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A STUDY ON HEALTH AWARENESS AMONG UNDERGRADUATE MARITIME CADETS IN INDIA

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Background:

Health awareness is a comprehensive understanding of the health of an individual. The primary determinants of health in any setting include social and economic environment, physical environment, and individual characteristics and behaviours of the person. Health awareness is the process of enabling people to increase control over their health and its determinants, and thereby improve their health. Seafaring being a job primarily requiring a tough physical and mental constitution, health awareness is essential to identify and understand the impact of various health and safety risk determinants. Like in the general population, there has been a paradigm shift in the history of health concerns of the seafarers from earlier nutritional and communicable diseases to present focus on non- communicable diseases and occupational health risks. The seafarers are required to be adequately informed about the physical, mental and health hazards present in the maritime domain and the known risks in the occupation to fully prepare themselves for healthy life and adaptation to the environment.

Keywords: Seafarer; Health Awareness; Maritime

Occupation; Lifestyle; Exercise

Methods:

The present study included a random sample of 105 respondents among undergraduate students of IMU, Chennai. Multiple variables such as demographic profile, family history of medical ailments, personal medical ailments, lifestyle parameters such as exercise regularity, fatty food consumption, quality of sleep, personal habits (smoking & alcohol consumption), prior sailing experience, acquaintance to maritime domain and health awareness aspects were studied using structured questionnaire and analysed.

Results:

The study reveals that the overall health awareness among the cohort was good. Majority of the respondents exercise regularly and do not consume fatty food frequently. The correlations between general health awareness, lifestyle health awareness and maritime occupational health awareness were strong and statistically highly significant. Based on the awareness scores, K Means Cluster analysis divided the sample group into 2 distinct clusters. Analysis of cluster characteristics reveal that the greater awareness levels of the individual was associated with their increased acquaintance to maritime domain, regular exercise habit, reduced smoking, alcohol and fried food consumption habits.

Conclusion:

The overall health awareness levels among the individuals is very good and can be attributed to the increased access to information via digital media, increased health awareness among general population and various other health promotional activities. Maritime health awareness is essential to identify and understand the impact of various health risk determinants in the maritime domain. Therefore, planned orientation, training programs, and proper guidance to the seafarers will help reduce occupational health hazards and adoption of the necessary safety measures.

The educational curriculum for the undergraduates should include maritime occupational awareness aspects to prepare the budding trainee for the rigor of seafaring and in-turn benefiting all the stakeholders of the maritime domain. **The** benefits of an informed community is that individuals take better care of themselves, they are less likely to fall ill, and they therefore place less burden on the entire system.

1. INTRODUCTION

Health Awareness is a comprehensive understanding of the health and a basic concept of living. The awareness responsibility not only involves every individual but also extends to families, societies, countries and the world. The essential benefits of the health awareness are that it can provide freedom from all diseases, provide sound mental and physical state and help one choose his / her health care options. Health awareness is a fundamental human right. Many factors such as the environment, the customs and cultures, economic conditions, geographical considerations and the individual characteristics, collectively contribute to the health of individuals and

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communities[1]. Health promotion and education leading to healthy ways of living, eating and taking care of the physical, mental and social aspects is the best way to achieve the health awareness. The main objective of the Health awareness is to provide health related knowledge to the people for preventing and curing disease. The emphasis on healthy lifestyle should start at a young age.

Seafaring being a job primarily requiring a tough physical and mental constitution, health awareness is essential to identify and understand the impact of various health and safety risk determinants[2,3]. Globally there has been a paradigm shift in the history of health concerns of the seafarers from earlier nutritional and communicable diseases to present focus on non- communicable diseases and occupational health risks. Apart from the occupational health risks, the health and wellbeing of the seafarer, like that of any on shore employee is influenced by factors such as geographical location, genetic predisposition, ethnicity, culture and customs they belong. Health awareness is essential to identify and understand the impact of various health risk determinants. The seafarers are required to be adequately informed about the physical, mental and health hazards present in the maritime domain and the known risks in the occupation to fully prepare themselves for healthy life and adaptation to the environment. In-depth knowledge in quantifying the impact of health risk determinants on the incidence of diseases enables the health promoters and other stake holders in developing appropriate, clear and effective strategies for improving the health of the population.

The probability of adverse health outcomes in an individual is dependent on their exposure to the various health risk factors which often coexist and interact with one another and in practice they do not operate in isolation, most often leading to a complex chain of events. Health awareness on various aspects of socio demographic, environmental, individual, genetic and, occupational determinants helps better understanding of the individual's vulnerability and determines the impact of health risk factors.

2. MATERIALS AND METHODS

The present study included a random sample of 105 respondents pursuing their undergraduate program at Indian Maritime University, Chennai campus, India. The study was conducted during the period January 2019. Appropriate consent for voluntary participation in the study was obtained and the respondents were adequately informed of the intent of data collection.

The participants were asked to fill a structured questionnaire. Incomplete questionnaires were excluded from the study. The questionnaire was used to collect data pertaining to the demographic profile, family history of medical ailments, personal medical ailments, lifestyle parameters such as exercise regularity, fatty food consumption, quality of sleep, personal habits (smoking & alcohol consumption), prior sailing experience, acquaintance to maritime domain and health awareness aspects. Health awareness was assessed by questions related to general health aspects, lifestyle aspects and maritime occupational health and safety aspects.

The data was analysed using statistical program for social studies (SPSS Version 16). Frequencies, descriptive statistics, correlation matrix and K-means cluster analysis were conducted. The data collected using 5 point scale was subjected to Cronbach's Alpha test for checking the internal consistency and reliability of the scale. The Cronbach's Alpha value of 0.828 obtained shows that there is high consistency in measurement of different types of variables and scaling is highly reliable.

3. RESULTS

The socio demographic profile analysed in the present study included age, gender, location of residence, prior sailing experience and acquaintance to maritime industry. Of the 105 respondents 103 were males and 2 were females.

The age of the respondents ranged from 17 years to 23 years with mean age of 20.15 ± 1.19 years. 67.6 % of the respondents were from urban localities (20% from metro area and 47.6% from cities) and remaining 32.4 % were from non-urban localities (16.2 % from towns and 16.2 % from villages) in India (Figure 1). Majority of them had no prior sailing experience. Considerable number of respondents (41.9 %) reported to be acquainted with maritime industry through their family or close friends.

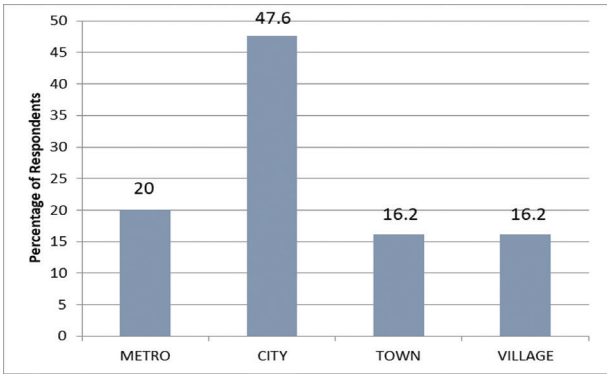

Fig. 1: Distribution of respondents based on Urban / Rural background (n=105)

Majority (94.2 %) of the respondents reported no significant medical ailments. The remaining 5.7 % respondents reported to be suffering from hypertension (1 %), asthma (1 %) and gastritis (3.8 %). 59 % of the respondents reported no history of medical ailments such as diabetes. hypertension, heart ailments, obesity among their close family members like Grandparents, parents and siblings an significant number of respondents (41 %) reported a positive family history of medical ailments. Among those who reported positive family history of medical ailments, 40 % reported diabetes, 30 % reported Heart ailments / Hypertension and, 30 % reported obesity among their family members. Personal habits causing health risk such as smoking habit and alcohol consumption was analysed among the sample group. Very few respondents reported smoking habit (10.5 %) and alcohol consumption (11.4 %). Majority of them who had these habits were only occasionally smoking or consuming alcohol. The study included analysis of lifestyle habits like regularity to exercising, frequency of consumption of oily / fatty food and quality of sleep among the respondents. Majority (86.7 %) of the respondents exercised regularly (Figure 2). 13.3 % of the respondents were not exercising regularly.

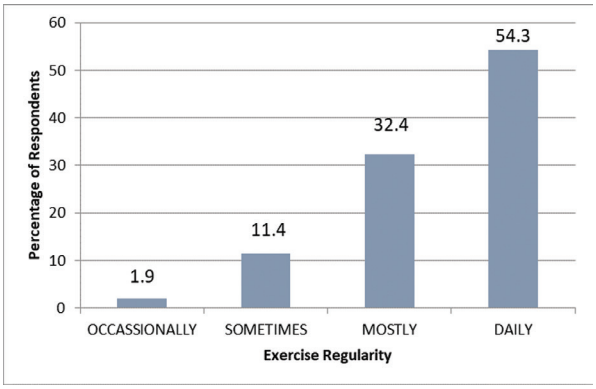

Fig. 2: Exercise regularity among respondents (n=105)

Figure 3 shows the frequency of fried and oily food consumption by the respondents. 17.1 % of the individuals consume fried and oily food frequently (more than 4 days in a week) while 81 % consume or take oily food very rarely (2-3 days in a week) and 1.9% do not consume any fatty food.

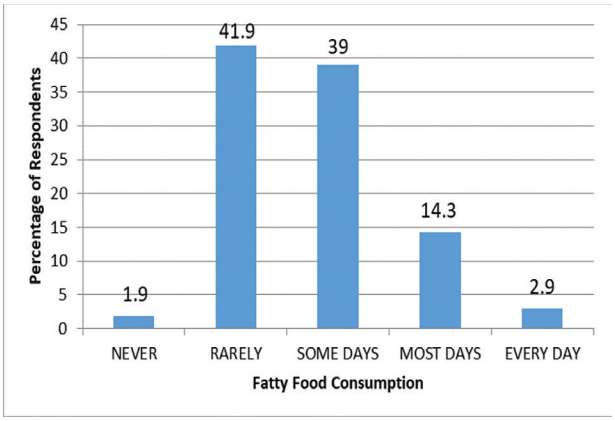

Fig. 3: Frequency of fatty food consumption (n=105)

54.3 % of the respondents slept comfortably and 9.6 % reported mostly disturbed sleep. 36.2 % reported occasionally disturbed sleep pattern (Figure 4).

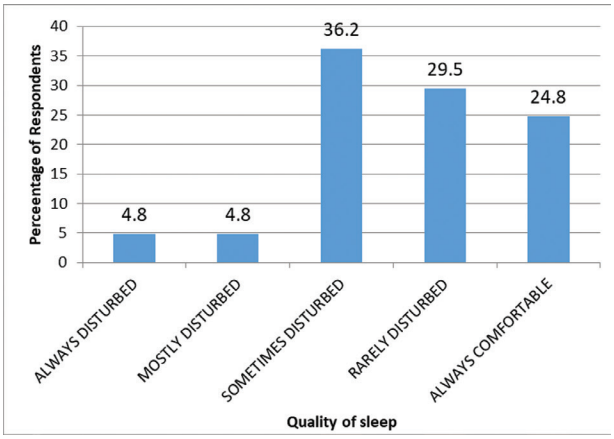

Fig. 4: Quality of sleep pattern among the respondents (n=105)

The health awareness among the respondents was assessed by a questionnaire (30 Questions) and responses were measured with 5 point Likert scale of Strongly Agree, Agree, Undecided, Disagree, strongly disagree with the weightage of 5,4,3,2 and 1 respectively.

The mean total health awareness score of the respondents was 123.89 ± 9.05 out of maximum score of 150. The mean general health awareness score was 25.55 ± 2.16 out of maximum score of 30. The mean lifestyle health awareness score and maritime occupational score were 52.00 ± 4.05 and 46.33 ± 5.07 respectively out of maximum score of 60 each. Highly significant and moderately positive correlation (2-tailed) were found between the general health awareness, lifestyle health awareness and maritime occupational health and safety awareness levels. General health awareness and lifestyle health awareness $r = 0.555$, $p < 0.010$. General health awareness and maritime occupational health and safety

awareness levels r = 0.480, p < 0.010. Lifestyle health awareness and maritime occupational health and safety awareness levels r = 0.364, p < 0.010.

The health awareness statements were classified based on general health, lifestyle and, maritime occupational health aspects and were grouped as 6 general awareness statements, 12 lifestyle health awareness statements and 12 maritime occupational health and safety statements.

The non-hierarchical clustering algorithm or k-mean clustering was applied, to group the observations on the basis of similarity. The numbers of clusters were fixed in advance as 2 clusters. Table 1 shows the formation of clusters and 2 dominant clusters have been formed significantly differentiated by all the 3 Health Awareness Factors. The first cluster formed has 75 respondents constituting of 71.4 % of the 105 total respondents covered in the study. The second cluster has 30 respondents comprising of 28.6 % of total respondents. Classification statistics showed that 96.2 % of original grouped cases were correctly classified.

Table 1: Health Awareness Score – Quick Cluster – Initial & Final Cluster means, ANOVA.

Health Awareness Aspects	QUICK CLUSTERS				ANOVA					
	Initial Cluster Centers		Final Cluster Centers		Cluster		Error		F	Sig.
	Cluster 1	Cluster 2	Cluster1	Cluster 2	Mean Square	df	Mean Square	df		
General Health Awareness	22.0	30.0	24.8	27.4	148.595	1	3.275	103	45.367	0.000
Lifestyle Health Awareness	46.0	60.0	50.7	55.2	421.167	1	12.474	103	33.763	0.000
Maritime Occupational Health & Safety Awareness	36.0	60.0	44.1	52.0	1348.667	1	12.861	103	104.87	0.000

The characteristics of the respondents based on their cluster membership was analysed (Table 2). The health awareness levels of cluster 2 members (mean score 134.60 ± 6.07) was significantly higher than cluster 1 members (mean score 119.60 ± 5.97). All the three aspects of health awareness levels were higher in cluster 2 members than cluster 1 members. Among the three health awareness aspects, the difference in mean score was much higher in maritime occupational health and safety aspects. Most of the socio demographic profiles were similar in both the groups. Presence of family history of medical ailments was significantly higher in cluster 1 members. With respect to personal habits like smoking and alcohol consumption, significantly more number of cluster 2 members reported no habits when compared to cluster 1 member. Lifestyle factors like exercise regularity, fatty food consumption and quality of sleep were similar in both cluster members.

Table 2: Respondent characteristics based on cluster membership

Respondent Characteristics	Number (%) of Respondents	
	CLUSTER 1	CLUSTER2
Group Number	75(71.4%)	30(28.6%)
Age in years	20.09 ± 1.26	20.3 ± 0.98
Gender Male	74(98.7%)	29(96.7%)
Gender Female	1(1.3%)	1(3.3%)
Urban Background	50(66.7%)	21(70.0%)
Prior Sailing Experience - Yes	1(1.3%)	2(6.7%)
Aquaintence to Maritime Industry - Yes	32(42.7%)	12(40.0%)
Presence of Medical Ailments - yes	4(5.3%)	2(6.6%)
Presence of Family History of Medical Ailments - Yes	34(45.3%)	9 (30.0%)
No Smoking Habit	65(86.7%)	29(96.7%)
No Alcohol Consumption	64(85.3%)	29(96.7%)
Regular Exercise Habit	65(86.7%)	28(86.7%)
Occasional Fatty Food Consumption	63(84.0%)	24(80.0%)
Good quality of sleep	71(94.6%)	29(96.7%)
HEALTH AWARENESS SCORE		
Total Health Awareness	119.60 ± 5.97	134.60 ± 6.07
General Health Awareness	24.80 ± 1.86	27.43 ± 1.67
Lifestyle Health Awareness	50.73 ± 3.69	55.17 ± 3.09
Maritime Occupational Health & Safety Awareness	44.07 ± 3.45	52.00 ± 3.92

The mean Likert scale value for each of the statements was analysed (Table 3) to determine the awareness levels of the respondents for each statement. The mean Likert score of both the cluster members were compared to study the response characteristics of the cluster group members. Overall, the combined mean Likert scale value was highest for lifestyle health awareness statements (4.33) followed by general health awareness statements (4.26) and least for maritime occupational health and safety awareness statements (3.86). On comparison of cluster members, it is seen that cluster 2 members had a higher mean score on all the aspects of health awareness when compared to cluster 1 member.

Table 3: Health awareness statements – Grouping and Likert Mean Value Response

S. No	Health Awareness Statements	Likert Scale Mean Value		
		Total	Cluster 1	Cluster 2
		n=105	n=75	n=30
GENERAL HEALTH AWARENESS				
1	Self medication can be harmful	3.60	3.47	3.93
2	Knowledge of Family history of health risks is essential	4.18	4.08	4.43
3	Most health hazards are due to failure in following safety procedures.	4.30	4.12	4.77
4	Sleep disturbance leads to disorientation / confusion & fatigue.	4.35	4.20	4.73
5	Health awareness reduces health care costs	4.46	4.35	4.73
6	Prevention is better than cure	4.66	4.59	4.83
LIFESTYLE HEALTH AWARENESS				
7	Repetitive movements can lead to joint pains	**3.25**	3.07	3.70
8	Work related physical activity alone cannot ensure fitness	4.04	3.96	4.23
9	Major cause of obesity is sedentary lifestyle.	4.16	4.01	4.53
10	Obesity can lead to Diabetes & Hypertension	4.31	4.19	4.63
11	Fast food snacks / meals contain high fat content	4.35	4.31	4.47

12	Alcohol consumption can cause liver failure	4.40	4.23	4.83
13	Regular diet habit is important for good health	4.49	4.40	4.70
14	Exercise helps relieve work stress	4.50	4.40	4.77
15	Tobacco chewing leads to oral cancers	4.58	4.47	4.87
16	Breakfast should not be skipped	4.62	4.57	4.73
17	Smoking can cause chronic respiratory diseases	**4.64**	4.52	4.93
18	Physical fitness is essential for better work performance	4.66	4.61	4.77
MARITIME OCCUPATIONAL HEALTH & SAFETY AWARENESS				
19	Lack of sleep is mostly a consequence of ship motion.	**3.47**	3.35	3.77
20	Getting injured or hurt while working on ships is very common	**3.49**	3.37	3.77
21	Abscess / boils are the most common skin disorder among seafarers	3.60	3.36	4.20
22	Engine room personnel have an increased risk of lung cancer	3.61	3.37	4.20
23	Seafarers exposed to vibration have a higher incidence of lower back pain	3.62	3.43	4.10
24	Seafarers experience increased restless / disturbed sleep at sea	3.94	3.79	4.33
25	Limited opportunities for recreation is an important source of stress in seafarers	3.99	3.80	4.47
26	Peculiarity in seafaring is the limited ability to provide medical aid on board	4.02	3.85	4.43
27	Noise pollution can lead to hypertension	4.10	3.88	4.63
28	Extreme weather conditions impact seafarers health and work	4.11	3.92	4.60
29	On-board hygiene is the main cause of spread of communicable diseases	4.16	3.95	4.70
30	prolonged exposure to UV light is the cause of many skin cancers	4.23	4.00	4.80

4. DISCUSSION

The respondents in the present study represent the undergraduate student population pursuing maritime education in India. They are all young individuals in the age group of 17 to 23 years pursuing the course immediately after completion of schooling. As maritime profession is male dominated, the present sample group also records only 2 female individuals out of 105 sample size participating in the study. The admission process into Indian maritime education includes a highly competitive CET (common entrance test) requiring in-depth preparation and adequate coaching which is mostly available to the urban students and not easily accessible to the non-urban students. Thus, more number of urban students is in the present study group. This is also because the urban students have more access to information and more acquaintance with people involved with the maritime industry. Nearly half of the study group has reported some form of knowledge about maritime profession through family and friends. Typical of the young age most (94.3 %) of the study group respondents do not have any medical ailment. At this young age most individuals do not present with any medical ailments. Age is an important non modifiable health risk variable. With increasing age, individuals are more vulnerable to health risks and this increases the incidence of disability and mortality.

Knowledge on family history of medical ailments is very important as it throws a light on the likelihood of an individual developing health ailment due to his genetic predisposition[4]. The present study recorded significant number (41 %) of individuals reporting strong family history of medical ailments, mainly metabolic diseases like diabetes, hypertension, heart ailment and obesity. Even though the young individuals are not suffering right now from any medical ailments, many of them are likely to present with these metabolic disease later on as they are aging.

It is best to be aware of the impending situation and take preventive measures to postpone the likelihood of medical ailments. An individual with strong family history of diabetes mellitus is likely to develop diabetes at a later age. But he could postpone by appropriate lifestyle modification (exercise, diet control) and regular screening. Personal behavioral and lifestyle choices significantly influence the health status of the individual. Personal habits like smoking and alcohol consumption are known health risks that need to be avoided. With the general awareness catching up globally about the ill effects of smoking and alcohol, the habituation to these habits has considerable decreased[5]. This can be seen in the present study were smoking and alcohol consumption habits are present only in 10.5 % and 11.4 % individuals respectively.

This is a very positive sign on impact of health awareness on the general population. Lifestyle habits such as unhealthy diet, lack of exercise and disturbed quality of sleep has been analysed in the present study. While a good sign is that majority of the respondents (82.9%) do not consume unhealthy diet (fatty food consumption) on a regular basis and 86.7 % respondents exercise regularly, still there are a considerable number of respondents who eat unhealthy diet (17.1 %) and do not exercise regularly (13.3 %). These respondents who eat unhealthy diet and have lack of exercise are the vulnerable population to develop non communicable diseases in the future. Behavioral and lifestyle risk factors are modifiable and acquired risks; whereas, age, gender, genetic and ethnicity factors are non-modifiable risks[6]. Avoiding acquired risk factors and taking preventive measures for non-modifiable risks helps in decreasing the disability and mortality in the individuals. Most of the respondents claimed to have a good quality of sleep and rarely are disturbed.

This is a positive factor for good health. Maintaining the circadian rhythm helps the body rejuvenate and replenish the essential metabolic elements to cope up with the constant metabolic demand of the individual[7].

The overall total health awareness of the respondents is good. This is typical of such young undergraduate students pursuing studies in premier educational institutions. The respondent's educational background, family support, acquaintances, general knowledge, access to information and influence of media helps them

in acquiring health awareness. Of the health awareness aspects the respondents awareness levels on lifestyle health aspects was the best followed by general health awareness and maritime occupational awareness.

The significant and moderate correlation between the health awareness aspects shows that all the three aspects are interlinked and knowledge on one aspect helps understand the other aspects better. The respondents were more aware of the general and lifestyle health awareness aspects as they come across these aspects more often than maritime occupational health aspects. One of the reasons for the respondents to be less aware of the maritime occupational health aspects is that they are yet to complete their course and hence have still not gone sailing. Between the two cluster groups the cluster 2 members have a better awareness levels on all the 3 health awareness factors.

The clear differentiating characteristic of the cluster 2 with cluster 1 members is the overwhelming absence of health risk factors such as smoking and alcohol consumption. Comparison of the mean Likert score response value for each of the health awareness statements showed that cluster 2 members scored higher that cluster 1 members.

The responses of cluster 2 members were clearly decisive. The analysis showed that Cluster 2 members (n=30) had higher health awareness in all respects. The present study shows that the total health awareness levels of the individual are good and their maritime occupational health and safety health awareness levels needs improvement. To improve the maritime occupational health and safety levels it is essential to promote health education and promotion on all the health awareness aspects. If the young seafarer has very good levels of health awareness, he will necessarily avoid acquiring health risks and take necessary preventive measures to deal with non-modifiable health risks and stay fit for better quality of life.

The adaptive abilities of the young cadet to the rigor of maritime occupation are best when the awareness levels are high. Health awareness preserves and improves the marine cadets health and forms an important stage in prevention of mental and behavioral disorders related to the maritime occupation.

5. CONCLUSION

The overall health awareness levels among the individuals is very good and can be attributed to the increased access to information via digital media, increased health awareness among general population and various other health promotional activities. The well acknowledged strenuous nature of maritime occupation coupled with the seafarer's wellbeing in the set environment is unique among all occupations. Maritime occupational health and safety requires a holistic approach combining physical, mental and social wellbeing of the seafarer as well as awareness on occupational and environment determinants in the domain. Maritime health awareness is essential to identify and understand the impact of various health risk determinants in the maritime domain. Therefore, planned orientation, training programs, and proper guidance to the seafarers will help reduce occupational health hazards and adoption of the necessary safety measures.

The educational curriculum for the undergraduates should include maritime occupational awareness aspects to prepare the budding trainee for the rigor of seafaring and in-turn benefiting all the stakeholders of the maritime domain. The benefits of an informed community is that individuals take better care of themselves, they are less likely to fall ill, and they therefore place less burden on the entire system.

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