental visits and history of pain during dental treatment. Younger patients, those looking for the dentist only when feeling pain, as well as those who always or almost always have felt pain during previous treatments have more frequently referred pain during treatment (27.7%, 35.5% and 36.4%, respectively).

As shown in table 3, mean pain intensity perceived by patients was 4.1. This intensity has varied and was statistically higher (5.6) in individuals who only look for the dentist when they are in pain.

Considering pain intensity in categories, where no pain corresponded to zero, mild pain between 0.5 and 3.0, moderate pain from 3.5 to 6.5, severe pain from 7.0 to 9.5 and unbearable pain corresponding to 10, we have found 77.9%, 10.9%, 6.4%, 2.6% and 2.2%, respectively.

Table 4 shows that restoration was the most common procedure (56.1%); however the procedure with the highest prevalence of pain was tooth extraction (38.5%). More than half the patients feeling pain during extraction have reported tooth removal itself (dislocation and excision of the element) as the cause of pain (60%).

Table 1 – General sample characteristics.

Patients Characteristics	n	%
Gender		
Male	67	21.5
Female	245	78.5
Age group (years)		
Up to 21	101	32.4
22 to 40	149	47.8
41 to 59	51	16.3
60 or above	11	3.5
Education (years)		
Up to 4	48	15.4
5 to 9	148	47.4
10 to 12	109	34.9
13 or more	7	2.2
Primary reason for looking for the dentist		
Routine visit	62	19.9
Need for treatment when there is no pain	174	55.8
Pain	76	24.4
Frequency of visits		
Every semester	118	37.8
Once a year	110	35.2
2 years or more	84	26.9
History of pain during dental treatment		
Never felt pain	145	46.5
Sometimes	123	39.4
Most of the times	26	8.3
Always	18	5.8

Drill was reported by most patients as the primary cause of pain during urgency procedures due to toothache (71.4%). Differences in the number of painful cases among procedures were significant; however differences among procedures in mean pain intensity were not. This result was similar even when procedures were classified as noninvasive (clinical exam, prophylaxis, application of sealant, varnish or fluoride), mildly invasive (restoration, tartar removal, urgency due to toothache and stitch removal) and invasive (tooth extraction and other surgeries), with pain in 2.1%, 24.4% and 38.5%, respectively ($p < 0.001$ for Chi-square test) and mean pain intensity of 3, 4 and 4.6, respectively ($p < 0.9$ for Kruskal-Wallis).

An adjustment of the logistic regression model, with presence or not of pain during treatment as dependent variable, and remaining variables shown in table 2, adding the categorized procedure type variable (noninvasive, mildly invasive, invasive), has shown a result similar to the bivariate analysis. However, in this multivariate analysis, procedure type was not only a significant variable but also the most significant for the model.

In a multivariate analysis with pain intensity as dependent variables and remaining variables used for logistic regression as independent variables, as already described, the significant predictor was just the primary reason for visits. History of pain and age were weak predictors of pain intensity ($p = 0.10$).

Results of multivariate analyses, both for pain presence and intensity, have not changed with the variable use or not of anesthe-

Table 2 – Presence of pain during treatment according to patients' variables.

Patients Characteristics	Presence of Pain				p value
	No		Yes		
	n	%	n	%	
Gender					
Male	55	82.1	12	17.9	$p^1 = 0.876$
Female	188	76.7	57	23.3	
Age group (years)					
Up to 21	73	72.3	28	27.7	
22 to 40	117	78.5	32	21.5	$p^2 = 0.048$
41 to 59	42	82.4	9	17.6	
60 or above	11	100	0	0	
Education (years)					
Up to 4	39	81.3	9	18.8	
5 to 9	110	74.3	38	25.7	$p^2 = 0.163$
10 to 12	87	79.8	22	20.2	
13 or more	7	100	0	0	
Primary reason for looking for the dentist					
Routine visit	49	79	13	21	
Need for treatment when there is no pain	145	83.3	29	16.7	$p^1 = 0.004$
Pain	49	64.5	27	35.5	
Frequency of visits					
Every semester	96	81.4	22	18.6	
Once a year	85	77.3	25	22.7	$p^1 = 0.436$
2 years or more	62	73.8	22	26.2	
History of pain during dental treatment					
Never felt pain or sometimes	215	80.2	53	19.8	$p^1 = 0.014$
Most of the times or always	28	63.6	16	36.4	
Total	243	77.8	69	22.1	

p^1 : Pearson's Chi-square test, p^2 : Likelihood ratio.

sia was included. And for pain intensity, results have not changed when pain was considered in categories (mild or moderate versus severe or unbearable) in logistic regression.

Table 3 – Pain intensity during treatment according to patients' variables.

Patients Characteristics	Pain Intensity		p value
	Mean	Standard Deviation	
Gender			
Male	3.5	3.5	p ¹ = 0.246
Female	4.2	2.9	
Age group (years)			
Up to 21	4.3	3.3	p ² = 0.547
22 to 40	4.4	3.1	
41 to 59	2.8	1.4	
60 or above	0		
Education (years)			
Up to 4	3.5	2.5	p ² = 0.956
5 to 9	4.2	3.1	
10 to 12	4.3	3.0	
13 or more	0		
Primary reason for looking for the dentist			
Routine visit	2.8	2.9	p ² = 0.008
Need for treatment when there is no pain	3.3	2.1	
Pain	5.6	3.3	
Frequency of visits			
Every semester	3.6	3.2	p ² = 0.337
Once a year	4.8	3.2	
2 years or more	3.8	2.5	
History of pain during dental treatment			
Never felt pain or sometimes	3.8	3.0	p ¹ = 0.056
Most of the times or always	5.1	2.9	
General Mean	4.1	3.0	

p¹: Mann Whitney, p²: Kruskal-Wallis.

DISCUSSION

Pain prevalence in this study was different from other publications which have found higher pain prevalence (73.4% and 42.5%)^{1,2}. This lower prevalence may be the reflex of basic attention procedures, in general less invasive, which are less associated to pain as compared to more invasive procedures^{1,2}.

Conversely, a study on general practice private services has found a prevalence of 25% pain during treatment⁴. So there seems to be a temporal trend toward the reduction of this prevalence, maybe as a reflex of technical-scientific advances and improved assistance quality.

As to pain intensity, there are few epidemiological studies in the literature dealing with this variable related to dental procedures in general. When intensity is addressed, it is different among studies. So, the comparison of our study to other publications is limited.

In a way, a possible comparison would be considering just the "more than moderate" pain intensity category (severe or unbearable). In our study, from those feeling pain, 21.7% have reported more than moderate pain; which is higher than other studies where the frequency was 11.6%² or at the utmost 10%⁴. This difference might have been influenced by the type of assistance provided to the studied population, that is, that study has evaluated patients assisted by private services⁴. It is known that the nature of the service influences the treatment offered by the dentist¹¹.

A study has shown that male patients more commonly refer pain during dental treatment, young and adults feel more pain than elderly people and, the higher the level of education, the higher the level of pain². Our study has not found relationship between pain and gender or education, only between pain and age.

Our results have pointed age as determining the presence or not of pain during dental treatment, but not pain intensity. Age variable was significant for the presence of pain, even when all other variables were included and also when variables were combined in different statistical models.

Table 4 – Pain and intensity according to types of dental procedures.

Types of Procedures	Data Related to Each Procedure							
	Frequency		Cases with Pain		Mean Pain Intensity	Primary Reason for Pain		
	n	%	n	%		Patient's Report	n	%
Tooth extraction	26	8.3	10	38.5	4.6	Does not know	1	10
						Anesthesia	3	30
						Tooth removal	6	60
Urgency due to toothache	23	7.4	7	30.4	4.78	Does not know	1	14.3
						Drill	5	71.4
						Water of triple syringe	1	14.3
Restoration	175	56.1	43	24.6	4.14	Does not know	2	4.7
						Drill	35	81.4
						Anesthesia	6	14
Tartar removal	33	10.6	7	21.2	2.92	Scraping	7	100
Stitch removal	5	1.6	1	20	4.0	Stitch removal	1	100
Polishing/Prophylaxis	9	2.9	1	3.0	3.0	Gum injury	1	100
Clinical exam/topic fluoride/sealant/varnish application	9	12.5	0	0	0	-	-	-

Maybe the relationship between age and pain is not linear, since the significant difference in pain was especially in the age group with 60 years or above, that is elderly people, where no case of pain was reported. This is in line with the findings of a different study².

With advanced age, dentine becomes more sclerotic, decreasing sensitivity to cavity preparation, which could justify the fact that elderly people have reported less sensitivity to pain, since more than half the procedures were restorations. In addition, a similar result was found in a study evaluating endodontic treatment¹², that is, age has determined the presence or not of pain during treatment, but not the intensity of pain.

As to history of pain during previous treatments, our study reinforces the idea that previous painful dental experiences directly impact pain of current treatment^{2,8}, or indirectly impact it due to increased anxiety with regard to the treatment¹³. In fact, it is worth stressing that no USFC used any protocol to decrease stress or anxiety.

Similarly to a previous study², it was observed that patients who look for the dentist only when they feel pain report more pain and intensity during treatment. Two factors may have contributed for such results. First, the delay in looking for the dentist may worsen the oral problem implying a more invasive approach, thus with higher probability of discomforts¹⁴, which leads to suppose that early visits do not only prevent oral diseases progression but also minimize discomfort during dental treatments.

Second, the presence of pain before treatment implies the presence of inflammation which produces a huge amount of substances leading to increased excitability of nociceptors and nociceptive afferents (peripheral sensitization), with increased responsiveness to stimuli and decreased activation threshold, and may reach a primary hyperalgesia, which is pain worsening at stimulation of the injury site, or even secondary hyperalgesia, which is increased sensitivity to stimuli far from the injury¹⁵. Our study has not evaluated previous existing pain duration or sites and extensions of such pain, which could be considered a limitation since those factors may be associated to hyperalgesia¹⁵.

Tooth extraction was the procedure with more reported pain, being this an expected result reported by other studies^{2,16} and because it is an invasive procedure^{2,9}. One should also highlight urgency treatment due to toothache as the second more frequency of pain during treatment being this result both important for the literature, since no attention has been given to this procedure, and understandable since, as discussed, the presence of pain may be associated to peripheral sensitization and hyperalgesia. It is important to stress that patients looking for treatment with toothache may be those who avoid the dentist for fear. If these patients feel pain during treatment they will further avoid the dentist. So, careful attention should be given by dentists to this type of assistance.

Notwithstanding the importance of the type of procedure for the possibility of patients feeling pain during treatment, this was not true with regard to pain intensity. This is because even in procedures less frequently associated with pain, when pain is pres-

ent it reaches a relatively high intensity with a considerable frequency. This fact has already been previously identified, at least in a smaller proportion, where 25% of patients receiving mildly invasive procedures have reported pain and one out of 20 have reported moderate/severe pain². This might be associated to the less frequent use of local anesthesia during mildly invasive procedures and the more frequent use of anesthesia during invasive procedures, while no anesthesia worsens pain intensity during mildly invasive procedures.

Unfortunately we had no information about local anesthesia for all procedures, only for half of them, which was a limitation of our study. However, we got information from dentists that local anesthesia was not used for restorations, that is, anesthesia in these cases was reduced. Even so, anesthesia was mentioned as the primary reason for pain in 14% of restorative procedures. It was also mentioned as such for 30% of extractions. Other studies reinforce the idea that local anesthesia is a painful procedure¹⁷. Some patients report more pain when submitted to local anesthesia than during periodontal surgeries and scraping¹⁸, so local anesthesia was identified as one of the strongest predictors of the presence of pain during treatment⁴.

Another important aspect with regard to anesthesia is that it does not seem to be effective. This may be illustrated by the fact that from patients experiencing pain during tooth extraction, 60% have reported that the cause of pain was the extraction itself. Reasons for pain and anesthetic failures, whether anatomic, pathological, pharmacological or technical, such as excessive injection pressure, not waiting for the effect, etc., were not evaluated in this study.

Notwithstanding information and guidance in the literature on how to induce painless anesthesia¹⁹, there is still a lot to be done by dentists and health service managers for the theory to become reality. Researchers, on the other hand, should investigate which non-technical factors are contributing to the unfavorable outcome of local anesthesia.

CONCLUSION

Pain during USFC treatment was less frequent than in other studies, however with higher intensity. Individuals more subject to pain and high intensity pain where those who only look for the dentist when are experiencing pain, indicating that more frequent visits to the dentist minimize discomfort, contributing to a more favorable relationship of patients with dental treatment.

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