Religion and protective behaviours towards AIDS in rural Senegal

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Objectives: To describe the association between religion and factors related to sexually transmitted diseases (STD)/AIDS in a country where religious leaders were involved early in prevention.

Design: A cross-sectional study conducted in a rural area in central Senegal.

Methods: Questionnaire-based interviews of a random sample of 858 adults from the general population aged 15–59 years and in-depth interviews of four religious leaders and 50 people.

Results: Seventy-six per cent of the respondents were Muslim, 24% Catholic, 1% Animist and 0.2% Protestant. A total of 86% of men and 87% of women reported religion to be very important to them. Important prevention-related variables were inversely associated with the importance of religion. Men who considered religion to be very important were less likely to cite AIDS as a major health problem [odds ratio (OR) 0.4, $P = 0.008$] and were less likely to feel at risk of getting HIV (OR 0.5, $P = 0.0005$). Women who considered religion to be very important were less likely to report an intention to change to protect themselves from AIDS (OR 0.2, $P = 0.0001$), less likely to report having discussed AIDS with others (OR 0.4, $P = 0.01$) and much more likely to feel at risk of getting HIV (OR 9.3, $P = 10^{-4}$). Individuals who considered religion to be very important were not more likely to report intending to or actually having become faithful to protect themselves from AIDS.

Conclusion: These findings stress the need to intensify the involvement of religious authorities in HIV/STD prevention at the local level.

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Introduction

In the fight against AIDS in Africa, the promotion of sexual behaviour modifications is still one of the major resources. Early on it was recognized that religion had a role to play in behaviour change, because religion can make a difference in the intimate behaviour of individuals [1]. Among other causes, such as modern education, urbanization and contraception, it has been suggested that Islam and Christianity have been partly responsible for the decrease in post-partum sexual abstinence and for the reduction in polygyny in eastern Africa. Moreover, some religious leaders have seized upon the occurrence of AIDS epidemics to put forth their moral recommendations. Indeed, the relationship between the AIDS threat and religion has often been ambiguous, and this may explain why few studies have addressed the potential role of religion in prevention. Interventions involving religious leaders have been described throughout Africa [1–8] and among African immigrants to New York City [9], but some doubt remains as to whether religion could help or hamper AIDS prevention [10–12].

Senegal is a country in West Africa where HIV infection has remained stable at approximately 1% in the general population, the first case of AIDS being recorded in 1986 [13]. Religion, mainly Islam, is part of nearly every Senegalese person's life, and health authorities recognized very early that they should work with religious leaders to build effective prevention programmes [14]. Since 1988, the National AIDS Control Programme has developed intensive contacts with Muslim and Christian leaders aiming to involve them in the promotion of sustainable safe behaviours.

We took advantage of a comprehensive epidemiological dataset on perceptions, behaviours and attitudes regarding HIV/sexually transmitted diseases (STD) collected in a rural community in Senegal to assess the role of Islam and Christian religions on behaviours and beliefs possibly related to preventative attitudes.

Population and methods

Setting

The survey was conducted in July 1997 in a rural community in the region of Fatick, in central Senegal. Since 1983, when a census was conducted, the population of the area has been under demographic follow-up; all new vital events (births, deaths, marriages and migrations) have been recorded periodically. As of 1 January 1997, 29 104 individuals lived in the study area [15]. The population consists mainly of farmers of the Sereer ethnic group, 74% are Muslim, 20% Catholic and 3% Protestant. Although very few report to be Animist (1%), all comply to some degree with traditional rites. The matrimonial system is polygamous. As of 1 March 1996, 46% of married women were in a polygamous union. A large proportion of the adult population (40% of men and 26% of women each year) spends several months (five on average) away from the area in seasonal migration.

Study sample

The demographic database was used to build a probability random sample of adults aged 15–59 years. A sample size of 1000 adults was sought. To determine our sample, we estimated the proportion of people away from the area to be 20%, from the demographic follow-up. The initial sample size was therefore 1200.

Interview

Interviewers were selected from the local population. They went through a 4 day training period consisting of collective courses and individual simulations of interviews. They were taught to translate the questionnaire extemporaneously from written French to the spoken local language (they do not write or read their local language, as school education in Senegal is in French). Therefore, a great part of the training period was devoted to the standardization of the translation. After informed consent, interviews were conducted in private places in order to protect confidentiality.

Content of the questionnaire

Previous surveys on sexual behaviour conducted in another area of rural Senegal [16] led us to derive a questionnaire from the knowledge, attitudes, behaviour and practices questionnaire of the World Health Organization's Global Programme on AIDS [17]. It was designed to study risk behaviour and the perception of AIDS and its prevention, taking into account the local sociocultural context. Some questions were also selected using an outline of the AIDS Risk Reduction Model [18].

The following sociodemographic information was recorded: age, sex, education, marital status and migration status. All respondents were asked their religion and the importance of religion to them (very important, quite important or not important).

Intentions to change sexual behaviour was measured by the question: 'Do you plan to change your behaviour or your way of life since having heard about AIDS?' AIDS-related knowledge was estimated using a summary score developed from six questions about routes of AIDS transmission and knowledge about asymptomatic infected people. Persons who had not heard of AIDS were given a score of 0. The score ranged from 0 to 6. Variables also included a spontaneous declaration of AIDS as a major health problem, the perception

of risk, communication about AIDS with others and perceptions about condoms.

Qualitative study

Open-ended interviews of a random sample of 25 men and 25 women who participated in the quantitative survey and of one Lutheran minister, one Catholic priest and two Muslim imams, all from the area, were conducted in June 1999. The importance of religion in everyday life and the potential role of religion and the involvement of religious leaders in AIDS prevention were investigated.

Analysis

All analyses were performed separately for each sex. The analysis was conducted in two steps. First, we determined whether levels of a selected set of variables related to AIDS preventative attitudes differed between Christians and Muslims. Second, we determined whether levels of the same set of variables differed between respondents who reported religion as being very important and other respondents. For the second purpose, one model was built for each variable related to AIDS preventative attitudes and was taken as the dependent variable. Associations between the importance of religion and the dependant variable were measured using odds ratios (OR) adjusted by logistic regression of statistically significant confounding factors among: age group, education, marital status, religion and migration status. When one of the potential confounding factors was included in the model, its corresponding OR is provided in Table 1. All statistical computations were carried out using the SPSS version 9.0.0 statistical package.

Results

The initial sample was of 1200 adults aged 15–59 years (600 men and 600 women). Of this sample, 306 were away from their village and could not be interviewed (25% of the initial sample). Twenty-eight individuals refused to answer the questionnaire (3% of those who were present) and eight did not answer at least one of the two questions concerning religion. The final sample for analysis consisted of 400 men and 458 women.

Out of the 858 people included in the analysis, 648 (76%) reported themselves to be Muslim (most of them from the Mouride brotherhood, and some from the Tidjane), 202 (24%) Catholic, five (1%) Animist and three (0.2%) Protestant. The proportion of those who had ever heard of AIDS was 78%.

Religion and factors related to prevention

Table 1 shows variations between Muslims and Christians in factors related to AIDS preventative attitudes. The proportion of those who spontaneously cited AIDS as a major health problem and the proportion of

Table 1. Comparison of levels of factors associated with preventative attitudes between Muslims and Christians.

	Men					Women				
	Muslims		Christians			Muslims		Christians		
	%	(N)[a]	%	(N)[a]	P**	%	(N)[a]	%	(N)[a]	P**
Intend or had become faithful to protect from AIDS[b]	55	(242)	39	(94)	0.01	42	(266)	33	(58)	ns
Had ever heard of condoms	59	(291)	64	(104)	ns	41	(353)	34	(99)	ns
Declared condoms are forbidden by religion[c]	40	(172)	37	(67)	ns	61	(146)	51	(35)	ns
Score of AIDS knowledge > 3	27	(293)	34	(104)	ns	23	(355)	19	(100)	ns
Cited AIDS as a major health problem	43	(291)	56	(104)	0.03	18	(354)	189	(99)	ns
Intended change to protect from AIDS[b]	30	(237)	42	(91)	0.05	12	(269)	10	(60)	ns
Feel at risk of getting HIV[b]	40	(239)	39	(93)	ns	59	(269)	58	(59)	ns
Has already discussed AIDS with others[b]	64	(239)	57	(93)	ns	54	(268)	40	(60)	0.06
Reported casual sex in the past 12 months	22	(256)	24	(91)	ns	5	(331)	5	(92)	ns
Declared alcohol consumption in the past 4 weeks	15	(293)	31	(104)	0.001	3	(355)	14	(100)	$< 10^{-3}$
Engaged in polygamous union (married people only)	28	(163)	15	(48)	0.06	47	(315)	45	(85)	ns

[a]Variations of no. of respondents are either due to questions asked to part of the respondents or due to a small number of non-responses.
[b]Among those who had ever heard of AIDS.
[c]Among those who had ever heard of condoms.
** *P* value for chi-square test; ns, $P > 0.1$.

those who intended to change behaviour to protect themselves from AIDS were both slightly higher among Christian than Muslim men. The proportion of those who reported already being or who intending to become faithful to protect themselves from AIDS was higher among Muslim than Christian men. No other AIDS prevention indicators differed significantly between religions.

To attempt to assess religious adherence, we compared alcohol consumption and polygamy between religions. As expected, alcohol consumption was reported significantly less often by Muslims than by Christians ($P = 0.001$ for men; $P < 10^{-3}$ for women). In particular, alcohol consumption was reported by 15% of Muslim men, 31% of Christian men, 3% of Muslim women and 14% of Christian women. The Christian : Muslim ratio was greater for women (14 : 3) than for men (31 : 15), which may suggest that women are more obedient to Islamic tenets than men. Polygamous unions are theoretically forbidden for Christians. Interestingly, whereas fewer Christian than Muslim men reported being engaged in polygamous unions (15 versus 28%, $P = 0.06$), we found no difference for women. This corroborates qualitative observations that people from the same household can be of different religions and that a man can have both Muslim and Christian wives. Moreover, results from open-ended interviews suggest that religious constraints on everyday life are loose in the area, perhaps because many people also comply with traditional rites.

Sociodemographic characteristics and importance lent to religion

As we intended to assess whether the importance lent to religion may influence attitudes related to AIDS prevention, we first studied its potential variations across sociodemographic groups.

The proportion of those reporting religion to be very important was very high: 86% of men and 87% of women. This proportion did not vary according to age group, marital status, education level, religion or migration status.

As expected, the proportion reporting alcohol consumption was lower in the 255 Muslim men declaring religion to be very important (13%) than among the 38 other Muslim men (29%; $P = 0.01$). A similar ratio was found for Muslim women (2.6 versus 4.2%), but the sample size was small and the chi-square test was not significant.

Importance of religion and preventative behaviours and perceptions

Table 2 tabulates the same set of selected prevention-related variables as in Table 1. For each of them, we assessed the potential explanatory role of the importance lent to religion and, when necessary, of other confounding variables. With the exception for men for the 'intended change' variable, the effect of the importance of religion on each variable went in the same direction among Christians and Muslims. We thus chose not to split the tables by religion.

Interviews with Christian and Muslim leaders revealed minimal involvement, if any, in AIDS prevention. Only the Protestant minister we interviewed seemed to be inclined to deliver prevention messages. Accordingly, neither men nor women who considered religion to be very important were more likely to report intending to or having already become faithful to protect themselves or others from AIDS. It is noteworthy that faithfulness was much more often reported by ever married men (OR 8.7) and by educated women (OR 3.3).

Important prevention-related variables were inversely associated with the importance of religion. Men who considered religion to be very important were less likely to cite AIDS as a major health problem (OR 0.4, $P = 0.008$) and less likely to report intentions to change to protect themselves from AIDS (the latter association is statistically significant only for Christian men). Women who considered religion to be very important were less likely to report intentions to change to protect themselves from AIDS (OR 0.2, $P = 0.0001$) and less likely to report having discussed AIDS with others (OR 0.4, $P = 0.01$).

Only seven men and one woman reported having used or intending to use a condom to protect themselves from AIDS. Men who considered religion to be very important were more likely to have heard of condoms (OR 2.1, $P = 0.01$). Women who considered religion to be very important were not more likely to have heard of condoms but were more likely to agree that condoms are forbidden by religion (OR 2.7, $P = 0.02$). It was found that 13 out of the 16 Muslim women who had attended Coranic School agreed with the assertion that condoms are forbidden, which may explain why education was associated with the variable (OR 4.4).

The reported importance of religion had a diametrically opposed influence on men's and women's perceptions of personal risk of being infected with HIV. Men who considered religion to be very important were less likely to feel at risk of getting HIV (OR 0.5, $P = 0.0005$), whereas women were much more likely to feel at risk (OR 9.3, $P < 10^{-4}$).

Finally, a positive but not statistically significant association was found between the importance of religion and knowledge of AIDS.

Table 2. Influence of perception of religion on factors associated with preventative attitudes, behaviours and perceptions.

	Religion is very important							OR for potential confounding factors						
	No		Yes					Age group			Education	Marriage	Religion	Migrations
	%	(N)[a]	%	(N)[a]	OR_a[b]			15–29	30–44	45–59	Ever been in school (versus never been in school)	Ever married (versus never married)	Muslims (versus Christians)	Has moved in past 12 months
Men														
Intend or had become faithful to protect from AIDS[c]	48	(50)	51	(286)	1.0	0.5–2.2	ns					8.7		
Had ever heard of condoms	46	(55)	63	(340)	2.1	1.2–3.9	0.01	1	2.1	0.6				3.1
Declared condoms are forbidden by religion	40	(25)	39	(215)	1.0	0.4–2.2	ns							
Score of AIDS knowledge > 3[c]	20	(56)	30	(344)	1.8	0.9–3.6	ns	1	2.4	2.3	1.9			
Cited AIDS as a major health problem	63	(56)	44	(342)	0.4	0.2–0.8	0.008					1.9	0.6	1.6
Intended change to protect from AIDS[c]	38	(48)	33	(280)	0.8	0.4–1.5	ns	1	0.8	0.4			[e]	
Feel at risk of getting HIV[c]	56	(50)	37	(282)	0.5	0.2–0.8	0.0005							
Has already discussed AIDS with others[c]	62	(50)	62	(282)	1.0	0.5–1.8	ns	1	1.9	0.8				
Women														
Intend or had become faithful to protect from AIDS[c]	38	(42)	41	(285)	1.1	0.6–2.2	ns				3.3		0.5	
Had ever heard of condoms	42	(60)	40	(392)	0.8	0.4–1.5	ns	1	0.5	0.1	4.4			
Declared condoms are forbidden by religion[d]	39	(26)	62	(156)	2.7	1.1–6.5	0.02				2.1			
Score of AIDS knowledge > 3[c]	16	(62)	23	(296)	1.5	0.7–3.1	ns	1	0.8	0.2	2.1			
Cited AIDS as a major health problem	11	(62)	19	(394)	1.8	0.8–4.2	ns							
Intended change to protect from AIDS[c]	30	(43)	9	(289)	0.2	0.1–0.4	0.0001				2.6			
Feel at risk of getting HIV[c]	16	(43)	65	(200)	9.3	4.0–22	$<10^{-4}$							
Has already discussed AIDS with others[c]	69	(42)	48	(209)	0.4	0.2–0.8	0.01				3.3	0.4	2.1	

[a]Variations in no. of respondents are either due to questions asked to part of the respondents or due to a small number of non-responses.
[b]OR_a were computed by logistic regression. Odds ratios (OR) for potential confounding factors submitted for inclusion are provided when the factor was included.
[c]Among those who had ever heard of AIDS.
[d]Among those who had ever heard of condoms.
[e]Among Christians, those who said religion is very important, 37% (N = 76) intend to change versus 67% (N = 15) who did not say religion is very important ($P = 0.05$).

Discussion

The present study, conducted in a rural community in Senegal, provides some evidence that, despite initiatives aimed at involving religious leaders in AIDS prevention, religion was only slightly, non-significantly associated with AIDS awareness in this area. Moreover, our data suggest that religion was negatively linked with preventative behaviours. To our knowledge, this is the first quantitative attempt to assess the potential impact of religion on preventative attitudes towards AIDS in a country of sub-Saharan Africa.

The area under study had a low level of HIV infection. Serological tests performed during the same survey and among the same sample found that 0.3% of adults were infected by HIV (E. Lagarde, *et al.*, in preparation). Despite this low seroprevalence, it is encouraging to note that AIDS awareness is very high: 78% of the sample had heard of AIDS. However, knowledge regarding HIV transmission was very poor, and only 60% of men and 29% of women had ever heard of condoms.

A major concern is the relevance of the questions used to ask about religion and its importance. The questionnaire was not designed to collect information such as mosque attendance or prayer frequency, but we did examine whether alcohol consumption, forbidden by Islam, and rates of polygamy, forbidden for Christians, differed between religions. Alcohol consumption was reported less frequently by Muslims than by Christians, and Christian men were engaged in polygamous unions less frequently than Muslims. In addition, we found that Muslims who considered religion to be very important were less likely to report alcohol consumption than other Muslims.

The reliability of self-reported data on behaviours related to AIDS and sexuality must also be questioned. A reliability survey we carried out in another rural area of Senegal showed that the same interview procedure (questionnaires filled out by local interviewers) provided very reliable data on sexual behaviour in married couples [19].

We tried to identify sociodemographic factors, possibly associated with the importance of religion (age, education, marital status, migration status, and the particular religion). Very few significant associations were observed. Moreover, when necessary, associations between the importance lent to religion and prevention-related variables were adjusted for these sociodemographic factors. We can, however, never be certain that unrecorded confounding factors such as economic status or living conditions might not explain part of our results.

An interesting finding is the opposite effect of the importance of religion on the perception of personal risk of getting infected with HIV on men and women. This may reflect very different signification of religion for men and women. Religion may give men a protective feeling, whereas for women it may be associated more with submission and the lack of control over their personal risk of HIV infection. These women may feel unable to intervene about their partner's behaviour. The very high OR (9.3) in women may be due to an increased awareness of the AIDS threat among those who reported religion as very important.

It might have been useful to analyse Christians and Muslims separately. We chose not to do so, however, for reasons of statistical power and also because all associations between the importance of religion and factors related to AIDS prevention went in the same direction for Christians and Muslims (with the exception of men's intended change of behaviour). It would also have been interesting to compare Catholics and Protestants, as qualitative interviews of their leaders showed that the Protestant Minister was much more inclined to deliver prevention messages to followers. This was not possible because of the small overall number of Christians in our sample.

In Senegal, as elsewhere, some consideration has already been given to the development of prevention campaigns in collaboration with religious authorities. It has primarily involved attempting to end taboos and dispel misunderstandings related to Koranic and biblical texts, to make it clear that national religious authorities do not oppose condom use. It also included an awareness and information campaign at the national and regional level. Our findings show that religion has the ability to modulate preventative behaviours, and suggest that there is a need to intensify the efforts to involve religious leaders at the local level.

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Appendix: MECORA group members

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