

# Knowledge, attitudes, and related practices of Filipino seafarers regarding cardiovascular diseases

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## ABSTRACT

**Background:** Globally, cardiovascular diseases (CVD) remain the leading cause of mortality. Due to the nature of their work and lifestyle on board, Filipino seafarers have a high propensity towards acquiring CVD. This study aimed to determine the knowledge, attitudes, and practices related to CVD of Filipino seafarers.

**Materials and methods:** This study utilised a descriptive cross-sectional study design. Self-administered questionnaires were distributed among 136 male seafarers who went into a private general hospital for their pre-employment medical examination.

**Results:** Eating fatty foods (77.0%), cigarette smoking (68.4%) and lack of exercise (65.4%) were identified by the respondents as the top three most common risk factors for CVD. Avoiding fatty or oily foods (85.3%) and exercising regularly (83.1%) were identified by the respondents as preventive measures for CVD. High blood pressure and shortness of breath were identified by more than half of the respondents as a sign and symptom of CVD, respectively. But the respondents failed to identify other equally important signs and symptoms. Majority of the respondents (> 80%) had high level of perception with respect to the six constructs of the health belief model. Some respondents had admitted engagement in risk-taking behaviours such as smoking (36.0%) and physical inactivity (27.2%). Majority were into high fat and salt diet (70.6%) and current alcohol consumption (79.4%).

**Conclusions:** Although the respondents had favourable attitudes towards CVD, there were knowledge gaps in risk factors, preventive measures, and recognition of signs and symptoms. Hence, some were still engaging in risk-taking behaviours such as smoking, irregular involvement in physical activity, unbalanced diet, and alcohol intake.

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**Key words:** risk factors, current smoker, physical inactivity, high fat diet, alcohol intake

## INTRODUCTION

Contributing to the surplus in the global population of sea-based workers, the Philippines remain the top supplier (more than 20%) of seafarers worldwide [1–4]. In 2014, the total number of Filipino seafarers deployed was 517, 972, which accounts to 22% of all the overseas Filipino workers in the world [5]. Through their remittances amounting to a billion of US dollar, Filipino seafarers had made a significant impact in the stability and growth of the Philippine economy

and have, in fact, helped insulate the country from the effects of the previous Asian crises [2]. However, the lived experiences of Filipino seafarers, particularly those related to their health, are seldom brought to public attention.

While on board, seafarers are constantly exposed to various occupational health hazards, leading to injuries and deaths [6]. Spending several months of separation from their families, many of them suffer from loneliness, isolation, and feeling of homesickness [6–8]. Heavy workload due to

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long working hours and sleep deprivation results in fatigue and other psychosomatic conditions [6, 9, 10]. Environmental factors such as noise, vibration, heat, and adverse weather conditions are also perceived as detrimental to health [6, 8–10]. The conglomeration of all of these physical, psychosocial, and environmental stressors contributes to poor mental and physical well-being of seafarers [10]. In addition, their propensity to lifestyle-related diseases such as cardiovascular diseases (CVD) is increased [8].

Globally, CVD are the top causes of mortality [11]. In the Philippines, diseases of the heart, cerebrovascular diseases, and hypertension constitute a third of all the reported deaths from the general population in 2013 [12]. CVD had also been implicated as the major cause of deaths that were attributable to natural causes among the seafarers [13]. Hence, due to the nature of their work and their lifestyle on board, the Filipino seafaring population is, by no means, an exemption from the threat and effect of CVD. In fact, CVD, which accounts to 8.1% of all cases, are among the major causes of medical repatriation [14]. Moreover, risk factors for CVD such as smoking, unhealthy diet, alcohol consumption, and physical inactivity are common practices among seafarers [6, 8, 13, 15–17].

Considering the propensity of Filipino seafarers to develop CVD, there is a need to call for actions to protect their welfare. However, there is paucity of local literatures and research initiatives that explored the psychosocial aspects of CVD among this population group. This could serve as basis in developing health promotion interventions. Therefore, this study was undertaken aimed at 1) describing the knowledge of selected Filipino seafarers on CVD; 2) determining their attitudes through their level of perception as guided by the Health Belief Model (HBM); and 3) determining their practices, which are lifestyle risk factors for CVD.

## MATERIALS AND METHODS

### STUDY DESIGN AND STUDY POPULATION

A descriptive cross-sectional study design was utilised in this study. Filipino male seafarers who had come to a private general hospital in the City of Manila from February to March, 2010 for their pre-employment medical examination were invited as respondents for this study. This hospital is operated by a union of Filipino seafarers and represents one of the biggest providers of health care services for seafarers in the Philippines. However, only those with professional history of working for at least 6 months in international shipping vessels and provided consent were eligible to participate. Sample size was computed using a formula for a descriptive cross-sectional study with a 5% margin of error. This yielded a sample size of 126 seafarers at 95% confidence level. Systematic random sampling was

applied in the selection of respondents by including every 5<sup>th</sup> potential respondent in the list of seafarers undergoing their pre-employment medical examination. About 95% of those who were invited had agreed to participate. A total of 136 respondents participated in the study. Main reason for non-participation was time constraint on the part of the potential participants, since they were in a hurry to finish the medical examination.

### RESEARCH INSTRUMENT

A structured self-administered questionnaire (SAQ) was developed, containing pre-coded responses. The self-developed questionnaire used closed-ended questions with pre-identified response categories. Although most of the questions were mutually exhaustive, some were multiple response questions. The questions were grouped in three domains: knowledge, attitudes, and practices. The respondents' knowledge on CVD was assessed in terms of known risk factors, preventive measures, signs and symptoms, and their sources of information on CVD. The question used to assess knowledge about CVD risk factors included, "How does a person develop cardiovascular disease?" This was followed by a list of 10 possible risk factors where the respondents were asked to tick/check all that apply. HBM constructs were applied to determine the level of perception of the respondents towards CVD. Those variables include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Questions were developed to measure each construct. A four-point scale, ranging from strongly agree to strongly disagree, was used for rating (Table 1).

The practices were defined as lifestyle risk factors related to CVD, which include smoking history, physical activity, diet, and alcohol consumption.

Prior to data collection, the SAQ was sent to an expert for validity check and was pre-tested for reliability. The Cronbach's  $\alpha$  was found to be as high as 0.80.

### DATA ANALYSIS

Descriptive statistics was used in describing the socio-demographic characteristics of the respondents and in assessing their knowledge and related practices on CVD. Whereas proportions were calculated for qualitative variables, means and standard deviations (SD) were computed for quantitative variables. For the analysis of attitudes towards CVD using the HBM constructs, the responses to the four-point Likert Scale were further analysed by computing for the weighted means from the frequencies per construct and then categorised as proportions with high and low perceptions. Appropriate adjustment of the scoring system was made for negatively stated items. Respondents whose total score fell between 1.00 and

**Table 1.** Questions representing each Health Belief Model (HBM) constructs

Perceived susceptibility
1. Everybody can get cardiovascular disease including seafarers
2. I am not at risk to cardiovascular disease
3. I can have cardiovascular disease even without feeling its signs and symptoms
Perceived severity
1. There are no drugs available to manage cardiovascular disease
2. Cardiovascular disease can lead to death
Perceived benefits
1. Seafarers should stop smoking to prevent cardiovascular disease
2. I believe that I will not get cardiovascular disease if I exercise regularly
3. Avoiding fatty and salty foods should prevent a person from having cardiovascular disease
Perceived barriers
1. I would rather spend time watching TV than exercise
2. I don't have time to exercise
3. If I don't smoke I experience headache and salivation.
4. It is okay to smoke whenever I feel stressed out or bored in the ship.
Cue to action
1. If somebody or some information materials remind me, I will exercise, eat healthy food, and stop smoking.
Self-efficacy
1. I feel confident that I can stop smoking
2. I am confident that I can exercise regularly
3. I feel confident that I can avoid eating fatty and salty food

2.50 were operationally classified as having low perception and those between 2.51 and 4.00 were labelled as having high perception.

## ETHICAL CONSIDERATIONS

Assurance is provided that this study had followed a technically and ethically sound protocol. None of the provisions of the Declaration of Helsinki had been violated. No considerable harm was imparted to the respondents. Permission from the administration of the seafarers' hospital was obtained prior to the conduct of the study. The objectives and procedures of the study were explained to the respondents. Informed consent was obtained from the respondents without coercion or undue inducement. Codes were used to represent each participant, thereby ensuring anonymity and confidentiality of information from data entry to analysis. Only the principal investigator had

**Table 2.** Distribution of respondents according to socio-demographic characteristics (n = 136)

Parameters	No. (%)
Age [years]	
20–29	18 (13.2%)
30–39	46 (33.8%)
40–49	29 (21.3%)
50–59	41 (30.1%)
60 and above	2 (1.5%)
Mean ± SD	41.7 ± 10.4
Median	41.0
Civil status	
Married/live-in	108 (79.4%)
Single/separated	28 (20.6%)
Educational attainment	
College graduate	91 (66.9%)
College level	25 (18.4%)
Vocational	12 (8.8%)
High school	8 (5.9%)

an access to all the data generated from this study. SAQ was distributed in coded envelopes to further ensure anonymity and confidentiality. The respondents were given a small token of appreciation to remunerate the time that they had shared.

## RESULTS

### SOCIO-DEMOGRAPHIC CHARACTERISTICS

A total of 136 male respondents participated in the study. The mean ( $\pm$  SD) age was  $41.7 \pm 10.4$ . One-third of the respondents were 30–39 years of age. Majority were married or in a live-in relationship. Two-thirds were college graduate (Table 2).

More than half of the respondents had worked in tankers and container ships. Only a few had experienced working in freighters and reefers, passenger ships, and Roll-on Roll-off vessels. Almost 20% had been in the seafaring industry for more than 30 years. Three-quarters of the respondents were ratings, whereas the rest were officers (Table 3).

### KNOWLEDGE ON CVD RISK FACTORS, PREVENTIVE MEASURES, SIGNS AND SYMPTOMS, AND SOURCES OF INFORMATION

Eating fatty foods, cigarette smoking and lack of exercise were identified as the top three most common risk factors for CVD. However, a lesser proportion had identified stress, salty diet and genes as culprits of CVD. Interestingly, there

**Table 3.** Distribution of respondents according to professional history and experience as a seafarer

Parameters	No. (%)
<b>Types of ships/vessels (n = 136)</b>	
Chemical/product/LPG tankers	44 (32.4%)
Container ships	39 (28.7%)
General cargo ships	17 (12.5%)
Oil tankers	13 (9.6%)
Bulk carriers	12 (8.8%)
Freighters and reefers	4 (2.9%)
Passenger ships	4 (2.9%)
Roll-on Roll-off vessels	3 (2.2%)
<b>Number of years working as seafarers (n = 136)</b>	
Less than 6	27 (19.9%)
6–10	23 (16.9%)
11–15	30 (22.1%)
16–20	17 (12.5%)
More than 20	39 (28.7%)
<b>Position held during last contract</b>	
Officers (n = 34):	
Engineer/engineering officer	14 (41.2%)
Second/third mate	12 (35.3%)
Captain, chief mate, chief training officer	8 (23.5%)
Ratings (n = 102):	
Able-bodied Seamen	31 (30.4%)
Bosun	15 (14.7%)
Oiler	14 (13.7%)
Ordinary seamen	10 (9.8%)
Fitter/mechanic	8 (7.8%)
Electrician	7 (6.9%)
Messman, messboy	6 (5.9%)
Chief cook	6 (5.9%)
Cadet, wiper, pumpman	5 (4.9%)

were respondents who had answered sharing utensils and mosquito bites as CVD risk factors (Table 4).

A great majority of the respondents (> 84%) had identified avoiding fatty or oily foods and exercising regularly as ways to prevent CVD. Having physical check-ups, avoiding smoking and maintaining ideal body weight were also identified as preventive measures (Table 4).

More than half of the respondents had identified high blood pressure and shortness of breath as a sign and symptom of CVD, respectively. More than a third mentioned high cholesterol level and obesity as signs of CVD. Only less than half of the respondents identified chest pain,

**Table 4.** Distribution of respondents according to their knowledge of cardiovascular diseases (n = 136)

Parameters	No. (%)
<b>Risk factors*</b>	
Eating fatty foods	104 (76.5%)
Cigarette smoking	93 (68.4%)
Lack of exercise	89 (65.4%)
Obesity/overweight	70 (51.5%)
Lack or inadequate vegetables/fruits in the diet	63 (46.3%)
Stress	53 (39.0%)
Eating salty diet	47 (34.6%)
Genetically inherited	41 (30.1%)
Sharing utensils	7 (5.1%)
Mosquito bites	2 (1.5%)
<b>Preventive measures*</b>	
By avoiding fatty/oily foods	116 (85.3%)
By exercising regularly	113 (83.1%)
By having annual physical check-up	98 (72.1%)
By not smoking	96 (70.6%)
By maintaining ideal body weight	96 (70.6%)
By including fruits and vegetables in the diet	81 (59.6%)
By avoiding soft drinks	54 (39.7%)
By taking alcohol in moderation	50 (36.8%)
<b>Signs and symptoms*</b>	
Signs:	
High blood pressure	93 (68.4%)
High cholesterol	56 (41.2%)
Overweight/obesity	51 (37.5%)
Weight loss	11 (8.1%)
Symptoms:	
Shortness of breath	72 (52.9%)
Chest pain	67 (49.3%)
Easily get tired	55 (40.4%)
Pain in the neck region	48 (35.3%)
Dizziness	42 (30.9%)
Body weakness	38 (27.9%)
Headache	27 (19.9%)
<b>Source of information*</b>	
Television	63 (46.3%)
Pre-departure orientation seminar	43 (31.6%)
Newspapers	34 (25.0%)
Health workers	33 (24.3%)
Information, education, communication materials	21 (15.4%)
Radio	18 (13.2%)
School	16 (11.8%)
Peers/co-workers/second mate	12 (8.8%)

\*Multiple response

**Table 5.** Distribution of respondents by their perception levels based on the Health Belief Model (HBM) constructs (n = 136)

HBM constructs	No. (%)
Perceived susceptibility/vulnerability	
High	122 (89.7%)
Low	14 (10.3%)
Perceived severity	
High	111 (81.6%)
Low	25 (18.4%)
Perceived benefits	
High	132 (97.1%)
Low	4 (2.9%)
Perceived barriers	
High	126 (92.6%)
Low	10 (7.4%)
Cues to action	
High	108 (79.4%)
Low	28 (20.6%)
Self-efficacy	
High	129 (94.9%)
Low	7 (5.1%)

getting tired easily, neck pain and dizziness as symptoms of CVD (Table 4).

Almost everyone had claimed that they have heard of CVD. A little less than half of the respondents had learned CVD from television. Pre-Departure Orientation Seminar (PDOS), newspapers, health workers, and information, education, and communication materials were mentioned by less than a third. Only a few had identified their peers, co-workers and their second mate as sources of information on CVD (Table 4).

### ATTITUDES TOWARDS CVD USING THE HEALTH BELIEF MODEL (HBM) VARIABLES

Results revealed that most of the respondents had favourable attitudes towards CVD as indicated by high level of perceptions with respect to HBM constructs (Table 5).

### PRACTICES RELATED TO CVD

At the time of the data collection, only 36% had admitted that they were current smokers. Half of them (49.9%) had been smoking for 1 to 5 years, while more than a third (36.7%) admitted that they had been smoking for more than 10 years already. Of the current smokers, 81.6% admitted to have smoked 1 to 10 sticks per day while the rest had smoked more than 11 sticks per day (Table 6).

Almost three-fourths of the respondents had claimed that they exercise regularly. Jogging/running, brisk-walking and engaging in sports (basketball) were the top three most common types of exercise activities of the respondents (Table 6).

Almost half of the respondents claimed to have been taking diet that was high in vegetables. However, about two-fifths were taking diet that was high in fat. Almost an

**Table 6.** Distribution of respondents according to their practices related to cardiovascular diseases

Parameters	No. (%)
<b>Currently smoking (n = 136)</b>	
Yes	49 (36.0%)
No	87 (64.0%)
<b>Number of years respondents have been smoking (n = 49)</b>	
1–5	21 (49.9%)
6–10	10 (20.4%)
More than 10	18 (36.7%)
<b>Number of cigarette sticks consumed daily (n = 49)</b>	
1–10	40 (81.6%)
11–20	7 (14.3%)
More than 20	2 (4.1%)
<b>Exercise regularly (n = 136)</b>	
Yes	99 (72.8%)
No	37 (27.2%)
<b>Types of exercise* (n = 99)</b>	
Jogging/running	72 (72.7%)
Brisk-walking	37 (37.4%)
Engaging in sports (basketball)	29 (29.3%)
Thread mill	12 (12.1%)
Weight lifting	12 (12.1%)
Others: Swimming, push-ups, sit-ups	13 (13.1%)
<b>Type of diet* (n = 136)</b>	
High in vegetables	67 (49.3%)
High in fat	59 (43.4%)
High in salt	37 (27.2%)
High in fruits	36 (26.5%)
<b>Drunk alcohol within the past 4 weeks (n = 136)</b>	
Yes	108 (79.4%)
No	28 (20.6%)
<b>Number of times respondents drank alcohol during the past 4 weeks (n = 108)</b>	
1–5	102 (94.4%)
6–10	4 (3.7%)
More than 10	2 (1.9%)

\*Multiple response

equal number of respondents had stated that they had been taking diet that was high in salt and high in fruits (Table 6).

Majority of the respondents had drunk alcohol within the past 4 weeks. Among them, nearly all had taken alcohol less than 5 times during the same period. Only a few had consumed alcohol for more than ten times in the past 4 weeks (Table 6).

## DISCUSSION

In general, the findings of this study had shown that most of the respondents had relatively good knowledge and favourable attitude towards CVD. A high proportion of the respondents had correctly identified some of the known risk factors, preventive measures, and signs and symptoms of CVD. Most had mentioned eating fatty or oily food, cigarette smoking, and lack of exercise as CVD risk factors, which were consistent with the findings in related studies and surveys [18–21]. Yet, the proportions of those who did not identify stress, salty diet, and genes as CVD risk factors, along with those who identified mosquito bites and sharing utensils as risk factors, are indicative of some knowledge gaps. Although the knowledge of the respondents on preventive measures for CVD had appeared well in general, the proportions of those who did not identify avoiding soft-drinks and drinking alcohol in moderation cannot be neglected. Consumption of soft-drinks is now being implicated for CVD [22]. Although moderate consumption of alcohol (1–2 drinks/day) offers cardioprotective effects and decreases the risks for coronary heart disease, heavier consumption is linked with hypertension, cerebrovascular diseases, and cardiomyopathy [23].

Whereas high blood pressure was the leading sign of CVD that was identified by more than half of the respondents, shortness of breath was identified as the leading symptom. In spite of this, poor recognition of the other equally important signs and symptoms by a high proportion of the respondents may imply poor knowledge and may lead to delays in seeking medical care and prompt medical management.

Improving the health literacy of seafarers on the signs and symptoms of CVD and the identified risk factors is deemed necessary. Health education may address the gaps in seafarers' knowledge on preventive measures, particularly their understanding of the positive outcome of smoking cessation and prevention.

Pre-Departure Orientation Seminar is a mandatory occupation-specific training for all departing overseas Filipino workers [24]. However, only a few had identified PDOS as a source of information on CVD. Such finding might be expected because the PDOS modules are more focused on the life on board and how seafarers could adapt in the ships and host countries [24]. Of the seven PDOS modules, only one covered health and safety; nonetheless, the module is more focused on the prevention and control of HIV/AIDS [25]. Moreover, the timing of PDOS, which is usually set few days before departure, provides insufficient psychological readiness for learning because those workers are preoccupied with accomplishing last minute arrangements, additional documents, and personal affairs [26]. Given the limitations of PDOS as a vehicle for health literacy interven-

tions, decision makers from the higher education sector shall explore the inclusion of non-communicable diseases in the curriculum for maritime education.

Only a few had mentioned information, education, and communication materials as their sources of information on CVD, which may be attributed to the unavailability of the materials on board [8].

On board, second mates are expected to serve as the “physician” or “medical officer” [8]. However, this study found that only less than 10% of the respondents had identified peers, including second mates, as their sources of information on CVD. One possible explanation could be that seafarers probably feel that their peers did not have adequate training on health and health service delivery and were, therefore, not yet viewed as legitimate sources of health information. Such finding might challenge the existing body of evidence that attest to peer education's effectiveness as a behaviour change strategy aboard the shipping vessels [27, 28]. This finding could be an avenue for further studies.

Assessment of the respondents' attitude towards CVD through the HBM constructs had shown that they had high level of perceived susceptibility and severity. Perceived susceptibility refers to an individual's opinion of personal vulnerability to a specific health problem, while perceived severity refers to an individual's judgment on the seriousness of a health condition based on the medical, clinical, or social difficulties that the condition may bring [29]. Filipino seafarers' who participated in this study had recognised CVD as a serious health condition and believed that they are vulnerable to it. Personal experiences of some signs and symptoms of CVD or being a witness to colleagues, friends or relatives who suffered from or had died due to CVD might explain such recognition, but this area needs to be explored further [8].

Whereas perceived benefit refers to the effectiveness of the recommended actions in preventing a threats to health, perceived barriers are concerned with the potential negative aspects of taking a health action [29]. Relatively, the proportion of those who had high level of perceived benefits and barriers in this study were greater compared to the first two HBM constructs. Hence, the respondents may become receptive to an intervention that highlights the positive effect of adopting a healthy behaviour or that provides reassurances, incentives, and assistance to reduce the barriers or hindering factor [29].

Self-efficacy construct was added to aid in understanding the adoption of complex behaviours such as those related to smoking and diet [30]. It refers to an individual's belief in his/her confidence to do the recommended action. On the other hand, cues to action refer to stimuli (internal or external) that trigger an individual's decision towards be-

haviour change [29]. Majority of the respondents had high self-efficacy, which is an indication that most were confident in doing preventive health behaviours for CVD. On the other hand, almost 80% had high level of external cues to action, which might have been brought about by their personal experience of witnessing their peers suffering from CVD [8].

Reviews had shown that interventions incorporating the HBM produced superior results, but each construct of the model has their own strengths and weaknesses. Perceived susceptibility contributes in understanding preventive health behaviours and sick-role behaviours, while perceived severity was found to be associated with the latter one only [29]. Therefore, an intervention that is based solely on perceived severity will be useful in promoting behaviours to restore health or to prevent progression of a health condition. However, the case will be different when the intervention intends to promote preventive behaviours. Perceived benefit was also found to be a poor predictor of health-protecting behaviour, while perceived barrier was found to be the most powerful HBM construct in explaining health behaviours [29, 30]. Considering all of these factors, it is important to consider the play-off in the use of constructs when designing an HBM-based intervention. In this study, the concern on the imbalance is minimal due to the proportion of the respondents with high level of perception. However, more focus shall be given to cues to action by making information and reminders available to the seafarers.

Some of the respondents had admitted that they were practicing risk-taking behaviours related to CVD such as smoking, irregular involvement in physical activity, high fat/salt diet, and alcohol intake. These indicate an impediment in the translation of knowledge on CVD into adoption of positive health behaviours in spite of the favourable attitudes of the respondents.

Smoking, as a risk factor for CVD, is an modifiable factor that is indirectly dependent on conditions on board [31]. Among the respondents, the proportion of current smoking behaviour at 36.0% was lower than that of the proportion among males in the general population in the Philippines ranging from 44.7% to 73.1% [19–21]. However, previous studies had shown that smoking behaviour was higher in the seafaring population than in the general population [31–33]. The difference between these findings might be attributed to the increasing health literacy brought about by health promotion interventions on board such as smoking cessation campaigns [34]. Yet such explanation needs to be validated through program evaluation, which is beyond the scope of this study.

Involvement in physical activity and diet were factors affecting the prevalence of CVD that are modifiable and probably related to conditions on board [34]. Majority of

the respondents had claimed that they were exercising regularly. This can be expected since engagement in physical activities was one of the coping mechanisms of Filipino seafarers against boredom and loneliness [8]. Despite the availability of fitness facilities and equipment, i.e. treadmill and weights, many of the respondents still preferred jogging, brisk-walking, and playing basketball. Low utilisation of gym equipment was attributed to fatigue experienced after work. Many would rather rest in their rooms while watching films than engage in active physical activities [8].

Limited food choice on board was a contributory factor for the unbalanced diet of the respondents [8]. Seafarers, in general, do not really have much food options because they only rely on what the chief cooks or chefs serve, which are usually foods that have high fat and salt contents. Vegetables and fruits, if ever served, are usually consumed first to prevent spoilage during the 6-month journey [8].

Drinking alcohol, as a coping mechanism, is part of a Filipino seafarers' past time on board [8]. Majority of the respondents (79.4%) reported that they had taken alcohol within the past 4 weeks. Such finding supports a previous study showing that current alcohol intake is relatively higher among male seafaring population at 82% [33] compared to males in the general population (38.9–70.0%) [20, 35]. The accessibility of alcoholic beverages on board might have contributed to a high proportion of alcohol drinking among seafarers. Likewise, their high income enables seafarers to purchase alcoholic drinks aboard the ship or when they got back home, which somehow limits the purpose of the Philippine sin tax law that set an increase in the price of alcohol commodities. Although the frequency of intake has been tackled in this study, the intensity and the presence of alcohol dependence among the seafarers were beyond the scope. This can be explored in further studies.

Advocacy to maritime health associations and policy makers shall be undertaken to ensure that a comprehensive health policy is formulated, implemented and monitored. Findings during the monitoring should be used for programme improvement and health decision making. Since seafarers are included in the compulsory coverage of social security system, existing policies governing benefits shall be reviewed in the context of the major causes of medical repatriations. To address the knowledge gaps, health education strategies should not be limited to the dissemination of information, education, and communication materials such as flyers, posters, and videos on board. Utilisation of information, education, and communication materials should result in positive health behaviour among seafarers. Health advocates such as non-government organisations and academic institutions can be tapped to provide health education on CVD during pre-employment medical examination. In addition, the provision of health service trainings specific for second mates shall be

explored as well. Review of maritime education curriculum to integrate health literacy shall be given consideration.

## LIMITATIONS OF THE STUDY

The above-mentioned conclusions and recommendations should be viewed in the light of the study's scope and limitations. The decision to include only one hospital in this study due to resource limitations might pose a question on the representativeness of the findings regarding the health status of Filipino seafarers. While this concern might have some basis, however, the hospital is the biggest provider of health care service for Filipino seafarers in the Philippines. Likewise, it provides the health service needs of seafarers from various international shipping companies. Therefore, the characteristics of the study population may do not differ much from those being served by other health facilities catering to Filipino seafarers.

## CONCLUSIONS

The findings of this study had shown that respondents had a good knowledge and favourable attitude towards CVD and a high proportion had correctly identified some of the known risk factors, preventive measures, and signs and symptoms of CVD.

To determine if the knowledge, attitudes, and practices of Filipinos seafarers on CVD are associated with each other or with the respondents' socio-demographic and occupational characteristics, a follow-up study with a sample size estimated for bivariate or multivariate analysis is recommended to be undertaken.

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