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Original Article

Relationship Between Mother's Sense of Coherence and Oral Health of Babies aged 6-36 Months: A Pilot Study

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Abstract

Objective: To evaluate the association between oral health of babies aged 6-36 months and the Mother's Sense of Coherence (SOC). **Material and Methods:** A cross-sectional pilot study was conducted in the city of Diamantina -MG with a convenience sample of 32 mothers and their babies, attended at the Dental Clinic for Babies at the Federal University of the Vales do Jequitinhonha and Mucuri. The survey included the filling of dental records of babies, a questionnaire given to the mothers about sociodemographic and oral hygiene of their babies, and self-administered SOC-13. Babies were submitted to a clinical intra-oral examination for the detection of dental caries and initial lesions according to World Health Organization (WHO) criteria. Data were analyzed by the t test and Pearson's correlation ($p < 0.05$). The size effect calculation proposed by Cohen was used to test the clinical significance of results. **Results:** The prevalence of dental caries was 40.0%. Maternal SOC had a variation between 35 and 59, with mean score of 47.7 (SD = 6.09). The monthly family income was more than two minimum wages for 51.6% of families. There was no statistically significant association between dental caries and maternal SOC ($p = 0.646$). Regarding monthly family income, there was a statistically significant association with maternal SOC ($p = 0.005$). Maternal SOC was also significantly associated with nocturnal oral hygiene of babies ($p = 0.008$). **Conclusion:** The mother's sense of coherence was not associated with dental caries and was associated with nocturnal oral hygiene of babies and with family monthly income.

Keywords: Dental caries; Sense of coherence; Oral health.

Introduction

The influence of social conditions on the health of individuals in a society has been the subject of studies in recent decades [1,2]. The salutogenic theory is based on the interaction between social context and biological and psychological factors, and seeks to explain why some individuals remain healthy, especially after experiencing high and long-lasting stressful life situations, while others do not [1].

The Sense of Coherence (SOC) is the central element of the salutogenic theory and refers to the individual's ability to understand and face everyday situations and the ability to use the available resources in order to maintain and develop health [1,3,4]. Individuals with strong SOC have the ability to define life events as less stressful (understanding), to mobilize resources to deal with the stress found (management), and to have motivation, desire and commitment to deal with difficulties (significance) [5].

The relationship between SOC and oral health has been reported in children, adolescents, and adults from different countries, such as Brazil, Sweden and Finland [6-8] and has demonstrated an inverse relationship between SOC and oral health conditions. Thus, weak SOC provides higher incidence of oral problems such as dental caries, periodontal disease and tooth loss [6-9]. Parental characteristics, attitudes and perceptions can influence the access of their children to dental care [10]. Therefore, association between maternal SOC and oral health conditions in children has been observed [6,7,11]. Other studies have linked SOC to behaviors that interfere with oral health such as the habit of visiting the dentist or access to dental care, brushing frequency, consumption of sugar in the diet and use of fluoride [12-14]. There are also studies evaluating the association between maternal SOC and eating habits [15] and childhood cancer [16].

This pilot study can encourage dentists not to be limited to clinical aspects of oral health, but also seek new forms of health analysis in a wider range, such as by evaluating psychosocial factors, generating benefits regarding the diagnosis and treatment of patients. The literature review has shown lack of studies on the relationship between psychosocial factors of mothers and oral health indicators in children [11], particularly in relation to the oral health of infants aged 6-36 months.

This pilot study aimed to determine the association between oral health of infants aged 6-36 months and psychosocial factors through the mother's sense of coherence.

Material and Methods

Ethical Issues

This study was approved by the Ethics Committee in Research with human beings of the UFVJM (Opinion No. 470 863). All mothers signed the free and informed consent form.

Subjects

A cross-sectional study was conducted in the city of Diamantina, which is located in the northern portion of the state of Minas Gerais, southeastern Brazil. Diamantina is located in the Vale

do Jequitinhonha region, one of the poorest regions of Brazil. The study population consisted of infants and their mothers attended at the Dental Clinic for Babies of the Federal University of the Vales do Jequitinhonha and Mucuri (UFVJM). This clinic started operation in 2011 and meets all the demands of children aged 0-36 months in the city of Diamantina, since the city's public dental service does not offer dental care aimed at this age group. All children-parents seeking this service receive care that includes: guidance and preventive procedures and curative treatment whenever necessary.

To be included in the study, babies should have at least one erupted tooth, do not have physical or mental illness and be accompanied by the mother.

For the conduction of this pilot study, a convenience sample was used. All babies aged 6-36 months and their mothers attending the Pediatric Dentistry Clinic of UFVJM were invited to participate in this study, and a total of 32 babies were evaluated.

Data Acquisition

Data collection was conducted through two questionnaires and oral clinical examination of babies attended at the Dental Clinic for Babies. Mothers were asked to answer the Sense of Coherence-13 scale (SOC-13) and a questionnaire that addressed issues related to socio-demographic information and about the oral health of their children, in an interview format. Prior to data collection, two examiners underwent training and calibration for the diagnosis of dental caries¹⁷ and questionnaire application methods. Training and calibration were carried out by projecting the equal images of different clinical situations of dental caries in two moments with an interval of one week. Inter and intra-rater kappa values were, respectively, 0.83 and 0.86.

Oral clinical examinations were performed in a dental unit under artificial light after cleaning and drying of the teeth examined. The procedures complied with biosecurity standards. Dental caries was assessed according to the World Health Organization criteria together with criteria for evaluation of initial caries lesions [17,18]. The child was classified as with the presence of dental caries in case of at least one tooth with carious lesion with clear cavitation, or restored, or lost due to dental caries [17]. Teeth that presented active initial caries lesion with rough appearance without cavitation and located near the soft tissue margin were considered decayed, in which biofilm accumulation usually occurs [18]. Dental plaque was diagnosed when it could be detectable in the vestibular portion of one or more upper incisors [11], without disclosure before teeth cleaning.

Mothers of babies were asked to answer two questionnaires: the SOC-13, which was filled by mothers, and another questionnaire was applied through interviews and addressed aspects related to sociodemographic characteristics and the oral health of their children.

Sociodemographic information included infant's age, mother's age, family composition (nuclear or non-nuclear family), number of people living from family income (≤ 3 people or > 3 people), number of siblings (0 or ≥ 1) maternal and paternal schooling (elementary or high school: ≤ 12 years of schooling or higher education: > 13 years of schooling), type of dwelling (own or rented) and family income (categorized by the median based on the minimum monthly current wage

in Brazil in the period of data collection = approximately R\$ 788,00 / ≤ 2 minimum wages or > 2 minimum wages).

Information regarding the infant's oral health included issues related to oral hygiene, tooth pain history and visits to the dentist.

Sense of Coherence Scale (SOC-13)

The short version of the SOC scale (SOC-13) was used to assess mother's sense of coherence. It is an instrument that has been validated for use in mothers of adolescents in the state of Goiás, Brazil [19] and has obtained a cross-cultural adaptation for use in mothers of pre-school children in the state of Minas Gerais, Brazil [20].

The SOC-13 is an instrument composed of 13 questions and answer options on a 5-point Likert scale. In order to exemplify the instrument, there are three items that could be considered representative of the SOC-13: 1 - "Do you have interest in what goes on around you?" 2 - "Do you have questions if you can control your feelings?" and 3 - "Do you have confused ideas or feelings?"

The results are calculated by summing the codes of response options, and the final score may vary between 13 and 65 points, with higher values corresponding to greater adaptability to stress.

Data Analysis

Data analysis was performed using the Statistical Package for Social Sciences (SPSS for Windows, version 20.0, SPSS Inc. Chicago, IL, USA) and included data frequency distribution and association tests. Statistical significance was determined for associations between sense of coherence (dependent variable) with respect to independent variables: gender, dental caries, dental plaque, oral hygiene, nocturnal oral hygiene, visits to the dentist, toothache history, maternal and paternal education level, monthly family income, family status, number of siblings and number of people by income, with significance level set at 5% ($p < 0.05$). Associations between each SOC-13 item and dental caries were determined by the t test for independent samples. The t test for independent samples was also used to verify associations between the dependent variable total SOC and sociodemographic independent variables related to the oral health of children. Pearson correlation was performed between total SOC and quantitative variables: number of decayed teeth, oral hygiene frequency, infant's age and mother's age.

The size effect calculation proposed by Cohen [21] was used to test the clinical significance of results. According to Cohen's criteria, effect size < 0.2 indicates small magnitude, effect size from 0.2 to 0.7 indicates moderate magnitude and effect size > 0.7 indicates large magnitude.

Results

A total of 32 infants aged 6-36 months and their mothers participated in the study. The mean age of infants was 27.13 months (SD = 8.45 months) and 18 (51.4%) were female. Most mothers and

fathers had less than twelve years of schooling (elementary school or high school). Monthly family income was more than two minimum wages among 51.6% of families.

SOC and Oral Health

The total maternal SOC score ranged from 35 to 59 with average score of 47.7 (SD = 6.09). The prevalence of dental caries was found to be 40.0%. The number of decayed teeth ranged from 1 (n = 1, 3.2%) to 18 (n = 1, 3.2%), with mean value of 2.26 (SD = 3.79). Cavitated carious lesions were found in 25.8% of children, ranging from 1 to 18 teeth (mean = 1.16 / SD = 3.40); and white spot lesions were identified in 32.3% of infants, ranging from 1 to 7 teeth (mean = 1.10 / SD = 1.99). Dental plaque was present in 14.3% of infants.

A total of 54.8% of mothers answered that what they do every day is a pleasure and satisfaction and that they have many goals in their lives, 41.9% reported always have interest in what is happening around them, 29% said that they rarely felt treated unfairly and rarely have doubts whether they can control their feelings, 38.7% answered that sometimes they were disappointed with people they trusted, sometimes they have mixed feelings, seldom have feelings that they would not want to and a few times in an unusual situation where they did not know what to do, 67.7% never found that things they do in life have little meaning, 48.4% were sometimes surprised about the behavior of people who they thought they knew well, 54.8% rarely felt failed and 48.4% gave importance not right or wrong for something that happened in their lives.

Table 1 shows the bivariate analysis of the relationship between each SOC-13 item and dental caries. There was no statistically significant association between dental caries and none of the items ($p > 0.05$).

Table 1. Bivariate analysis of the relationship between each SOC-13 item and dental caries of 32 infants attended at the Dental Clinic for Babies of UFVJM Dentistry Course, Diamantina, Brazil.

| SOC-13 | Healthy | | Decayed | | p* | d |
|---|----------------------|--------------|----------------------|--------------|--------------|-------------|
| | Mean (SD) | Median | Mean (SD) | Median | | |
| <i>Daily activities</i> | 4.00 (0.707) | 4.00 | 4.14 (0.663) | 4.00 | 0.569 | 0.20 |
| <i>Goals in life</i> | 4.00 (0.791) | 4.00 | 4.00 (0.877) | 4.00 | 1.000 | 0.00 |
| <i>Interest in what goes around</i> | 3.94 (1.029) | 4.00 | 4.29 (0.825) | 4.50 | 0.320 | 0.38 |
| <i>Treatment with injustice</i> | 4.29 (0.849) | 5.00 | 3.71 (0.914) | 4.00 | 0.078 | 0.66 |
| <i>Confused ideas and feelings</i> | 3.35 (1.115) | 4.00 | 3.50 (0.650) | 3.00 | 0.666 | 0.16 |
| <i>Sense of what does in life</i> | 4.59 (0.870) | 5.00 | 4.21 (1.188) | 5.00 | 0.320 | 0.36 |
| <i>Disappointment with people she trusted</i> | 3.12 (0.928) | 3.00 | 2.71 (0.994) | 3.00 | 0.253 | 0.43 |
| <i>Feelings that she would not want to have</i> | 3.00 (1.275) | 3.00 | 3.36 (0.842) | 3.00 | 0.377 | 0.33 |
| <i>Control of feelings</i> | 3.76 (1.300) | 4.00 | 3.57 (0.938) | 4.00 | 0.645 | 0.17 |
| <i>Surprised by the behavior of people who knew</i> | 3.00 (1.061) | 3.00 | 2.86 (0.535) | 3.00 | 0.651 | 0.17 |
| <i>Sense of failure</i> | 4.06 (0.966) | 4.00 | 3.79 (0.893) | 4.00 | 0.424 | 0.29 |
| <i>Feeling of not knowing what to do</i> | 3.65 (1.320) | 4.00 | 3.71 (1.267) | 4.00 | 0.887 | 0.05 |
| <i>Importance to things that happen in life</i> | 3.41 (0.618) | 3.00 | 3.29 (1.069) | 3.50 | 0.684 | 0.14 |
| Total SOC | 48.18 (6.912) | 49.00 | 47.14 (5.112) | 48.50 | 0.646 | 0.17 |

* T test for independent samples.

Bivariate analysis of the relationship between total SOC and independent variables is shown in Table 2. A statistically significant association was found between total SOC and monthly family income ($p = 0.005$) and between total SOC and nocturnal oral hygiene (0.008).

Table 2. Bivariate analysis of the relationship between total SOC and independent variables of 32 infants attended at the Dental Clinic for Babies of UFVJM Dentistry Course, Diamantina, Brazil.

| Variables | Total SOC Mean (SD) | p* |
|--|------------------------|--------------|
| Sex | | |
| Female | 47.67 (6.81) | 0.964 |
| Male | 47.77 (5.20) | |
| Dental caries | | |
| Healthy | 48.18 (6.91) | 0.646 |
| Decayed | 47.14 (5.11) | |
| Tooth plaque | | |
| Absence | 46.94 (5.92) | 0.083 |
| Presence | 40.33 (4.73) | |
| Oral hygiene | | |
| Yes | 47.88 (6.52) | 0.385 |
| No | 42.00 | |
| Nocturnal Oral Hygiene | | |
| Yes | 50.13 (5.81) | 0.008 |
| No | 43.11 (5.73) | |
| Visit to the dentist | | |
| Yes | 47.73 (6.66) | 0.856 |
| No | 48.20 (6.34) | |
| Toothache history | | |
| Yes | 46.78 (6.36) | 0.193 |
| No | 50.29 (4.92) | |
| Maternal schooling | | |
| Higher education ≥ 13 years | 49.10 (6.66) | 0.389 |
| Elementary or high school < 13 years | 47.05 (5.85) | |
| Paternal schooling | | |
| Higher education ≥ 13 years | 48.33 (5.68) | 0.658 |
| Elementary or high school < 13 years | 47.32 (6.45) | |
| Monthly family income | | |
| >2 minimum wages | 50.56 (4.57) | 0.005 |
| ≤ 2 minimum wages | 44.67 (6.15) | |
| Family status | | |
| Nuclear family | 47.24 (6.42) | 0.541 |
| Non-nuclear family | 48.70 (5.52) | |
| Number of siblings | | |
| 0 | 49.10 (6.64) | 0.389 |
| ≥ 1 | 47.05 (5.86) | |
| Number de persons / income | | |
| ≤ 3 | 48.36 (5.94) | 0.665 |
| > 3 | 47.35 (6.29) | |
| Dwelling | | |
| Own | 48,00 (6.50) | 0.592 |
| Rented | 46,73 (5.59) | |

* T test for independent samples.

Through the Pearson correlation shown in Table 3, it was observed that total SOC has not been correlated with variable number of decayed teeth, infant's age and mother's age ($p > 0.05$).

Table 3. Pearson correlation between total SOC and independent variables of 32 infants attended at the Dental Clinic for Babies of UFVJM Dentistry Course, Diamantina, Brazil.

| Total SOC | r* | p |
|-------------------------|--------|-------|
| Number of decayed teeth | -0.163 | 0.381 |
| Child's age in months | 0.117 | 0.530 |
| Mother's age in years | 0.151 | 0.418 |
| Oral Hygiene Frequency | 0.279 | 0.177 |

* Pearson Correlation Coefficient.

Discussion

The aim of this study was to investigate the association between dental caries and psychosocial factors through the mother's sense of coherence in 6-36 month-old babies.

It was found that income > 2 minimum wages was associated with stronger SOC. This finding is in agreement with previous studies [22-25] and can demonstrate the impact of financial constraints on the ability of mothers to face and deal with everyday difficulties.

Maternal SOC was significantly associated with nocturnal oral hygiene of infants, and mothers who performed the night cleaning of their children had stronger maternal SOC. Other studies have also found association between strong maternal SOC and good oral hygiene habits of adolescents [3,7]. Association between oral hygiene of parents and oral hygiene of their children has been demonstrated, and parents who have care of their own oral hygiene have greater care with the oral hygiene of their children [26], considering that the baby directly depends on the supervision of parents for the performance of their oral hygiene [27].

The results showed no significant association between SOC and dental caries. However, this fact may be due to the small sample evaluated in the case of a pilot study, since through the magnitude of effect observed, moderate magnitude values of associations between SOC-13 and dental caries, representing the clinical significance of findings.

Previous studies have confirmed the existence of association between SOC and the general health status of individuals [28,29], including the oral health of infants [11], adolescents [12] and adults [13]. These studies are in agreement with the salutogenic theory, in which the higher / stronger the SOC, the healthier the individuals [5]. A cross-sectional study conducted in Brazil with preschool children evaluated the relationship between maternal SOC and the oral health of children and demonstrated that low maternal SOC is associated with a greater number of decayed and filled teeth, but no significant results were found for plaque, tartar and gum disease [11].

The association between maternal SOC and oral health of infants was expected in this study, with a view to maternal influence on the care of the oral health of children, such as teeth cleaning and dental care, since babies at this age group are unable to make decisions about their oral health. [30]

This is a cross-sectional study and interpretation of results should be performed with caution, since they only allow associations and not a causal relationship among factors. Longitudinal studies are needed to assess the influence of long-term maternal SOC on the oral health of infants aged 6-36 months.

Preliminary results of this study serve as a source of information for planning and organizing of social and health programs working jointly with the appropriate public sectors, with SOC as an important influence to provide effective improvements in oral health of the population. By applying the SOC in dental offices, it is possible to assess the tendency of patients to have oral and behavioral problems aiming at a better diagnosis and treatment of these individuals. In addition, the results reinforce the importance of the interdisciplinary partnership between psychology and dentistry through stress management and better perception of parents of the child health-disease process, increasing maternal care in the dental health of children since early years.

Conclusion

Mother's sense of coherence was not associated with dental caries and was associated with nocturnal oral hygiene of infants and monthly family income, and lower income and lack of nocturnal oral hygiene of infants were associated with weaker SOC.

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