Sense of Coherence (SOC) and its Association with Dental Anxiety among Adolescents: A Cross Sectional Study

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Abstract:-

➢ *Background:*
Sense of coherence is a health generation theory, and also psychological factor. Dental anxiety is a common emotional reaction associated with dental care involving fear, anxiety, or stress related to dental settings. Paucity exists in the scientific literature on SOC an emerging area and its relation to dental anxiety.

➢ *Aim:*
This study aims to assess the association between SOC and dental anxiety n adolescents.

➢ *Materials and Methods:*
This cross-sectional study was conducted on 332 healthy adolescents aged between 11-17years who were subjected to a self administered questionnaires which consisted of Antonovsky's shorter version of SOC scale (SOC-13) and corah's dental anxiety scale. And the data was statistically analyzed.

➢ *Conclusion:*
82.80% of the study population presented with a moderate level of SOC and the mean SOC was 50.18±12.77. The prevalence of dental anxiety in the study population was 93.07%. A significant association was found between SOC and dental anxiety (p= 0.049). Our findings suggest that individuals with a stronger SOC may possess better coping mechanisms and a greater ability to manage stressful situations, including dental visits.

Keywords:- Sense of Coherence, Dental Anxiety, Adolescent Oral Health, Psychological Health.

I. INTRODUCTION

The sense of coherence (SOC) is the central concept developed by Aaron Antonovsky in his work on salutogenesis, which focuses on factors that support human health and well-being, rather than on factors that cause disease[1,2] and it also aids individuals in navigating stress, physical and psychological challenges, and other pathogenic influences, while also facilitating self-regeneration and harness healing.[2] The two key concepts of the Salutogenic theory is the sense of coherence (SOC) and general resistance resources (GRRs)[3]. Generalized Resistance Resources (GRR) are elements that help people cope with stress and life challenges effectively which includes material factors like money, genetic traits, knowledge, and social support. These resources manifest through specific life experiences that contribute to the development of a sense of coherence (SOC). The key types of life experiences that foster SOC are Consistency, Load balance, participation in Shaping Outcomes, and Emotional Closeness.[4] The repetitive use of GRR will lead to the development of SOC and helps in facilitating to cope up with stressors to strengthen the SOC [5,6] The main concept behind the salutogenic approach is sense of coherence (SOC),[7] which directly correlates with an individual's capacity to utilize cognitive, emotional, and practical approaches, enhancing their ability to manage stress effectively[3].

Sense of coherence is described as a comprehensive outlook reflecting the degree to which an individual possesses a pervasive, enduring yet dynamic sense of confidence in the predictability of both internal and external environments, along with a high likelihood that outcomes will align with reasonable expectations.[8] This construct encapsulates the ability to perceive the world as either comprehensible, manageable, or meaningful, which are its core sub-components[9] The three fundamental elements of SOC include: Comprehensibility (the cognitive aspect), Manageability (the instrumental/behavioral aspect), and Meaningfulness (the motivational aspect) (Antonovsky,1979).[10]

The Diagnostic and Statistical Manual of Mental Disorders (DSMV-5, 5th edition) defines dental anxiety as a form of specific phobia, it is a conditioned response, characterized by the anticipation of encountering a dental related threat in the future and very common in the general population and is also correlated to health related outcomes[11,12]. Significant number of people suffer from dental anxiety despite the advancements in dentistry which creates a barrier in maintaining oral health[13].Severe dental anxiety can lead to avoidance of dental care, which may increase the prevalence of dental diseases. Individuals with a stronger SOC may possess better coping mechanisms and a greater ability to manage stressful situations, including dental visits. They may perceive dental procedures as less threatening and have more confidence in their ability to handle any discomfort or anxiety that arises during dental treatment. Whereas those with lower SOC levels may experience heightened dental anxiety due to uncertainty about dental procedures. They may struggle to cope with the stress and fear associated with dental visits, leading to avoidance behaviors and poorer oral health outcomes. Studies have shown association of SOC with oral health[14], gingival bleeding[15],self perceived dental aesthetics[16]and Plaque and periodontal disease[16] The research in the area of the psychological aspect that is anxiety is limited but some studies have shown association between soc and dental anxiety,[17,18] contrastingly in a study done by Carlsson et al did not show any association[11] This study aims to assess the association between SOC and dental anxiety in adolescents.

II. MATERIALS AND METHODS

This study comprised of 332 healthy adolescents aged between 11-17 years. The sample size was calculated based on a 95% confidence interval, 80% power, and an allowable error of ± 0.4. The standard deviation for this estimation was derived from the reference article by Kantipudi JN Mrudhula et al[19]. This study is a part of previously published article[14]

After obtaining ethical approval from the instituitional ethics committee the study was conducted in four English medium schools which was selected based on convenience sampling. The study protocol was thoroughly explained to the school authorities before conducting the study. Over 1000 consent forms were distributed. Adolescents aged between 11-17years without any systemic illness, who were present on the day of data collection with the required parental consent or assent and the first 332 participants who returned the duly filled questionnaires were included in the study. The study tool consisted of a self-administered close ended questionnaire consisting of 17 questions comprising of SOC-13 scale and corah's dental anxiety scale.

To prevent instruction bias, a single instructor introduced and explained the questionnaire to the participants to avoid ambiguity and reduce incorrect responses. Antonovsky's shorter version of the sense of coherence scale (SOC-13) was used to assess sense of coherence in the study. This scale consists of 13 questions, including five items for comprehensibility, and four items each for manageability and meaningfulness. Each item is scored on a seven-point semantic differential scale. The total score ranges from 13 to 91 points, with higher scores indicating a stronger sense of coherence. Based on the total score, individuals were categorized as having a weak, moderate, or strong SOC, with scores of less than 33 indicating weak SOC, scores between 33 and 66 indicating moderate SOC, and scores greater than 66 indicating strong SOC[19,20]. To assess dental anxiety corah's dental anxiety scale, developed by Corah in 1969 was used. It consisted of 4 items with 5 multiple choices, measured on a 5-point scale where responses were scored from 1 (no anxiety, relaxed) to 5 (high intensity of anxiety, very anxious)[21], higher the scores higher was the level of dental anxiety. The total score was calculated by adding the scores of all the four questions. The scoring ranged from 4 to 20. The scoring criteria were: 4 - No fear ; 5 to 8 - low fear; 9 to 14 - moderate fear and 15 to 20 - high fear Each score specified the level of dental anxiety experienced by the study participant[22]. The data was collected, coded, and entered into SPSS IBM version 23 for statistical analysis. Descriptive statistics included the mean and standard deviation. Inferential statistical tests comprised the ANOVA test, followed by the post hoc Tukey's test, and the Pearson correlation test for comparisons. The significance level was set at 0.05 with a 95% confidence interval.

III. RESULTS

The mean SOC score in the study population was 50.18 ± 12.77, indicating a moderate level of SOC (n=275; 82.80%). Less than 10% of the participants exhibited either a weak SOC (n=30) or a strong SOC (n=27).There was no significance found in the SOC levels when compared between male and female (p= 0.48). But when it was compared age wise there was a significant difference in levels of SOC (p=0.038) (Graph-1) The prevalence of dental anxiety in the study population was 93.07%. Mean dental anxiety score of the study population was 10.45 ± 3.88, indicating moderate fear and 34.3% (n= 114) of the study population presented the same. Whereas, 6.92%(n=23) of the study population presented with no fear, 27.4% (n=91) with low fear, 13.8% (n=46) with high fear and 17.4% (n=58) with severe fear. Mean dental anxiety in the different ages was also found to be moderate(Graph-2). A significant association was found between SOC and dental anxiety (p= 0.049).When dental anxiety was compared to different level of SOC there was no significance found (p=0.10).

IV. DISCUSSION

Dental anxiety refers to fear and apprehension related to visiting a dentist or undergoing a dental procedure and it could lead to delaying or avoiding dental care. This could further impact an individual's oral health related quality of life and overall wellbeing[23]. Agras et al, in an article stated that dental anxiety was one of the causes of anxiety.It's etiology is multifactorial it could be personal, environmental, and psychological factors. Globally the prevalence of dental anxiety among the adolescent population was 23.9% [24].According to a systematic review conducted by Grisolia et al., prevalence rates of dental Anxiety among adolescents was 13.3%.[24]In our study the prevalence of dental anxiety was found to be 31.32% which was more than previous reports. In a study conducted by Sathyaprasad et al. on Indian population consisting of 462 children aged between 5 to 10 years, prevalence of dental anxiety was found to be 24.5%70. In another study conducted by raju et al. it was found that adolescents were highly anxious towards dental procedures and[1] dentist plays an important role in relieving dental anxiety by using behavior management techniques so that the treatment isn't hampered.[13]In the present study there was an association SOC with dental anxiety which was significant (p=0.049) which was in agreement with the study conducted by Deepak Viswanath et al[18], however, it was not in agreement a study conducted by Carlsson et al[11]in Sweedish population   significant association was found between SOC and dental anxiety and this was in agreement with our present study.

Other observations made in the study was that there was no significance found in the SOC levels when compared between male and female (p= 0.48) which was in agreement with studies conducted prior.[11,19] The study population when categorized age wise based on the level of SOC which is into weak moderate and strong, this was found to be statistically significant (p=0.38) which was in disagreement with a study conducted by Chandrasekhar et al[19]. Since our study was not aimed to assess SOC in early(11-14 years) and middle adolescence periods(15-17 years), further studies need to look into this aspect with equal distribution of study participants to have a better understanding on how age, levels of soc and anxiety can be affected.

Adolescence is a critical period and it is hypothesized that an individual develops SOC during the first three decades of life after which only strong changes could alter it.[25]Therefore, it is a crucial period for making lifestyle choices, embracing responsibilities, and developing healthy habits and behaviors that will carry into adulthood.[18] Its important to inculcate good habits in this age which could bring about a positive impact in one's life and overall wellbeing and might help reduce anxiety. Our study findings suggests that there in an association of SOC with dental anxiety and individuals with a robust sense of coherence, in turn can have an impact on their dental anxiety which will further enhance their ability to cope with stress and maintain overall well-being. Since both SOC and dental anxiety are psychological concepts more studies are needed in various population before coming to any conclusions.

V. CONCLUSION

A significant association was found between SOC and dental anxiety (p= 0.049).Its a nascent field which requires more research for greater understanding and clinical application.

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GRAPH 1: DISTRIBUTION OF THE VARIOUS LEVELS OF SOC AGE WISE IN THE STUDY POPULATION
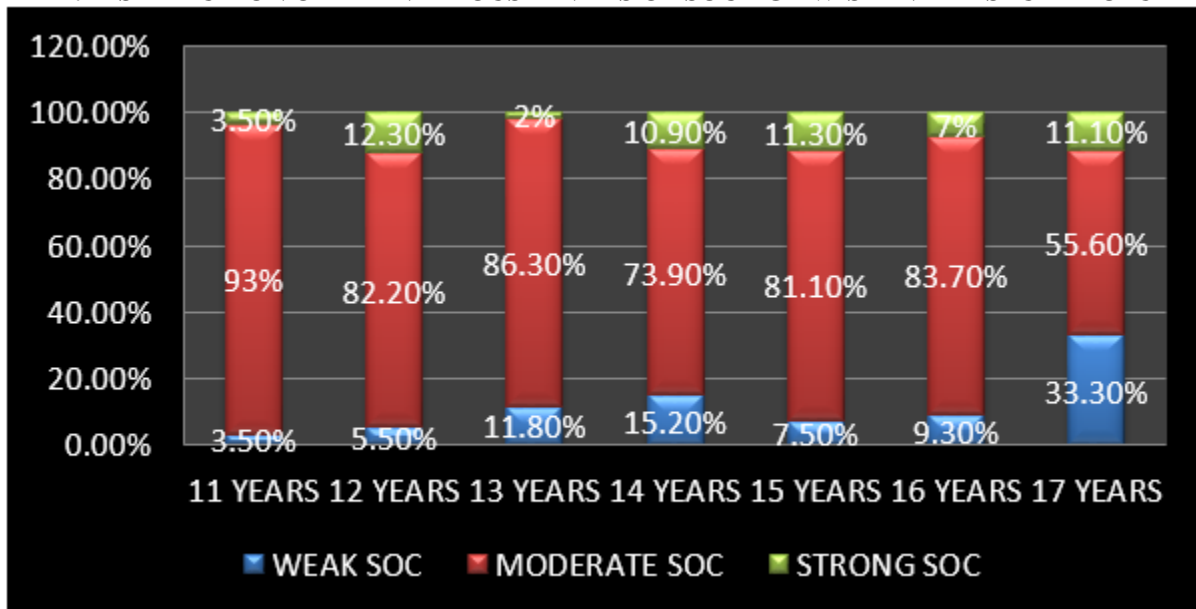
GRAPH 2: AGE WISE DISTRIBUTION OF DENTAL ANXIETY SCORES IN THE STUDY POPULATION