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Caraciolo Albuquerque, Aíla Fontes; da Rocha Kozmhinsky, Veronica Maria; Rebêlo de
Moraes Guerra, Cândida Augusta; da Silva Rodrigues, Simone; Jamelli, Silvia Regina

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Original Article

Access to Dental Care among Adolescents with Heart Disease

Aíla Fontes Caraciolo Albuquerque¹, Veronica Maria da Rocha Kozmhinsky², Cândida Augusta Rebêlo de Moraes Guerra³, Simone da Silva Rodrigues⁴, Silvia Regina Jamelli⁵

¹Resident, Instituto de Medicina Integral Prof. Fernando Figueira, Recife, PE, Brazil.

²Coordinator of Dental Service, Instituto de Medicina Integral Prof. Fernando Figueira, Recife, PE, Brazil.

³Preceptor, Instituto de Medicina Integral Prof. Fernando Figueira, Recife, PE, Brazil.

⁴MSc. Student, Child and Adolescent Health, Universidade Federal de Pernambuco, Recife, PE, Brazil.

⁵Adjunct Professor, Universidade Federal de Pernambuco, Recife, PE, Brazil.

Author to whom correspondence should be addressed: Aíla Fontes Caraciolo Albuquerque. Rua Teles Junior, 350/102, Rosarinho, Recife, PE, Brazil. 52050-375. Phone: (81) 98805-1961 E-mail: ailafcaraciolo@gmail.com.

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Abstract

Objective: To evaluate the access of adolescents aged 15 to 19 years with heart disease to oral health services at a reference hospital in the city of Recife, Brazil. **Material and Methods:** A cross-sectional study was conducted at the Cardiology Clinic of *Instituto de Medicina Integral Prof. Fernando Figueira* (IMIP) from April to September 2015 using a convenience sample of 83 adolescents with heart disease. A questionnaire was administered in interview form to adolescents and/or parents/guardians to collect information on socio-demographic characteristics, the use of dental services and oral health habits. Data analysis was performed using descriptive statistics and association tests (chi-square test and Fisher's exact test), with the significance level set to 5% to identify possible associated factors. **Results:** Fifty-two adolescents (62.7%) had never been denied dental care due to their condition. Public services accounted for 66.3% of the care offered. Checkup/prevention was the main reason for seeking care (39.8%). Many of the adolescents exhibited inadequate oral hygiene habits. Forty-four (53%) did not brush their teeth regularly at night and 66 (79.5%) did not floss. No statistically significant association was found between access to dental care and social class ($p=0.148$), with whom the adolescent resided ($p=0.607$), birth order ($p=0.598$), race ($p=0.068$), education level of the head of the household ($p=0.828$) or scholastic failure on the part of the adolescent ($p=0.196$). **Conclusion:** Most adolescents with heart disease obtained dental care, although most did not have adequate hygiene habits. Moreover, socio-demographic, psychosocial and behavioral factors exerted no influence on access to oral health services. Further studies on this issue are needed.

Keywords: Health Services Accessibility; Oral Health; Adolescent; Heart Diseases.

Introduction

Tooth decay remains the main problem of oral health of Brazilians. Gingival alterations such as gingivitis and periodontitis are absent in only 17% of adults 35-44 years old and only 1.8% of those aged 65-74 years old. Consequently, there is a great demand for dental prostheses in both public and private dental practices. In elderly people 65-74 years old, 23% need full-arch dentures in at least one arch and 15% need dentures in both arches [1].

There is a strong trend in the professional environment to select implant-supported prostheses as the model of rehabilitation [2]. Prior knowledge of the surgical anatomy is a key to the surgical protocol for implant placement in the anterior mandible region, allowing surgery with less trauma, less sensory complications and with a spatial distribution that favors the biomechanics. The correct demarcation of the bilateral mental emergence paths using the surgical guide allows the distal implants to be positioned at a minimum distance of 3.5 mm from the mental foramina [3].

Previously, such analysis and planning were carried out by periapical and panoramic radiographs leading to not so satisfactory results due to the distortions that are common in such techniques. Nowadays, there are more accurate techniques such as CT scans, especially the cone-beam type that provides a three dimensional (3D) image showing maximum details and using low exposure doses [4,5].

Surgical planning procedures, such as the placement of endosseous implants in the interforaminal area to carry out Brånemark protocol-type rehabilitations, can be better achieved with CBCT. The original Brånemark technique used fixed prostheses screwed onto six implants with diameters of 3.75 mm each and they were empirically distributed in this space [6].

Thus, the aim of this study was to retrospectively determine the distance between mental foramina of a Brazilian population and define the number of implants that could be placed in the interforaminal region using CBCT scans. Moreover, this pilot study developed and presents a method to measure the space available for the installation of the implants between the mental foramina.

Material and Methods

Study Design

A descriptive, quantitative, analytical, cross-sectional study was conducted with male and female adolescents aged 15 to 19 years under treatment at the Cardiology Clinic of *Instituto de Medicina Integral Prof. Fernando Figueira* (IMIP) in the city of Recife, Brazil, from April to September 2015.

Study Population

A convenience sample was used, involving the initial recruitment of 99 adolescents with heart disease followed up during the data collection period. Adolescents aged 15 to 19 years diagnosed with heart disease and in follow up at the Cardiology Unit of IMIP were included in the

study. Eleven of the adolescents were excluded due to cognitive, hearing or visual impairment that impeded the administration of the questionnaire and six declined to participate. Thus, the sample was composed of 83 individuals.

Data Collection

The data were collected at the Cardiology Clinic by two researchers. For such, a questionnaire was administered in interview form to the adolescents and guardians, addressing information of socio-demographic, behavioral and psychosocial characteristics (independent variables) as well as access to oral health services (dependent variable).

Statistical Analysis

The data were analyzed using the Stata/SE 12.0 software. Descriptive analysis was performed with the calculation of absolute and relative frequencies, which were presented in tables. The chi-square test and Fisher's exact test were employed to identify possible associated factors. The level of significance was set to 5% ($p < 0.05$).

Ethical Aspects

This study was approved by the Ethics Committee of the Veiga de Almeida University (UVA) under resolution No. 1,197,645.

Results

During the study, 99 adolescent patients at the IMIP Pediatric Cardiology Clinic were approached. The response rate was 83.9%. Eleven individuals were excluded based on pre-established criteria and six declined to participate, resulting in a total sample of 83 adolescents. The majority was between 15 (45.7%) and 16 (21.7%) years of age. Males accounted for 51.8% of the sample ($n = 43$) and females accounted for 48.2% ($n = 40$). Individuals with brown skin color predominated (54.3%). More adolescents resided in rural areas (59%) than urban areas of metropolitan Recife (37.3%) (Table 1).

Table 1. Socio-demographic characteristics of sample.

Variables (N = 83)	Frequency	
	N	%
Sex		
Male	43	51.8
Female	40	48.2
Age (Years)		
15	38	45.7
16	18	21.7
17	11	13.3
18	11	13.3
19	5	6.0
Race		
White	19	22.9

Black	8	9.6
Brown	45	54.3
Yellow	8	9.6
Indigenous	2	2.4
Not informed	1	1.2
Place of Residence		
Metropolitan Recife**	31	37.3
Instate	49	59.0
Other state	3	3.6
Schooling – Head of Household		
To 3 rd grade	24	28.9
To 4 th grade	25	30.1
Complete elementary school	13	15.7
Complete high school	18	21.7
Complete university	1	1.2
Does not know	1	1.2
Not informed	1	1.2
Economic Class		
B	2	2.4
C	43	51.8
D	33	39.8
E	1	4.8
Not informed	1	1.2

*Sample size varied due to missing information.

A total of 51.8% of the interviewees belonged to economic class C. Among the heads of household, only 21.7% had a complete high school education (Table 1). A total of 51.9% of the adolescents lived with their parents and 39.8% were the first-born child. A total of 61.4% of the adolescents reported having failed a school year (Table 2).

Table 2. Psychosocial characteristics of sample.

Variables (N= 83)	Frequency	
	N	%
With Whom Adolescent Resides		
Mother	26	31.3
Father	4	4.8
Mother and father	43	51.9
Others	9	10.8
Not informed	1	1.2
Birth Order		
First child	33	39.8
Second child	20	24.1
Third child	10	12.0
Fourth child	20	24.1
Failed School Year		
Yes	51	61.4
No	32	38.6

*Sample size varied due to missing information.

With regard to oral habits, 47% of the adolescents regularly brushed their teeth at night. A total of 79.5% did not include flossing as part of their daily routine (Table 3).

Table 3. Behavioral characteristics of sample and use of dental services.

Variables	Frequency	
	N	%
Brushing at Night		
Regular	39	47.0
Irregular	44	53.0
Use of Dental Floss		
Yes	17	20.5
No	66	79.5
Denied Access to Dentist		
Yes	31	37.3
No	52	62.7
Last Dental Appointment		
In previous 12 months	47	56.7
Between 1 and 2 years	24	28.9
Three or more years ago	9	10.8
Not informed	3	3.6
Setting of Last Dental Appointment		
Public service	55	66.3
Private practice	25	30.1
Health insurance affiliate	2	2.4
Not informed	1	1.2
Reason For Last Appointment		
Checkup/Prevention	33	39.8
Pain	8	9.6
Extraction	15	18.1
Treatment	22	26.5
Others	3	3.6
Does not know	1	1.2
Not informed	1	1.2
Assessment of Treatment		
Positive experience	71	85.6
Negative experience	8	9.6
Not informed	4	4.8

Fifty-two adolescents (62.7%) had never been denied dental care due to their condition. The prevalence of the utilization of dental services in the 12 months prior to the interview was 56.7%. More than half of the adolescents interviewed (63.3%) made appointments at public services. The main reasons for making appointments were checkup and prevention (39.8%), followed by treatment (26.5%), and 85.6% reported having a positive experience during their last dental treatment (Table 3).

No statistically significant associations were found between access to dental services and socio-demographic, behavioral or psychosocial variables (Table 4).

Table 4. Bivariate analysis of denied dental care according to socio-demographic, psychosocial and behavioral factors.

Variables	Have you ever been denied dental care due to your condition?		p-value
	Yes	No	
	n (%)	n (%)	
Race			
White	7 (36.8)	12 (63.2)	0.068 ***
Black	0 (0.0)	8 (100.0)	
Brown	21 (46.7)	24 (53.3)	
Yellow	2 (25.0)	6 (75.0)	

Indigenous	0 (0.0)	2 (100.0)	
Economic Class			
B	2 (100.0)	0 (0.0)	0.148 ***
C	16 (37.2)	27 (62.8)	
D	12 (36.4)	21 (63.6)	
E	0 (0.0)	4 (100.0)	
With Whom Resides			
Mother	9 (34.6)	17 (65.4)	0.607 ***
Father	2 (50.0)	2 (50.0)	
Mother and father	15 (34.9)	28 (65.1)	
Others	5 (55.6)	4 (44.4)	
At Home, You Are the			
First child	15 (45.5)	18 (54.5)	0.598 **
Second child	6 (30.0)	14 (70.0)	
Third child	4 (40.0)	6 (60.0)	
Fourth child or after	6 (30.0)	14 (70.0)	
Schooling – Head of Household			
To 3 rd grade	8 (33.3)	16 (66.7)	0.828 ***
To 4 th grade	9 (36.0)	16 (64.0)	
Complete elementary school	5 (38.5)	8 (61.5)	
Complete high school	6 (33.3)	12 (66.7)	
Complete university	1 (100.0)	0 (0.0)	
Ever Failed a School Year?			
Yes	22 (43.1)	29 (56.9)	0.196 **
No	9 (28.1)	23 (71.9)	

*Sample size varied due to missing information; **Chi-square test; ***Fisher's exact test.

Discussion

Although health is an abstract concept to children and adolescents, this is believed to result from the little emphasis educators place on the subject. Health care is closely related to an educational process, which assists greatly in the prevention and control of oral problems [14].

No specific programs prioritize adolescent dental care at public services, especially with regard to groups with specific characteristics, such as those with heart disease. Moreover, the literature on access to dental services by this population is scarce, which makes the present study important, but hinders the comparison of the results.

Most of the adolescents interviewed reported having access to oral health services. Similar results have been described for adolescents with Down syndrome, the majority of whom (79.5%) had been to the dentist at least once [15]. Another study involving children and adolescents with special needs (physical, mental, hearing or visual impairment) found that half of the population had no access to dental care [16]. Likewise, studies evaluating the utilization of dental services by adolescents aged 15 and 19 years with no diseases found that 7.6% (17) and 13% (4) never had access to dental services, which is in agreement with the present findings.

Differences in health needs are not eliminated by the use of health services alone. It is undeniable that access to quality services can alleviate unfavorable health situations in populations [18]. Information on self-care with regard to oral health, the use of fluoride and oral problems can contribute to a better quality of life [19]. The fact that the majority of adolescents reported having access to dental services can be explained by the fact that this study was conducted in a hospital that offers specialized dental care, including care to heart patients.

Despite the need to increase the offer of public services, a large portion of care was performed in the public healthcare realm. This is in disagreement with data from a study involving children and adolescents with disabilities, in which half of the population was unable to attain care at public services due to the excessive demand or a lack of training on the part of the dentist [16]. A study involving healthy adolescents in the same age range found that 55.6% had access to public services [19].

Pain, treatment and extraction together accounted for 54.2% of the reasons for seeking dental treatment, whereas checkup/prevention accounted for 39.8%, demonstrating greater demand due to some symptom, which is in agreement with previous studies involving healthy patients [20-22]. This underscores the need to raise awareness in the population regarding the importance of preventive oral health care and the avoidance of aggravating the systemic condition, since the simple handling of oral tissues by dentists can cause bleeding, predisposing the individual to bacteremia, which can lead to bacterial endocarditis [5].

More than half of the interviewees with access to dental services visited the dentist in the previous year, which is similar to data reported in previous studies involving adolescents without diseases [19,23-26]. Dental care patterns are directly proportional to symptoms, such as pain, oral problems and precarious oral health [20-22,27].

A total of 85.6% of the interviewees considered their last dental appointment to have been a positive experience, which is in agreement with a previous study involving healthy adolescents aged 15 to 19 years [25]. This fact may be an incentive to the practice of self-care with regard to oral health. However, the individuals reported inadequate oral hygiene habits, as more than half did not regularly brush their teeth at night and the majority did not floss. Although the importance of flossing has been emphasized in recent years, the use of dental floss is not a common practice among adolescents, as demonstrated in previous studies [19,26,28]. The importance of determinants to the prevention and control of oral problems, such as brushing, limiting sugar intake, the adequate use of fluoride, flossing and regular visits to the dentist, is evident in the literature [6,19,23,26].

Unlike findings reported in other studies, schooling of the head of the household did not exert an influence on access to health services in the present sample. Education offers opportunities to achieve a particular occupation and consequently reach a certain level of income, which can influence different health-related behaviors [29].

The present study has limitations that should be considered, such as the small sample size obtained during the data collection period and the scarcity of literature on the subject to serve for the purposes of comparison. However, the adequate, well-founded methods attest to the validity of the study. Further investigations should be conducted with a larger sample of adolescent heart patients through multicenter studies.

More than merely ensuring access, the dental care model should be constant, universal, fair, efficient, integral and resolute. It must be able to satisfy both the patients and health professionals, thereby contributing to an improved quality of life for the population [30].

Conclusion

Based on the findings, most adolescents with heart disease obtained dental care, although most did not have adequate hygiene habits. Moreover, socio-demographic, psychosocial and behavioral factors exerted no influence on access to oral health services. This investigation can serve as the basis for the development of further studies that seek to clarify access to dental services by adolescents with heart disease and possible associations.

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