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CHILD DEATH AND WOMEN'S OWN EARNINGS ARE ASSOCIATED WITH CONDOM USE IN MADAGASCAR

ARMAND RANDRIANARIVO[1], MAMINIRINA RAZAFINANEFA[2], MONIQUE RASOLOMAHARO[2], AYAKO NISHIYAMA[3], TOMOHIRO SAITO[4], NAOMI WAKASUGI[3]

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Abstract: The prevalence of human immunodeficiency virus (HIV) infection is lower in Madagascar than in continental African countries, but recently it has steadily risen. To identify factors that facilitate or deter condom use among married couples in Madagascar, a cross-sectional study was conducted by means of a questionnaire survey of 977 women attending 10 health facilities for antenatal care and child care. Information on reproductive and socioeconomic factors was obtained, and logistic regression analysis was used to identify factors contributing to condom use. Child death and women's earnings were statistically significant factors for condom use, with an odds ratio of 2.0 (95% confidence interval (CI): 1.2-3.5) for the former and 1.6 (95% CI: 1.1-2.3) for the latter in the logistic regression analysis. The promotion of economic independence among women and the reduction of child mortality deserve greater attention in the planning of HIV prevention policy in Madagascar.
Key words: Madagascar, Condom use, Child health, Women's socioeconomic status.

INTRODUCTION

In the face of a massive epidemic of human immunodeficiency virus (HIV) infection in Africa, Madagascar retains a very low prevalence in comparison with countries on the African continent. However, the estimated prevalence among adults in Madagascar has steadily risen, showing a ten-fold increase in 6 years from 0.03% in 1992 to 0.3% in 1998 (UNAIDS/WHO 2002). This increase seems to have accelerated in recent years based on the seropositivity of 1.0% in 1999 (Ministère de la Santé, Madagascar, 1999). Ravaoarimalala *et al.* (1998) predict that HIV seroprevalence among adults will reach 3% in the low scenario or 15% in the high scenario by 2015.

Heterosexual contact has been the predominant mode of transmission in Africa, making women vulnerable to the infection from the early stage (Piot P 1984, Nzilambi N 1988). More than half of HIV-positive cases in Africa are women, and females aged 15-19 years have a much higher infection rate than their male counterparts (UNAIDS/WHO 2002). These facts reflect both the socioeconomic situation of women and their biologically higher risk of becoming infected: 8 times greater than in men (Padian N 1997).

Women in Madagascar seem to be in a similar situation, and they are under the threat of a surge in the HIV epidemic. Risk factors for its spread also abound in this country: a high prevalence of sexually transmitted infections (Harms G 1994, Behets FM 1996), early sexual debut among youths, increased prostitution related to poverty, increasing tourism and contact with people from countries with high HIV prevalence such as India and the African Continent.

Thus, Madagascar is at a juncture in the effort to prevent and control the HIV epidemic. Condom use is currently one of the major strategies in the prevention and the control of HIV (Population Reports 1999). However, because they lack economic resources of their own and fear of abandonment or violence by their partners (UNAIDS 1997), women at risk seem to have little power in using condoms and otherwise controlling sexual activity. The purpose of this study is to identify factors that facilitate and deter condom use in Madagascar. The information obtained and presented in this paper should be instrumental in the planning and implementation of activities to prevent and control HIV infection in places where the prevalence is still relatively low but timely action is urgently needed.

METHODS

A questionnaire survey was conducted in Mahajanga District I, which has a population of 230,000. Mahajanga District I includes Mahajanga City, a port on Mozambique

[1] La Direction Inter-Régionale du Développement Sanitaire de Mahajanga, Madagascar
[2] Le Centre Hospitalier Universitaire de Mahajanga, Madagascar
[3] Department of Epidemiology, Research Institute, International Medical Center of Japan, Tokyo, Japan
[4] Division of Epidemiology, National Institute for Child Health and Development, Tokyo, Japan

Strait. The directors of the 19 health facilities in the area were approached with a request to cooperate in this study. Facilities that specialized in sexually transmitted infections were excluded. Ten health facilities agreed to cooperate: 2 in semi-urban areas and 8 in the urban area.

Questionnaire sheets were handed to all the currently married women who visited the clinics for antenatal consultation or care of their sick children during a four-week period in February 2000. All the women consented, signed the form of consent to participate in the study, and responded to the questionnaire. Registered prostitutes were excluded. When the number of study subjects reached 100, recruitment at that clinic was terminated. The questionnaire was in French, and those who could read it (about one tenth of the study subjects) were asked to fill in the questionnaire themselves. For women who could not read it, a facility staff member read the questionnaire aloud and obtained their answers. The questionnaire consisted of the following items: age, years of school attendance, number of past pregnancies, live births and stillbirths, deaths and causes of death of children, presence of symptoms suggestive of sexually transmitted infections, personal earnings, and condom use by their partners.

The information obtained was analyzed using PC-SAS (SAS Institute Inc. 1996). Logistic regression analysis was used to assess factors related to condom use.

RESULTS

Replies to the questionnaire were obtained from a total of 977 subjects, and their characteristics and replies are shown in Table 1. The subjects ranged in age from 13 to 57 years, the mean and standard deviation being 28.7 and 7.4 years, respectively. The range of the number of past pregnancies, fetal death and child death were 0-17, 0-9 and 0-9 with mean (standard deviation) 3.8 (2.7), 0.6 (1.0) and 0.4 (0.8), respectively. Three hundred and fifty (35.8%) of the 977 subjects showed STI symptoms, the most common being vaginal discharge (24.0%), genital pain (10.4%), and genital ganglion (1.4%). Regarding condom use, 701 (71.8%) of the 977 responded that condoms were never used, 131 (13.4%) that they were occasionally used, and 38 (3.9%) that they were regularly used by their partners. Ninety-four (9.6%) answered “don’t know” with regard to condom use by their partners.

Associations between condom use and the characteristics studied were assessed by the x^2 test as presented in Table 2. Condom use was dichotomized into two categories in the analysis. Answers of “regular” and “occasional” were classified as “use”, and answers of “never” were classified as “non-use” with the rationale of dividing study subjects

Table 1. Social and reproductive characteristics of enrolled women

Characteristics		N	%
Age (n=973)			
	13-14	3	0.3
	15-19	73	7.5
	20-24	246	25.3
	25-29	232	23.8
	30-34	202	20.8
	35-39	131	13.5
	40+	86	8.8
Pregnancy (n=977)			
	0	29	3.0
	1-2	347	35.5
	3-4	313	32.0
	5-6	150	15.4
	7-8	75	7.7
	9+	63	6.4
Fetal death[a] (n=962)			
	0	615	63.9
	1	223	23.2
	2	78	8.1
	3	29	3.0
	4+	17	1.7
Child death[b] (n=977)			
	0	756	77.4
	1	135	13.8
	2	51	5.2
	3	24	2.5
	4+	11	1.1
School attendance[c] (n=963)			
	<1	87	9.0
	1-5	308	32.0
	6-9	337	35.0
	10+	231	24.0
Own earnings (n=967)			
	Yes	468	48.5
	No	498	51.5
Condom use (n=977)			
	Never	701	71.8
	Occasional	131	13.4
	Regular	38	3.9
	Don’t know	94	9.6
	No answer	13	1.3

a. Number of stillbirths and/or abortion (Number of pregnancy-Number of live births)
b. Number of dead children after live birth c.Years of school attended

Table 2. Condom use by characteristics of enrolled women

Characteristic		Respondent (N)	Condom use Yes (N)	Condom use %	p-value*
Age (y)	<25	282	51	18.1	0.522
	≧25	584	117	20.0	
Pregnancy	<3	345	77	22.3	0.096
	≧3	524	92	17.6	
Fetal Death	0	532	100	18.8	0.534
	≧1	323	67	20.7	
Child Death	0	682	148	21.7	0.001
	≧1	188	21	11.2	
School Attendance (y)	<10	642	111	17.3	0.010
	≧10	218	56	25.7	
Own earnings	Yes	444	105	23.6	0.001
	No	416	63	15.1	

* chi-square test

Table 3. Factors associated with condom use by logistic regression analysis

	Factors	N	OR (95% CI)	P-value
Pregnancy[a]				
	＜3	345	1.00	
	≧3	524	1.31 (0.85-2.01)	
Fetal death[b]				
	≧1	323	1.00	
	0	532	1.13 (0.77-1.66)	
Child death[c]				
	≧1	188	1.00	
	0	682	2.06 (1.22-3.50)	＜0.01
Mother's age (y)				
	≧25	584	1.00	
	＜25	282	1.39 (0.91-2.12)	
School attendance (y)				
	＜10	642	1.00	
	≧10	218	1.35 (0.92-1.98)	
Own earnings				
	No	416	1.00	
	Yes	444	1.61 (1.13-2.30)	＜0.05

OR= odds ratio adjusted for each variables listed above
CI=confidence interval;
a Number of past pregnancies
b Number of pregnancies - Number of live births
c Number of dead children after live birth

with some intention of condom use from those without any such intention. Factors with numerical values were reclassified as follows for multivariate analysis: age, into under 25 years old and 25 years old or over; number of pregnancies, into less than 3 and 3 or more; number of fetal deaths (abortion or stillbirth), into none and 1 or more; number of dead children, into none and 1 or more; and education, into less than 10 years and 10 years or more. The occurrence of more than 1 child death was significantly associated with non-use of condoms (p=0.001). School attendance for more than 10 years (p=0.01), and having personal earnings (p=0.001) were positively associated with condom use. However, no significant association was found between school attendance for more than 10 years and personal earnings (p=0.15, data not shown).

A multivariate logistic regression analysis was then performed to identify variables that had a significant independent association with condom use. Data from the 158 subjects with missing information for any factor were excluded, and the analysis was conducted on the data from the remaining 819 subjects.

The results of the logistic regression analysis using these variables are shown in Table 3. Child death and personal earnings by the women remained statistically significant factors for condom use. More specifically, women without a child death used condoms 2.0 times more than women with at least one child death, and women with their own earnings making a financial contribution to the household used condoms 1.6 times more than women without their own earnings or contributions. Length of school attendance was not statistically significant in the multivariate logistic regression analysis.

DISCUSSION AND CONCLUSION

Our study showed the proportion of women whose partners used condoms regularly to be very close to the proportion reported in the nationwide study of 1997 (Enquête Démographique et de Santé Madagascar 1998), that is 4.9% among currently married women. The proportion was rather low, and there seemed to be no increase in use over the past few years, even though the prevalence of HIV steadily increased. Condoms seem to be used more often as a method of contraception than as a way to protect against STIs including HIV. The high proportion of women with signs and symptoms of STIs in this study, which was closely consistent with the proportion in a previous study (Harms G 1994), supports this assumption. Indeed, the use of condoms is the third most common contraceptive method among married couples in Madagascar, after injection method (9.8%) and contraceptive pills (8.9%) (Enquête Démographique et de Santé Madagascar 1998).

A history of at least one child death and personal earnings were associated with condom use in this study. The number of live births and years of school attendance were not significant factors for condom use. These results may provide a useful insight for strategies to prevent HIV infection through the use of condoms in Madagascar and other developing countries.

The importance of economic empowerment of women has been relatively underestimated until recently. This study found that the partners of women with their own earnings used condoms more frequently than those of women without their own earnings. The economic independence of women or redress of the power imbalance between partners seems to play a key role in the success of women's attempt to gain their male partners' cooperation and acceptance of condom use. This hypothesis is supported by the report that women economically dependent on men had difficulty in protecting their own reproductive health (Van der Straten *et al.* 1995). Since education is thought to be a prerequisite for economic empowerment, much attention has been paid to women's education. However, our results suggest that education may not necessarily be contributory or linked directly to condom use. We propose that women's economic independence deserves greater attention in efforts to combat the spread of HIV infection through condom use.

The reduction of childhood mortality seems to be another key issue related to condom use. Women with a his-

tory of at least one child death used condoms less frequently than women with no experience of child death. In this study, 221 (22.6%) of the 977 women experienced the death of a child, reflecting the very high mortality among children under 5 years of age in Madagascar: one of the 30 highest among the 191 countries in the world (UNICEF 2000). This high child mortality could dampen the motivation for contraception including condom use in society and particularly among couples who experienced the death of their children. Promotion of women's health certainly plays an important role in the health of children and family (UNICEF 2000, McDermott JM 1996), but our results suggest that the child's health gives women the impetus to improve their own health and therefore that the two are closely related.

The general population does not yet aware of the impending epidemic of HIV infection in Madagascar. Accurate knowledge of HIV infection needs to be disseminated, and education is needed to inform the population that the most efficient method of HIV prevention is, at present, the use of condoms. Dissemination of this information requires that family planning be promoted and widely accepted in Madagascar society, and condom use should be introduced as the first priority. In conjunction with these direct condom use campaigns, the promotion of women's income generation and the reduction of child mortality should be intensified and integrated as closely related programs in planning HIV prevention policy in Madagascar.

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