

# Knowledge and attitudes of Senegalese sailors about HIV/AIDS

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## ABSTRACT

**Background:** In West Africa there is little information on the behavior of sailors with respect to HIV/AIDS.

**Aim:** The objective of this study was to assess the knowledge and attitudes on HIV/AIDS and their risk factors.

**Materials and methods:** This was a cross-sectional study on a sample of 400 sailors. Information was collected on knowledge and attitudes. Multiple logistic regression was performed to analyse the factors related to knowledge and attitudes.

**Results:** The mean age was  $38.1 \pm 9.8$  years. Among sailors, 7.5% knew the 3 main modes of HIV transmission and 48.3% did not sail with a crew member infected with HIV. Knowledge was related to occupational category (OR = 14.07 [5.40–36.65]). Stigmatisation was related to education (OR = 0.45 [0.27–0.74]) and fear (0.19 [0.09–0.41]).

**Conclusions:** Sailors have a low level of knowledge and negative attitudes towards people living with HIV. Interventions implemented must take into account the low level of knowledge and the mobility of the target population.

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**Key words:** knowledge, attitude, HIV/AIDS, sailor, Senegal

## INTRODUCTION

HIV and AIDS remain a major public health problem worldwide. Indeed, the UNAIDS report in 2011 estimated the number of people living with HIV to be 34 million worldwide, including 31.1 million adults. The number of people newly infected was 2.5 million, including 2.3 million adults. Deaths due to HIV/AIDS were 1.7 million [1]. Africa remains the continent most affected. It is estimated that 69% of people with HIV live in sub-Saharan Africa [1].

In Senegal, the national prevalence was estimated at 0.7% in 2010 [2]. Senegal is a country with a concentrated epidemic, that is to say that the infection is especially prevalent in certain risk vulnerable groups. UNAIDS advocates in this kind of context to focus the fight against HIV/AIDS on such kind of groups. Thus Senegal has implemented a monitoring system. The first National Survey of Combined Monitoring, assessing biological and behavioral data, initiated in 2006 by the Division for the Fight against AIDS and STIs under the aegis of the National Council for the Fight

against AIDS has allowed identification of groups called gateways, those of high risk of HIV infection [3]. These groups are: the military, the police, fishermen, truckers and sex workers. It also helped to have evidence for planning interventions for these groups.

Sailors are a group vulnerable to HIV/AIDS [4] because of their national and international mobility [5]. They are also a gateway group who may carry the virus from high-risk groups to groups less vulnerable to HIV infection [4]. Vulnerability to HIV/AIDS is increased by ignorance about the disease. Indeed, practices vis-à-vis HIV/AIDS are largely dependent on the level of knowledge and attitudes. However, the National Survey of Combined Monitoring took into account that seafarers included fishermen and other sectors sailing for trade and professional pleasure. In addition, no program against HIV/AIDS was adopted for specific occupational categories.

After the creation of a Seafarers' Health Department in Senegal in 2007 by the Ministry of Maritime Economy



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[6], it appeared necessary and urgent to begin targeted actions to fight against HIV infection among the sailors. This study aims to assess the knowledge and attitudes of sailors against HIV/AIDS and their determinants in order to plan future strategies to effectively control for this disease.

## MATERIALS AND METHODS

### SETTING

Senegal is the furthest country west on the West African map and has a 700-km coastline. It offers opportunities for access through sea and inland water transport. It has 4 fishing ports and about 200 artisanal wharves [7]. The Seafarers' Health Department has been established by decree in the Merchant Marine Directorate in 2007 [6]. It has the power to ensure compliance by sailors with the general provisions on health as well as all provisions on living and working conditions on board Senegalese ships. The Seafarers' Health Department is responsible for carrying out medical fitness examinations of seafarers prior to entry into the seafaring profession or annual medical revalidation. Ship inspections are either conducted in the context of safety inspections by the relevant services, or at the initiative of the Seafarers' Medical Officer. They aim to control medical supplies and some positions and health facilities aboard, in accordance with the Merchant Marine Code Act. The target was estimated at more than 20,000 sailors enrolled in the Merchant Navy.

### TYPE AND POPULATION

This was an epidemiological, observational, cross-sectional descriptive and analytical study, which took place from 3–26 May, 2010 in the Seafarers' Health Department. The population consisted of sailors of the merchant marine (fisheries, trade and leisure), who had attended the Seafarers' Health Service during the study period. 'Sailor' or 'seafarer' mean any sea transport professional, holder of a pilot diploma, degree, and certificate which rights and prerogatives are attached to. Any sailor of the Merchant Navy belonging to either the fishing industry, trade sector or the leisure boating industry was included.

The sample size was calculated using the Schwartz formula:

$$n = (\epsilon_{\alpha}^2 p.q) / i^2$$

we took  $p = q = 0.5$ , if  $\alpha = 5\%$ , for an accuracy  $i = 5\%$ , then  $n = 384$ . We then increased the sample size to 400 sailors.

### DATA COLLECTION

Data were collected through the individual interviews by 3 trained interviewers. The questionnaire included the following parts: socio-demographic and professional risk be-

haviors, knowledge about HIV/AIDS, and attitudes towards HIV. In order to make minor changes, the questionnaire was tested on 5 Navy sailors who were not part of the study. The knowledge about transmission was considered good if the sailor knew the 3 main modes of transmission – through sexual intercourse, blood, and mother to child transmission. Stigma was measured by the consent of the sailor to sail with a sailor with HIV/AIDS.

### ANALYSIS

Data analysis was performed with the software R. A description of the qualitative variables through proportion and quantitative variables by the mean and the standard deviation was performed. In the first step, a bivariate analysis using the  $\chi^2$  test and Student's t helped examine the association between the dependent variables (the knowledge and stigma) and the explanatory variables (personal characteristics, knowledge and attitudes). All variables with  $p$  less than 0.25 [7, 8] have been used for the construction of the final models by the multiple logistic regression. Total 2 models were built. Model 1 was used to explain the knowledge by personal characteristics and Model 2 stigmatisation by personal characteristics and knowledge. The significance level was set at 0.05.

## RESULTS

The study involved 400 sailors. The average age was  $38.1 \pm 9.8$  years. Among sailors, 28.5% were uneducated, 41.0% reached the primary level and 30.5% the secondary level and above; 73.3% were married and 24.5% single. The average duration in the occupation was  $12.79 \pm 4.2$  years. The sailors were the most represented (80.5%), followed by engineers (6.8%) and officers (6.8%) (Table 1). They had landed abroad in 78% of cases. Countries visited were mostly in West Africa, in Europe and the Islands. Among these, the most popular were: Guinea Bissau (30.3%), Ivory Coast (25.4%), Mauritania (22.2%), Gambia (22.2%), Spain (18.9%), Guinea (11.9%), Seychelles (10.3%), Madagascar (7%), Gabon (6.8%) and Ghana (5.1%). The average sea voyage was  $75.8 \pm 56.6$  days.

### KNOWLEDGE ABOUT HIV/AIDS

All sailors surveyed had heard of HIV/AIDS. Information sources were dominated by the media (91.5%), peers (15.0%) and medical staff (11.0%). The sexual mode of transmission is the most cited (96.5%), followed by blood (63.5%), and mother to child transmission – 7.5% of the sailors knew these 3 modes. Incorrect modes of transmission were cited; 13.8% of the seamen declared that contamination could occur when one shared a meal with PLWHA (People Living With HIV/AIDS) and 41.3% mentioned mosquito bites as a mode of transmission of HIV/AIDS.

**Table 1.** Personal characteristics, knowledge and attitudes of sailors (n = 400)

	N	%
<b>Personal characteristics</b>		
Rank:		
Sailor	322	80.5
Officer	27	6.8
Mechanic	21	6.8
Cook	13	3.5
Others	17	2.3
Marital status:		
Married	293	73.3
Single	97	24.5
Widower and divorced	10	02.2
Length of service in the profession:		
> 10 years	207	51.8
≥ 10 years	193	48.2
Education:		
None	112	28.5
Primary	164	41.0
Secondary	102	25.5
University	20	5.0
Disembarkation abroad:		
Yes	102	25.5
No	20	5.0
<b>Knowledge</b>		
Modes of transmission:		
Sexual contact	254	63.5
Blood contact	34	8.5
Mother-to-child	165	41.3
Sharing meals	55	33.78
Means of protection:		
Abstinence	269	63.7
Condom use	224	56.0
Faithfulness	107	26.8
Sharing sharp object with others	25	6.3
<b>Attitudes</b>		
Presence of persons living with HIV in the vessel:		
Yes	149	47.3
No	193	48.3
Don't know	18	4.5
Reaction against fear about having HIV:		
No knowledge	221	55.3
No	97	22.0

Stated means of protection against HIV were: abstinence (67.3%) and condom use (56.0%). Not sharing a blade with others was cited by 6.3% of sailors only. Four modes of protection, namely: condoms, abstinence, fidelity and avoidance of sharing blades were known by only 1 of all the sailors.

### ATTITUDES TOWARDS HIV/AIDS

Among the respondents, 33.8% of sailors claimed that condoms reduce pleasure during sex. The responses to PLWHA were dominated by support (67.3%), fear (13.8%) and rejection (8.5%). However, 48.3% responded 'No' to the question: 'Should one permit a seafarer with HIV/AIDS to sail with colleagues?'

### BIVARIATE ANALYSIS

The results in Table 2 show that knowledge of modes of transmission was associated with younger age ( $p = 0.001$ ) and the duration of the occupation ( $p = 0.003$ ). Modes of transmission were known by 48.1% of officers compared to 4.6% of non-commissioned officers. Educated sailors (20.5%) had better knowledge than non-educated (1.8%) ( $p = 0.001$ ). Marital status and disembarking abroad were factors associated with knowledge of mode of transmission of HIV (Table 2). Older sailors were less accepting of sharing the ship with a crew member with HIV infection ( $p = 0.004$ ). It was the same for uneducated (64.4%) and single (55.9%) (Table 2). Sailors who thought that HIV/AIDS could be transmitted by sharing food (50.9%) and those who did not know (63.5%), were less likely to share the ship with people with HIV/AIDS (Table 2).

### MULTIVARIATE ANALYSIS

The knowledge was greater among the officers (OR = 14.07 [5.40–36.65]), better educated sailors (OR = 2.41 [1.03–5.77]) and single sailors (OR = 3.05 [1.0–9.31]). Landing in ports abroad reduced knowledge about modes of transmission (Table 3). Refusal to share the ship with PLWHA (OR = 0.45 [0.27–0.74]) and not expressing a fear against PLWHA (OR = 0.19 [0.09–0.41]) were related to stigma. Belief in the transmission of HIV/AIDS from a meal was associated with increased stigma (Table 3).

### DISCUSSION

The practices are largely dependent on knowledge and attitudes. The results of this study showed that the sailors have a low level of knowledge about HIV/AIDS and negative attitudes towards PLWHA. The main determinants are low level of education and misconceptions.

Sailors have a low level of knowledge about HIV/AIDS – only 7.5% were aware of the 3 main modes of transmission of HIV/AIDS. Similar results were found in the combined

**Table 2.** Distribution of knowledge and stigma among the sailors

	Good knowledge (%)	P	Stigma (%)	P
<b>Personal characteristics</b>				
Age:				
Yes	32.7 ± 8.0	0.001	39.5 ± 9.8	0.004
No	38.5 ± 9.8		36.6 ± 8.0	
Length of service in the profession:				
Yes	11.6 ± 4.0	0.003	12.4 ± 4.1	0.19
No	14.2 ± 4.8		13.8 ± 5.2	
Rank:				
Officer	27 ± 48.1	0.001	27 ± 38.5	0.22
Not officer	373 ± 4.6		373 ± 51.4	
Education:				
Yes	278 ± 1.8	0.001	278 ± 64.4	0.01
No	122 ± 20.5		122 ± 44.1	
Marital status:				
Single	107 ± 16.8	0.001	107 ± 55.9	0.001
Married	293 ± 4.1		293 ± 35.6	
Disembarkation abroad:				
Yes	312 ± 5.1	0.001	312 ± 52.7	0.13
No	88 ± 15.9		88 ± 42.9	
<b>Knowledge</b>				
Good knowledge:				
Yes			30 ± 51.6	0.17
No			370 ± 37.9	
Transmission through the sharing of meals:				
No			55 ± 36.4	0.002
Yes			275 ± 50.9	
Don't know			173 ± 63.5	
<b>Attitudes</b>				
Reaction against fear about having HIV:				
Yes			55 ± 81.5	0.01
No			275 ± 45.4	

survey where 10% of fisherman had a good knowledge of the modes of the transmission of HIV/AIDS [3]. The present results are contrary to the study of sailors of the Indian Ocean, where the level of knowledge reached 72% [9]. This difference can be explained by the numerous interventions in these countries [9]. This ignorance of the disease in the present study is mainly due to the low level of education. Illiteracy is a major barrier to access the information. In our study the media was the main source of information. This aspect should be taken into account in the campaigns to pass messages

in local languages, but mainly focus on media imagery, for better impact of the messages [10]. Staying abroad had an impact on knowledge. Thus, it appears that mobility was a factor of ignorance, and thus vulnerability to HIV/AIDS, while 78% of the workforce had already landed in foreign countries. This mobility makes this group easily accessible to this population prevention campaigns. Campaigns for behavior change should be regularly updated and put in place for these mobile mariners, enabling them to bridge the gap that separates them from those less mobile [11].

**Table 3.** Determinants of knowledge and stigma among sailors

	<b>Model 1 OR [95% CI]</b>	<b>Model 2 OR [95% CI]</b>
<b>Personal characteristics</b>		
Age	0.98 [0.92–1.04]	1.03 [0.99–1.06]
Length of service in the profession	0.92 [0.85–0.99]	0.98 [0.95–1.06]
Rank:		
Not officer	1	1
Officer	14.07 [5.40–36.65]	0.74 [0.29–1.06]
Education:		
No	1	1
Yes	2.41 [1.03–5.77]	0.45 [0.27–0.74]
Marital status:		
Married	1	1
Single	3.05 [1.0–9.31]	0.65 [0.36–1.18]
Disembarkation abroad:		
Yes	1	1
No	0.21 [0.12–0.65]	0.78 [0.45–1.35]
<b>Knowledge</b>		
Good knowledge:		
Yes		1
No		0.82 [0.33–2.04]
Transmission through the sharing of meals:		
Yes		1
No		2.82 [1.46–5.44]
Don't know		4.28 [1.87–9.80]
<b>Attitudes</b>		
Reaction against fear about having HIV:		
Yes		1
No		0.19 [0.09–0.41]

OR – odds ratio; CI – confidence interval

The formation of some sailors as educators can be a solution. Thus, they can educate their peers during stays at sea. It is the same as the involvement of the managers of vessels.

PLWHA are often stigmatised [12]. The main consequences of the latter are the refusal of screening, sharing status, poor adherence [13, 14] and depression [15]. Stigma is very present in the sailing world. Among the respondents, nearly half did not want the presence of a marine PLWHA in their boats. This stigmatising attitude towards PLWHA sailors was found also in different studies [9]. Good knowledge of the 3 modes of HIV transmission does not change [9]. However, some erroneous beliefs such as transmission by sharing a meal increase the stigma. This shows that it is not enough to inform mariners about what they should

do, but also what they should not do. The campaigns must take into account information many believe about HIV/AIDS, particularly those non-educated. Indeed, this stigma was twice as great in the uneducated. Thus, it appears that ignorance fostered stigma. Therefore a better understanding of the disease, in particular the rejection of false beliefs by sailors may fight more effectively against the stigmatisation of PLWHA, in promoting tolerance towards them [16].

## CONCLUSIONS

This study highlighted the issues that need to be addressed in a campaign for behavior change regarding HIV/AIDS in the maritime sector. These reflect the

mobility of the population, low level of education and incorrect knowledge. It requires the establishment of an education programme involving sailors and managers of vessels also.

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### CONFLICT OF INTEREST

The authors declare no conflict of interest.

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