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## Original Article: Student Research

# Sense of coherence and self reported health amongst medical students: A cross sectional study



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## ABSTRACT

**Background:** In late 70s, Antonovsky proposed a salutogenic theory. This theory was based on the assumption that the human environment causes stress, and sense of coherence could serve as a stress-resisting resource. This study examined association between sense of coherence and self rated health of medical students. The aim of this study was to determine the association between sense of coherence and self reported health among medical students.

**Methods:** This was a cross-sectional analytical study conducted among medical students. The study tool used was a pre-designed, pre-tested, structured and self administered questionnaire (SOC scale and the SF 12 version 2 self-rated health measure). 172 medical students participated in the study. The data collected was entered into Microsoft Excel and analyzed using SPSS 20. All students were educated about sense of coherence after the study. **Results:** Among the respondents, there were 99 (57.6%) female students, and 73 (42.4%) were male. The mean age of the students was 20.8 + 1.20 years. The mean ( $\pm$ SD) SOC scale score was 56.15 ( $\pm$ 7.83). The mean self rated health score was 53.52 ( $\pm$ 7.11). Pearson's  $\chi^2$  test was used to determine the association and there was significant association between students SOC and self reported health ( $p < 0.000$ ).

**Conclusion:** There is a significant association between score of sense of coherence scale and self rated health among medical students.

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## Introduction

The first international conference on health promotion, held in Ottawa defined health promotion as a process of enabling the individuals to increase control over their health, improve their health in order to reach a state of complete physical, mental and social well-being and to lead an active and productive life.<sup>1</sup> With the present globalization and urbanization, the ability to manage stress is characterized by rapid social changes which are essential for the maintenance and development of health.

In the late seventies, Antonovsky proposed a salutogenic theory.<sup>2</sup> This theory was based on the assumption that the human environment causes stress and sense of coherence (SOC) could serve as a stress-resisting resource, providing prerequisites for a good life.

Sense of coherence is a core concept of salutogenic theory. It is defined as “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli, deriving from ones internal and external environment in the course of living are structured, predictable and explicable (comprehensibility), (2) the resources are available for one to meet the demands posed by these stimuli (manageability) and (3) these demands are challenges, worthy of investment and engagement (meaningfulness)”.<sup>3</sup>

Medical education is perceived as being stressful, and a high level of stress may have a negative effect on cognitive functioning and learning of students in a medical school. Apart from this, medical students face multiple challenges other which are peculiar in their age group and lifestyle. During the final year they are stressed not only because of the examinations but also about future career in various specialties.<sup>4</sup> The negative effects of various stressors faced by these students can be overcome by improving the Sense of coherence. Studies determining the effects of Sense of coherence on university student's health have found that it is associated with healthy living habits, better self-rated health, mental and physical well-being.<sup>5,6</sup> The salutogenic model has an important role to play in formulation of health promotion programmes.

This study examined association between sense of coherence and self rated health of medical students in Western Maharashtra. An additional advantage of this study was to make the medical students aware of the concept of sense of coherence which is one of the most pertinent needs for the future education of health professionals. Adoption of salutogenic framework would be a valuable foundation for doctors engaged in health promotion. In the recent past, multiple studies have highlighted that use of sense of coherence characteristics in the salutogenic model can make the health promotion programmes more meaningful.<sup>7,8</sup>

## Material and methods

- This was a cross-sectional analytical study conducted among medical students of various colleges of Western Maharashtra. The data was collected during an inter college festival held in the month of Nov 2016. Institutional Ethical

Committee clearance was taken. Participation in this study was voluntary. Informed consent was taken from all the participants. A questionnaire with two sections was specifically designed for the study. The first section consisted of the SOC scale<sup>9</sup> and second section consisted of SF 12 version 2 self-rated health measure.<sup>10</sup> As per previous literature<sup>11</sup> the Cronbach's alpha for SOC ranges from 0.70 to 0.92 and test-retest correlation for SF 12 scale was 0.89 and 0.76.<sup>12</sup> The questionnaires were distributed and the identity of student was not asked for in the questionnaire. To assess SOC of each student, Antonovsky's short thirteen-item scale covering the three main subcomponents of SOC: comprehensibility, manageability, and meaningfulness was used. Every question was scored, which ranged from 1 to 7 points. Negatively worded questions were reverse-scored so that a high score indicated a strong SOC. The total sum ranged from 13 to 91. The SF-12 version 2 scale was used to assess self rated health. It comprises of 12 questions organized into 2 components, Physical Health and Mental Health. The total sum ranged from 12 to 56. Higher scores indicate better physical and mental health. A mean split (high and low SOC scores and SF12 scores) was used to create groups for comparison of associations between the SOC Scale and SF 12 self reported health scale. A total of 172 medical students participated in the study. Specific time duration was given to answer all the questions. The students were allowed to enquire any clarifications with the investigator. The data thus collected was entered into Microsoft Excel and analyzed using SPSS 20 software. Pearson's  $\chi^2$  test was used to determine the relationships between the SOC Scale and self reported health of medical students. Kappa co-efficient was calculated to determine the degree of agreement between the two scales: SOC and SF 12 scale. Interpretation of kappa was done as poor (<0.20), fair (0.20–0.40), moderate (0.40–0.60), good (0.60–0.80) and very good agreement (0.80–1.00).

All students were educated about sense of coherence after the study.

## Results

Among the respondents, there were 99 (57.6%) female students, and 73 (42.4%) were male. The mean age of the students was  $20.8 \pm 1.20$  years (range 18–24). Urban and rural distribution of participants was 106 (61.6%) and 66 (38.3%) respectively. Majority 123 (71.5%) were a part of nuclear family and remaining 40 (23.2%) from joint family and 09 (5.2%) were from three generation family.

### SOC scale (Table 1)

The mean ( $\pm$ SD) SOC scale score was  $56.15 (\pm 7.83)$ . Mean scores for each question had a range from 3.18 to 5.25. Question 7 had the greatest mean score and question 11 had the lowest mean score of all items. Standard deviations (SD) scores ranged between 1.32 and 1.75. Question 6 showed the lowest SD and Question 9 had the largest SD. Mean score for Comprehensibility subscale was 20.81 with a SD = 5.21. Manageability subscale mean score was 15.97 and a

**Table 1 – Sense of coherence scale score.**

	Minimum	Maximum	Mean	Std. deviation
Comprehensibility score	8	31	20.81	3.94
Meaningfulness score	10	28	19.37	3.65
Manageability score	7	23	15.97	2.93
SOC score	28	82	56.15	7.83

**Table 2 – SF 12 version 2 self rated health scale score.**

	Minimum	Maximum	Mean	Std. deviation
Physical composite score	11	20	15.89	1.75
Mental composite score	13	22	17.53	1.75
SF 12 score	28	77	2	7.11

SD = 2.93. Finally, meaningfulness had a mean score of 19.37 and a SD = 3.65.

#### SF 12 version 2: self rated health measure scale (Table 2)

The mean self rated health score was 53.52(±7.11). The mean score for self rated physical health component was 17.53 with a SD = 1.75. The mean score for self rated mental health component was 15.89 with a SD = 1.75.

#### Association (Table 3)

There was significant association between students SOC and self reported health ( $p < 0.000$ ). Students with a high SOC

reported better health and those with low SOC reported poor health. Subdivisions of SOC scale like comprehensibility, manageability and meaningfulness were also found to be significantly associated with self rated health ( $p < 0.000$ ). However, on further analysis of association between SOC score with physical composite score and mental composite score for self related health, it was not significant. On further stratification of study participants based on gender, there was no statistically significant difference between the males and females with respect to SOC score or SF 12 score. On running Mann Whitney U test the medians of SOC score were same across the categories of gender ( $p > 0.05$ ). Kappa coefficient was calculated to determine the agreement between the two scales. There was a very good agreement between SOC scale and SF 12 scale (Kappa 0.836). Agreement was also found between SF 12 scale and components of SOC scale like comprehensibility score (Kappa 0.684) and meaningfulness score (Kappa 0.451).

## Discussion

Medical students face stressful events everyday that affects their academic performance, health, physical and mental wellbeing.<sup>13,14</sup> Various studies have suggested that stress management should be an integral part of the curriculum of medical students to overcome the stress of medical education and also to develop coping mechanism.<sup>15</sup> In one of the randomized controlled trial, mindfulness training was shown to significantly increase SOC, which helps in selection of the most appropriate coping strategy to deal with the stressor.<sup>16</sup> Another study has suggested that a mindfulness-based program improves sense of well being by increases awareness to changing nature of life and could be an effective stress management intervention.<sup>17</sup> Hence, medical students might be benefitted from increasing their SOC, which in turn might

**Table 3 – Association between SOC score and SF 12 score on self rated health.**

	SF12 score poor	SF score good	Chi square value	p value	Kappa co-efficient
SOC score poor	83	3	121.61	<0.001	0.836
SOC score good	11	75			
	<b>PCS poor</b>	<b>PCS good</b>	0.225	0.752	–0.035
SOC score poor	53	33			
SOC score good	56	30	0.697	0.504	0.058
	<b>MCS poor</b>	<b>MCS good</b>			
SOC score poor	63	23	80.40	<0.001	0.684
SOC score good	58	28			
	<b>Comprehensibility poor</b>	<b>Comprehensibility good</b>	34.95	<0.001	0.451
SF12 score poor	80	14			
SF score good	13	65	15.96	<0.001	0.304
	<b>Meaningfulness poor</b>	<b>Meaningfulness good</b>			
SF12 score poor	69	25	15.96	<0.001	0.304
SF score good	22	56			
	<b>Manageability poor</b>	<b>Manageability good</b>	15.96	<0.001	0.304
SF12 score poor	67	27			
SF score good	32	46			

help with perceiving stressors as more manageable. As determined in various studies SOC composed of comprehensibility, manageability, and meaningfulness has been associated with coping strategies and skills.

Our study demonstrated that SOC score was significantly associated with better rated self health in the participants.<sup>10</sup> The implications of this in real practice is that welfare activities in medical colleges should be pre designed and directed towards improving the overall SOC score of students which in turn will promote positive health in them. This is the first study of its kind done on medical students. Previous studies being conducted on adults and university students.<sup>18,19</sup> SOC score also indicates the psychosocial resources of an individual which are linked to the overall physical and mental well being. No significant differences were found in SOC of men and women. This was different from the previous study which showed a significant difference between women and men for physical composite score. This difference might be because of better knowledge regarding health among medical students.

SOC score of the students can be enhanced by intervention in the form of application of medical education teaching methods, training students in coping mechanisms, improving their problem solving capabilities within available resources and healthy lifestyle. A baseline score at the time of entry followed by tailor made health promotion programmes based on SOC scores and student's needs can serve as an intervention in increasing SOC scores and promoting positive health. The SOC scale could be used as a screening tool by medical colleges to identify students with a low SOC. A strong SOC score of students in medical colleges will help the administration in maintaining an enabling environment and positive health.

## Conflicts of interest

The authors have none to declare.

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