

Quality of life among seafarers aboard the government passenger ships at Kochi Port

Ann John Mampilli, Mackwin Kenwood D'mello

K S Hegde Medical Academy, Deralakatte Nithyanandanagar, Mangaluru, India

ABSTRACT

Background: Quality of shipboard life plays a significant role, as for a seafarer the ship is both his workplace and home for extended periods. Physical, psychological, social and environmental factors have a substantial impact on the seafarers' quality of life and work. The aim of the study was to analyse the domains determining the factors associated with the seafarers' quality of life at Kochi Port, India.

Materials and methods: This was a cross-sectional study in which 302 Indian seafarers took part in the research and was conducted in January–February, 2020. WHOQOL-BREF scale was used to explore the four domains of quality of life, and the participants had to rate their perceived satisfaction in each of the domains. The trained researcher conducted a face-to-face interview session using a structured questionnaire. Bivariate and multivariate analysis was used to determine associations and predictors for quality of life, respectively.

Results: The majority (80%) of the seafarers were married and were from a rural area (74%). The mean score (standard deviation) was highest for the psychological domain 70.9 (10.5), followed by environmental domain 69.9 (13.2), social relations domain 68.5 (16.9) and physical domain 61.2 (12.8), respectively. A significant association was found between age and the psychological domain ($p < 0.05$). At the same time, the area of residence had a significant association with physical and psychological domains whereas marital status with physical, psychological and environmental domains ($p < 0.05$). Daily working hours had a significant association with psychological domains and work experience with the physical and psychological domains ($p < 0.05$).

Conclusions: The findings of this study are an indication for the health policy makers to focus on interventions for improving the quality of life among the seafarers and would also help in enhancing healthy work environments for them.

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Key words: seafarer, quality of life, ship, mariner

INTRODUCTION

Quality of life is a broad concept that involves an individual's perception on their physical, psychological, social and environmental systems within their cultural values and beliefs. It also encompasses their goals, expectations, standards and concerns with respect to these systems [1].

On a global level, it was found that long-term separation from families, loneliness and social isolation are the

most critical occupational stressors. Heavy workload, long strenuous working hours and conflicts around work-roles also topped this list [2]. It was also found that the maritime population was prone to greater injuries and accidents, psychosocial hazards and poor quality of sleep [3].

Other dimensions of industry's peculiarity are stress and fatigue, which are induced by a high workload, extensive paperwork and reduced crew levels [4]. Among Danish sea-



Dr. Ann John Mampilli, Master of Public Health, K S Hegde Medical Academy, Deralakatte Nithyanandanagar, Mangaluru, India, tel: +919482311849, e-mail: captmampilli.aj@gmail.com

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farers, 209 out of the 1993 accidents caused permanent disability for more than 5% and 27 fatalities. Age, resting period during the voyage period, type of ship, and nature of work were found as the most significant risk factors for accidents [5]. In Great Britain, it was found that the fatal accidents that occurred among the seafarers were 27.8 times more than in the public workforce during the same period [6]. On a global level, when it comes to how the quality of life varies with age, it has been noted that around 23.2% of young seamen of age 20–24 years rated their quality of life as 'excellent' while the same percentage seafarers between 25 and 34 years rated it as 'very good' [7].

Since minimal research has been conducted on the quality of life among seafarers, and as the topic is significant, this study was conducted on Indian seafarers to determine their quality of life aboard passenger ships. Besides, the goal was to explore the four domains determining the quality of life in the WHOQOL-BREF questionnaire.

MATERIALS AND METHODS

This is a cross-sectional study conducted among the seafarers of Indian Government passenger ships (Lakshadweep Development Corporation Limited) at Kochi Port in January–February 2020. The Census (complete enumeration) method was the sampling method adopted. To avoid inter-person variability, a single trained investigator collected data using a structured interview method. The seafarers in these passenger ships who had completed at least 6 months of sailing off shore were included for this study. Government passenger ships are owned by the government and are used to transport people from one port to another for basic necessities. They are all India-registered and act as both cruise and general transport ships. The non-response rate of the survey was 7%.

In the described study, the following method was applied.

World Health Organization Quality of Life Questionnaire – Brief Version (WHOQOL-BREF) was the instrument that was included for this study. WHOQOL-BREF contained 26 questions distributed across the four (physical, psychological, social relation and environmental) domains of quality of life and followed a self-rating scale. The questionnaire had the socio-demographic component with seven questions regarding age, marital status, and area of residence (classified as urban and rural), the rank of employment (officers and auxiliary staff), work experience and daily working hours. The trained researcher conducted a structured interview schedule among seafarers aboard.

The four domains of the WHOQOL-BREF are described as follows.

The ability to work, energy and fatigue, drug dependence and its treatment, daily activities, mobility, pain and discom-

fort, and sleep duration were the physical components (D1) of the scale. Negative and positive feelings, self-esteem, spirituality, religion, way of thinking, memory, concentration and appearance were the components of the psychological scale (D2). Social support, sexual activity, personal relationships and environment made up the social scale (D3). The environmental scale (D4) comprised physical and psychological safety, healthcare (availability and quality), freedom, financial resources, home environment, learning new skills, physical environment, transport and recreation.

Two experts in the desirable field validated the questionnaire, and Cronbach's alpha was found to be 0.89. A pilot study was conducted among 20 seafarers in a similar study setting, and two questions were modified in the socio-demographic component accordingly. The institutional ethical clearance was obtained with the reference number and date being INST.EC/EC/113/2019-20 and 30.09.2019, respectively.

STATISTICAL ANALYSIS

Statistical Package for Social Sciences (SPSS) was used to analyse the variables of this study. The continuous variables were expressed in means and standard deviations and the categorical variables were expressed as proportions and frequencies. Student t-test was used to find the mean difference across the domain and p value less than 0.05 was considered to be significant. Multiple linear regression models were used to identify the predictors of quality of life.

RESULTS

SAMPLE CHARACTERISTICS

The study involved 302 seafarers employed in the government of India passenger ships (Lakshadweep Development Corporation Limited) who had the onboard experience of a minimum of 6 months. The study group consisted of only men aged 21 to 64 years. The mean age was found to be 38.2 ± 10.6 years. Majority of the seafarers were married (80.1%) and were from a rural area (74%). The officer's ranks were mainly from urban areas whereas most of the auxiliary staff were from the rural area. Majority of the seafarers in the study were deck crew (76%). The mean length of service at sea was 12.5 ± 9.6 years and most (74.8%) of the seafarers worked for more than 12 hours a day (Table 1).

Figure 1 shows the mean scores were highest for the psychological domain (70.9 ± 10.5), followed by the environmental domain (69.9 ± 13.23), social relations (68.4 ± 16.9) and physical domain (61.2 ± 12.8), respectively.

The analysis in Table 2 shows that age groups above 35 and below 35 is significantly associated ($p < 0.05$) with the psychological domain of quality of life and area of residence, urban and rural was significantly associated ($p < 0.001$) with the physical and psychological domain. The

Table 1. Socio-demographic and occupational characteristic of the respondents

Characteristics	Frequency	Per cent
Age groups		
< 35	133	44.0
> 35	169	56.0
Marital status		
Single	60	19.9
Married	242	80.1
Area of residence		
Rural	223	74.0
Urban	79	26.0
Rank of employment		
Officers	100	33.1
Auxiliary staff	202	66.9
Work experience [years]		
< 15	208	68.9
> 15	94	38.1
Number of daily working hours		
< 12	226	74.8
> 12	76	25.2

marital status of the respondents (married and single) was significantly associated ($p < 0.05$) with physical, psychological and environmental domains while it did not affect social relationships of the seafarers. The years of work experience both above and below 15 years was significantly associated ($p < 0.05$) with physical, psychological and social relations. Daily hours of working, above and below 12 hours

had a significant association ($p < 0.05$) with the psychological domain of quality of life. A significant relationship was found between the rank of employment and the physical domain of quality of life.

Table 3 shows the results of multivariate analysis across four domains. Area of residence was a predictor variable for both physical as well as psychological domain. Seafarers from rural areas tend to have a poorer physical quality of life and better psychological quality of life than their urban counterparts.

DISCUSSION

The study shows that age is significantly associated with the psychological domain of quality of life. The aging of seafarers is particularly essential when it comes to the shipping industry [8]. The results of an international study conducted among seafarers in 2012 suggested that the increased mental strain among senior engine-room officers could be attributed to the rapid organizational and technological development in the shipping industry [9]. Findings from a Lithuanian study have established age differences in the physical and psychological health related quality of life [10]. The results of an international study of seafarers showed that as age increased the self-rated quality of life tend to decrease [5].

Work experience is also an important variable. In this study, there was a significant association between work experience and physical and psychological domain of quality of life. In a study conducted in Sweden (2006) it was found that although seafarers' health declines with age, the effects of work related stress were less as seafarers gained more experience throughout the years [11]. The results obtained by a study conducted in Poland focusing on the

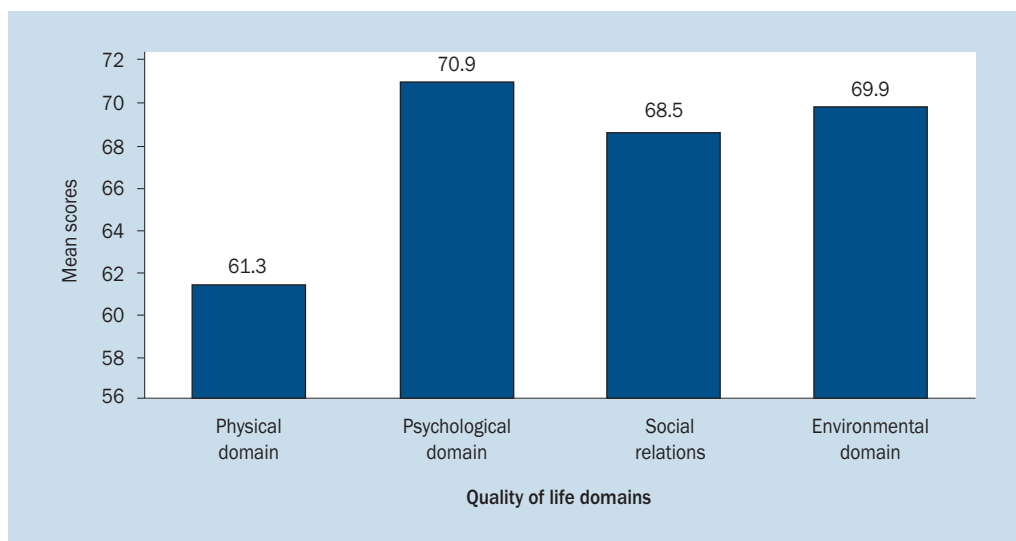
**Figure 1.** Mean scores of quality of life domains among the study population

Table 2. Association of quality of life domains with various social demographic factors

Characteristic	Physical domain	Psychological domain	Social relations domain	Environmental domain
Age group				
< 35	59.6 ± 11.0	74.1 ± 7.0	70.3 ± 17.0	71.3 ± 11.7
> 35	59.8 ± 11.4	71.2 ± 10.1	70.3 ± 16.2	71.4 ± 12.8
P-value	0.911	0.036	0.986	0.980
Area of residence				
Rural	59.2 ± 12.6	72.6 ± 9.7	68.7 ± 17.6	70.4 ± 13.4
Urban	67.2 ± 11.7	66.1 ± 11.3	67.8 ± 14.9	68.5 ± 12.6
P-value	0.000	0.000	0.694	0.277
Marital status				
Single	58.2 ± 10.0	74.1 ± 8.3	69.6 ± 17.6	73.2 ± 10.8
Married	62.0 ± 13.3	70.1 ± 10.8	68.2 ± 16.7	69.1 ± 13.6
P-value	0.039	0.009	0.561	0.030
Work experience [years]				
< 15.0	59.9 ± 11.8	71.8 ± 9.5	69.6 ± 16.7	70.6 ± 13.0
> 15.0	64.5 ± 14.5	69.0 ± 12.2	66.0 ± 17.0	68.4 ± 13.5
P value	0.004	0.035	0.085	0.183
Daily working hours				
< 12	60.7 ± 12.7	72.0 ± 10.2	68.1 ± 16.8	70.4 ± 13.2
> 12	63.1 ± 13.3	67.7 ± 10.7	69.6 ± 17.2	68.4 ± 13.1
P-value	0.160	0.002	0.489	0.275
Rank of employment				
Officers	63.7 ± 11.5	69.5 ± 11.6	67.7 ± 16.5	70.0 ± 13.7
Auxiliary staff	60.1 ± 13.3	71.6 ± 9.8	68.8 ± 17.1	69.8 ± 13.0
P-value	0.026	0.105	0.592	0.878

Table 3. Factors associated with domains of quality of life in multivariate analysis

Variable	B	Standard error	t	Sig.	95% confidence interval	
					Lower bound	Upper bound
PHYSICAL DOMAIN						
Marital status						
Single	-0.22	2.05	-0.10	0.91	-4.26	3.81
Married	Ref	Ref	Ref	Ref	Ref	Ref
Area of residence						
Rural	-6.46	1.74	-3.71	0.000	-9.89	-3.04
Urban	Ref	Ref	Ref	Ref	Ref	Ref
Work experience						
< 15 years	-0.86	2.32	-0.37	0.71	-5.44	3.71
> 15 years	Ref	Ref	Ref	Ref	Ref	Ref

Table 3. (cont.) Factors associated with domains of quality of life in multivariate analysis

Variable	B	Standard error	t	Sig.	95% confidence interval	
					Lower bound	Upper bound
Daily working hours						
< 12 hours	0.14	1.71	0.08	0.93	-3.22	3.50
> 12 hours	Ref	Ref	Ref	Ref	Ref	Ref
PSYCHOLOGICAL DOMAIN						
Marital status						
Single	0.84	1.67	0.50	0.61	-2.45	4.13
Married	Ref	Ref	Ref	Ref	Ref	Ref
Area of residence						
Rural	4.54	1.41	3.20	0.002	1.74	7.33
Urban	Ref	Ref	Ref	Ref	Ref	Ref
Work experience						
< 15 years	-1.65	1.89	-0.87	0.383	-5.39	2.07
> 15 years	Ref	Ref	Ref	Ref	Ref	Ref
Daily working hours						
< 12 hours	2.34	1.39	1.68	0.093	-0.39	5.09
> 12 hours	Ref	Ref	Ref	Ref	Ref	Ref
Age	-0.17	0.09	-1.88	0.060	-0.35	0.008
SOCIAL RELATIONS DOMAIN						
Marital status						
Single	-0.96	2.84	-0.33	0.735	-6.55	4.62
Married	Ref	Ref	Ref	Ref	Ref	Ref
Area of residence						
Rural	0.03	2.40	0.01	0.988	-4.70	4.77
Urban	Ref	Ref	Ref	Ref	Ref	Ref
Work experience						
< 15 years	0.81	3.22	0.25	0.801	-6.93	2.37
> 15 years	Ref	Ref	Ref	Ref	Ref	Ref
ENVIRONMENTAL DOMAIN						
Marital status						
Single	3.11	2.20	1.41	.160	-1.23	7.45
Married	Ref	Ref	Ref	Ref	Ref	Ref
Area of residence						
Rural	0.51	1.87	0.27	0.785	-3.17	4.19
Urban	Ref	Ref	Ref	Ref	Ref	Ref
Work experience						
< 15 years	0.09	2.50	0.03	0.969	-4.82	5.02
> 15 years	Ref	Ref	Ref	Ref	Ref	Ref
Daily working hours						
< 12 hours	1.14	1.83	0.62	0.535	-2.47	4.76
> 12 hours	Ref	Ref	Ref	Ref	Ref	Ref

Table 4. Mean scores of quality of life among different seafarers based on nationality

Nationality	Physical domain	Psychological domain	Social domain	Environmental domain
Indian seafarers	61.3	70.9	68.5	69.9
Polish seafarers	58.52	62.48	65.08	62.04
Chinese seafarers	67.8	64.3	63.8	52.5
Turkish seafarers	63.96	63.08	62	56.68

occupational stressors of seafaring (2006) showed that trainees on ships, compared to the officers perceived the job as highly stressful [12].

In the present study, the officers and non-officers almost gave similar satisfaction rates for the quality of life in each of the four domains. The results of the survey of Lithuanian seafarers showed that the health-related quality of life was best among the commanding officers thus establishing differences by profession. The physical dimension of quality of life was found to be poorest among engineer ship service members, while psychological quality of life was found worst among the auxiliary staff [10]. A study conducted among Polish seafarers (2013) showed differences in some aspects of psychological well-being between seafarers of different categories. These results combined prove the importance of the ranks and nature of work on board as they involve coping with various stressors [13]. The results of another international study (2009) also showed that a significant stressor for superiors on board resulted from the low satisfaction at work of the auxiliary staff. Long strenuous working hours of the auxiliary staff contributed to their higher stress levels than the engine room personnel [14].

Regarding marital status, there was a significant association between that and the physical, psychological and environment domains. It was found that among the younger seafarers with children, separation from home and family was a major stressor [2]. It was also shown that between stress and anxiety, and also between stress and a sense of purpose in life marital satisfaction played a significant role in their association [15, 16]. Hence the ability to cope with stress and anxiety at sea increased with respect to marital satisfaction. Daily working hours were found to be significantly associated with the psychological domain of quality of life. Oldenburg et al. (2009) [2] found that longer working hours was a significant occupational stressor affecting the quality of life.

The mean ratings for quality of life among the seafarers were highest for the psychological domain followed by environmental, social relations and physical domain. In China, from a study conducted on seafarers, it was found that the mean ratings for the domains were highest for the physical health followed by psychological, social relations

and environment domains [7]. In a study conducted among the Turkish seafarers the mean scores of quality of life were such that the highest scores were for physical followed by psychological, social and environmental domains [17]. Many studies have found the mean ratings for social relations domain as the lowest, which is a cause of concern. This could be attributed to the fewer number of questions asked in the social domain. In another study conducted among Polish seafarers, it was found that the highest score for quality of life was obtained for the social relationships followed by psychological and environmental domains. The lowest scores were attributed to the physical domain [18]. Table 4 gives a concise view of these scores.

LIMITATIONS OF THE STUDY

Since the study was carried out in the presence of a supervising officer, participants may not have been able to openly discuss their satisfaction levels related to their work leading to self-reporting bias. The possibility of the incorrect response of the participant due to recall bias concerning the occurrence of occupational accidents would have occurred. The study could have included more predictor variables. All the seafarers were males, as no female seafarers were on board during the time of data collection. Hence the quality of life-based on gender could not be determined.

RECOMMENDATION

More researchers need to carry out studies on Indian seafarers to highlight their quality of life and issues surrounding that. Very few studies are conducted in India; in this regard, policy-makers need to formulate policy regarding working hours in the government passenger ships. Working hours need to be regulated, and over-time needs to be compensated accordingly. Policies should encourage the construction of living and office spaces with ergonomic considerations.

Posters listing the dos and don'ts to prevent occupational accidents and to enhance the quality of life on board should be displayed in the offices aboard the ships to increase the awareness. Weekly/monthly recreational activities should be conducted on board to reduce stress and encourage physical activity among the seafarers.

CONCLUSIONS

Although the government brings new schemes for the seafarers through welfare programmes, getting an optimal quality of life is inevitably challenging to most of the seafarers. Seafarers at higher positions are well received in society, and their status has a positive impact on the quality of life. Digital means of communication, which plays an essential role in the life of the people, has still a long way to help the seafarers maintain their social relations while working aboard the ships. Every domain of quality of life should be focused upon to increase the overall score of quality of life.

The study contributes new knowledge about quality of life of seafarers in different domains and socio-demographic characteristics. One finding was that Indian seafarers in government of India passenger ships experienced low quality of life in the domain of the social relation. The seafarers should be empowered to adjust their mentality to find joy and fulfilment in their careers and should be encouraged to build good-quality social relationships and thus improve their perception of the quality of life. Lastly, the findings of this study are an indication for the health policy makers to focus on interventions for improving the quality of life among the seafarers and also to help in enhancing healthy work environments for them.

Conflict of interest: None declared

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