

# Influence of patient age on dentists' decision-making to extract or preserve a tooth

*Influência da idade do paciente no processo de tomada de decisão de extrair ou manter um dente por cirurgiões-dentistas*

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## ABSTRACT

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### Objective

The study examined the influence of patient age on the process of decision-making by dentists in keeping or extracting an extensively decayed tooth.

### Method

This is a cross-sectional study that used "case scenarios". The sample consisted of 81 general dental practitioners Campina Grande (Paraíba). They answered a two-part questionnaire, one containing their identification data and another to determine the treatment decision. The case scenario 1 presented a face photograph of a young patient and a photograph of an extensively decayed tooth. After presenting the case, the question was put: "In your opinion, what is the prognosis for this tooth? Would you extract or maintain the tooth?" After a minimum interval of one month, a second meeting was arranged and the case scenario 2 was presented: the photograph of the face of an elderly patient and the photograph of the same tooth, and the same question was asked. Data were entered on a SPSS software spreadsheet and the statistical analysis of association was carried out using the Chi-square test.

### Results

The majority opted for greater preservation of the tooth of a young patient (95.1%) than in elderly patients (75.3%). However, the frequency of decisions to extract the tooth in a young patient was compared with the decision for the elderly patient and revealed a greater preservation of the tooth of the young one.

### Conclusion

Patient's age influences the decision-making process for treatment by the dentist.

**Indexing terms:** Community dentistry. Decision making. Prejudice.

## RESUMO

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### Objetivo

Verificar a influência da idade do paciente no processo de tomada de decisão por cirurgiões-dentistas em manter ou extrair um elemento dentário extensamente cariado.

### Métodos

Trata-se de um estudo do tipo transversal com a utilização de "cenário de casos". A amostra foi constituída de 81 cirurgiões-dentistas que desenvolviam a atividade clínica em Campina Grande, Paraíba, e que responderam a um questionário com duas partes, uma contendo os dados de identificação e outro para determinar a decisão de tratamento. O cenário de caso 1 apresentava a fotografia da fisionomia do paciente jovem e outra fotografia do dente extensamente cariado. Após a apresentação do caso era feita a pergunta: "Em sua opinião, qual a conduta para esse elemento dentário? Extrairia ou conservaria o dente em questão?" Após o intervalo de um mês, era realizado um segundo encontro, sendo apresentado o cenário de caso 2: a fotografia da fisionomia do paciente idoso e a fotografia do mesmo dente sendo feita a mesma pergunta. Os dados foram lançados na planilha eletrônica do software SPSS e a análise estatística de associação foi feita através do Qui-quadrado.

### Resultados

A maioria optou por maior preservação do elemento dentário do paciente jovem (95,1%) do que no paciente idoso (75,3%). Porém, ao compararmos as frequências da decisão de extrair o elemento dentário no paciente jovem com a decisão no paciente idoso podemos notar uma maior preservação do elemento dentário do jovem.

### Conclusão

A idade do paciente influencia na tomada de decisão de tratamento do cirurgião-dentista.

**Termos de indexação:** Odontologia comunitária. Tomada de decisões. Preconceito.

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## INTRODUCTION

The definition of the word decision may be considered to be the resolution of a voluntary act which, after a period of evaluation, occasions the execution of an alternative found in a macrocosm of others. Meanwhile, the decision theory is the set of analysis methods and procedures which seeks to guarantee the coherence and effectiveness of the choices made, based on the information available<sup>1</sup>.

The process of clinical problem resolution is characterized by two big elements of decision-taking, which need to be analyzed separately, although in practice they cannot be separated. The first of these is the content, a knowledge base that resides in the memory banks of the professional in search of the solution to the problem, while the other is the method of applying the knowledge used in this attempt to resolve the problem in question<sup>2</sup>.

One of the key principles associated with the taking of good clinical decisions is the requirement to be scientifically accurate, since the application of an evidence-based approach has the potential to improve significantly the quality and efficiency of care<sup>3</sup>.

With the intention of assisting the professional to take decisions in specific clinical circumstances, parameters or guidelines have been developed. The use of these "clinical practice parameters", however, also has its limitations. Many of them are primarily based on the consensus of a select group of professionals, with limited scientific foundations. Other barriers to use include complexity, multiplicity, inflexibility and parameters that conflict with each other<sup>4-6</sup>.

Given the difficulties of the evidence-based approach, the majority of clinicians naturally draw on their personal experiences and the results they have achieved in their clinics, in order to formulate their own work philosophy<sup>3</sup>.

In dentistry, these dilemmas may also exist between the spirit of the principle and the descriptive spirit in the decision-taking process. According to the spirit of the principle, the job of the dentist to choose the ideal treatment for each patient requires a rational evaluation of the risks involved in a positive or negative decision, bearing in mind also that it may be important to take into account the values of the patient<sup>7-9</sup>.

Studies on the variation in dental treatment, although they may not focus on the factors associated with these variations, are important in showing that decisions

made by dental surgeons about treatment are also not totally objective. Accordingly, these professionals are open to all the subjectivity and bias common to the decision-making process, including the social aspects<sup>10</sup>.

The aim of this study, therefore, was to ascertain the influence of patient age on the treatment decision process of the dental surgeon, whether to keep or extract an extensively decayed tooth.

## METHODS

This study was carried out on dental surgeons in the municipality of Campina Grande, in the Brazilian state of Paraíba. The studied population comprised professionals carrying out general clinical duties in the city of Campina Grande. According to data obtained from the Paraíba Regional Dental Council, this comprises 543 duly enrolled professionals. Based on this figure, the sample size was calculated using the finite population formula. The minimum required sample size was 81 dentists.

This was a descriptive and quantitative study using a cross-sectional type design insofar as the "cause" and "effect" were analyzed concurrently. Nevertheless, this classical investigation typology had one specific characteristic: the study used a "case diagram", i.e. a clinical case presentation standardized by the investigator.

A draw was made using the listing supplied by the Paraíba Regional Dental Council, by way of simple sampling, with substitution in instances where the selected professional could not be located.

The classical cross-sectional study typology had one specific characteristic, since a "case diagram" was employed. These are already well-known in epidemiological research and have been used in the majority of specific decision-taking studies<sup>11</sup>. Used with the method employed by Cabral et al.<sup>10</sup> it is regarded as an invaluable method, having the distinct advantage of controlling variables, it being permitted to analyze the extent to which they are responsible for differences in decision-taking<sup>12</sup>.

The study was submitted to and approved by the Research Ethics Committee at the Paraíba State University (CAAE 0091.0.133.000-05), together with a copy of the Free and Informed Consent form and the Image Donation Form of the actors taking part in the case scenarios, both of which conform to the standards of Resolution 196/96 issued by the National Health Council and the 2002 Helsinki Declaration.

Case scenario no. 1 contained the photograph of the face of a young patient and the photograph of an extensively decayed tooth. Then in case scenario no. 2, the photograph of an elderly patient was shown as well as the presentation of the same tooth shown in case scenario no. 1, although some of the intraoral characteristics of the photograph were digitally manipulated to depict the age of the elderly patient. The two case scenarios were presented to the dental surgeons at different times, with a time interval of at least one month so that the similarities could not be observed.

Upon the initial contact with the interview, we explained the reason, nature and relevance of the study to dentistry. The professional was told that the aim of the study was to identify factors connected with the decisions made by dental surgeons regarding treatment, when faced with the decision to extract or preserve a tooth. However, the professional was not informed about the emphasis placed on the characteristics of the patient's age.

Thus the participation of the professional was requested and he/she signed the Free and Informed Consent Form. Then the interview began, using a two-part questionnaire: the first part identified the socio-demographic variables while the second was used to obtain the decision on the therapy.

We first presented case scenario no. 1: the photograph of the facial features of the young patient and another photograph of the extensively decayed tooth. Following the presentation of the case, the following question was asked: "In your opinion, what is the prognosis for this tooth? Would you extract or preserve the tooth in question?"

After a minimum period of one month, a second meeting was scheduled where case scenario no. 2 was presented, the same question being asked.

The data were input to an electronic spreadsheet belonging to the Statistical Package for Social Science (SPSS) program in order to ascertain the frequency of the results and significant associations between the dependent variable and the independent variables via the Chi-square test.

## RESULTS

For the most part, the sample was composed of the female sex (72.8%); Caucasian (66.7%); working purely as general practitioner (64.2%); without post-graduation course

(61.7%); age below 35 years (59.3%); graduated within last 10 years (59.3%); income of up to 8 minimum salaries (58.0%); marital status, single (50.6%); average time spent per patient of up to 20 minutes (44.4%) as shown in Table 1.

The majority of the dental surgeons in the study chose to keep the tooth in both patients, though the decision to extract was made more in the case of the elderly patient (24.7%) than in the young patient (4.9%) as per Table 2.

From the associations between the dependent variable (treatment decision) and the independent variables (socio-demographic characteristics of the dental surgeon), tested using Pearson's Chi-square test, it can be seen that there was an association between the qualifications of the dental surgeon and the taking of the decision to extract the tooth in the elderly patient ( $p=0.002$ ). Of those professionals who had a post-graduate degree (specialization, masters or doctorate), 6.5% chose to extract the tooth in the elderly patient versus 36% for professionals who only had an undergraduate course degree (Table 3).

A significant association was also found between the age of the professional and the decision to extract or preserve the tooth in the young patient ( $p=0.011$ ), where the majority of professionals opting to extract were in the 36 to 45 age range (Table 4).

**Table 1.** Distribution of dental surgeons studied according to socio-demographic variables. Campina Grande (2011).

Socio-demographic variables	n	%
<b>Sex</b>		
Male	22	27.2
Female	59	72.8
<b>Ethnicity</b>		
White	54	66.7
Non-white	27	33.3
<b>Area of involvement</b>		
General practice	52	64.2
Specialties only	17	21.0
General practice and specialties	12	14.8
<b>Time since graduation</b>		
Less than or equal to 10 years	48	59.3
11 to 20 years	11	13.6
Over 20 years	22	27.2
<b>Work sector</b>		
Public service	27	33.3
Private service	27	33.3
Both	27	33.3
<b>Total</b>	<b>81</b>	<b>100.0</b>

**Table 2.** Frequency of decision-taking on extracting or preserving tooth according to patient's age. Campina Grande (2011).

Decision	n	%
<b>Young patient</b>		
Preserve	77	95.1
Extract	4	4.9
<b>Elderly patient</b>		
Preserve	61	75.3
Extract	20	24.7
<b>Total</b>	<b>81</b>	<b>100.0</b>

**Table 3.** Association between level of qualification of dental surgeon and the taking of the decision to extract or preserve the tooth of the elderly patient. Campina Grande (2011).

Variables	Decision over the elderly patient				Value of p
	Preserve		Extract		
Level of qualification	n	%	n	%	
Graduation	32	64.0	18	36.0	p<0.05*
Post-Graduation	29	93.5	2	6.5	
Total	61	75.3	20	24.7	

\* Chi-square test.

**Table 4.** Association between the age range of the dental surgeon and the taking of the decision to extract or preserve the tooth of the young patient. Campina Grande (2011).

Variables	Decision over the elderly patient				Value of p
	Preserve		Extract		
Age Range	n	%	n	%	
≤ 35 years	47	97.9	1	2.1	p<0.05*
36 to 45 years	12	80.0	3	20.0	
≥ 46 years	18	100.0	0	0.0	
Total	77	95.1	4	4.9	

\* Chi-square test.

## DISCUSSION

The Regional Dental Council<sup>12</sup> confirms that in Brazil, 45.3% of dental surgeons are male and the majority (54.7%) are female. The Northeast region tracks this tendency for the predominance of the female sex, while the federal state having the largest concentration of female dental surgeons is Paraíba, with a total percentage of 68.32%.

As regards the sex of those investigated, the majority of the sample was composed of females (72.8%), corroborating the work of Cabral et al.<sup>10</sup>. The opposite situation was found in a study by D'Avila et al.<sup>13</sup>.

In relation to the color of those interviewed, 66.7% stated they were white, the same results being found in other studies<sup>10</sup>.

As far as the time since graduation is concerned, 59.3% had graduated within the previous 10 years, contrary to that found in another study<sup>14</sup> where the majority of those interviewed had been qualified for over 20 years.

With regard to the place where their clinical activities were performed, the profile found was roughly equal, with 1/3 in each of the options: only private service, only public service or both services. In other studies, however, activities were predominantly carried out in the private sector<sup>15-16</sup>, unlike the study by Pinheiro et al.<sup>16</sup>, where the predominance was in the public sector.

Turning to the specific case of the decision on whether to extract or preserve a tooth, there is a consensus that tooth extraction is not recommended until all other possibilities to salvage the teeth have been exhausted<sup>17-18</sup>.

In all the dental surgeons investigated in this study, a preoccupation with not extracting the tooth was noted, the vast majority opting to preserve the tooth, regardless of the patient's age, though when we compare the frequencies of the decision to extract the tooth in the young patient with that in the elderly patient, we can detect a higher degree of preservation of the young person's tooth.

In this decision on whether to extract or preserve, it was seen that the characteristics of the patient, particularly age, had an influence on the decision taken by the professionals<sup>11</sup>.

One would normally expect that health professionals, and they would also expect this of themselves, would not be affected by the social or demographic characteristics of the patient whenever the latter is in need of a final decision<sup>19</sup>.

Research into social categorization and stereotyping suggests, however, that these expectations are not realistic. People make judgments about categories or groups of people and extrapolate these judgments to all individuals mentally assigned to that category or group<sup>20</sup>. In the study by D'Avila et al.<sup>13</sup>, it was found that 70.7% of those interviewed demonstrated interference through first impressions, which is quite common behavior amongst human beings.

There is evidence that the characteristics of the patient, the professional and the work also specifically influence the treatment decision by the dental surgeons<sup>21</sup>.

When a study was carried out analyzing the influence of the ethnicity of the patient on the decisions by the dental surgeons to extract or preserve an extensively decayed tooth, it was found that there is a significant shift in the decisions taken by the professionals between white patients and those of African origin, such that they decided to extract more frequently when the patient was of African origin than when the patient was white (25.6% vs. 16.2%)<sup>10</sup>.

When Dolan et al.<sup>22</sup> submitted to the clinical dental surgeons case diagrams identical to those of a partially toothed patient, with just a difference in the patient's age, the dentists' plan of treatment for the case (limited treatment vs. extensive treatment) was associated significantly with the patient's age.

As the studies suggest, attitudes and expectations associated with the social identity of the patient can shape the evaluation and response of the professional towards the patient's clinical problems. Doctors prefer to treat younger people, while they harbor negative images of elderly patients<sup>23-24</sup>.

Another important point to stress is the professional qualification as a bigger influence on the decision to preserve the tooth. There is evidence that, with professionals who have taken a post-graduation course (specialization, masters or doctorate), the tendency to opt for conservative treatment is increased.

D'Ávila et al.<sup>13</sup> believe that under any hypothesis, choices should be guided by respect for human dignity and there should be no discrimination of people in the healthcare services by virtue of race, sex, age or socioeconomic condition and, if selection criteria do exist, they should be transparent and acceptable to professionals and society alike.

Based on the findings above, it is extremely important that, in the relationship between patient and the professional who is treating him/her, there should be a relationship of humanization, this being an essential part of the process of professional qualification of the dental surgeon, as well as in the professional's daily practices<sup>25</sup>.

## CONCLUSION

Despite the fact that the overriding philosophy is to preserve teeth, the age of the patient is a factor which influences the dental surgeon in the process of taking decisions on treatment.

## Collaborators

S D'ÁVILA took part in the project conception, data analysis and composition of the article. PAP OLIVEIRA gathered the pilot project data, made adjustments between the pilot and the study, took part in the gathering of data and the composition of the article. GMS CAVALCANTE took part in the gathering of data, analysis of results and the composition of the article. EHA SOUZA took part in the project conception, analysis and discussion of the data, and the composition of the article. AF CALDAS JÚNIOR took part in the revision and composition of the article.

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