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Original Article

Dentistry Section

Impact of Sense of Coherence on Oral Health Behaviour and Perceived Stress among a Rural Population in South India- An Exploratory Study

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ABSTRACT

Introduction: Sense of Coherence (SOC) measures a person's ability to use currently existing life scenarios to overcome the associated problems and cope with life stressors to lead a healthy lifestyle, free from any disease to stay well. It is the central construct of the salutogenic theory put forth by Aaron Antonovsky. Few studies have examined its impact on Oral Health Behaviour (OHB) in adults, especially in the rural Indian context.

Aim: To determine the impact of SOC on OHB and perceived stress among adults in rural South India.

Materials and Methods: Present study was carried out among 230 adults aged 18 years and above visiting a Primary Health Centre in Ullal, Karnataka. SOC was assessed by employing the SOC-13 scale and perceived stress was assessed by using Perceived Stress Scale (PSS-10). OHB was assessed by a structured, pre-tested, self-administered questionnaire. Information about socio-demographics was also collected. Correlation analysis employed Pearson's correlation coefficient and multivariate regression analysis was performed with OHB as dependant variable.

Results: Education was significantly associated with OHB (r=0.16, p=0.01) and socio-economic status had a significant association with SOC (r=-0.13, p=0.04). OHB was significantly associated with SOC (r=0.31, p<0.001). Stress was also associated with SOC (r=-0.21, p=0.001) and OHB (r=-0.19, p=0.003). Multi-variate regression analysis revealed SOC (OR=1.02, p=0.04, CI 1.01-1.04) and PSS (OR=0.83, p<0.001, CI 0.76-0.91) as significant predictors for OHB.

Conclusion: More favourable OHB like twice daily tooth brushing, maintaining adequate oral hygiene and no associated tobacco habits were observed among those with a stronger SOC and less perceived stress. Salutogenic model might have critical implications for OHB in rural India.

Keywords: Coherence sense, Multivariate analysis, Oral health-related behaviours, Perceived stress scale

INTRODUCTION

The salutogenic theory was proposed by Aaron Antonovsky, who was exploring various issues related to stress and coping mechanisms. Antonovsky proposed that understanding the origin of health is more important than identifying the causes of disease. This theory is operationalised by the SOC, which is the model's core construct [1].

SOC evaluates the capability of an individual to use existing resources to overcome difficulties and cope with life stressors in order to have a healthy behaviour and live well. People with stronger SOC can cope better with existing stressors in their social life. Thus, leading to an increased feeling of well-being. SOC is a cross-cultural method, not influenced by age, sex, ethnicity and nationality. It basically follows the core principles of these three namely: comprehensibility, manageability and meaningfulness [2,3].

SOC expresses the extent to which one has a pervasive, dynamic feeling of confidence that [1], during the course of living, the external and internal stimuli from the environment are predictable, structured [2]. The resources are available to meet the demands posed by these stimuli; and [3] these demands are challenges, worth investing and engaging in [4]. SOC is a tool for coping with stressors; it is associated to quality of life, and can be considered as a medium to predict health.

The SOC has been an important tool for establishing healthy behaviours and a positive self-perception of oral health. Coping strategies may protect against negative oral health outcomes, through behavioural pathways. The SOC is a strong psychosocial factor of OHBs in adolescents, which leads to improved oral health in adulthood [5]. Since compelling evidence exists regarding the effect of SOC on OHB, hence the clinically appreciated oral health aberrations may be determined by these behaviours [6].

The available literature regarding SOC isn't consistent enough as it prone to change in an individual's life over due course of his life. For improving the quality of life of the elderly and adults it becomes very essential to understand the role of SOC and the various positive ways of stimulating it so that it becomes an important strategy in determining the final effect it has on the overall quality of life of an individual. There is a strong association between the SOC and better oral conditions, indicating the significance of directing inquiries accordingly, as reported by Bernabé E et al., [7].

Rural populations are characterised by reduced access to mainstream oral health care delivery systems. They also may have high oral disease burden, low awareness and paucity of resources to tackle oral health problems. Salutogenic theory might have crucial implications among rural populations. There are no studies exploring the impact of SOC on OHB among the rural population [8].

Although literature linking Sense of Coherence to OHB continues to grow, few studies have examined its impact in adults, especially in the rural Indian context. Keeping this in mind, this study was conceptualised to assess the impact of SOC on OHB and perceived stress among adults in rural South India.

MATERIALS AND METHODS

The present study employed a cross-sectional design. It was conducted on the patients visiting a Primary Health Centre in Ullal, Dakshina Kannada district, Karnataka. It was conducted from May 2017 to December 2017. Ethical clearance was obtained from the institutional ethics committee. (Protocol Ref no. 17059).

A pilot study was conducted among 35 patients visiting the Ullal health centre, Mangalore prior to the main study. Sample size of minimum 230 study subjects was calculated according to the

findings of the pilot study using G Power software (version 3.1.2) with effect size of 0.5 and with 95% CI (confidence interval) and at 80% power of the study.

Inclusion criteria for the present study was adults aged 18 years and above, and those who were willing to provide a written informed consent. Participants not willing to give written informed consent and suffering from any systemic diseases constituted the exclusion criteria.

The questionnaire was translated to the local language (Kannada) by the first translator and back translated to English language by a second translator. The final version of the questionnaire in Kannada was then finalised by the investigators and the two translators. Before the commencement of the main study, the questionnaires was self administered to study subjects in hard copy and approximately 30-40 minutes were taken for filling it up, which were not included in the final study. Reliability of the questionnaire was assessed by employing Crohnbachs' alpha score of 0.8.

Sense of Coherence was analysed by using SOC-13 questionnaire [9]. This questionnaire consists of thirteen questions with seven-point response on the Likert scale. Perceived stress was measured by the 10-item version of Perceived Stress Scale (PSS-10) [10]. Socio-demographic details and OHB of the study subjects were obtained using a structured, pre-tested, self-administered questionnaire [11,12].

STATISTICAL ANALYSIS

Data analysis was done using the Statistical Package for Social Sciences (SPSS), version 11.5 (SPSS Inc, Chicago IL). Correlation analysis employed Pearson's correlation coefficient and multiple regression analysis was employed with OHB as dependant variable and age, gender, education, occupation, income, socioeconomic status, perceived stress and sense of coherence as independent variables. Using this method, variables which showed a statistically significant difference at the 95% level (p<0.05) were selected.

RESULTS

The mean age of the population was 32.98±13.67 years. Out of the 230 participants, 120 were males and 110 were females. Majority of them had low educational (77%) and occupational background (85%). Educational qualification below high school level and occupation as in semi-skilled worker or below were considered to be low in accordance to the Socio-economic Status (SES) scale given by Kuppuswamy [11]. The family monthly income of the participants was comparatively higher and hence the socio-economic status was high. The mean scores of SOC and Perceived Stress Scale (PSS) were higher for people with low income while a better perception of OHB was found in people with a higher educational background [Table/Fig-1]. Pearson's correlation was performed to assess correlations of SOC, OHB and PSS with the demographic variables. Results revealed that socio-economic status was correlated with SOC (r=-0.13, p<0.05) while education was related with OHB (r=0.16, p<0.05) and there were no correlations of any demographic variables with PSS [Table/Fig-2]. OHB was found to have statistically significant correlations with SOC (r=0.31, p<0.001) and PSS (r=-0.19, p<0.05). PSS was also found to have statistically significant correlation with SOC (r=-0.21, p<0.05) [Table/Fig-3]. Step-wise multivariate analysis with OHB as dependant variable revealed that education (OR=0.45, p=0.01, CI=0.24-0.86), SOC (OR=1.02, p=0.04, CI=1.01-1.04) and PSS (OR=0.83, p<0.001, CI=0.76-0.91) were significant predictors of OHB [Table/Fig-4].

Variables		Number of participants		SOC score		OHB score		PSS score	
		N	%	Mean	SD	Mean	SD	Mean	SD
Age (years)	≤35	156	67.8	58.6	13.97	7.1	2.18	27.6	3.51
	>36	74	32.2	56.8	13.17	6.9	2.26	28.09	3.27
Gender	Male	120	52.1	57.5	13.43	6.9	2.41	28.01	3.34
	Female	110	47.9	58.6	12.94	7.2	1.96	27.5	3.53
Education	Low	177	76.9	57.7	13.96	6.9	2.23	27.8	3.46
	High	53	23.1	59.2	12.94	7.7	2.04	27.5	3.37
Occupation	Low	197	85.6	58.1	13.64	7.1	2.17	27.7	3.35
	High	33	14.4	57.8	14.38	6.6	2.42	27.9	3.96
Income	Low	99	43.1	60.6	13.51	7.1	2.16	27.3	3.52
	High	131	56.9	56.1	13.61	7.2	2.06	28.1	3.35
Socio-economic status	Low	106	46.1	60.2	13.61	7.1	2.15	27.6	3.34
	High	124	53.9	56.2	13.6	7	2.26	27.9	3.52

[Table/Fig-1]: Mean scores of SOC, OHB, PSS and demographic factors of study participants.

Variables	SOC score		OHB score		PSS score	
	r-value	p-value	r-value	p-value	r-value	p-value
Age	-0.61	0.35	-0.01	0.82	0.05	0.43
Gender	0.03	0.65	0.02	0.66	-0.07	0.24
Education	0.092	0.58	0.16	0.01*	-0.08	0.19
Occupation	-0.008	0.9	-0.07	0.24	0.02	0.74
Income	-0.05	0.41	-0.01	0.82	0.07	0.23
Socio-economic status	-0.13	**0.04***	-0.02	0.67	0.04	0.49

[Table/Fig-2]: Correlation between SOC, OHB, PSS and various demographic variables†.
†Pearson's correlation test was used.
*Significant at the 0.05 level

Variables	SOC score		OHB score		PSS score	
	r-value	p-value	r-value	p-value	r-value	p-value
SOC score	-	-				
OHB score	0.31	**<0.001***	-	-		
PSS score	-0.21	**0.001***	-0.19	**0.003***	-	-

[Table/Fig-3]: Correlation between SOC, OHB, PSS†.
†Pearson's correlation test was used.
*Significant at the 0.05 level

Explanatory variables	Model without sense of Coherence (SOC) and Perceived Stress (PSS)				Model with Sense of Coherence (SOC) and Perceived Stress (PSS)			
			95% CI				95% CI	
	OR	p-value	Lower bound	Upper bound	OR	p-value	Lower bound	Upper bound
Age	0.99	0.49	0.97	1.01	0.99	0.55	0.97	1.01
Gender	1.1	0.72	0.64	1.88	1.13	0.65	0.65	1.94
Education	0.45	**0.01***	0.23	0.85	0.45	**0.01***	0.24	0.86
Occupation	1.41	0.38	0.64	3.09	1.44	0.36	0.65	3.17
Income	1.37	0.45	0.59	3.13	1.29	0.54	0.56	2.97
SES	0.82	0.48	0.48	1.41	0.75	0.31	0.43	1.31
PSS					0.83	**<0.001***	0.76	0.91
SOC					1.02	**0.04***	1.01	1.04

[Table/Fig-4]: Mutivariate step-wise regression analysis with OHB as the dependant variable.
*Significant at the 0.05 level, SES: Socio-economic status; PSS: Perceived stress scale; SOC: Sense of coherence; OR: Odds ratio; CI: Confidence interval

DISCUSSION

There is considerable evidence in literature which indicates that positive OHB might be influenced by psychosocial factors. SOC being a psychosocial determinant could be associated with the OHB of an individual [1,3]. A healthy lifestyle and positive oral health related behaviour traits are more common with people having a stronger SOC and such people frequently respond better to health advices as well [13-15]. This is mostly uncommon for the individuals with a weak SOC [16].

The results of the present study reveal that educational level was positively correlated with OHBs. This essentially confirms the fact that people with low educational levels often are unaware of the consequences of good oral health practices. It is also found that such people have poor oral hygiene and do not have a positive attitude towards OHBs. One also has to consider that the present study was conducted among rural population, where awareness about oral health might be lower in comparison to other populations These results are in corroboration with the Antonovsky's theory and those reported by numerous investigators [1-3,17,18].

The present study also found a negative correlation between Sense of Coherence and socio-economic status which is in contrast with the findings reported by, Antonovsky A and Bernabe E et al. [1,3,14]. This might be due to the fact that although the socioeconomic status of the population studied in Ullal was slightly better than the towns nearby to it, but the overall educational levels were low. Results of the present study also indicate that there were no significant correlations between PSS and any of the demographic variables.

There was also a correlation between OHB and SOC which indicates that a stronger SOC contributes towards better OHB among the participants. Also, these findings were not influenced by any socio-demographic factors which are in agreement with the findings reported by Bernabe E et al., [16]. These results are also in agreement with the findings reported by Savolainen J et al., Davoglio RS et al., and Suominen S et al., [5,6,8]. In this present study higher education was associated with both perceived stress and stronger SOC for a positive OHB which is in contrary to the study reported by Paulander J et al., and Savolainen J where they have reported that higher education with low perceived stress with stronger SOC led to positive general health behaviours [17,18]. The negative correlation between SOC and PSS in the present study is similar to the findings reported by Flannery RB Jr and Flannery GJ, and Takayama T et al., [19,20]. The regularity of the dental attendance pattern hasn't been found to be associated with the SOC of the same individuals in this present study which is contrary to the findings of the study conducted by Elyasi M et al., whereas the socioeconomic status and SOC are found out to be the predictors for positive OHBs which is ascertained by a study conducted by Reddy KS et al., [21,22].

SOC might act as a buffer against the negative impact of stress among individuals. The results also found out that OHB was also negatively correlated with perceived stress. This might be due to the negative impact of stress on patient compliance and health behaviour. This finding is similar to those reported by Deinzer R et al., and Moksnes UK et al., [23,24].

The results of the present study reveal that educational level and sense of coherence were significant predictors for OHS. Higher educational levels might lead to greater awareness about oral health and better oral hygiene maintenance and OHB. Individuals with higher SOC were found to have better OHB scores. SOC might have an impact on oral health of individuals through the behavioural pathway [7,13,14]. Further longitudinal studies are needed to confirm the findings of the present study [25]. There are many similar studies in literature [26-29] but there is none that is done in a rural context.

Limitation(s)

The findings of the present study have to be viewed in the light of its inherent limitations. Cross-sectional nature of the present investigation does not indicate causation. One geographic location in the rural set-up may not be representative of the entire rural population. Questionnaires are prone to biases such as yeah saying bias, social desirability/faking good bias and deviation/faking bad bias. Further studies are needed to confirm the findings of the present study.

CONCLUSION(S)

The results of the present study are of important nature since it is the only study that assesses sense of coherence and OHB among a rural population. Stronger SOC, higher education, lower stress has been found to be the important predictors for positive OHB in an individual in this present study. The Salutogenic theory is a valuable resource in the field of health promotion among all age groups, offering possibilities of intervention beyond the oral health clinical specialties. Thus, it can be used in public health policies to promote oral health.

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