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Survey on HIV risk perception and sexual behaviours among seafarers

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ABSTRACT

Because the nature of their work seafarers spend long periods of time away from their families and therefore represent a group at risk for sexually transmitted diseases, including HIV infection. This paper reports the results of a survey to evaluate awareness and knowledge of the risk of HIV infection among seafarers. Risky behaviours for HIV transmission were also assessed. The survey was conducted using anonymous questionnaires on 197 workers of 9 vessels and 26 office employees of an Italian shipping company (FINAVAL S.p.A., Rome). The respondents considered HIV/AIDS as one of the diseases with a high risk of transmission. Most respondents had a good general knowledge of HIV/AIDS and on the ways of its transmission. However, there is still lack of knowledge on the basics of this disease. On the other hand, in spite of knowledge and awareness about the risks of the disease, only 56.35% of the interviewed crewmembers used protection in sexual intercourse with occasional partners. Compared to data available in literature, the percentage of self-protecting people is increasing, but the number of seafarers exposing themselves to risky behaviours is still high. As expected, condoms are used with regular partners with lower frequency compared to occasional intercourse. The results of this survey indicate that adequate prevention campaigns and major attention paid to seafarers health is useful for stimulating responsible conduct for the prevention of infectious diseases, including HIV infection. Nevertheless, it is still necessary to increase information about the risk of sexually transmitted diseases and how to reduce it.

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Key words: HIV/AIDS, risky behaviours, seafarers

INTRODUCTION

Communicable diseases in seafaring are a world health issue and an occupational problem with specific work-related risks [1]. Seafarers have been identified as a group at risk for HIV infection and other sexually transmitted diseases. Due to the nature of their work, seafarers employed in long-range navigation spend long periods of time away from their families and partners. This is the reason why seafarers are prone to sexual intercourse with occasional partners, even in areas where HIV infection is endemic [2]. Unsafe sex, drug addiction, or procedures such as tattooing play a relevant role in HIV transmission [1]. Factors such as emptiness, loneliness, and boredom may predispose seafarers to risky social behaviours more than the general population [3]. It has been reported that separation from spouse and family, peer norms, alcohol use, low perceived vulner-

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ability to HIV, limited access to healthcare, and low levels of education are the main reasons for susceptibility to infection in the Thai seafaring communities [4].

The best method for preventing HIV diffusion is represented by health education of people who are vulnerable to infection [5]. Educational interventions on knowledge, modes and routes of transmission of HIV, and on sexual behaviour can considerably decrease the risk of HIV virus diffusion among seafarers [2]. Different studies have investigated the epidemiology of HIV/AIDS among seafarers. These publications have emphasized that appropriate knowledge of the disease could represent a preventive measure to counter the diffusion of HIV/AIDS [3–11].

The majority of investigations on the subject were conducted on samples of volunteer seafarers at ports of call [2]. Some studies have examined the topic by distributing questionnaires on attitudes, behaviours, and knowledge on HIV among seafarers and port workers. These surveys were done in maritime countries such as Brazil and Thailand as a part of campaigns on HIV/AIDS [4, 6, 7]. One of these investigations has reported that knowledge on AIDS and HIV virus transmission is inadequate among seafarers [5]. It was also reported that in sexual intercourse with occasional partners, the majority of seafarers did not use condoms to protect themselves against sexually transmitted diseases, including HIV [5].

The present study summarizes the results of a survey done on sailing ships to evaluate awareness and knowledge of the risk of HIV infection among seafarers. The questionnaire was given to the seafarers of nine tankers of the Italian shipping company FINAVAL S.p.A. (Rome) and, as a reference, to employees of the same company working in their headquarters in Rome. This questionnaire is part of the project "Healthy Ship", a collaborative project between the Centre for Telemedicine and Telepharmacy of Camerino University (UNICAM), the International Radio Medical Centre (CIRM) in Rome, and FINAVAL S.p.A. The main goal of the project is the prevention of transmittable and non-transmittable diseases on board ships through information campaigns about major health risks to seafarers.

MATERIALS AND METHODS

An anonymous questionnaire on awareness of infection risk on board ships was distributed in September 2010. The questionnaire was sent by express mail to any of the 9 tankers in the fleet and was also distributed to employees working in FINAVAL headquarters in Rome. The workers received a sealed white envelope containing a covering letter explaining the goals of the project ("we must inform, not prohibit"). The envelope contained another one containing the questionnaire and instructions on how to fill it in. The questionnaire was filled in on a voluntary basis, and participants to the survey had one week for completing it. After having filled it in, each seafarer was requested to put the questionnaire back in its original envelope and to seal it with tape. All closed envelopes containing questionnaires were collected by captains at the same time and transferred in front of seafaring crew into a larger envelope that was then sealed. This strict procedure was established to guarantee anonymity of questionnaires. One container per ship was then sent to the epidemiology group of UNICAM by express mail from the first port of call. A similar procedure was followed for FINAVAL headquarters, except that an officer of the company collected these questionnaires instead of the ship's master. Questionnaire collection was concluded in January 2011.

The study examined the seafaring crew of nine vessels of the company and, as reference, the staff from the headquarters. The questionnaire was divided into two parts. The first was limited to personal details such as sex, age, nationality, education level, and work rank. The second included specific questions about awareness and knowledge of infectious diseases, with particular reference to sexually transmitted diseases and HIV. These questions are listed in the analysis of data in Table 2. To assess differences in response between seafarers and people living ashore, the analysis considered independently ashore personnel (n = 26) and seafarers (n = 197).

The questionnaire answers were transferred onto Microsoft Excel sheets. This program was used for storing and processing the data. Statistical analysis was performed using GraphPad Software [12]. The Fisher Exact Test was chosen to compare proportions. Statistical significance was assessed at $p < 0.05$.

RESULTS

The total number of questionnaires filled-in was 223, whereas those distributed were 280. Considering that participation in the survey was voluntary, the degree of contribution should be considered high (79.6%). In general, responders to our questionnaire were males (90.58% of the total number of responders). Women represented the 2.69% of the sample and were only employed in the FINAVAL office ashore.

Table 1. Demographic characteristics of interviewed workers

	Seafarers (%)	Ashore personnel (%)	Total workers (%)
Gender			
Male	93.91	65.38	90.58
Female	0.00	23.08	2.69
No answer	6.09	11.54	6.73
Age			
≥ 20	4.57	3.85	4.04
21–30	31.98	7.69	27.35
31–40	30.46	30.77	32.29
41–50	15.23	34.61	17.04
51–62	9.64	11.54	10.76
No answer	8.12	11.54	8.52
Nationality			
Italian	21.83	84.61	29.15
Indian	49.24	0.00	43.50
Filipino	17.77	0.00	15.69
Ukrainian	3.04	0.00	2.69
Romanian	2.03	0.00	1.79
Bulgarian	0.51	0.00	0.45
No answer	5.58	15.39	6.73
Education level			
Elementary diploma	3.55	0.00	3.14
High school diploma	11.17	7.69	10.76
Professional diploma	22.84	3.85	20.63
Diploma	22.33	38.46	24.21
University degree	20.30	26.92	21.08
No answer	19.80	23.08	20.18

The field of gender on the questionnaire was left empty by 6.73% of the respondents.

Data on demographic characteristics of the sample are summarized in Table 1. As shown, more than 50% of respondents were Filipino or Indian.

AWARENESS AND KNOWLEDGE OF HIV/AIDS RISK

Responses of seafarers to the question "In your opinion, which contagious diseases have a higher risk of transmission?" was: HIV 55.84%, other sexually transmitted diseases (like syphilis) 42.64%, skin diseases 42.13%, tuberculosis 35.03%, hepatitis B and C 31.47%, hepatitis A 23.35%, scabies 20.30%, and meningitis 11.68%. Answers obtained from ashore personnel indicated: HIV 57.69%, other sexually transmitted diseases 46.15%, meningitis 38.46%, skin diseases and hepatitis B and C 26.92%, hepatitis A 23.08%, tuberculosis 19.23%, and scabies 11.54%. The only significant difference ($p < 0.05$) between the two groups was related to meningitis.

The results of the survey for other questions are summarized in Table 2. Responses between the two groups are similar, with the only exception of the source of information on HIV. Doctors or other healthcare professional represented the main source of information for the seafarers, whereas only 26.08% of ashore personnel obtained this kind of information from health practitioners (Table 2). Data analysis per nationality showed that 96.67% of Filipinos,

Table 2. Percentages of answer given by 223 interviewed workers to the 7 questions of the questionnaire about HIV/AIDS

Questions	Seafarers			Ashore personnel		
	Yes	No	NA	Yes	No	NA
1. Have you ever received information on HIV and on how to prevent it?	88.83	6.09	5.08	88.46	7.69	3.85
2. If yes, what was the source of information?						
• doctors and healthcare professional ($p < 0.05$)	87.43	–	–	26.08	–	–
• mass-media (newspapers, radio, TV...)	84.57	–	–	86.95	–	–
• friends and/or partner	62.28	–	–	43.48	–	–
• prevention brochures and/or educational courses	54.86	–	–	69.56	–	–
3. Do you think HIV virus can be transmitted through:						
• unprotected hetero and homosexual relations:	85.28	–	–	80.77	–	–
– heterosexuals relations	79.19	–	–	80.77	–	–
– homosexuals relations	61.93	–	–	76.92	–	–
• transfusion of infected blood	75.13	–	–	73.08	–	–
• insect bites carrying infected blood	15.23	–	–	15.38	–	–
• from infected mother to child during pregnancy	56.85	–	–	50.00	–	–
• sharing needles	81.22	–	–	84.62	–	–
• sharing needles, razors, etc	71.07	–	–	84.62	–	–
• kissing	20.30	–	–	11.54	–	–
• living together	11.17	–	–	11.54	–	–
• drinking from the same glass	6.60	–	–	0.00	–	–
• sharing the telephone/cell	3.05	–	–	0.00	–	–
• hugging	3.05	–	–	0.00	–	–
• breathing closely	2.54	–	–	11.54	–	–
• sharing restrooms/toilets	2.03	–	–	11.54	–	–
• sharing cutlery	2.03	–	–	0.00	–	–
4. In your opinion, which body fluids have the potential to transmit the HIV virus?						
• blood	93.91	–	–	88.46	–	–
• sperm	76.65	–	–	80.77	–	–
• vaginal secretions	46.70	–	–	61.54	–	–
• saliva	13.20	–	–	3.85	–	–
• tears	0.51	–	–	3.85	–	–
• sweat	0.51	–	–	3.85	–	–
5. On your knowledge, which definition of AIDS is most appropriate? Respondents correctly	83.25	6.60	10.15	84.61	11.54	3.85
6. What is meant by "window period" when talking about HIV? Respondents correctly	45.69	34.52	19.79	61.54	19.23	19.23
7. In your opinion, your knowledge of HIV and other contagious diseases is:						
• extensive	6.09	–	–	11.54	–	–
• good	42.64	–	–	34.62	–	–
• moderate	41.62	–	–	46.15	–	–
• scarce	4.06	–	–	3.85	–	–
• insufficient	0.51	–	–	0.00	–	–
• NA	5.08	–	–	3.85	–	–

NA — no answer

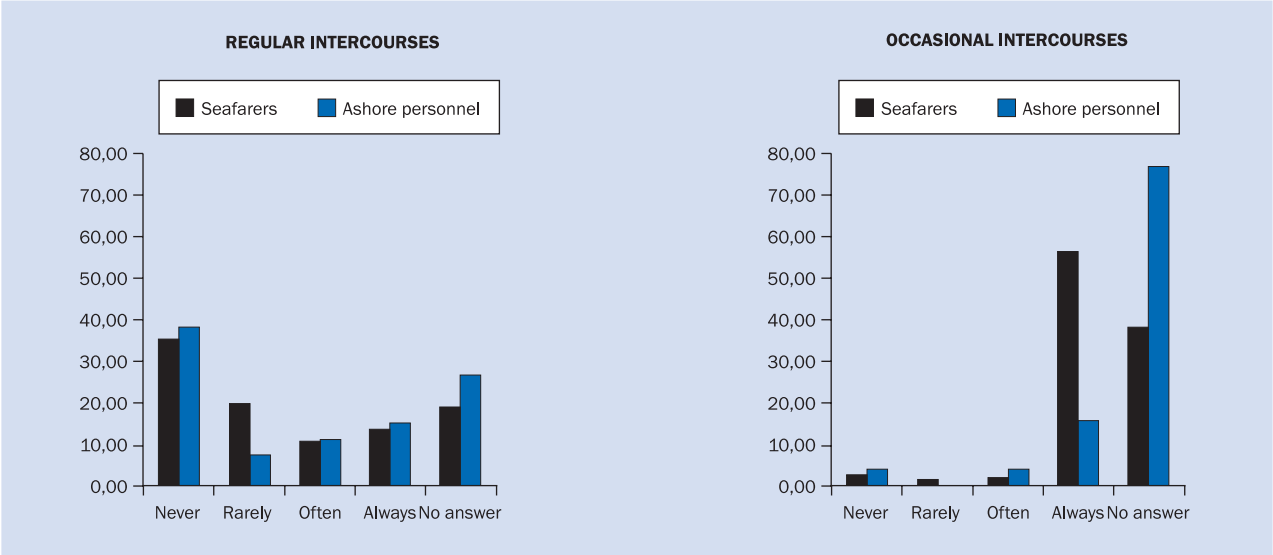

Figure 1. If you have sexual relations, how often do you use a condom?

93.02% of Indians, and 72.73% of East European seafarers gained knowledge on the issue through health professionals. Only 52.63% of Italians received information through the same source, but we should remember that 1 Italian out of 3 works ashore. 87.72% of Italians were informed by mass-media but the other ethnic groups were also well represented by this source: 76.67% Filipino, 87.21% Indian, 90.91% East European. Prevention brochures and/or educational courses are used mainly by Italians (70.18% of them), followed by Filipinos (70.00%). Friends and partners have less impact on Italians and East European people (respectively 47.37% and 45.45%), but greater importance among Filipinos and Indians (respectively 76.67% and 69.77%). The best informed people were the Filipinos, with all 4 source categories represented at over 70.00%.

ANALYSIS OF RISKY BEHAVIOURS FOR HIV/AIDS

Nowadays, prevention is the only effective measure against HIV/AIDS. Condoms should be always used in intercourse with occasional partners. Transmission of the virus between regular partners is possible in cases of infidelity associated with unprotected intercourse. The question, therefore, asked how often a condom is used as a precautionary measure in case of intercourse with occasional partners. Data analysis revealed that 76.92% of office staff did not answer the question ($p<0.05$). 56.35% of seafaring crew ($p<0.05$) claimed regular use of condoms with occasional partners, and 38.07% did not answer the question. Only approximately 5% of seafarers did not use condoms. A further analysis of answers referring to the rank of seafarers revealed that 64.58% of members of deck crew, engine crew, and catering and galley personnel (n = 96) "always" used a condom. Analysis among officers revealed that only 46.67% of captains, and deck and engine officers (n = 45) did the same. This kind of analysis was possible only among interviewed people reporting their rank (n = 141). Both in seafarers and in the ashore groups, the responses "never" and "rarely" were sparse (Figure 1). Analysis of the use of condoms as a function of age revealed that they are used primarily by younger seafarers (twenty-year-old, 60%). People between 31 and 40 years of age were apparently less sensitive (45.59%) to the problem of safe sex. The difference among groups was not statistically significant.

Protection with regular partners is less frequently used than with occasional partners. Only 13.71% of seafarers and 15.38% of office staff always used a condom with wives and girlfriends, whereas 38.46% and 35.53% of them, respectively, never used one with stable partners. 19.29% of seafarers and the 26.92% of ashore personnel did not answer this question (Figure 1). The difference between the two groups is not statistically different. 30% of twenty-year-old interviewed used always condom with their regular partner. This percentage decreased to 13.85% in the 21-30-year-old interviewed.

Another question was if in the interviewee's opinion two HIV-positive people should continue to use condoms. 40.36% of respondents said that it is better to continue with precautions to avoid further HIV super-infection, whereas the 52.02% believed that it

is better to have safe intercourse only to avoid the transmission of other sexually transmitted diseases. 13.90% of the respondents believed that two HIV-positive people may have unprotected sex, and 8.97% stated that they could use the same syringe because they were both affected by the same disease. No differences were noticeable in these responses between seafarers and ashore workers.

DISCUSSION

The present study summarizes the results of a survey conducted with special attention to protect the identities of the respondents. The particularity of this investigation is that it was conducted on sailing seafarers of a shipping company, which is different from surveys on similar topics that were proposed in ports or in outpatient maritime clinics [5–7, 9]. The potential advantages of administering questionnaires to sailing crew are: more time available for filling-in proposed materials and reduced external influence on answers. Both seafarers and ashore personnel consider HIV/AIDS as one of the diseases with the highest risk of transmission compared to others mentioned in the questionnaire. This conviction probably comes from the campaigns of information on HIV, which have been quite numerous in recent years. These initiatives have raised people's awareness on the subject in respect to other diseases. There is a non-significant difference in responses to these questions between the two groups, indicating a similar awareness to the problem of the two samples investigated.

The survey revealed that the source of information on HIV/AIDS is different between seafarers and ashore workers. The first have as their major source of information physicians or other health professionals, followed, in order, by mass-media, friends/partners, and brochures or courses. People working ashore received information on the subject mainly from mass-media followed by brochures or courses, friends or partners, and health professionals. This difference in part reflects the difficulty for sailing people in getting informative materials or in following courses, compared with ashore workers. This could be bypassed by increasing the efforts of specific health campaigns on board ships. In fact, modern ICT technology offers the possibility of delivering/following courses from remote sites. The fact that seafarers received the majority of information on HIV from physicians or health professionals is probably related to the frequency of medical visits they have for occupational reasons. Another possible explanation could be the prestige and esteem recognized to these categories by seafarers.

Most respondents knew the body fluids that are implicated in contamination (even if the role of vaginal secretions was less recognized) and the ways of infection. Although this topic is debated [13], in respondents to our survey relevant mistakes reveal the misunderstanding of basic information on the disease (i.e. living together, kissing, insect bites carrying infected blood). These data could represent a reference for future specific campaigns for increasing knowledge of seafarers on the disease under discussion.

Historically, after an initial peak in the mid-1980s, HIV incidence in homosexual men declined in most Western industrialized countries and then plateaued during the 1990s [14]. Since the late 1990s, increasing numbers of newly diagnosed HIV infections have been observed in the majority of countries with large and visible homosexual communities [14]. Homosexual men remain, in the USA, the leading risk group for HIV infection [13]. In this study both seafarers and office staff considered unprotected heterosexual intercourses as a way of transmission riskier than unprotected homosexual sex. Probably this point of view is due because in the last 15 years there was a change in the distribution of cases that also involved heterosexual people and, even more, intravenous drug users [13–15].

Most of respondents know the definition of HIV, but the awareness of what "window period" means is poor. Hence, although knowledge on HIV has improved compared to the past [5], it is still superficial and inadequate. This is consistent with a recent study which demonstrated how male Filipino seafarers have excellent knowledge on risk factors and symptoms of sexually transmitted infections but poor awareness on transmission and prevention of these diseases [3]. A comparison of this survey with an investigation on the same topic carried out in the 1990s suggests that nowadays awareness is better but still not good enough [5]. In the above quoted study published in 1995 [5] the majority of ratings did not use condoms as protection against HIV, which in fact was used only by 35.1% of them. In the present investigation 64.58% of ratings declared that they use sexual protection with occasional partners. This result is only partly comforting because although the percentage of condom users has increased in ratings, the same is not true among officers. Of course, lack of protection in intercourse with regular partner represents a serious problem

for virus transmission if seafarers do not use condoms during occasional intercourse.

The high percentage of non-answers to the question about the use of condoms in intercourse with occasional partners among ashore workers is probably due to the fact that, living close to their families, they have less interest in having extramarital affairs. Another possibility is that being among a small group, such as the firm where they are working, they did not feel confident about the anonymity of the questionnaire and therefore preferred to leave this field empty. Although less than in the sample of ashore workers, a relevant percentage of seafarers did not answer the question. A possible explanation for this is a lack of sexual intercourse during the time they are away from home or the same reason as for the above mentioned ashore personnel.

The fact that younger seafarers (15–20 years of age) are the most prone to use condoms, both with regular partners and during occasional intercourse, is comforting and let us hope that the new generation of seafarers will have a greater sensitivity to their protection from sexually-transmitted diseases.

CONCLUSIONS

Information campaigns and major attention on seafarers health have improved knowledge on infectious diseases, including HIV, in this category of workers. Gaps revealed by the present investigation suggest the need to continue in the efforts in this educational area, not only by providing notions and warnings but also by explaining pathogenic actions of microorganisms and why correct behaviours should be assumed. An educational approach characterized by proposing to seafarers specific questionnaires on the topic; evaluation of answers; returning results and comments to the same respondents; production of informative materials with general explications on disease pathophysiology; and recommendations on appropriate behaviours, may represent an approach to counter the diffusion of transmittable diseases on board ships.

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