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A new female condom : women's opinions

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List of abbreviations

AIDS	Acquired immunodeficiency syndrom
CDC	Centers for Disease Control and Prevention
CI	Confidence interval
HIV	Human immunodeficiency virus
HPV	Human papilloma virus
ICPD	International Conference on Population and Development
PATH	Program for Appropriate Technology in Health
RHCS	Reproductive Health Commodity Security (key-action for implementing ICPD)
STD / STI	Sexually transmitted disease / Sexually transmitted infection
UNAIDS	Joint United Nations Programme on HIV / AIDS
UNFPA	United Nations Population Fund
UNIFEM	United Nations Development Fund for Women
USA	United States of America
WHO	World Health Organisation

1. Introduction

Unprotected intercourse may have noxious effects in various domains : in reproductive health, in risk of infections and in excessive population growth (section 1.1). Condoms are useful both for family planning and for preventing infections. Even if the use of condoms has increased since the 90ties, needs are far from being met (section 1.2).

A new device has been conceived and could add to the variety of choice, contributing thus to increase the overall protection if promoted : a new type of female condom (section 1.3). In order to test spontaneous opinions regarding this new condom, the latter has been presented to 318 women, in Brussels, chief town of Belgium, a country where the very concept of female condom is not known (section 2). The present report analyses the answers (section 3) and discusses the results, particularly in the context of public health (section 4).

1.1. Dangers of unsafe sex

Sexual relationships can have dangerous effects various ways :

- a In reproduction related problems : unwanted pregnancies, abortions, maternal deaths, infant mortality, ...
- b In infections : spreading of HIV/AIDS and sexually transmitted infections (STI).
- c On a global level : increase of population in developing countries hampering the development.





1.1.1. *Reproduction related problems*

Worldwide, 210 million women become pregnant per year around 1999, with a high proportion (about 40 to 50%) of all pregnancies being unintended all around the world ¹; among the latter, it has been assessed that 46 million women undergo abortion (22% of the pregnancies) ²; about 20 million abort in unsafe conditions ³, mainly in Asia. Most of the pregnancies occur in developing countries (182 million versus 28), but the rate of unplanned pregnancies is higher in developed countries (49% versus 36%) and so is the rate of abortion (36% versus 20%) ². Two to eight percent of pregnancies in the world are among teenagers, 12% in Africa ⁴. The lifetime average reaches about one abortion per women ² !

In the United States, almost half of all pregnancies were unintended (1994), 78% as far as teenagers are concerned ⁵. Among unintended pregnancies, almost half go to abortion, 13% are miscarriages and four out of ten end in an unplanned birth, which was the lot of 2.1% of all women aged 15-44 in 2000. Such abortion rate is high compared to several other industrialised countries (0.7 to 1.9%) ⁶. In Belgium, such abortion rate amount to only 0.7% in 2000⁷.

Approximately 600 000 women die annually from pregnancy-related causes, including more than 75 000 from unsafe abortion ¹. Furthermore, about one-third of unsafe abortions result in serious complications ². The risk of dying from complications related to pregnancy and birth is much higher among teen-agers (up to 25 times under 15).

1.1.2. *AIDS and Sexually Transmitted Infections*

The epidemic of HIV/AIDS is spreading : in 2002, 3.1 million people died from this cause, 5 million were newly infected; altogether about 42 million were being infected ⁸ and 20 million had already died ⁹. In a few African countries, between 18 and 26% of adults aged 15-49 are infected ¹⁰. It is the fourth leading cause of death. Worldwide, more than 80% of all adult HIV infections have been transmitted through sexual intercourse ¹¹.

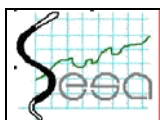
Women are particularly at risk : transmission from men to women is more likely than from women to men both for STIs ¹² and for AIDS (twice to four times as much for the latter^{13, 14}). Causes are numerous : "specific biological aspects, social constraints and limitations, economic circumstances, cultural barriers and the accessibility and quality of health care available to women" ¹⁵.

In 1992, 20% of Belgian people aged 15 to 59 years stated that they already had a test for screening AIDS ¹⁶.

Impact on mortality is high : it has been assessed that, between 2000 and 2050, 278 million persons will die prematurely because of AIDS ¹⁷. In several African countries, the death rate has doubled and life expectancy is dropping and is expected to decline further, in some cases severely, up to 25 years of difference !

The consequences of AIDS are also high in terms of

- disability and vulnerability to all kinds of other diseases,



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- decreased social cohesion, rise of gender inequalities, dramas for millions of orphans, premature deaths among economically active adults, the latter decreasing in number while they have to take care of children and elderly ¹⁸ .
- loss of productivity, loss of skilled workers, high cost of care (which means a burden for families and health systems), weakening economic growth, ... ; in the United States for instance, the cost of treatment has been assessed to US\$ 1033 per year (cited in ⁹). Gross domestic product per capita is projected to decrease by 8% by 2010 in some countries, and even by 20% in 2020 ¹⁹ .

In 1998, direct costs of treating STIs and their complications in the US have been estimated to 8.4 billion \$ per year (excluding lost wages, lower productivity, ...) ¹² .

As to STIs, some are incurable : genital herpes, human papilloma virus and hepatitis B ; they can cause recurrent pain, chronic liver disease and cancer. Other ones are curable, such as syphilis, chlamydia and gonorrhea. Altogether, some 25 infections can be spread through sex ¹⁰ .

Worldwide, 333 million new cases of curable STIs occur annually ¹⁰ . In the United States, STIs hit about 15 million people annually; one in five adults is affected. They can cause ectopic pregnancy and infertility ²⁰ , chronic pain and disability even for men ²¹ , miscarriages, stillbirths, infant deaths, premature delivery, low birth weight, and severe perinatal infections (blindness, mental retardation, ...) ²² . Several STIs, such as gonorrhea, syphilis and chlamydia make women two to five times more vulnerable to HIV infections ²³ .

The most common STI is caused by the human papilloma virus (HPV) : it has been estimated that up to 75% of reproductive age people have been infected at some point in their lives ²⁴ ; it can cause invasive cervical cancer, fortunately only in one case out of 1000 ²⁵ ; however, HPV is present in 80-93% of cervical cancer tumours ^{22, 26} . It is also associated to other types of cancer, both in men and women (ibid.).

1.1.3. Population Growth

According to the 2002 population prospects, the population of the world is currently growing by 77 million each year and is expected to reach 8.9 billion in 2050, provided fertility decreases according to the stated hypotheses. Would fertility rates remain constant throughout the world, the population might still double, up to 12.8 billion ¹⁷ !

The growth will only take place in the less developed regions, despite a probable decline in fertility, and particularly in the least developed ones. Among the latter, six African countries might still quadruple, severely hampering any effort for improving their state of poverty ! By mid-century, numerous countries will still not have completed the transition to the replacement fertility level.

Adolescent mothers will have more children than women starting childbearing later ; consequently raising the mother's age at first birth could reduce the population growth ²⁷ .

1.2. Contraception and Condom use : utility and prevalence



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Among various methods, condom use constitute a useful protection for all problems mentioned above if used correctly and consistently. Even abortion tends to decline to moderate levels as contraceptive use rises (except in Brazil) ².

Laboratory studies have demonstrated that latex condoms provide a good barrier to particles the size of STD pathogens ²⁸. A meta analysis has confirmed that correct and consistent condom use does decrease the risk of HIV infection by about 85% ²⁹. In 2003, it is still the only available technology for protection against sexually transmitted HIV. A panel carefully reviewing relevant literature concluded that such use can also reduce gonorrhea for men ¹¹. A review prepared at Johns Hopkins mentions a set of studies showing some protection for quite a few STIs ¹⁰.

The CDC recommends condom use for prevention of HIV/AIDS and all STIs (inter alia for HPV for which there is no therapy ³⁰), even if epidemiological studies are not perfectly conclusive for all of them.

Worldwide, the contraceptive prevalence rate is only 17% among sexually active young people ²⁷. However, the overall rate has increased from 10% in the mid-sixties up to 60% early this century, with 9 out of 10 using modern methods ³¹. Better availability play an important role in this increase, even more than change of attitudes ³². In Europe, about 58% of women aged 18 or more were already using (or had used) some type of contraception in 1991 (64% in Belgium, 72% in Germany). The percentage reached 67% to 83% in the age classes 20-54 ³³.

Among those using contraception, the condom method is not the first choice in any country except Japan ² and female condoms (rather new) score even lower.

In Belgium for instance, only 7% of those under contraception used condoms in 1989 ³⁴. This result is congruent with a global assessment : worldwide too, only 5% of couples in marital or consensual union rely on condoms, i.e. 7-8% of those using family planning ^{10,62}.

In the Belgian survey quoted above, about 40 to 45% of those using condoms, were using them either as contraceptive or as protection against sexually transmitted diseases (STDs) ; only 15 % stated that both purposes were sought.

Condoms are less frequently used within marriage than among single people sexually active: about 60% of all condoms are used outside marriage ¹⁰. Tables in appendix 3 show prevalence in various regions.

But condom use is increasing. In the United States for instance, the male condom was used by 12% of persons using contraception, 15% in 1988 and 20% in 1995 ³⁵; increases occurred in all age groups, all educational groups, all income groups and mainly among non-married women. Surveys among young people confirm this upward trend : 33% users among ages 15-19 in 1988, up to 45% in 1995 ; in 1997, the rate in grade 9-12 reached 51% for females, 62% for males ³⁶.

Considering the dangers of unsafe sex (see section 1.1), one may wonder why condoms are not more frequently used, even by those who consciously use contraception. A few reasons for this under-use are known : ignorance, social norms (stigma attached to the condom,





discussion about it being a sign of distrust or of infidelity), gender inequality (male refusal, traditional role of passivity for women, fear of abuse and violence, economic dependency, lack of physical mobility), cost or unavailability, unexpected intercourse, risk taking being socially acceptable among young people, lack of awareness of risk and feeling of invulnerability, but also reluctance for using a device which might dull the pleasure, ...

It has been estimated that worldwide 6 to 9 billion condoms were used each year (1999) ¹⁰. Even if this overall use of condoms can appear as significant at first sight, it has been assessed as exceedingly low, given the frequency of sexual intercourse revealed through surveys ³⁷. According to UNFPA for instance, a shortfall of \$1 million in donated contraceptive commodities alone is likely to result in approximately 360 000 extra unintended pregnancies, 150 000 additional abortions and almost 26 000 additional deaths (maternal, infant and under 5) ¹.

Efforts in order to promote the use of condoms are important around the world, particularly in Programmes of Public Health (see section 4.5). Among the proposed strategies, it is suggested that possibilities of choice be extended, that women be empowered and that devices become more easily available worldwide ³⁸. This is the context in which the present study has been carried out.

1.3. A new type of protection : the female condom

1.3.1. *The first female condom : in polyurethane.*

In the early 90ies, a female condom has been approved by the USA Food and Drug Administration and has been marketed in various countries. The Joint United Nations Programme on HIV / AIDS (UNAIDS) has promoted its use in developing countries due to following facts : increasing share of women in the AIDS epidemic, women's greater vulnerability to HIV ¹⁴ (more vulnerable genital tract, low power on safe sex behaviour, ...). According to Unaid, a large fraction of women say that they would use the female condom in the future ³⁹ and studies in Kenya and Brazil have shown that people like female condoms ¹⁰. Our own review of the literature confirms this statement for several countries, e.g. United States ⁴⁰, South Africa ^{41 42}, Ivory Coast ⁴³, Kenya ⁴⁴. Specific surveys also showed marked interest among high risk groups, such as sexual workers (Costa Rica ⁴⁵, Thailand ⁴⁶) drug involved women in Brazil ⁴⁷. Furthermore, some homosexual users in the USA were also pleased with such a device for anal sex ⁴⁸.

In response to some problems, second generation female condoms were tested ; in 2002, the Program for Appropriate Technology in Health (PATH) assessed that none was satisfying the needs that users found important ⁴⁹.

1.3.2. *A new female condom : made out of latex and with extra protection*

In 2003, a new type of female condom is coming out. Just as the previous one, it aims at providing a choice for contraception and for protection against sexually transmissible infections. It comprises a thin-walled flexible tube in latex (just as the male ones), with a closed end and an open end, and provided with : a) a collar made out of a rigid but still soft



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latex piece aiming at keeping it open and b) a slightly longer part of this collar extending towards the anal area, in order to prevent the penis to slip outside before or during the intercourse. It can be used with or without inner ring, according to the users' preference : either inserting it manually by the woman or placing it on the verge of the vagina, letting the man pushing it in with his penis. Tests in vivo are only starting.

Condoms in general present following advantages :

- neither prescription nor special fitting is needed;
- no systemic side effect;
- anal intercourse can also be protected ¹⁵.

According to previous research work (they show consistent results), the first female condom presents following advantages versus the male condom ; the new female condom having similar features on these aspects, should offer the same advantages :

- it 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 ¹⁴ ;
- consequently, the penis does not have to be in erection (no interruption of the intercourse) ;
- this enables the women to take the initiative, to have greater control, and to have a new way to communicate ;
- both the vulva and the base of the penis are protected against infection (this can make it less attractive to some) ;
- less leakage after sex and during intercourse due to dislodgement ;
- less loss of sensitivity or stimulation for the man, since the penis is not constricted;
- a longer intercourse is possible, since safety does not require the man to withdraw immediately after ejaculation ⁵⁰ ;
- women can feel safer and can thus enjoy the intercourse more ;
- adding new types of contraceptives, *inter alia* the female condom, results in more cases of protected intercourse ^{14, 50}.

In addition, the conception of the new female condom is expected to have following advantages compared to the previous one :

- hardly any noise (latex compared to polyurethane for which noise can be disturbing) ;
- no discomfort of outer ring : the outer piece is soft ;
- less costly, being made out of latex rather than polyurethane ;
- safer thanks to the material, latex being associated to a lower frequency of breakage and slippage than polyurethane (1.6% versus 8.5% clinical failures according to a diary of first five uses, 0.9 versus 3.6% according to reports during 6 months, randomized controlled trial about condoms ^{15, 51});
- safer thanks to the collar and the extension to the anal area :
 - . the genitals are better covered, which could be useful for preventing STI for which skin-to-skin is the usual way of transmission ;
 - . consequently, irritation might be better avoided for women having frequent and/or violent intercourse ;
 - . accidental push into the vagina or misdirection outside the device should probably reach zero ;
- for the same reasons, it is expected that the penis does not have to be redirected by the woman when coming out of the vagina during the intercourse ;





- the intercourse can probably last longer after the erection, without danger of spilling into the vagina (still to be proven).

For those stated advantages of the new female condom, the initial in vivo tests are starting; they should be carried out later on, on a large scale.

Inversely, polyurethane is known as being more durable (5 years), requiring no storage arrangements, thinner and conducting heat (hence allowing more sensitivity), can be used with a variety of lubricants including oil-based, and is a solution for those 8% of people who are allergic to latex. However, in a randomised controlled clinical trial about the use of male condoms, users of the polyurethane male condom, in spite of several positive appraisals regarding the latter, were less satisfied and more likely to discontinue participating to the study because of dissatisfaction than users of latex condoms⁵¹. However, its use requires some experience, due to initial difficulties for insertion¹⁰.

2. Methodology

The present report analyses women's opinions at first sight of the new female condom, in Brussels, chief town of Belgium, i.e. in a context where the very concept of such a device is not known (no marketing of the female condom has been carried out in Belgium as yet).

The potential users of such a device can be of almost all ages, starting with teenagers. We thus wished to interview all kinds of women, mainly sexually active. A concentration of such women could be expected in Centres for family planning. In Belgium, the latter are set up by law in order to organise medical, psychological, social and legal consultations in the following fields: prenatal and antenatal care, infertility, contraception and unwanted pregnancy, affective and sexual life and sexually transmitted diseases (STD)⁵². We contacted eight of such centres among the French-speaking centres of Brussels; we asked for collaboration for interviewing women consulting. Four of the centres refused, all arguing a lack of time and personnel. One accepted, but it quickly became obvious that it could not respect the strict rules of systematic interviewing. Three finally accepted, provided the interviews would take place in the waiting room, without involvement of their own personnel. The interviews were administered between October 22 and November 28, 2002, most of them (81%) by a psychologist; 93% of them were administered in one Centre, where all women consulting were systematically interviewed, except if they were accompanied (husband, mother, ...). The sample is thus not a representative sample but a purposive one: in places where women of various ages could be met, who would be ready to talk about some aspects of sexual relationships. Most surveys about female condoms around the world have adopted a similar approach.

A questionnaire has been designed in order to investigate:

- women's appraisal of the use of male condoms, by their partner or by men in general;
- women's spontaneous opinions about the female condom (the new prototype was shown to them): possible interest for women in general and potential use by themselves or by others;





- a few personal features and aspects of sexual life which could possibly explain differences of opinion.

The questionnaire has been discussed with : a professor of methodology in health sciences (the author), a professor of marketing, a gynaecologist and a medical doctor specialist in AIDS care. It has been reviewed after a pilot test with 42 women. Due to the limited time available for each interview in the chosen setting, a few questions had to be dropped after the pilot phase, e.g. those regarding the assessment (positive or negative) of the device itself. The final version appears in appendix 1.

Answers were double encoded by two different persons. Occasionally, women ticked two answers when only one was expected ; we retained the answer which was the less favourable for the working hypotheses.

Potential acceptance of the female condom was assessed through opinions, first about potential interest for women in general, than about potential use by the respondents themselves (details in section 3.3).

As working hypotheses, we assumed that circumstances inducing a higher acceptance of the new device would be :

- Worry about risk of AIDS or STD ^a, feeling at risk ^a or being at risk,
- Use of male condoms,
- Difficulties when using male condoms ^a or criticisms against them ^a (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,
- for personal use rather than use by others.

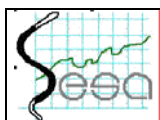
Composite indexes were then set up, averaging for each respondent the scores for several questions pertaining to a common theme :

- Difficulties encountered before using male condoms (see question 7),
- Difficulties encountered after using male condoms (see question 7),
- All difficulties encountered, before or after,
- Current images about male condoms, mainly criticisms heard from men (see question 8),
- Importance ascribed by women to the stated advantages of the female condom compared to a male one.

A maximum of one missing answer was tolerated for composite indexes including only three items; two missing answers were accepted for indexes including four to seven items ; in such cases, the average of those answering to the item was assigned to the missing item(s).

Differences between groups of women were first tested through a bivariate approach, using plain chi square tests (for frequencies) and variance analysis (F tests) for differences of means (see section 3.3). Further on, we used logistic regressions (SPSS statistical

^a Such aspects were investigated before showing the new female condom.





package), in order to differentiate groups of women with higher or lower acceptance of female condoms, taking several factors into account (see section 3.4).

3. Results

First, the structure of the sample will be described (3.1). Then factors which might contribute to the acceptance or refusal of female condoms will be analysed (3.2). Finally, potential use will be analysed, first through a bivariate approach (3.3), than through a multivariate approach (3.4).

3.1. Who are the interviewed women ?

Out of the 331 contacted women, only 13 refused : one was really sick (vomiting), the other ones were very stressed, expecting bad news (unwanted pregnancy or HIV positive) ; we thus reached a 96% response rate.

The sample is rather young : 44% are aged less than 24, only 10% are older than 40 ; mean age : 28 years. Due to this young age, only 14% are married, 27% are either bachelor or divorced, as many as 58% state that they are living with a partner (three quarters of them since more than 6 months).

The sample has a high level of training : only 5% did not finish high school, two thirds have a degree above high school level.

Three quarters of the women were Belgian, 18% came from another European country, the other ones from other parts of the world, mainly Africa (including Mahgreb). There were too few of such foreigners to enable specific results about them.

The sample being not representative of a defined population, no weighting of the observations has been used. Consequently, precise global inference is not possible. Data have been used for analytical purposes, comparing sub-groups. Nevertheless, a few confidence intervals (CI) are provided; they should be considered with care : they show the range of uncertainty in case the sample would be a precise micro picture of a specific population.

Regarding the structure of the sample, the latter enables to confirm a few truisms such as:

- Younger respondents have lower degrees and are less often married.
- Women of high school level or beneath were more often single or in a recent union and with a partner labelled at risk (i.e. < 6 months or multiple partners).

Such obvious results confirm the internal validity of the data.

In the bivariate analyses, the various personal features show hardly any relationship with the variables assessing the interest for the female condom : neither age, nor degree, nor marital status, with a few exceptions about potential risk (see 3.2.1.), opinions about male condoms (see 3.2.3) and advice to others (3.3.2), and also :



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- Women alone less frequently mention present sexual relationships ;
 - Women alone or in recent union more often admit having a partner at risk ;
- such obvious relationships confirm again the internal validity of data.

However, several subgroups had very few numbers, so that tests were not always meaningful. A few significant relationships appear in the multivariate analysis (see section 3.4), in which groups are larger, due to a dichotomous subdivision of all variables.

3.2. Factors potentially related to female condom use (bivariate approach)

3.2.1 Potential risks

High awareness, increasing with the level of training – Opinions differ from facts

Three variables offer information about possible risks : "Feeling of being at risk", "Having ever felt worried about becoming possibly at risk of AIDS or STD", "Having a partner since less than six months or several partners", summarised as "partner at risk" in this report.

Our sample is rather well aware of potential dangers. Seventy per cent of the women answering feel at risk (CI : .65-.76); on average, women *feel at risk* (mean = 2.04, $\sigma = 1.07$) on an index from 0 (not at risk) up to three (9% missing scores). Compared to other results, this variable scores very high.

Still more striking, almost three quarters have already been *worried to be faced with a situation of being infected by AIDS or an STD* (CI : .69-.79). Even those not feeling at risk have already been worried about it (60%) but, not surprisingly, such worry is more frequent when risk is currently felt (82%, $p=.000$); correlation is significant (.000) but rather low (.24).

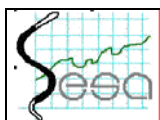
Such worry is much lower under 20 years of age and for women with a degree lower or equal to high school, in spite of the fact that the partner was more frequently at risk in those groups ; the worry increases with the level of training : from less than two thirds at high school level (or below), up to 82% at university level ($p= .019$).

Only 19% of the sample had either a *partner* since less than 6 months (16%) or multiple partners (3%), situations that we label "at risk". This represents almost a quarter of the answers for those having a partner (CI : .18-.28). Interesting enough, this category that we consider being "at risk" is not linked neither to higher feeling of risk nor to more worry about being ever hit by AIDS or STD.

The three variables assessing potential risks show a few links with the use of either male or female condoms (see below), but no systematic relationship.

3.2.2. Use of male condoms

A rather high use, increasing with risk, particularly with objective risk



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Only 3% of the interviewed women did not answer to this question. Forty two percent of answers state (almost) always using male condoms, 10% about once out of twice, and another 11% once out of four. Thirty eight percent report never using male condoms (CI : .32-.43) or only with a new partner for 1%.

Not surprisingly, women alone or in recent union use male condoms more frequently (up to 52-60% (almost) always in such cases, versus 34% in unions longer than 6 months and 21% in married couples ($p = .000$).

Never using condoms is much less frequent for women admitting being at risk : a third or less, up to 47 to 57% (according to the level of agreement about the item) for those not feeling at risk ($p = .004$). The range is still larger for those stating a sexual life that we consider as risky (according to the type of partner mentioned) : 22% versus 50% ($p = .000$) and according to the current sex life : 9% for those having presently no sex life versus 44% ($p = .000$). However correlation is rather low, e.g. .20 with the feeling of danger ($p = .000$).

3.2.3. Opinions about male condoms

Opinions were asked about possible difficulties encountered before or after using male condoms (question 7), and about current ideas regarding male condoms (question 8).

As stated earlier, such opinions were aggregated in various composite indexes, which were all computed on a 0 (no difficulty, no criticism) to 3 basis.

a) Difficulties encountered before using male condoms

Such difficulties are rather rare, particularly plain refusal. They are more frequent when risk is felt.

Possible difficulties were : hesitates to ask using a male condom; had to insist for using one, partner has asked not to use one or refused to use it.

One item had particularly low results : only about 13% of the women (CI : .09-.17) stated that their partner might refuse to wear a condom, most of them with the mild answer "sometimes" (11% of the 96% of valid records).

When aggregated into a composite index, only 2% of the records could not be used because of insufficient answers. Among records used, about 3% had one answer assigned. The index ranks from 0 (never), up to 3 (very often).

On this index, the average level of reported difficulties is rather low : .49 ($\sigma = .44$), i.e. between "never" and "sometimes". Women never using condoms report a lower level of difficulties (.32 versus .59, $p = .000$). The average score is also significantly lower for married women (.41), for those having a stable partner (.43) and particularly for those who never worried about STDs nor AIDS (.32). It increases slightly for women who feel at risk (.53), and more for those who state having no current sex life (.60).





b) Difficulties encountered after using male condoms and index of all difficulties

More difficulties after than before the intercourse are reported. Immediate withdrawal is rare

Possible difficulties after intercourse were : partner has been embarrassed, has regretted or did not withdraw immediately ; the rationale about this item is that immediate withdrawal is required in order to prevent sperm from spilling into the vagina.

One item shows a very high level of difficulties : in 74% of the valid cases, women state that the withdrawal does not always occur immediately (CI : .69-.79), with exceptional high frequencies for (very) often : 38%.

After aggregating such difficulties on an index, only 10 records (< 2%) could not be used because of insufficient answers. Among valid records, less than 5% had one answer assigned.

This index of difficulties is correlated with the one regarding difficulties encountered before the intercourse ($r = 0,38$, $p = .000$). But the average level is much higher in this case : 1.065 ($\sigma = .62$), i.e. just above "sometimes", which is still rather low. Remember that the score concerns all women, including those not using condoms.

We do not observe here the relationships which we found for difficulties *before* use.

If we aggregate all difficulties (before and after intercourse) on a global index, women with partners labelled "at risk" score higher on the global index of *all* difficulties : .78 versus .58 ($p = .003$). Same conclusion for women alone or in recent union : above .72 versus .57 or less ($p = .007$).

c) Images of the male condoms

Rather high agreement with negative images of male condoms, higher when partner is labelled at risk.

We investigated current negative images, such as: the condom stops the impulse, decreases men's pleasure, men feel it as being embarrassing, partner does not like to use it or does not appreciate interrupting the intercourse, he refuses to use it, you get tired of it. One record stating "it spoils everything" has been assigned to "strongly agree" for items on this composite index.

Only the item "refuses" is but poorly approved : among valid answers, hardly 10.3 % (strongly) agree (CI : .07-.14) ; this is congruent with own experience as stated in the index "difficulties before" described above ($r = .29$, $p = .000$). For the six other items, the pattern of answers was almost identical in each case : on average, 8 and 21 % (strongly) disagree with the stated critics (scores 0 or 1); 50 and 20 % agree or strongly agree (scores 2 or 3).

When items were aggregated, 13% of the records could not be used because of insufficient answers. Furthermore, 44% of those kept on the index had one or two answers out of seven





assigned. This index is thus of lower quality than the previous ones ; it will not be used in the multivariate analysis.

The average level is rather high : 1.67 ($\sigma = .51$) on this index ranking from 0 (not a single criticism) up to 3 (adherence to all 7 items) ; the mean is pulled down by the item "refuses" (mean : 0.69), whereas all the other items average 1.77 or more.

The level of agreement with this index of negative statements was significantly higher among women having partners labeled at risk (1.8), or who do not dare to talk about condoms (1.9) ($p < .008$ in both cases).

The level is also very linked to both indexes of difficulties before and after the intercourse ($p = .000$) ; when both types of difficulties are aggregated in one single composite index, the average level of criticisms rises from 1.37 (when difficulties score less than .25) up to 1.98 when difficulties are more numerous (score 1.25 or over). Correlation between the index of criticisms and the global index of difficulties is rather high : .41 ($p = .000$).

3.2.4. Appreciation of the potential advantages of the new device

High interest for the potential advantages of the new female condom

Potential advantages of the device as stated at the interview were : 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 are expected advantages ; they remain to be confirmed by further research.

Among valid answers, the possible safety aspect was particularly appreciated (95% consider it as being rather or very important, CI : .93-.98) ; but the number of missing (incl. no opinion) was particularly high, so that the difference drops to nothing if the % is computed on the whole sample (77%). The fact that the partner's consent would not be required was considered as less interesting : the % of "rather or very important" is the lowest of the set, but still reaches 75% of valid answers (CI : .70-.80) ; several women questioned the statement ("partner's agreement is always required" was a free comment).

On the composite index, less than seven percent of the records could not be used because of insufficient answers. Among those kept on the index, eighteen percent of the records had one item assigned; nine percent had two.

The average score is high : 2.28 ($\sigma = .45$) on an index ranking from 0 (no importance) to 3 (very important). This shows a large interest for the potential advantages of the female condom.

This index will show important relationships with the potential use of female condoms and to other indicators of interest (see sections 3.3 and 3.4). Amazingly, it is not related to any other variable : neither to feeling of risk, nor to worry about AIDS/STD, nor to difficulties before or after use of male condoms, nor even to criticisms about the latter.





3.3. Acceptance at first sight of the new female condom (bivariate analyses)

Women's acceptance has been approached as follows :

- ◆ As far as overall use is concerned :
 - Perceived interest for women in general
 - 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
- ◆ As far as own use is concerned :
 - Would the interviewed women use it for themselves and
 - at which frequency and
 - which price would they accept to pay as a maximum.

At this stage, chi-square analyses usually kept all details of the answers (various levels of appreciation) ; consequently, a number of analyses were meaningless, because of insufficient observations (expected cells < 5). It should thus be noted that the absence of clear relationship can be misleading : more links might possibly have been discovered in case the sample would have been larger. Of course, only those relationships confirmed by a meaningful test are mentioned.

3.3.1. Potential interest

Having heard the stated advantages, women perceive overall interest as very probable. The latter increases when appreciation of such advantages is high.

The potential interest, as perceived for women in general, was tested immediately after having shown the new device and explaining its expected advantages ; the question was put with reference to women being possibly interested (yes or no) to protect themselves against AIDS and other STDs. In such a context, three quarters of valid answers were positive, an extra 2.5 % wishing to first test it, altogether about 78% (CI : .73-.82) ; 6% were missing.

Quite normally, the overall interest as perceived for women in general is linked to the appreciation of the potential advantages of the device : on the composite index (see 3.2.4), the perceived importance of the stated advantages scores 2.35 for those who suppose that women will be interested and lower (but still 2.04) for those who state the contrary ($p = .000$). When advantages are appreciated below score 2, only two thirds of the valid answers feel that women will be interested ; this frequency lies above 90% when the importance of the potential advantages reaches 2.5 or more ($p = .000$).

At this stage, no other factor seemed to influence the perceived interest. The multivariate analysis will reveal some of them though (see section 3.4.2).

Quite normally, this readily perceived interest is linked to the other indicators of acceptance, first for others (propensity to advice), then for potential personal use (would use it or not, frequency and price) ($p = .000$, except for price : .012).





3.3.2. Advice to others

About 90% of women who answered would recommend the new device ; they appreciate more the stated advantages.

Both types of advice (in case of new partner and distrust) are strongly correlated : .60 ($p = .000$). Seven to eight percent of answers were missing. Only 9% of valid answers would not recommend the new device in case of a new partner (CI : .06-.12) and less than 13% in case of distrust about the partner (CI : .09-.16) ; in the latter case, free comments have shown that a few women would rather advise to stop the relationship. Refusing advice being rare, a few tests could not be performed because of insufficient number of observations. The meaningful results are the following.

Here too, the appreciation of the potential advantages play an important role, with sharper differences : for both types of advice the score on the composite index of advantages is less than 1.97 for the very few who do not consider advising it, it reaches 2.23 or more for those who will probably advise it and 2.37 or more when they are sure to advise it ($p = .000$).

In case of a new partner, women are more prone to advise the use of female condoms when they report less difficulties using male ones ($p = .019$). In case of distrust, women with a low degree were also more prone to advise it ($p = .000$), just as those stating less difficulties after intercourse ($p = .03$), recognising less criticisms about male condoms ($p = .04$) or perceiving more importance for the stated advantages of the female condom ($p = .004$).

No relationship was found neither with worry about AIDS/STD, nor with the feeling of being at risk, the use of male condoms, the fact of having currently a sex life or the level of accepted price.

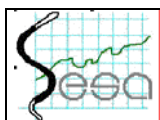
Furthermore, links could be found with other indicators of acceptance : in both scenarios (new partner and distrust), the propensity to recommend the new female condom to others increases when women are ready to use it for themselves and intend to use it equally or more than the male condom ; it very strongly increases when they suppose immediate interest from other women ($p = .000$ in all cases).

3.3.3. Personal use

Acceptance of use : particularly linked to perceived advantages, use of male condoms and difficulties before use.

Women were further asked if they would use the female condom which had been displayed. Only 3% of the interviewed women did not answer to this question. About half of the responders (CI : .45-.56) stated that they would use the female condom shown (about 3% of them specifying "maybe", stating that they wish to test it first or that it would be in case of distrust). This is a rather high result for a completely new device, knowing that only 62% are presently using male condoms. This level might be underestimated, considering the answers about the frequency of use (see below).

Here again, the strongest relationship is found with the perceived importance of the potential advantages : 59% if interest scores 2 or higher; versus 32% interest lies below 2 ($p = .001$).





The acceptance of use is also linked to both the current and the overall use of male condoms : $r=.20$ ($p=.000$) ; but is not quite dependent of it : 58% of those using male condoms would readily use the female one, versus 37% in the opposite case ($p= .000$).

Furthermore, the acceptance is also stronger :

- for women reporting more difficulties (.75+) before intercourse : 62% of acceptance versus 45% ($p= .023$) and
- for those feeling at risk : 55%, versus 41% ($p= .017$) ; correlation is here low : .13 ($p= .03$).

As stated before, the various indicators of acceptance are congruent : potential use is linked to perceived overall interest (62% versus 14%), to propensity of advising the new condom (+/- 65% versus 11 or 22 %) and to intended frequency of use (.000 in each case)..

Frequency of use : linked to perceived advantages. Much higher than the initial acceptance.

Seven percent did not answer. Among those answering, 11% expect to use it more than the male condom, 22% equally and 43% less. Only 22 % would never use the new device (CI : .17-.27), which is less than those never using male condoms (38%) and much less than the percentage stating previously that they would not use it (50%); in fact, hardly 43% of those first saying they would not use it confirm a "never" answer at this point of the interview !

Women stating that they would use it equally or more than the male condom, score 2.46 on the index assessing the perceived advantages, versus 2.24 for those who would use it but less and 2.05 for those who decline the idea of using it ($p= .000$). Women stating that they would use this new condom equally or more than the male one form only 15% of respondents when they score the advantages at less then 2, but reach 35 % when such score lies between 2 and 2.5 and 51 % when advantages are scored 2.5 or more.

For the rest, no link was found with potential explaining variables such as age, worry about AIDS/STD, feeling of danger, use of male condoms, difficulties of use or criticisms about the male condoms. On the contrary, links are found as usual with other indicators of acceptance : potential interest, considering advising the device and personal use

Maximum accepted Price : 43% would pay more than for male condoms

Women were asked which price they would consider as a maximum for themselves. Valid answers constitute 87% of the total. Just about half of them state that they would pay maximum the same price as for the male condom, i.e. about 0.6 € at the Belgian market price. Interesting enough, less than 8% would only accept to pay less, whereas 43% (CI : .37-.48) would be ready to pay more (34% maximum 1 €, 7% maximum 2 €, and 2% maximum 3 €).

Not surprisingly, the considered price is linked to the perceived interest : 46% of those who suppose that women will be interested would be ready to pay more than the present price of male condoms, versus only 27% for those suspecting no interest ($p=.012$).





Not a single other relationship could be found, neither with potential explaining variables, nor even with other indicators of acceptance.

3.4. Acceptance and possible explaining factors (multivariate analysis)

The possible combined influence of available data on the acceptance of female condoms was analysed through logistic regressions, which required to dichotomise all the variables.

Dependent variables were :

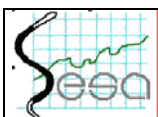
- For use by other women : perceived overall women's interest, advice which would be provided to others (in case of a new partner or distrust about partner) ; see section 3.4.1.
- For personal use : potential use (would use it or not), relative frequency compared to the male condom (equal or more versus less or never), and maximum accepted price ($> .60$ € versus $\leq .60$ €); see section 3.4.2.

The potential explaining variables were :

- Socio-economic features : age (<20 versus 20 or over), degree (higher than high school), marital status : married versus other statuses.
- Current sex life (or not).
- Partner labelled at risk (i.e. union < 6 months or multiple partners).
- Current use of male condom (yes), difficulties of use, either before or after (cut-off point = median) and
- Importance ascribed to the potential advantages of the female condom as stated (cut-off point = median).

Three other variables were disregarded, because of too many 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 further deleted because it was not significant in any case and the resulting equations appeared less clear : worry about being possibly threatened by AIDS or STD. The results appear hereunder.



**3.4.1. Potential use by other women**

	Probable overall interest for women (Yes / no)		Would advise in case of new partner (Yes / no)		Would advise in case of distrust about partner (Yes / no)	
	Odds ratio	P value ^(b)	Odds ratio	P value ^(b)	Odds ratio	P value ^(b)
Whole equation		.002		.039		.011
Age : < 20	.280	.024	.794	.801	.463	.298
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 +	.922	.828	.721	.559	(a)	(a)
Difficulties after using male condoms : 1.0 or +	1.615	.181	.744	.591	.351	.036
Stated advantages of female condoms perceived as important: 2.33 or +	2.810	.003	5.001	.006	2.577	.036
Constant	12.015	.000	112.842	.000	29.320	.000

a Variable deleted : if maintained, "difficulties after use" appears as single significant variable !

b Bold figures show significant results at .05 level.

Other factors taken into account, the probability of perceiving that women in general will show interest for the female condom is much higher when stated advantages are strongly appreciated (times 2.8) ; it is lower for teenagers (.28), and when training exceeds high school level (.29).

Advice to others in case of new partner is much more probable for those women considering the potential advantages as important (times 5), all other factors taken into account. Advice to other women in case of distrust is also linked to such appreciation (times 2.6), but it is lower for those reporting difficulties after using a male condom but such strange relationship remains as the sole significant one if the variable "difficulties before using a male condom" is maintained in the equation; a rather high level of training (degree above high school) induces a lower probability (borderline as far as significance is concerned).



**3.4.2. Potential Personal use**

	Possible Personal Use (yes/no)		Potential frequency of use (equal or more versus less or never)		Maximum Price Considered (price > .60 versus ≤ .60)	
	Odds ratio	P value ^(b)	Odds ratio	P value ^(b)	Odds ratio	P value ^(b)
Whole equation		.005		.001		NS
Age : < 20	.728	.451	1.394	.478		
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 +	1.707	.050	1.374	.305		
Difficulties after using male condoms: 1.0 or +	.672	.144	1.095	.769		
Stated advantages of female condoms perceived as important: 2.33 or +	(a)	(a)	3.248	.000		
Constant	.696	.401	.147	.000		

(a) Variable deleted (difficulties are not significant when "Advantages" remain in the equation)

(b) Bold figures show significant results at .05 level.

Other factors taken into account, the probability of using personally new female condoms is much higher when male condoms are being used (times 2.4), and for women stating difficulties before using male condoms (times 1.7) but the latter relationship disappears when all variables are kept in the equation. The prospect of using them as frequently or even more than male condoms is much stronger for married women and when the probable advantages of the new device are considered as more important (times 3.2 in both cases, all other factors taken into account). As far as maximum price is concerned, no significant equation could be found.

In multivariate analyses, only the stated advantages of the new device show links in several variables of acceptance.

Neither occasional worry about AIDS/STD (results not shown), nor current sexual life, nor having a partner considered at risk by us (i.e. since less than six months or multiple partners) intervene significantly in any of the six equations. The variables linked to the various indicators of use differ according to the indicator analysed : there is thus no clear cut main factor of influence ; with one major exception : in four equations out of six, interest, potential advice or intended use is linked to the importance ascribed to the stated advantages of the new device, other factors taken into account; opinions about overall interest are also more favourable when training is rather low, but the links are not systematically significant.



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4. Discussion

4.1. Possible biases - Internal validity

As expected, our sample is not representative of an overall population ; it concerns attendants of an urban family planning unit, i.e. a group including a smaller percentage of married women and older women and consequently, probably more condom users. Our approach is congruent with the one adopted in almost all studies regarding female condoms: the latter purposely concentrate on groups where the use of male condoms is expected to be rather high. 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 toward female condom⁵³. Such approach enables to perform comparative analyses as we did; it is less useful for inference of frequencies to a global population.

The confidence intervals should thus be considered with caution ; they are provided, because our sample constitutes an interesting proxy for those people more concerned by the problems addressed through a female condom : contraception, STIs and AIDS.

It is interesting to note that respondents state firmly that their partner seldom refuses to wear condoms ; this shows a rather good quality of relationships in our sample.

The quality of the results is confirmed thanks to good internal validity of results found for personal features (see section 3.1) ; furthermore, other results are quite consistent with what could be expected, e.g :

- *The use of male condoms is more frequent for those having felt worried about possible situation of threat of AIDS/STDs.*
- *Negative images of male condoms are more frequent when more difficulties of use are reported.*
- *The worry about AIDS and STDs increases with the level of training, confirming the better awareness of risk when training is higher.*

4.2. Working hypotheses : partial confirmation

Our working hypotheses were partially confirmed :

- Readily acceptance of the female condom is lower for personal use (50%, CI 45-56%), than perceived overall interest for it (78%, CI 73-82%) or advice to other women (\pm 90%, CI 84-94%).
- The importance ascribed to the stated advantages of the new female condom had significant relationships with several indicators of acceptance ; but no other link with any potential explaining variables could be found. Potential advantages are thus appreciated for their overall interest, rather than as an immediate solution to present problems.
- Potential use of female condoms was linked to using male ones. Other indicators of acceptance were not.

A few other results were unexpected :





- To our surprise, worry about being possibly in a situation of threat of AIDS or STD was never significant for explaining any indicator of acceptance of the female condom. Neither were "feeling at risk" or "having a partner labelled at risk" (< 6 months or multiple), except in one single case: acceptance to use with feeling of risk (moderate relationship).
- Neither difficulties with the use of male condoms nor perceiving a high degree of criticisms showed consistent relationships with acceptance.
- Being married played a minor role : only for frequency of use, other factors taken into account.

Due to constraints of time at the spot of the interview, we could not include all potential explaining variables, such as knowledge about AIDS, locus of control and concepts listed in the theory of planned behaviour : attitudes towards the behaviour and perceived attitudes of important others (= subjective norms) ⁵⁴. More specifically, possible negative opinions which were planned in the initial version of the questionnaire had to be dropped.

4.3. Side results

- Advising the female condom was widely accepted, for a new partner as well as in case of distrust. The small difference of frequency may be due to the fact that, in the latter case, a few respondents would rather advice to break off, as stated in a few open comments.
- Enquiring about potential frequency of using the new female condom, we found less women answering they would "never" use it, than answers "no" to the initial question about potential use (i.e. "I will not use it"). The difference probably shows an interest for testing the device.
- At first sight, stated behaviour about using male condoms is more in line with objective risk (type of partner) than with open recognition of risks ; however, stating "not being at risk" may result from a conscious use of male condoms (a rational preventive measure) rather than from a lack of awareness.
- Acknowledging criticisms about male condoms is linked to reported difficulties when using them; this shows that such images are not only prejudices, but are based on personal experience.
- Quick withdrawal after ejaculation, which is required for an effective use of male condoms, is not a natural behaviour : in our sample it is stated as rather rare ! Such result shows why the use of the present male condom can be ineffective.
- Objective risk may be disconnected from subjective feeling ; our category "partner at risk" (< 6 months or multiple partners) is neither linked to feeling of risk nor to worry about AIDS/STDs. This might partly explain the relative failure of prevention campaigns. As said earlier, it can also result from a preventive behaviour, using male condoms.
- The fact that maximum price could hardly be related to any of the available variables means that other unknown factors are more important, among which income might be the main one.





4.4. Comparisons with other studies

The initial opinion about potential use of the new female condom in our sample, is in line with international literature regarding acceptability after effective use of the previous one : the latter has been considered as acceptable by about 50% to 70% of respondents in surveys carried out in numerous countries and in many different settings ⁵⁰.

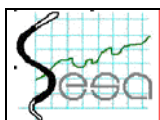
Similar to our results, intention to use the (previous) female condom had already been linked to condom use (at last intercourse) ⁵⁴.

Respondents who questioned the stated advantage "men's concern not required" might be right : WHO reports women, particularly in developing countries, being prevented from using the previous female condom because of male disapproval ⁵⁵ and some surveys have revealed the need to obtain partner's consent prior to using the previous female condom (references in ⁵⁵). The anticipated reaction of partner to the female condom has been shown to be important for women ⁵⁶.

Married couples use male condoms less frequently ; this is congruent with a conclusion of the worldwide study carried out at Johns Hopkins ¹⁰.

4.5. Insight for promotion in general (own results and previous studies)

- Stated potential use for the new female condom (50%- CI: 45%-56%) is rather high considering the level of use of the male condom (62% CI: : 57-68). It is worth noting that the device which was shown was still in a pilot-phase ; in the latest versions, the outer part is softer and its appearance has been improved : the colour is now sweeter (amber instead of red). Opinions might thus improve with this latest prototype.
- However, for assessment regarding the overall population, larger surveys would be useful ; to this end, the concept of female condom should be already diffused into the community !
- At this stage, the spontaneous answers that we obtained are just transient opinions at first sight of an unknown device ; they are neither vested intentions, nor sure behaviour. Illustrating this, we can refer to a survey in 14 countries (but no information about representativeness) : among youngsters aged 16-21 intending to have sex with a new partner, 97% said they would use a condom but when time came, only 57% did so ⁵⁷.
- In order to transform such opinions into behaviour, communication campaigns are necessary. Surveys can then be carried out in order to measure attitudes scales, particularly after in vivo tests ; examples already exist ⁵³.
- The significance of the stated advantages as explaining variables for accepting the new female condom, confirms, if need be, the importance of a good marketing for any firm wishing to sell such a new device.

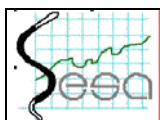




- In our survey, potential use is more linked to perceived advantages than to feeling of danger. This means that communication for promotion should diffuse positive messages about the interesting aspects of the device, rather than threatening messages about the risks to avoid. For instance, in order to improve the image of the condoms, some authors suggest to portray them as fun, reliable, important, convenient, acceptable and the social norm ¹⁰.

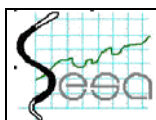
Other studies have already shown :

- The importance of positive messages has also been pinpointed in a broader meaning in publications about policies of reproductive health for young people : "improving adolescent's future prospects, ... is likely to have greater impact than exhortation and messages that it is wrong for them to start childbearing early" ⁵⁸.
- Marketing strategies should be culturally oriented. Differences of values, beliefs, norms, attitudes and behaviour can vary across countries, as shown by numerous examples below :
 - . In developed countries for instance, the percentage of women 20-24 having had first sex before age 18 ranges from 12% in Poland up to 72% in Iceland ¹⁰.
 - . The percentage of currently sexually active teenage women not using any contraceptive method (among 5 countries) ranks from 4 % in Great-Britain up to 20 % in the USA ⁵⁸.
 - . In the mid-1990s, adolescent pregnancy rate (excluding miscarriages) was in the Russian Federation ten times the Japanese rate ⁵⁸ ; adolescent birth rate in the USA reaches 49 per 1000 women aged 15-19 versus 10 in France and less than 5 in Japan (ibidem). Consequently, the birth rate outside union in the USA (37/1000 women) is much higher than in Sweden or France (5/1000 or less) ⁵⁸.
 - . The percentage of married women practising contraception ranges from 20% in Africa, up to 65-80% in developed regions, Latin America and the Caribbean and East Asia ².
 - . Condom use among unmarried women varies from 1% to 36% (Latin America) ¹⁰.
 - . From 22% of sexually active adults in France up to 61% in Sweden admit they would still have sex without a condom (internet survey : figures are thus not representative of the whole population) ⁵⁹.
 - . The percentage of men having extramarital sex varies from 3% to 73% (63 countries were studied) ¹⁰.
 - . Abortion rates per 1000 women aged 15-44 vary from 10-15 in several western European countries up to around 80 in Cuba, Romania and Vietnam ².
- Furthermore, messages should take into account that beliefs and attitudes may also differ according to gender and according to the type of partner (main or casual) ⁵⁶. Regarding condom use, differences may be linked to the anticipated reactions from partners.
- Other surveys in developed countries (among young people aged 16-21) have shown that both lack of awareness of potential risk and lack of availability are reasons for not using contraception for their first sexual experience ⁵⁷. Sex education, promotion campaigns and expanding the places for sale should thus be used for improving safer sex. Distribution should occur in many different places, including not only shops but also hotels, bars, clubs, grocery stores, barber shops, gasoline stations, taxis, vending machines, truck stops, military barracks, ... ¹⁰.





- The market for condoms in general is potentially huge : an estimated 1550 million women aged 15-49 were living in the world in 2000, among whom 298 in developed regions (see appendix 2) ⁶⁰.
 . In 1995, there were 982,2 million couples of reproductive age. Among the latter, about 58% were using a contraceptive method, but only 4% were using condoms ⁶¹ ; the number of users among such couples can thus be assessed at about 25,6 millions (14% of users) in more developed regions, versus about 16 millions (2% of users) in less developed regions.
 . In 2000, just above 1 billion women aged 15-49 were in a marital or consensual union. According to surveys in the late 90es, about 61.9% of such women were using a contraceptive method (70.4% in more developed regions, versus 60.2% in less developed regions). The prevalence of use of modern method was slightly lower : 55.6%; But the prevalence of condom users among them was still low : just above 5% of the stated women, with large differences across the regions : from about 1% in Africa, around 4% in various other less developed regions, up to 11-12% in the developed regions, except for Japan where a record rate is registered : 46% ⁶² !
- According to those sources, the use of condom remained low but had greatly increased within a few years. Applying those rates to the 2000 population concerned, this means that about 53 to 56 million of such women were using condoms : i.e. 25.5 million (15% of users) in developed regions, and 27 to 30 million (3.1 to 3.4 % of users) in less developed regions. This would mean a 27-34 % increase within just a few years.
- Extending those figures to the whole population is hazardous since the prevalence among single women (*inter alia* among adolescents) and extramarital use of married people is not known. Appendix 4 shows an attempt according to two hypotheses : equal use (total 88 million) and 60% of use outside marriage,- according to an estimate made at Johns Hopkins ¹⁰, - (total : 139 million !) ; the latter is certainly overestimated, since the stated % outside marriage includes couples in union (also included in the basic figure).
- Nowadays, the production of condoms is already large: 8 to 10 billion condoms are produced each year, of which 6 to 9 are used. Female condoms are not competitors but complements, still in developing phase ; between 1992 and 1998, 30 million were sold ¹⁰.
- For the developed regions in the world, the number of condom users has remained stable, reflecting a small increase of use among a slightly smaller population (see appendix 2). As a consequence, the male condom market in the US, which had experienced a double-digit sales increase in the late 1980s, has become slower
- For the future, the market in developed countries will depend upon average demand, since the number of women in reproductive age is expected to decrease in those regions, except in the United States : about minus 10% between 2000 and 2015 in the other developed regions (see appendix 4).
- Consequently, the US producers have expanded abroad and have promoted sales through agencies supplying the developing world ⁶³. On average, about 1.15 billion male condoms have been donated yearly between 1996 and 2000 ⁶⁴.

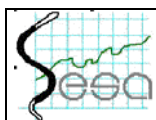




- As to female condoms, Unaid alone has supplied 19 million in developing countries and UNFPA states 6.9 million female condoms donated in 2000-01⁶⁵. In developing countries.
- Even in countries depending on donors' aid, the number of users of modern contraceptive methods is high in the private sector, with large variations among countries: from 7% of women in Asia up to 50% in some Latin American countries³². This is particularly the case for condoms : 7.3 million condom users in the private sector versus 3.2 in the public sector; this share is expected to remain relatively stable until 2015 : 14.7 million versus 6.8³².
- With the support of the United States Agency for International Development (USAID), projects are underway for implementing Commercial Market Strategies, including increasing consumer demand (social marketing activities); improving accessibility of health services (developing health insurance schemes and health-financing alternatives); creating public-private partnerships; supporting innovative financing mechanisms; increasing the sustainability of the Non Governmental Organisation sector, ...¹.

4.6. Insight for action in Public Health (own results and previous studies)

- In our survey, worry about AIDS and STD is much lower among teenagers and for women with a degree lower or equal to high school ; this confirms the difficulty of raising awareness early enough. Similarly, perceived overall interest for the female condom is lower for teenagers other factors taken into account (but here also for highly trained rather than low trained !). If this result is confirmed on a larger scale, health education should consider specific efforts towards teenagers. Specific approaches for young people involve : information, training for skills, services (preferably enshrined in common public health services and covered by insurance), and removing social, legal and programmatic obstacles to reproductive health⁶⁶. Such policies are particularly needed now that the number of young people is greater than ever (3 billion under age 24), and that the gap between earlier puberty and later marriage is growing. Whenever possible, social and economic well-being and equality enable to provide greater support for such policies. Positive attitudes towards sexuality, clear messages about safe sex and easy access to services contribute to responsible teenage behaviour⁵⁸. Many studies have shown that such activities do not lead to earlier sex nor to increased sexual activity¹⁰.
- The fight for reproductive health should include various approaches, *inter alia* the "ABCs" : abstinence, being faithful to one's partner and condom use⁹. Education should be tailored separately for men and women, due to gender differences regarding beliefs and attitudes toward female condoms⁵⁴.
- For Public Health Programs in developing countries, the availability of devices can only be achieved with the help of donors. The market should be segmented, so that subsidized supplies are limited to those who cannot afford to pay for the services³².





- Strategies should involve training both for the use of (female) condoms and for negotiating skills ; a study in Senegal has shown that such combination can result in 80% of women being able to protect themselves from unsafe sex ¹³. Other challenges are at stake, as identified and developed in various reports, e.g.:
 - . Information, communication for behaviour change, distribution to the most appropriate access points, management and finance for the distribution system, and support (advocacy, training and coordination) ³¹.
 - . Changing norms about sexual behaviour and condom use, assuring effective use, providing greater access, promoting condoms (improving the image) and changing restrictive policies in some countries ¹⁰.
- Furthermore, the policy promoted through ICPD and the follow-up forums, advocate not only technical solutions, but the development of a new paradigm, based on empowerment and extension of choice. The latter includes extending the number of devices.
- Another way to improve women's quality or reproductive health is to enshrine those women's rights into the global philosophy and strategy of overall human rights ; since abuses in this field are mostly "about controlling women's bodies, particularly their reproductive and sexual lives" ⁶⁷, the pathway to progress involves improving women's status, -in order to enable greater control over their lives,- and promoting women's human rights as a part of solving public health problems.
- The challenge is huge :
 - . An additional 45 million people might become infected by HIV before 2011 in low- and middle-income countries unless a drastic prevention effort is implemented ; in such a case, 29 million new infections could be avoided by 2010 ⁸.
 - . The population prospects, which assess a 40% increase until 2050 (+57% in developing countries), are based upon hypotheses of decreasing fertility, the latter requiring that access to family planning is widely available to couples ⁶⁸ !
 - . The number of women and men of reproductive age in developing countries might increase by 23 per cent between 2000 and 2015, from 1.25 billion up to 1.54 (+ 36%, in 87 countries depending on donors, reaching 720 million in 2015 in those countries ³²).
 - . As to the demand for reproductive health services in developing countries, it is projected to increase as a result of both the growth of potential users (+111 million) and increased awareness (about 3/4 of the increase due to population change ⁶⁵) : +81 million, altogether about 724 million contraceptive users in 2015, a growth of more than 36% compared to 2000. In 87 countries depending on donors (thus excluding China and India), the expected increase of contraceptive users could even reach 79% between 2000 and 2015 ³².
 - . As to condoms, 24 billion of them should be used each year; i.e. about 3 to 4 times the actual use (6 to 9 billion) ¹⁰. Seventy one percent of those need lie outside marriage (16% in extramarital situations); the majority of need thus lies in prevention rather than in family planning.
 - . In many countries, condoms have played a relatively small role, but their use is expected to increase. For the developing world only, the need by 2015 is estimated at 18.6 billion condoms for HIV/STI prevention (excluding family planning purposes) ³⁷. It is considered as a low estimate, since it excludes condoms for solely family planning





purposes and assumes that condoms will not be used consistently³⁷. In the 87 countries depending on donors³², the needs are expected to triple within 15 years : from 3.3 billion up to 9.9, of which about 80% depending on the public sector, and thus largely on donor's aid. The cost of requirements in the sole framework of UNFPA activities has been estimated at 702 millions of dollars for 2003¹ ; for 2015 it could be at least \$ 2.8 billion³⁷. This perspective is particularly puzzling knowing that donor support has been decreasing between 1996 and 1999 (from 44% of estimated needs for contraceptives in developing countries, down to 27%, with the share of condoms dropping from 41% to 30%)⁶⁴. For 2015, the gap in donor dependent countries could reach \$140-210 million annually (at constant prices), leaving 100 million women with unmet needs³².

- At international level, the work in the field of reproductive health is being sponsored by various UN Funds.

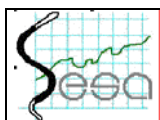
a) The United Nations Population Fund (UNFPA), grounds its efforts on the Programme of Action of the International Conference on Population and Development (ICPD), particularly § 53 of the 1999 follow-up ; one stated objective is : universal access by the year 2015 to high-quality, affordable reproductive health products, including condoms for STI/HIV prevention³¹. Their strategy, summarised in two documents^{1,31}, utterly mentions female condoms, referring to the ICPD Programme of Action. They state that their section "Commodity Management Unit" is the largest international supplier of contraceptives and will continue to act as "a channel for guidance on the introduction of new and less well-known reproductive health commodities", mentioning the female condoms among other examples (§ 21). The UNFPA Call for Action lists the various partners which will be involved around the World for implementing the strategy : international organisations (the World Bank, WHO, UNAIDS), intergovernmental Organisations, a set of Non-Governmental Organisations from various countries and private contractors. The five main donors are : USAID, World Bank, UNFPA, Department for International development of the UK (DFID) and the European Union.

b) The World Health Organisation (Department of Reproductive Health and Research), together with the Joint United Nations Programme on HIV / AIDS (UNAIDS) Information Centre have provided support for the development of a superb guide for planning and programming actions for promoting the existing female condom⁵⁰, not only at national level, but also at programme level, (audience, distribution and communication strategies, training, ...), and finally at users' level (what to explain, how to explain, ...).

When the global strategy succeeds, it will result in a decrease in unmet need for family planning; a decrease in unwanted births, especially among adolescents; a decrease in maternal mortality; and a decrease in HIV prevalence among persons aged 15-24¹. Even abortion is expected to decline if liberalisation is accompanied by better reproductive health services, sex and contraceptive education, support and counselling².

Conclusions

Condoms help preventing a set of infections, unwanted pregnancies and their multiple noxious effects and contribute to reduce the pace of population growth. However their use is



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still insufficient to meet the needs and use is not always effective, because it is incorrect or inconsistent. In order to increase effectiveness and coverage, various strategies have been and must still be developed. Whatever the channel, promotion should accompany extended availability of condoms.

Effectiveness should be promoted through education and communication : skills for dialogue and for negotiation, should be extended. Counselling, group discussion and the mass media can play a role in this field.

For improving coverage, one strategy consists in extending the choice ; female condoms can help here : adding to the variety of available possibilities, the overall rate of protected intercourse increases, as verified in several contexts. Having a second female condom available on the market will probably induce the same effect. Neither of them will replace the male condom.

The challenge of extending the use of condoms is similar for male and female condoms. But the channel will differ according to the type of region. In developed countries commercial promotion will take the lead. In developing countries, donors have largely helped in extending the coverage, through public health programmes and social marketing Their intervention will remain necessary ; UNFPA is presently coordinating efforts, mobilising donors and various partners.

Our survey analyses the possible acceptance of a new female condom in the chief-town of Belgium. Having heard the stated advantages, women perceive overall interest as very probable and about 90% of those answering would recommend the new device.

About half of the responders (CI : .45-.56) stated that they would use the female condom shown ; only 22 % state that would never use the new device (CI : .17-.27), showing that not intending to use it may be linked to absence of present need rather than plain opposition. Those results should be compared to the present use of male condoms : 62%. As to maximum accepted price, 43% would pay more than for male condoms. The various indicators of acceptance are congruent : potential use is linked to perceived overall interest, to propensity of advising the new condom and to intended frequency of use (.000 in each case).

For several of these indicators, the strongest relationships with potential explaining factors are found with the importance ascribed to the potential advantages. In multivariate analyses, only such stated advantages of the new device show links with several variables of acceptance.

As a conclusion, our results show a potentially good acceptance of the new female condom in the stated urban context. The next step should now consist in confirming these intentions after live tests.

Appendix 1. Questionnaire.

SURVEY

We first wish to thank you for accepting to answer to the present survey, which is quite anonymous : your answers will be mixed with many others. Answers are neither good nor



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bad. What is important is that you would tell precisely which is your opinion, because this will enable us to help women to protect themselves against AIDS and other sexually transmitted diseases. Thank you very much for your help.

1. Place of interview :

2. How old are you ?

3. Which is your civil status or your union situation

- 1 Married
- 2 Widow
- 3 Divorced
- 4 Single
- 5 Union since more than 6 months
- 6 Recent union

3 Which is your highest degree ?

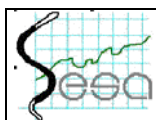
- 1 6th grade
- 2 9th grade
- 3 High school
- 4 Bachelor degree or similar
- 5 Final University degree (master)

5. Citizenship ?

- 1 Belgium
- 2 Other countries of the European Union
- 3 Other countries (out of European Union) in Europe
- 4 Maghreb
- 5 Countries of Africa except Maghreb
- 6 USA - Canada - Australia
- 7 Other countries of America or Oceania***
- 8 Asia

6. People talk a lot about AIDS and about other sexually transmitted diseases, such as hepatitis, herpes, syphilis. Have you already been worried, thinking that you might once be in a context where you could be hit by such a disease ?

- 1 Yes
- 2 No





7. (Please tick (x) in one box on each line)

	Very often	Often	Sometimes	Never
1 Did you hesitate yet to ask your partner to put a condom on ?				
2 Were you ever compelled to insist for having your partner putting on a condom ?				
3 Did you feel yet that your partner was embarrassed for having to put on a condom ?				
4 Did your partner regret yet to have to put one on ?				
5 Did your partner ask yet not to put one on ?				
6 Did your partner refuse yet to put one on ?				
7 Your partner does not withdraw immediately after having ejaculated				

8 Sometimes, people utter criticisms regarding condoms. How far do you agree with following statements ?

	3	2	1	0	5
(Tick (x) in one box on each line)	Strongly agree	Agree	Disagree	Strongly disagree	No opinion
1 The condom stops the impulse					
2. Men feel it is embarrassing					
3 It dulls man's sexual pleasure					
4 My partner refuses					
5. My partner does not like to put a condom on					
6. You get tired of it					
7. My partner does not like to interrupt sex					
9 I do not dare to talk about condoms with my partner.		Incl. 'sometimes'			
9 I believe that I am not at risk	0	1	2	3	5
10 Other :	3	2	1	0	5

The new female condom just shown to you enables women to decide to protect herself, even if her partner does not wish to put on a male condom. This will enable her to avoid AIDS or other sexually transmitted diseases, such as hepatitis or genital herpes which are getting more frequent in Belgium.

This condom has two advantages :

First advantage

It can be put on several ways and at various moments :

- either before sexual intercourse, the woman inserts it completely into her vagina, just like a Tampax
- or during intercourse : in this case, the woman places it on the verge of the vagina, letting the man pushing it in with his penis.



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Second advantage

It is not noisy during intercourse and man does not feel a loss of sensitivity, contrary to the male condom.

9. Do you think that women will be interested to protect themselves against AIDS and other sexually transmitted diseases with this new female condom ?

1 Yes (yc projet intéressant)

0 No

Why ?

.....
.....

10. Among following advantages of the device, which ones are important for you ?

(Tick (x) in one box on each line)

	3	2	1	0	5
	Very important	Rather important	Slight important	Not important	No opinion
1 It is possible to choose when to place the condom (either before or during intercourse)					
2 It dulls less the sensitivity for men					
3 It is safer than the male condom					
4 It is possible to choose the male or female condom according to circumstances.					
5. The partner's consent is not required					

11. Would you advice a girl-friend who has a new partner refusing to put on a male condom to buy this new female condom ?

3 Yes, definitely

2 Yes, probably

1 No, probably not

0 No, definitely not

5 I do not know

Why ?

12. Would you advice a girl-friend to buy this new female condom if she distrusts a partner's fidelity if the latter does not wear male condoms?

3 Yes, definitely

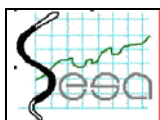
2 Yes, probably

1 No, probably not

0 No, definitely not

5 I do not know

13. Do you use male condoms in order to protect yourself ?





- 3 Always or almost always
 2 Once out of two
 1 Once out of four (incl. "sometimes")
 0 Never
 9 always because I have a nw partner (nerver later on)
 11 never now because I have a stable partner (otherwise yes)
 2 (3 + 2 = 5) 1 (2 + 1 = 6) 0 (0 + 1 = 7)

14. Would you use this female condom which was just shown to you ?

- 1 Yes (Incl Yes in case of infidelity)
 0 No
 3 To be tested, maybe, it depends, 0+1
 5 I do not know

15. Compared to male condoms, would you use such a female condom

- 3 More often than the male condom
 2 As often as the male condom
 1 Less often than the male condom (incl. if ticked together with "never")
 0 Never
 5 I do not know
 6 To be tested

16. A male condom costs about 0.6 euro

How much would you buy such a female condom as a maximum ?

- 1 Less than 0,60 euro (or 24 BEF)
 2 0,60 euro (or 24 BEF)
 3 Between 0,60 euro and 1 euro (between 24 and 40 BEF)
 4 Between 1 euro and 2 euros (between 40 and 80 BEF)
 5 Between 2 euros and 3 euros (between 80 and 120 BEF)
 6 3 euros and more (120 BEF and more)
 7 I do not know (= missing)

NB If two answers were given, the highest one has been encoded, since the question pertains to maximum price

17. Do you currently have a sexual life ?

- 1 Yes (incl. +/-)
 0 No

18. If Yes

- 1 With a stable partner (i.e. since more than 6 months)
 2 With a new partner
 3 With several partners
 7 No point (declared missing)

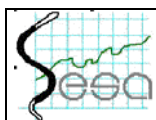
Many thanks for you kind collaboration.



**Appendix 2 : Women of reproductive age and condom use (thousands)**

	1995	2000	Index 2000 versus 1995		
Women aged 15-49 (thousands)					
World	1452131	1549604	1,07		
Developed regions	301922	298368	0,99		
Less developed regions	1150209	1251236	1,09		
Couples of reproductive age (thousands)					
			Own estimate	Own estimate	
World	982200	1047499	1,07		
Developed regions		170277			
Less developed regions		877223			
Contraceptive Prevalence among such couples (%)					
World	58	61,9	1,07		
Developed regions		70,4			
Less developed regions		60,2			
Condom Prevalence among such couples (%)					
World	4 - 4,2	5,1	5,3	1,20	1,25
Developed regions	14	15,0	15,0	1,07	1,07
Less developed regions	2	3,1	3,4	1,55	1,71
Condom users among such couples (thousands)					
World	41600	52700	55605	1,27	1,34
Developed regions	25600	25500	25542	1,00	1,00
Less developed regions	16000	27200	30063	1,70	1,88

Source : - For 1995: [World Contraceptive Use 1998](#), Population Division of the United Nations Department of Economic and Social Affairs, United Nations publication, (ST/ESA/SER.A/175), Sales No. E.99.XIII.4,
- For 2000 : Source : [World Contraceptive Use 2001](#), United Nations, Department of Economic and Social Affairs, May 2002.





Appendix 3 : Use of Condoms per region

Table 1. - Estimated Worldwide Use of Condoms by Married Women for Family Planning, 1999. - Based on Survey Responses by Married Women of Reproductive Age (MWRA)

Region (abstract)	% MWRA using Condoms	Number (in Millions)
China + Indian Subcontinent	3	16
All developing areas except China + India	3	5
All developing areas	2	21
East Europe (incl. former USSR)	10	5
North Europe (Scandinavia)	23	1
South Europe	11	2
West Europe	5	1
North America	13	6
Japan	46	8
All developed areas	14	23
Total world	4	44

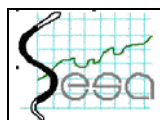
Source : Gardner R, Blackburn RD, Upadhyay UD, Closing the Condom Gap. *Population Reports*, Series H, No. 9. Baltimore, Johns Hopkins University School of Public Health, Population Information Program, April 1999.

Table 2. Current Condom Use Among Unmarried Women and Men (%) - Selected Surveys

Region, Country & Year	Women	Men
AFRICA		
Benin 1996	9	38
Burkina Faso 1993	NA	15
Central African Rep. 1994-95	6	11
Chad 1996-97	4	15
Côte d' Ivoire 1994	11	NA
Eritrea 1995	17	47
Gambia 1990	NA	18
Malawi 1996	11	19
Mali 1995-96	8	45
Mozambique 1997	2	7
Tanzania 1996	6	22
Uganda 1995	15	32
Zambia 1996	12	36
Zimbabwe 1994	14	50
LATIN AMERICA & CARIBBEAN		
Brazil 1996	17	NA
Colombia 1995	11	NA
Costa Rica 1993	3	NA
Dominican Republic 1996	9	37
El Salvador 1993	1	NA
Guatemala 1995	5	NA
Haiti 1994-95	11	27
Jamaica 1993	36	64
Paraguay 1995	3	NA
Peru 1996	17	32
EASTERN EUROPE & CENTRAL ASIA		
Czech Republic 1993	12	NA
Kazakhstan 1995	19	NA

NA = Not available - Sources : Demographic and Health Surveys and US CDC Family Health Surveys

Source : Gardner R, Blackburn RD, Upadhyay UD, Op.cit.



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