

Original Research Article

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AN ANALYSIS ON THE SENSE OF COHERENCE AMONG ONBOARD SEAFARERS IN TANDEM WITH DIETARY HABITS AND SELF-PERCEIVED ORAL HEALTH

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ABSTRACT: Shipping is an indispensable occupation that keeps the country's economy galloping. Amidst profuse transportations, Sea transport is in an inflated demand because comparatively larger and bigger quantities can be shipped across the world through containers that are loaded onto a vessel. There are nearly 5,600 container ships that serves sea routes worldwide. A ship can reach its destined location only with help of a sedulous seafarer. The sense of coherence (SOC) plays a vital role among individuals coping with arduous toil, especially among seafarers. They fail to take care of their oral hygiene and dietary intake on their long expedition. A cross-sectional questionnaire-based study was conducted among 200 seafarers through a validated Food Frequency Questionnaire (FFQ) and it also documented oral health attitudes and behaviours. Descriptive statistics and chi-square tests were used. This study is intended to assess the sense of coherence among onboard seafarers and to explore their union with dietary habits and self-perceived oral health in the group of mariners. The samples were collected through a private shipping firm. A positive correlation of SOC with dietary habits in tandem with self-perceived oral health among seafarers was obtained. With a p-value of 0.05, the SOC was statistically significant when combined with dietary habits and self-perceived oral health. On long voyages, seafarers should acquire knowledge of a balanced food intake and also take preventive measures to maintain their oral hygiene under any circumstances.

Keywords: Seafarers; stress; sense of coherence; dietary habits; oral health care; oral hygiene.

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1. INTRODUCTION

An individual's well-being is determined by the work they encounter daily, which moulds their socio-economic and health status. Certainly, workplace stress is said to have a detrimental effect on a person's health (including oral health status) [1]. A seafarer is meant to sail on a vessel for more than six months onboard despite the diverse and inflating natural environment they come across [2]. They are very often exposed to poor working environment such as sleepless nights due to their shift schedule, health crisis, minimal interaction with people onshore, stress and mental status problems and unstable dietary intake [3] [4]. At sea, it becomes burdensome for them to maintain normal homeostasis and tend to feel more deprived than in other occupations [5]. An epitome of psychological and behavioural stress may take different forms and be of wavering intensity. Sometimes there are no evident signs but would afflict those in despair deeply within. However, even dramatic, emotional and behavioural expressions of distress become apparent [6]. According to Antonovsky, a sense of coherence(SOC) is an internal asset that helps individuals to cope with stressful situations. The sense of coherence is a global orientation that expresses comprehensibility, manageability and meaningfulness in one's life [7]. Likewise, the psychosocial stress caused aboard could be because of immense work demands, shift duty and permanent physical impacts such as ship movement, noise and vibration [8]. Due to their long sea voyages, seafarers are very liable to the limitless amount of snacks; they also consume excessive amounts of beverages and dairy products due to their peculiar working hours and unique lifestyle [9]. Short port turnaround leads to tedious work for the crew onboard. As a result of which, there is a meagre time for seafarers onshore. Within the vessel, there is a mess where the seafarers have their food, and this would fluctuate if the crew members have varying work schedules leading to irregular meals. During the stay onboard, seafarers have a confined influence on the quality and quantity of food over several months [10]. Most of their dietary products consist of fermentable carbohydrates and sugars. Foods rich in carbohydrates and sugars are the major criteria for dental caries and other related dental diseases [11]. Moreover, their varying shift hours on the ship can have a role in the nutritional behaviour of seafarers [12]. Conventionally oral diseases have been viewed separately from the rest of the body. However, it has been recognized in recent years that oral health is an integral part of general health for an individual [13]. Standard oral health enables an individual to eat, speak and socialize without any active disease, which contributes to the well-being of the people. Therefore, it should be the motive for all individuals [14]. In particular, the seafarers find it difficult

to cope with the surrounding environment, and their oral health is quite cumbersome to sustain because of their odd working hours. Oral health cannot be parted from general health as the oral cavity has many functions such as food intake, aesthetic appearance, word pronunciation and social life. Thus, poor oral status can potentially decrease the quality of life [15] [16]. Onboard oral hygiene among seafarers during their long journeys across each port tends to neglect their oral care. It has also been reported that tooth-brushing habits were lesser when compared to ashore. Hence oral hygiene is questionable onboard [17]. Improper oral health maintenance could lead to dental plaque, dental caries, gingivitis, stomatitis, tongue coating, periodontitis, bad breath (halitosis) and dry mouth [18]. This study would be an analysis of the sense of coherence, dietary habits and self-perceived oral health among the onboard seafarers due to their prolonged duration on the ship, the lack of social interaction, insufficient dietary food and improper oral self-care.

2. MATERIALS AND METHODS

A cross-sectional study using a questionnaire that embraced an estimation of 200 seafarers. The analytical study was conducted over three months, from January to March 2022. The study was evaluated and obtained ethical approval from the Institutional Board of the Department of Public Health Dentistry, SRM Dental College and Hospital, Chennai, India. The study presided under the precept of the World Medical Association (WMA) that developed the Declaration of Helsinki. The samples for this study were taken from the seafarers through a private shipping firm. The questionnaire was split into four sections, namely demographic details (Personal information), sense of coherence, dietary habits and self-perceived oral health that helped to give a descriptive analysis. Socio-demographic information that included name, rank, age, gender, marital status, educational qualification and also a note about the rest hour as per International Labour Organization [19]. The concept of being coherent evolved with the aid of the SOC scale proposed by Antonovsky [20] [21]. The SOC scale encompasses 13 items that comprise three components, namely comprehensibility (5 items), manageability (4 items) and meaningfulness (4 items). On a 7-category differential semantic scale, respondents indicated their agreement or disagreement. Food intake was recorded among the seafarers by a short form of a validated Food Frequency Questionnaire(FFQ). FFQ comprised foods into 12 major groups. They are Meat, Fish, Eggs, Pulses, Cereals, Dairy products, Fats, Vegetables, Fruits, Sweets, Beverages and Nuts. It enlightens us about the frequency of consumption, namely the number of times per day, week, month and year [22]. Due to several months of strenuous work by the onboard seafarers, oral care tends to be neglected. Oral health attitudes and behaviour among seafarers were documented using this questionnaire [23]. Under oral health behaviours, the questions enlisted are brushing frequency, duration of brushing, cleaning of the tongue and using dental floss and mouthwash. Under oral health attitudes, the questions were about self-perceived oral health, their knowledge about a dental check-up and the measure they take while encountering initial caries in their tooth. The results were examined using

the chi-square test, which produced the desired outcome in this group of mariners and set the statistical significance to $p < 0.05$.

3. RESULTS AND DISCUSSION

A group of 200 seafarers responded to the questionnaire. The outcome was a 100% response rate. This cross-sectional study was answered by most experienced mariners who had travelled on board for ten years. It comprises both male and female seafarers. Maximum respondents were male (96%) and (4%) female. In contrast to their marital status, 118 were married (59%), and 82 were single (41%). [Table 1]. A comparison of the sense of coherence with age, total years of experience voyaging on the ship and the rest hour they are provided onboard according to the International Labour Organization (ILO). [Table 2].

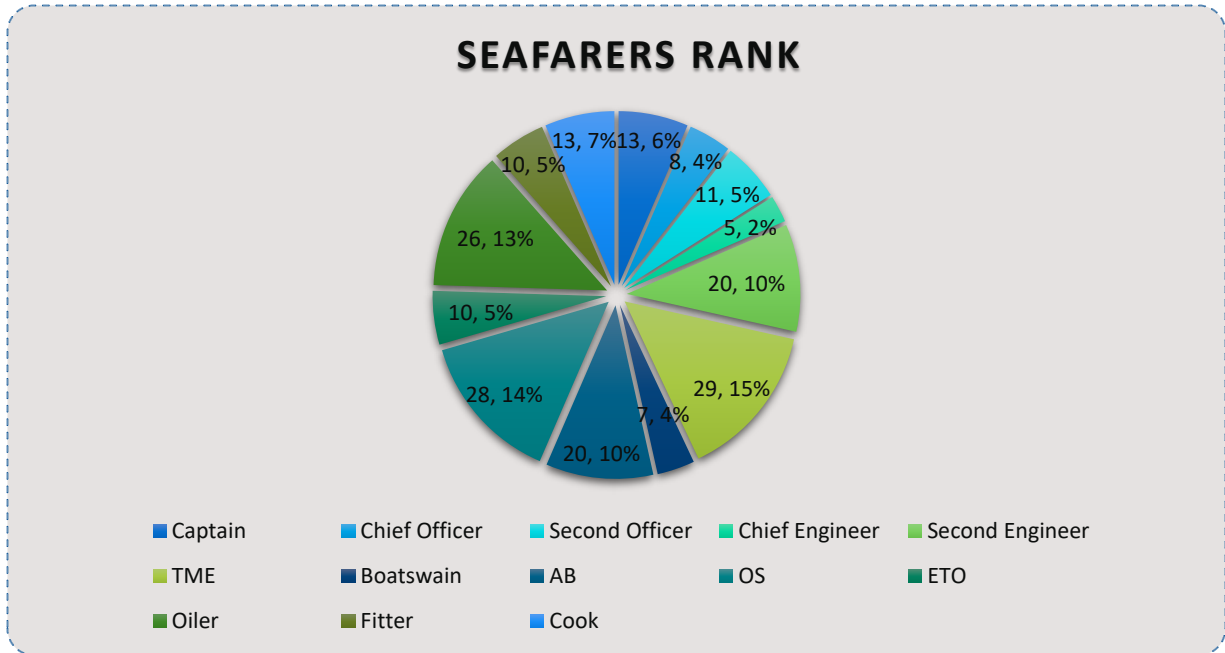
Table 1: Socio-Demographic details among the Onboard Seafarers

DEMOGRAPHIC DETAILS OF THE SEAFARERS		
S.No	VARIABLES	TOTAL N(%)
1	<u>GENDER</u>	
	<ul style="list-style-type: none"> ✚ MALE ✚ FEMALE 	<p>192 (96)</p> <p>8 (4)</p>
2	<u>MARTIAL STATUS</u>	
	<ul style="list-style-type: none"> ✚ SINGLE ✚ MARRIED 	<p>82 (41)</p> <p>118 (59)</p>
3	<u>EDUCATIONAL QUALIFICATIONS</u>	
	✚ BE – MARINE ENGINEERING	39 (19.5)
	✚ DME – DIPLOMA IN MARINE ENGINEERING	21 (10.5)
	✚ GME – GRADUATE MARINE ENGINEERING	23 (11.5)
	✚ ETO – ELECTRO TECHNICAL OFFICER	14 (7)
	✚ B.Sc – NAUTICAL SCIENCE	25 (12.5)
	✚ GENERAL PURPOSE RATING COURSE	26 (13)
✚ OTHERS	52 (26)	
4	<u>TOTAL YEARS OF EXPERIENCE</u>	
	✚ LESS THAN 5 YEARS	66 (33)
	✚ 6 – 10 YEARS	71 (35.5)
	✚ 11 – 20 YEARS	46 (23)
	✚ 21 YEARS AND ABOVE	17 (18.5)

The demographic details collected among 200 seafarers comprise their gender, marital status, educational qualifications and the total years of experience they possess. An operational ship on the sea has seafarers possessing various ranks like a captain, second and third engineers, oilers, fitters

and other ranks, which would help the ship to function efficiently and fulfil its voyage. [Graph 1]. The statistical data obtained from the chi-square test gave a significant correlation between SOC and diet among seafarers. [Table 3]. Overconsumption and an unbalanced diet often accompany stress and a lack of physical activity. Sense of coherence concerning the appropriate food groups in proportionate to the servings they consume daily, weekly, monthly and yearly. [Graph 2]

Graph 1: Ranks of Seafarers Onboard.



AB: Able-bodied Seamen.

TME: Trainee Marine Engineer

OS: Ordinary Seamen

ETO: Electro-Technical Officer

Table 2: Correlation Between Sense Of Coherence With Age, Total Years Of Experience And The Rest Hour As Per ILO

SENSE OF COHERENCE	AGE	TOTAL YEARS OF EXPERIENCE	APPROPRIATE REST HOUR AS PER ILO
Correlation Coefficient	.046	.079	-.063
Sig. (2-tailed)	.518	.267	.374
N	200	200	200

ILO – international labour organization.

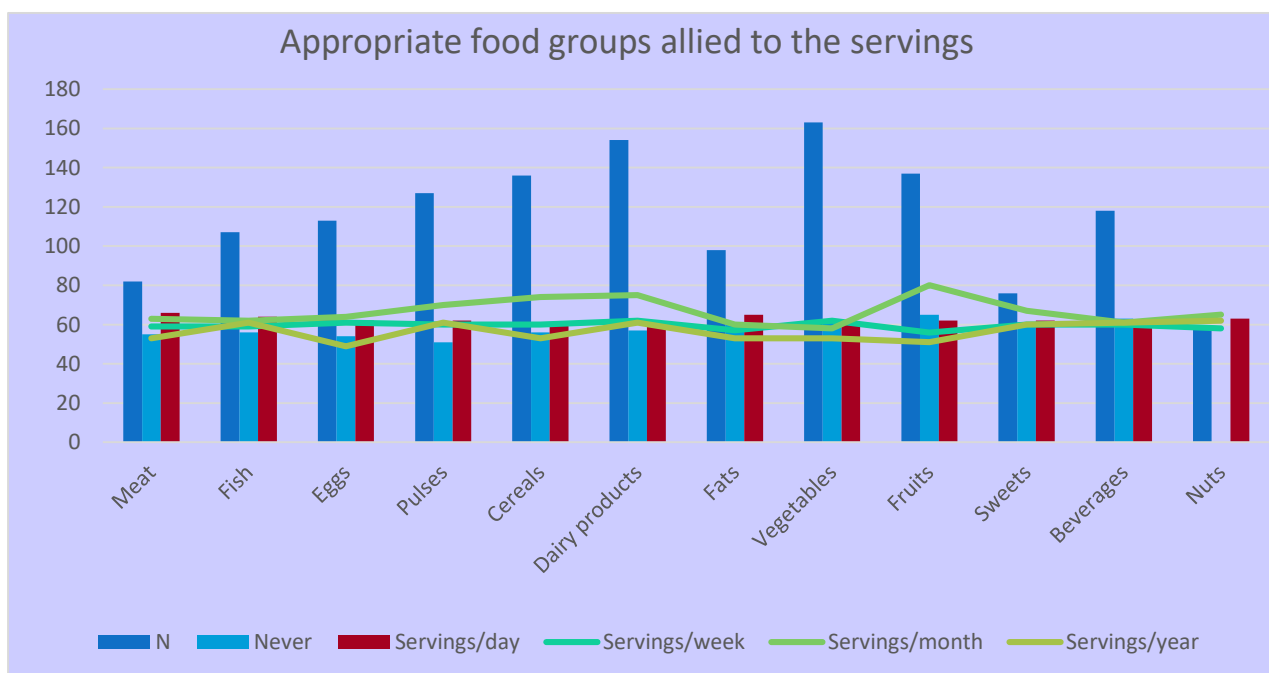
Table 3: Correlation between sense of coherence and diet.

		Meat	Fish	Eggs	Pulse	Cereal	Diary products	Fats	Vegetables	Fruits	Sweets	Beverages	Nuts
S O C	R	-.076	-.039	.059	.037	.090	.115	.221* *	-.074	-.137	-.018	-.049	.126
	Sig (2- tailed)	.284	.586	.408	.605	.207	.107	.002	.297	.052	.798	.495	.076
	N	200	200	200	200	200	198	200	200	200	200	200	200

(r – Correlation Coefficient and SOC – Sense of Coherence)

A p-value of < 0.05 is considered to be significant. Consumption of fat has a correlation coefficient of -0.221 ** among the seafarers.

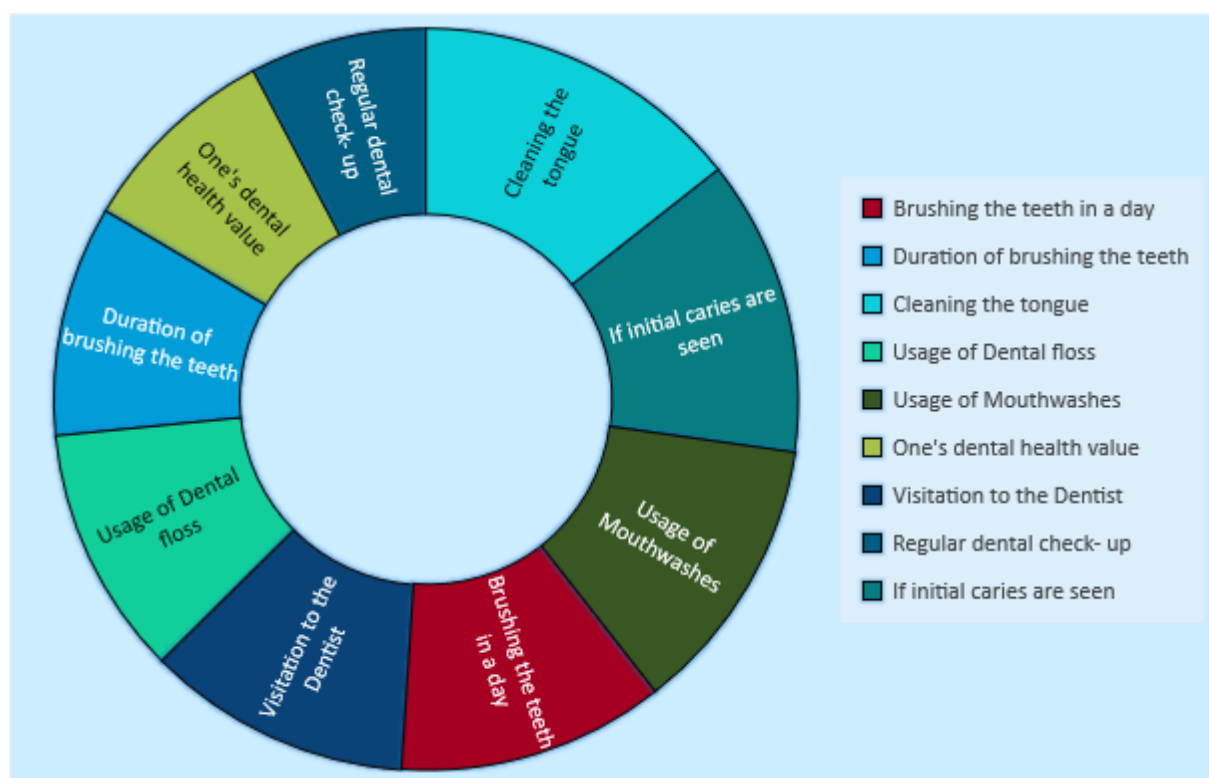
Graph 2: Food groups in regards to the servings



Most seafarers brushed their teeth once daily (57%) for 2 minutes (49%). An interrelationship between the sense of coherence and self-perceived oral health was obtained

with the seafarers cleaning their tongues (70%) and the usage of dental floss (53%) with a P value < 0.05. [Graph 3]. 59% reported their use of mouthwashes. Over 43% of seafarers perceived their dental health to be good. 56% of them reported visiting the dental office only when encountering a dental problem (toothache, swelling and other dental problems)

Graph 3: Sense of coherence with self-perceived oral health



Regarding the question about their take on when a regular dental check-up has to be carried out, 37.5% reported once a year, 33.5% when necessary and 29% every six months. Initial caries management was acknowledged over a question – “ What would they do if they came across initial caries in any of their teeth? “ 63% wanted to treat it as soon as possible, Only 30% wanted to take preventive measures, whereas the remaining 7% wanted to wait and watch. [Table 4]

Table 4: Correlation between sense of coherence and self- perceived oral health

		Brushing the teeth in a day	Duration of brushing the teeth	Cleaning the tongue	Usage of dental floss	Usage of mouth washes	One's dental health value	Visitation to the dentist	Regular dental check-up	If initial caries are seen
SOC	Correlation Coefficient	.053	.082	-.168*	-.214**	-.104	-.230**	.227**	-.274**	.026
	Sig. (2-tailed)	.454	.247	.017	.002	.141	.001	.001	.000	.717
	N	200	200	200	200	200	200	200	200	200

Graph 2 and Table 4 refer to the correlation of the sense of coherence with self-perceived oral health. Correlation Coefficient of cleaning the tongue is $-.168^{**}$, usage of dental floss is $-.214^{**}$ Usage of mouthwashes is $-.104$, One's dental health value is $-.230^{**}$, and Regular dental check-up is $-.274^{**}$

DISCUSSION

Shipping is an industry that contributes to the world's economy. Numerous merchant ships are plying all across the globe, transferring goods between places and keeping the economy of the country galloping. Seafarers represent a vulnerable group due to their long working days, high thermal temperatures generated in workplaces (engineers in the deck sectors), separation from their families and other occupational challenges they have to come across. Provision of health to an onboard seaman is a problematic task. An elaborated study was conducted about the work-related, physical, and psychosocial stress factors seafarers encounter onboard [24]. Despite the numerous research study on seafarers, the correlation of the sense of coherence in tandem with dietary habits and self-perceived oral health was not assessed. The commencement of this study was to address the interrelationship of SOC with diet and self-perceived oral health. This study questionnaire was answered by both young budding and experienced seafarers of all ranks. The maritime industry is broadly deemed to be a male-dominated profession. However, the study revealed a notable difference in gender preference, with male respondents outnumbering female respondents. A marked predominance of married seafarers onboard was also identified. It concluded that most seafarers experience a feeling of loneliness, separation from their loved ones and a lack of social interaction. An inter-relationship between sense of coherence and the deprived status of an individual with relevance to oral health status gave a strong syndicate in a study [25]. Thus, sense of coherence among the seafarers plays a vital role in expressing their comprehensibility,

manageability and meaningfulness. The statistical data gave a positive interrelationship of SOC with the consumption of fat, served daily as a part of their diet. Dietary habits during long voyages are questionable. They are susceptible to consuming many dietary substances containing fermentable carbohydrates and sugars. Overconsumption of fat in an individual's diet gives a few clinical significances like obesity, fatty liver and degenerative changes in the arterial wall. Overweight and cardiovascular illness are the prime risk factors a seafarer faces due to fat consumption. Since a positive correlation was obtained, overconsumption and an unbalanced diet are allied with stress and disrupt a man's functioning capacity leading to frustration, depression, fear, low self-esteem, social isolation and lack of assertiveness [26]. A notable significance of oral health attitudes and oral health behaviours was documented. The significant correlation of SOC with self-perceived oral health by cleaning their tongue and the usage of dental floss. When investigated, they preferred to visit a dentist once a year and to consult a dental practitioner only when they had a dental problem. This emphasized that the seafarers didn't want to take preventive measures to maintain their oral hygiene before it became a serious illness. Despite their burdensome profession, seafarers upheld their oral health to be good. Taking into account to look spruced – up and maintain their oral health due to their long voyages. There are a few limitations of this study that includes: This cross-sectional study allowed the identification of trends but was unable to explain the triggering factors that can alter the course of time in the attitudes and behaviours of the seafarers onboard; It was conducted through a questionnaire that was self-reported by the seafarers, which could have led to information bias; It wasn't easy to organize an oral examination because the working conditions of seafarers of various ranks vary greatly.

4. CONCLUSION

A sense of coherence is an innate trait that makes an individual more resilient under challenging circumstances. Regardless of their laborious occupation onboard, seafarers cannot jeopardize their sense of coherence with the correlation of dietary habits and self-perceived oral health. During their expedition, they should acquire knowledge of a balanced diet and other crucial elements that aid in coping with the pressure onboard throughout their voyage. The mariners must maintain their dental hygiene and take preventive measures to avoid gruesome problems in the future. The onboard sailors should undergo routine oral cavity screenings if their voyage last more than 3-6 months. It would aid the seafarers in maintaining harmony with their environment and the oral cavity.

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ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No Animals/Humans were used for studies that are base of this research.

CONSENT FOR PUBLICATION

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CONFLICT OF INTEREST

Authors have declared that no competing interests exist.

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