

A new female condom: women's opinions and strategies of promotion for public health

by

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Abstract

Background: *Unprotected intercourse may have noxious effects: health problems related to reproduction, infections and excessive population growth. Condoms contribute to alleviate such problems. Their use has increased, but unmet needs are still important.*

Aim: *To analyze the potential acceptance of a new type of female condom and to discuss the results, particularly in connection with promotion strategies in the context of public health programmes.*

Method: *Survey among 318 women in Brussels. Composite indices have been conceived, enabling to summarize answers pertaining to common topics. Chi square tests and logistic regressions enable to compare subgroups and to identify explaining variables.*

Results: *Various indicators of acceptance of the new female condom are congruent, e.g. perceived overall interest, propensity of advising it, potential use and intended frequency of use. Such indicators of*

acceptance increase when stated advantages are more appreciated. Potential use is also linked to the use of male condoms, but hardly to various indicators of risk.

International literature presents strategies for promoting condoms through commercial channels or through public health programmes. They include: extended choice, improved distribution, sex education and campaigns for information, improving skills and behaviour change. Such strategies should be differentiated according to target groups and supported by structural measures at overall level, inter alia in the field of women's status.

Conclusion: *The female condom may add to the variety of choice and thus contribute to safe sex in general; the first contact with a group of urban women shows a rather good potential acceptance among that population.*

Keywords: Female condom, contraceptive method, safe sex, prevention, reproductive health, women

Introduction

More than 1.5 billion women of reproductive age live worldwide; about 1 billion in marital or consensual union. If the latter have sex twice a week (i.e. below assessment from current surveys), there are about 100 billion occurrences of intercourse annually, excluding sex behaviour outside marriage or union. Most part of sexual life is thus unprotected, with an unknown proportion of actual risk (1,2). Consequences of unsafe sex for reproductive health, infections and population growth will be briefly assessed, together with an overview of contraception and condom use (section 1). Female condoms might contribute to safer sex (section 2). A survey about potential acceptance of a new female condom has been carried out: the method is described in section 3, results appear in section 4 and are discussed in section 5.

1. Unsafe Sex - Condom use

1.1. Dangers of unsafe sex

- ***Reproduction related problems***

Worldwide, 210 million women became pregnant around 1999 (2-8% among teenagers); about 40-50% did not intend it (3). Numerous harmful conditions are related to pregnancy, more particularly when unintended

(abortions, complications of unsafe abortions, maternal deaths, ...); but they are multicausal and will not be detailed here.

- **AIDS and Sexually Transmitted Infections**

Having sex, this fundamental human need, may in certain circumstances spread AIDS and sexually transmitted infections (STIs). Such conditions are numerous and have deleterious effects.

In 2002, 3.1 million people died from AIDS, 5 million were newly infected; altogether about 42 million people were infected (4) and 20 million had already died (5). In some African countries, 18 to 26% of adults aged 15-49 are infected (1). An additional 45 million people might become infected before 2011; an intensive prevention campaign might avoid 29 million of such infections (4).

More than 80% of HIV infections in adults occurred through sexual intercourse (6). Some 25 diseases can be transmitted through sexual behaviour; worldwide, 333 million new cases of curable STIs occur annually (1), 15 million in the United States of America, where one in five adults is affected. Women are particularly at risk, both for STIs (7) and for AIDS (twice to four times as much for the latter (8,9)), notably because of more vulnerable genital tract and low power on safe sex behaviour.

AIDS has dramatic consequences:

- Disability and vulnerability to numerous other diseases.
- High mortality: 278 million premature deaths are expected between 2000 and 2050 (10); in several African countries, the mortality rate has doubled and life expectancy is dropping, in some cases with up to 25 years.
- Dramas for millions of orphans, decreasing number of economically active adults, the latter having to care for more children and elderly (11).
- High cost of care, burdening families and health systems; in the United States, treatment costs USD 1033 per year (cited in (5)).
- Loss of productivity and of skilled workers ; economic growth weakens and, in some cases, gross domestic product per capita might decrease (by as much as 20% by 2020 (12)).

As to STIs, some are incurable: genital herpes, human papilloma virus and hepatitis B. Several can cause chronic pain and disability even for men (13), chronic liver disease, cancer, ectopic pregnancy and infertility (14), miscarriages, stillbirths, infant deaths, premature delivery, low birth weight, and severe perinatal conditions (blindness, mental

retardation, ...) (15). Some STIs, *e.g.* gonorrhoea, syphilis and chlamydia, make women two to five times more vulnerable to HIV infections (16). Up to 75% of reproductive age people may have been once infected by human papilloma virus, which is present in 80-93% of cervical cancer tumors and is associated to other types of cancer (15,17). STIs and their complications are also costly; in the United States for instance, direct costs of treating them have been estimated to 8.4 billion USD per year around 1998 (excluding lost wages and lower productivity).

- **Population Growth**

The world population is growing by 77 million each year and is expected to reach 8.9 billion in 2050, provided fertility decreases. Would fertility rates remain constant, the population might double, up to 12.8 billion (18). In six African countries, it might still quadruple. Uncontrolled fertility would thus severely hamper efforts for alleviating poverty, thus increasing world political instability.

1.2. Contraception and condom use: utility and prevalence

Worldwide, the contraceptive prevalence rate has increased from 10% in the mid-sixties up to almost 62% in the late nineties (assessed for women aged 15-49 married or in consensual union) (2,3). Better availability plays an important role, even more than change of attitudes (19).

Condoms constitute a useful protection for problems listed above, if used correctly and consistently (1,6). Even abortions tend to decline as contraceptive use rises (except in Brazil) (20). The Centers for Disease Control and Prevention recommend condom use for prevention of HIV/AIDS and all STIs (21). However, among contraceptive methods, condoms are rather rare, except in Japan (20); worldwide, only just above 5% of couples in marital or consensual union relied on condoms in the 90s, *i.e.* 7-8% of those using family planning (1,2). But use is increasing: applying the stated estimated prevalence of condom use, about 53 to 56 million of these women were using condoms, *i.e.* a 27-34 % increase within just a few years, compared to previous data.

Worldwide, 6 to 9 billion condoms were thought to be used each year around 1999 (out of the eight to ten which are produced), which can be compared to the twenty four billion which should be used each year; *i.e.* about 3 to 4 times the actual use (1). Needs thus largely exceed demand, given the frequency of sexual intercourse (5) and the dangers of unsafe sex. In the sole field of reproduction, a shortfall of USD 1

million in donated contraceptive products could result in about 360,000 extra unintended pregnancies, 150,000 additional abortions and almost 26,000 additional deaths (maternal, infant and under 5) (3).

Reasons for low use are: ignorance, cost or unavailability, social norms (stigma attached to condoms, often considered as a sign of distrust or infidelity), gender inequality (male refusal, traditional women's passive role, fear of abuse and violence, economic dependency, lack of physical mobility), unexpected intercourse, lack of awareness of risk and feeling of invulnerability, socially acceptable risk taking among young people, and also reluctance for a device which might dull the pleasure, ...

Efforts for promoting condoms are important around the world, particularly in Programs of Public Health (see section 5.3). The developing world is strongly dependent from donors; on average, about 1.15 billion male condoms have been donated yearly between 1996 and 2000 (22).

Besides donations, it is suggested that possibilities of choice be extended, that women be empowered and that devices become more easily available (see section 5.3). This is the context in which a new female condom has been conceived and the present study has been carried out.

2. Female condoms

Female condoms (rather new), of course score even lower; they are not competitors of the male condom but complements, still in a developing phase.

• *Types of female condoms*

In the 90s, a female condom was approved by the USA Food and Drug Administration. The Joint UN Program on HIV/AIDS has promoted its use in developing countries and concluded that many women would use the female condom (23). Our review of the literature confirms that people appreciate it, *e.g.* in the United States (24), South Africa (25,26), Ivory Coast (27) and Kenya (28) and also among high risk groups, for instance sexual workers (Costa Rica (29), Thailand (30)), drug involved women in Brazil (31), homosexual users in the United States for anal sex (32).

In 2003, a new type of female condom has been developed: a thin-walled flexible tube in latex provided with: a) a rigid collar aiming at keeping it open and b) an extension toward the anus, for preventing the penis to slip outside before or during the intercourse. It can be used

with or without inner ring; it can be either inserted manually or placed on the verge of the vagina, letting the penis push it in.

- **Features and advantages of various condoms**

Condoms in general present following advantages: neither prescription nor special fitting is needed, no systemic side effect and anal intercourse can also be protected (33).

According to previous research work (34), the first female condom presents advantages compared to the male condom and the new one should do equally:

- *Empowerment*: the female condom can be positioned before the sexual activity, which can be particularly useful when alcohol or drugs increase the risk of not using a male condom (35); this enables women to take the initiative, to have greater control and a new way to communicate.
- *Safety*: leakage due to dislodgment is less frequent. Both the vulva and the base of the penis are protected against infection (however, this can make it less attractive to some).
- *Enjoyment*: the penis does not have to be in erection (intercourse is not interrupted). Men can enjoy more sensitivity or stimulation, since the penis is not constricted. A longer intercourse is possible, since safety does not require the man to withdraw immediately after ejaculation (35,36). Women can feel safer and can thus enjoy the intercourse more.
- *Increased prevention*: adding new types of contraceptives, notably female condoms, results in a higher frequency of protected intercourse (36).

In addition, the new female condom is expected to have other advantages, about which tests are starting and will be carried out later on, on a large scale:

- Safer: a) latex is associated to a lower frequency of breakage and slippage than polyurethane (1.6% versus 8.5% (37)); b) thanks to the collar and the extension to the anus:
 - genitals are better covered, a plus for preventing STIs transmitted through skin-to-skin contact;
 - accidental push into the vagina or misdirection outside the device should probably reach zero.
- Cheaper and noiseless (latex rather than polyurethane).
- More enjoyable: a) no discomfort of outer ring (soft outer piece) b) the penis should not have to be redirected when coming out of the vagina during the intercourse.

Inversely, polyurethane is more durable (5 years), requires no storage arrangements, is thinner and conducts heat (favouring sensitivity), can be used with a variety of lubricants and is a solution for those 8% of people allergic to latex. However, in a randomized controlled clinical trial, users of polyurethane male condoms were less satisfied and more likely to discontinue participation than users of latex (37).

3. Potential acceptance of a female condom: Methodology

Women's opinions at first sight of a new female condom have been assessed, in Brussels, i.e. in a context where female condoms are hardly known. Eight French-speaking centres for family planning of Brussels were contacted; such centres organize medical, psychological, social and legal consultations about prenatal and antenatal care, infertility, contraception, unwanted pregnancy, affective and sexual life and sexually transmitted diseases (STDs) (38). Four centres refused, arguing lack of time and personnel. One accepted but could not respect the strict rules of systematic interviewing, *inter alia* because of rather short time spent in the waiting room. Three accepted, provided their own personnel would not be involved. Contacts took place between October 22 and November 28, 2002, 93% of them in one centre, where all women consulting were systematically interviewed, except if accompanied (husband, mother, ...). The sample is thus a purposive one: in places where women of various ages would accept to talk about aspects of sexual relationships. Most surveys about female condoms adopt a similar approach.

The survey pertaining to opinions about a device which was not known, the latter was first presented, together with the other female condom. Precautions were taken in order to avoid biases:

- Communication was minimal (time was constrained): the person in charge showed both female condoms, explained features and asked collaboration to a survey; women were allowed to touch and to ask questions.
- The presentation was standardised: words to be used were set down in a written recommendation which had to be followed. Information was thus limited.
- Upon acceptance, women answered in writing, without interference by any interviewer and afterwards they put the questionnaire in an urn, in order to ensure confidentiality.

The questionnaire has been discussed with a professor of methodology in health sciences, a professor of marketing, a gynecologist

and a medical doctor specialist in AIDS care. It has been reviewed after a pilot test with 42 women. It aimed at investigating:

- women’s appraisal of male condoms;
- women’s spontaneous opinions about the new female condom (*i.e.* “potential acceptance”);
- personal features and aspects of sexual life possibly explaining differences of opinion.

Women’s potential acceptance of the new female condom has been approached as follows:

- ◆ For overall use by women in general: a) Perceived interest for women in general (= “probable overall interest”) and b) Advice to use it which would be provided to other women, either in case of a new partner, or in case of distrust about a partner (= “propensity to advising it”)
- ◆ For own use: a) Would the interviewed women use it for themselves and (= “potential use”) b) at which frequency and c) which price would they accept to pay as a maximum.

As working hypotheses, we assumed that higher acceptance would be related to:

- worry about risk of AIDS or STDs, feeling at risk or being at risk,
- use of male condoms,
- difficulties when using male condoms or criticisms against them (from men or partner),
- high appreciation of the potential advantages of the new device.

On the contrary, less enthusiasm would be shown by married women, and for personal use rather than use by others.

Two persons encoded the answers separately and concordance was checked. Occasionally, in case of double tick instead of single, we retained the answer less favourable for the working hypotheses.

Composite indices were set up on scales ranking from 0 to 3; they average for each respondent the scores for several questions pertaining to a common theme:

- Possible *difficulties* encountered in using male condoms: either before (hesitated to ask using a male condom, had to insist for using it; partner has asked not to use one or refused to use it) or after use (partner has been embarrassed, has regretted or did not withdraw immediately) and all difficulties considered together.

- Current *images* about male condoms, mainly criticisms heard from men (*i.e.* impulse is stopped; condom decreases men's pleasure; men feel it as embarrassing, partner does not like to use it, does not like to interrupt or refuses to use it; you get tired of it).
- Importance ascribed to the stated advantages of the new female condom compared to male ones (moment to put it can be chosen, men's sensitivity is less hampered, safer than the male condom, a choice is provided according to circumstances, partner's agreement is not required). At this stage, those expected advantages remain to be confirmed by further research for the new female condom.

One missing answer was tolerated for indexes composed of 3 items; two for indexes including 4 to 7 items; in such cases, the average of those answering the item was assigned to the missing item(s).

Data enable to compare sub-groups. Inference is less reliable; nevertheless, confidence intervals (CI) are provided (see discussion, section 5.1). Differences between groups were first tested through chi square tests. After dichotomizing the variables, logistic regressions were then used (SPSS), for differentiating groups of women, taking several factors into account.

4. Results

4.1. Who are the interviewed women?

The response rate reached 96%; out of 331 women, 13 refused, one being sick (vomiting), the others being stressed, fearing unwanted pregnancy or HIV+.

The sample is young, as expected in a centre for family planning: 44% are aged less than 24, only 10% are older than 40; mean age: 28 years. Only 14% are married, 27% are either bachelor or divorced, 58% are in union (3/4 of them since more than 6 months). The level of training is high: only 5% did not finish high school, 2/3 graduated above that level. Three quarters of the women are Belgian, 18% come from other European countries, the remainder from elsewhere.

The structure of the sample confirms the internal validity of data, e.g.:

- younger respondents have lower degrees and are less often married;
- women above high school level were less often single or in a recent union.

4.2. Potential acceptance at first sight of the new female condom

The main results appear in table 1 (level and bivariate analyses) and table 2 (multivariate analyses).

- **Level of potential acceptance**

Having heard the stated advantages, 78% of women answering perceive overall interest as very probable and about 90% of them would recommend the new device in case of a new partner or in case of distrust about the partner.

About half of the respondents (CI:.45-.56) believe that they would use the female condom shown (including 3% wishing to test it first or to put it aside in case of distrust). This might be underestimated: indeed much less (22% of the respondents) stated that they would “never” use the new device (CI:.17-.27) when they were asked about intended frequency; this is also less than those never using male condoms (38%, CI:.32-.43).

About half of the respondents would pay as a maximum the same price as for the male condom; less than 8% only consider paying less, whereas 43% (CI:.37-.48) would accept to pay more. Perceived interest plays a role: 46% of those supposing potential interest would accept to pay more, versus only 27% when suspecting the contrary ($p=.012$).

- **Relationships between variables (bivariate analyses)**

Various indicators of acceptance of the new female condom are congruent, e.g. potential use is linked to perceived overall interest, to propensity of advising it and to intended frequency of use ($p=.000$ in each case). However, “maximum price accepted” is only related to perceived interest.

At this stage, neither age nor degree nor marital status shows significant relationships with other variables, except for a few truisms confirming again the internal validity of data.

Potential interest, propensity to advise, acceptance of use and intended frequency of use all increase when stated advantages are more appreciated.

On the composite index of potential advantages [ranking from 0 (no importance) to 3 (very important)], 6.6% of the records were ignored because of insufficient answers; 18% of records kept had one item assigned, 9% had two.

TABLE 1
Perceived interest for and potential use of the device shown

Indicators of potential interest or use – Groups showing differences of appreciation	Frequency among valid answers		
	Yes or maybe	Confidence interval	p value of difference between subgroups
1. Potential interest for women in general			
Would women be interested to protect themselves against AIDS and other STDs with this new female condom? – If interest for advantages = 2.5+ – If between 2 and < 2.5 – If <2	78% 92% 79% 66%	(.73-.82)	p= .000
Would you advice to buy this new female condom, if a friend of yours • has a new partner who refuses to use a male condom?	91%	(.88-.94)	No test: cells have expected count < 5.
• has doubts about her partner's fidelity (the latter not wearing condoms)? – If interest for advantages = 2.5+ – If between 2 and < 2.5 – If <2	87% 95% 91% 78%	(.84-.91)	p= .004
2. Potential personal use and intensity of use			
Would you use this female condom? • – If interest for advantages score 2+ – If interest for advantages score < 2 • – If male condoms are used – If male condoms are not used • – If frequent difficulties before using male condoms (.75+) – If less difficulties (<.75) • – When feeling at risk – When risk is not felt	50% 59% 32% 58% 37% 62% 45% 55% 41%	(.45-.56)	p= .001 p= .000 p= .023 p= .017
Compared to male condoms, would you use such female condom – more often – as often – less often – never	Fre- quency 11% 22% 43% 22%	(.17-.27)	

Expected personal use is also linked to the use of male condoms, the feeling of risk and the amount of difficulties before intercourse; on the latter composite index, two percent of the records were ignored due to insufficient answers; about 3% of the records kept had one answer assigned.

- **Acceptance and possible explaining factors (multivariate analysis)**

The combined influence of available data on the potential use of female condoms was analyzed through logistic regressions; variables were thus dichotomized. Three variables were disregarded, because of excessive missing cases (feeling of being at risk and perceived men's negative opinions about the male condom) or too few observations in one subgroup (citizenship). One variable was deleted, being systematically insignificant: worry about possibly being threatened by AIDS/STDs.

In multivariate analyses, only the stated advantages of the new device show links in several variables of acceptance (Table 2). There is no other clear cut important factor of influence. Neither occasional worry about AIDS/STD (results not shown), nor current sexual life, nor having a partner considered at risk intervene significantly in any of the six equations.

A few other relationships appeared, when the influence of all potential variables is combined:

- Being a teenager and having a higher training (above high-school) were both linked to a lower probability of perceived interest for other women, but not to less potential use.
- Both 'Using male condoms' and 'More difficulties before using them' are linked to a higher probability of personal use.
- Being married increases the probable frequency of use.
- Difficulties after using male condoms were related to less advice to others in case of distrust.

5. Discussion

5.1. Possible biases - Validity

As in most studies regarding female condoms, our sample is a purposive one: reaching attendants of an urban family planning unit, thus including less married and older women and more condom users than the overall population. Almost all studies regarding female condoms concentrate on such groups. For instance, for both age and marital

status, the structure of our sample is very similar to the one found in a study about attitudes towards female condoms (39).

Our respondents state that their partner seldom refuses to use condoms; this shows a rather good quality of relationships in our sample.

The device shown was in a pilot-phase; the outer part is now softer and its appearance has improved with a sweeter colour (amber instead of red); opinions might thus improve with this latest prototype.

Spontaneous answers obtained are opinions; as such, they may of course be transient and thus do not guarantee vested intentions, nor sure behaviour.

Confidence intervals constitute a proxy here for the range of results regarding urban people concerned by contraception, STIs and AIDS, i.e. problems addressed by a female condom. For assessment regarding population in general, larger surveys would be useful, particularly after in vivo tests.

Internal and external validity are satisfactory.

Internal validity is good, for personal features and for other results which are consistent with expectations (results not shown).

Several results are congruent with previous research work. The previous female condom is considered as acceptable (after effective use) by about 50-70% of respondents (surveys carried out in various settings and numerous countries (36)). Intention to use it had already been linked to male condom use (40). Married couples use male condoms less frequently, as already shown by the worldwide study carried out at Johns Hopkins (1).

5.2. Working hypotheses and side results

Our working hypotheses were partially confirmed:

- Readily acceptance of the new female condom is lower for personal use than for perceived overall interest or advice to others.
- Potential use of this device is linked to using male ones.
- Perceiving advantages as important increases most indicators of acceptance.

However,

- Indicators of acceptance were mostly not linked to worry about threat of AIDS/STD, nor to “feeling at risk”, nor to “having a partner at risk”.

TABLE 2
Influence of variables on indicators of acceptance (logistic regressions)

1. Potential interest for other women						
Potential explaining variables and value considered	Indicators of potential interest					
	Probable overall interest (Yes/no)		Would advise in case of:			
			New partner (Yes/no)		Distrust about partner (Yes/no)	
	Odds ratio	P value ^(a)	Odds ratio	P value ^(a)	Odds ratio	P value ^(a)
Whole equation		.002		.039		.011
Age: < 20	.280	.024	.794	.801	.463	.298
Gender: Married	2.865	.108	.917	.904	3.032	.163
Degree: >High school	.288	.006	.444	.206	.306	.052
Having sex currently	.549	.219	.188	.122	.608	.478
Partner at risk	.729	.452	.866	.800	.747	.583
Using male condoms	.694	.371	.608	.402	1.984	.138
Difficulties before using male condoms: .5 or + ^(b)	.922	.828	.721	.559	(c)	(c)
Difficulties after using male condoms: 1.0 or + ^(b)	1.615	.181	.744	.591	.351	.036
Importance ascribed to stated advantages of female condoms: 2.33+ ^(b)	2.810	.003	5.001	.006	2.577	.036
Constant	12.015	.000	112.842	.000	29.320	.000

2. Potential Personal use						
Potential explaining variables and value considered	Indicators of potential use					
	Possible Personal Use (yes/no)		Potential frequency of use (equal or more versus less or never)		Maximum accepted Price (> .60 € versus ≤ .60)	
	Odds ratio	P value ^(a)	Odds ratio	P value ^(a)	Odds ratio	P value ^(a)
Whole equation	.005		.001		NS	
Age: < 20	.728	.451	1.394	.478	No significant equation found	
Gender: Married	1.782	.130	3.118	.011		
Degree: >High school	.891	.686	.783	.461		
Having sex currently	.802	.511	1.328	.459		
Using male condoms	2.411	.002	1.386	.319		
Partner at risk	.900	.749	.836	.640		
Difficulties before using male condoms: .5 or + ^(b)	1.707	.050	1.374	.305		
Difficulties after using male condoms: 1.0 or + ^(b)	.672	.144	1.095	.769		
Importance ascribed to stated advantages of female condoms: 2.33+ ^(b)	(d)	(d)	3.248	.000		
Constant	.696	.401	.147	.000		

a Bold figures show significant results at .05 level.

b Cut-off point = median of a composite index from 0 to 3.

c Variable deleted: if maintained, "difficulties after use" appear as single significant variable.

d Deleted: not significant and "Difficulties" are not significant when "Advantages" remain in the equation

- Difficulties in using male condoms showed inconsistent relationships with acceptance; one could have expected that more difficulties would increase the propensity of advising to use the female condom; this is not the case when distrust is evoked; in such a scenario, respondents might be more prone to advise to break off the relationship, as suggested in an open comment.
- Being married only played a role for frequency of use, other factors taken into account.

Side results showed that:

- Less women answered they would “never” use the new female condom (question about potential frequency of use), than “No, I will not use it” (plain question with dichotomic answer); this probably shows an interest for testing the device.
- The maximum price that respondents would be ready to pay was hardly related to any available variable; as far as accepted price is concerned, factors which have not been analyzed are thus more important, among which income might be essential.

5.3. Insight for further action (own results and previous studies)

At international level, work about reproductive health is sponsored by various UN Funds. Due to their triple benefit in reproductive health, prevention of infection and mastering population growth, condom use has been promoted among other methods and further efforts are under way, e.g.:

a) The United Nations Population Fund grounds its efforts on the Program of Action of the International Conference on Population and Development and its follow-up. It aims at universal access by the year 2015 to high-quality, affordable reproductive health products, including condoms for STI/HIV prevention (3). The proposed strategy utterly mentions female condoms.

b) The World Health Organization and the Joint United Nations Program on HIV/AIDS have supported the development of a guide for planning and programming actions to promote a female condom (36).

The challenge is huge. Possible strategies rest both on various techniques, including education, social marketing and structural measures.

- ***The size of the overall target: the future ahead***

The size of the problem has been evoked in section 1. Let us mention here a few expected evolutions for the future.

In the developed regions, condom use is increasing but women in reproductive age become less numerous (-6% from 2000 till 2015)⁴¹.

In developing countries, 1.25 billion women aged 15-49 were living in 2000; this group is expected to increase by 23% by 2015. The demand for reproductive health services is projected to increase as a result of both more potential users and increased awareness, reaching about 724 million contraceptive users in 2015 (+36% compared to 2000, and even + 79% in 87 countries depending on donors) (19). In the sole developing world, the need by 2015 is estimated at 18.6 billion condoms for HIV/STI prevention (excluding family planning purposes) (5).

- **Possible strategies**

The fight for reproductive health should include the "ABCs": abstinence, being faithful to one's partner and condom use (5).

For contraception in general and for condom use in particular, both lack of awareness of risk and lack of availability hamper contraception at first sexual experience (42). Strategies should thus include distribution strategies, sex education and promotion campaigns.

Distribution strategies include enlarging availability to the most appropriate access points (hotels, bars, grocery stores, gasoline stations, ...). Besides, management and finance for the distribution system are necessary, and also support in developing countries (advocacy, training and coordination)(1).

As to sex education and promotion programmes, they require communication campaigns in order to inform and to transform opinions into behaviour change and effective use.

In our survey, the stated advantages of the new female condom largely contributed to explain differences of acceptance; feeling of danger was less significant. Promotion should thus diffuse positive messages, rather than threatening ones about risks. For instance, some authors suggest to improve the image of male condoms by portraying them as fun, reliable, important, convenient, acceptable and the social norm (1).

Strategies should also involve *training for the use of* (female) condoms and for *negotiating skills*; in Senegal, such a combination resulted in 80% of women being able to protect themselves (43).

Such strategies oriented towards the individual should be strengthened by structural measures at national level: *changing norms* about sexual behaviour and condom use and *changing restrictive policies* in some countries.

The International Conference on Population and Development advocates more: *empowerment and extension of choice*, notably the number of devices (3).

Women's right to safe reproductive health belong to the overall human rights; abuses being mostly about controlling women's bodies (44), their reproductive and sexual lives, progress requires *improving women's status*, for greater control over their lives.

Programmes should be *gender specific and culturally oriented* (45). Differences of values, beliefs, norms, attitudes and behaviour can vary across countries. Examples of such differences are numerous in a variety of studies worldwide (1,20,46,47).

In our survey, worry about AIDS and STD and (when other factors are controlled) with perceived overall interest for female condoms are lower *among teenagers*, confirming the difficulty to raise awareness early enough. Health education should thus devote specific efforts toward teenagers, particularly now that the gap between earlier puberty and later marriage is growing.

Conclusions

Condoms help preventing several infections, unwanted pregnancies and their noxious effects and also contribute to reduce the dangerous pace of population growth. Existing needs are not met and use is still often incorrect or inconsistent. Various strategies aim at increasing effectiveness and coverage.

Effectiveness could be promoted through education and communication: skills for dialogue and negotiation should be extended. Counseling, group discussions and mass media can play a role.

For improving coverage, extending the choice may help. Female condoms add to the variety of available possibilities, contributing to increase the overall rate of protected intercourse. The availability of a second female condom will probably induce the same effect. Neither will replace male condoms.

Our survey analyses the possible acceptance of a new female condom in family planning units of the capital of Belgium. The initial acceptance of the new female condom in the stated urban context is similar to results obtained in other contexts. Having heard the stated advantages, women perceive overall interest as very probable and about 90% of the respondents would recommend the new device. About half of the respondent would use the female condom shown; only 22% would never use it; not intending to use it may thus be linked to absence of present need rather than plain opposition. For the sake of comparison,

male condoms are not used by 38% of respondents. Forty-three percent would pay more than for male condoms.

The various indicators of acceptance are congruent: perceived overall interest for the new condom, propensity of advising it, potential use and intended frequency of use ($p = .000$ in each case). The strongest relationships with possible explaining factors are found with the importance ascribed to the potential advantages.

Acknowledgement

We are grateful to Mediteam which offered 6000 €, enabling to handle the data.

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