

Research paper

## Condom use among Moroccan women of childbearing age

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### ABSTRACT

Assess factors associated with condom use among women of childbearing age in Morocco and to provide evidence for the implementation of education strategies aimed at preventing sexually transmitted infections and HIV is the objective of this study. A total of 1100 sexually active women of childbearing age were interviewed in the 20 health districts of Essaouira province, Morocco. Only 62.5% had heard of condoms, and 115 women (10.5%) had used them in the 12 months preceding the survey. Significant factors associated with condom use were marital status, healthcare decision-making, place of residence, and condom knowledge. More educational interventions are needed to improve condom knowledge and promotion, particularly among rural women who are less autonomous in healthcare decision-making and those with no condom knowledge.

## 1. Introduction

Cases of STIs continue to rise, and their persistence poses a major public health problem, not only because of their severity but also because of their frequency [1]. This increase in the incidence of STIs can be explained by the less frequent use of condoms [2]. However, in the face of the AIDS epidemic and numerous STIs, condoms are a better and more sustainable prevention strategy [3].

Condoms are an effective method of preventing STIs [4,5,6,7]. They have been included in prevention strategies and campaigns in various countries [8].

According to the Cochrane systematic review by Weller and Davis-Beatty (2012), consistent condom use by heterosexual couples was associated with an HIV infection risk reduction of around 80% [9]. Similarly, consistent condom use was associated with a reduced risk of STIs. Results showed that visits in which participants reported consistent condom use (100% intercourse) over the past seven days had fewer incident STIs, with an adjusted OR of 0.4 (95% CI, 0.2-0.9) compared with visits in which no condom use was reported. This finding suggests that consistent condom use may offer significant protection against STI acquisition [10,11].

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Condom promotion and distribution programs, as well as behavior change communication, have shown promise in STI prevention. Male and female condoms are two options available, with male condoms being more accessible and cost-effective. Recent advances in condom technology have led to improvements in quality and user experience [8].

However, in some studies, reported problems associated with condom non-use by women include non-acceptance by the sexual partner, perceived ineffectiveness, lack of comfort, lack of sexual satisfaction with condoms, husband's alcohol consumption, depression, anxiety, and being unavailable at the time [12]. Similarly, partners perceive that asking for a condom indicates infidelity or multiple partners [13]. Also, when sexual relations take place on an ad hoc basis, there is often no place for condoms [14]. Furthermore, condoms may only be useful for occasional partners. But in the case of more or less long-term relationships, condoms are not used [3]. In fact, sexual relations with transactional partners are potentially at higher risk of STI transmission [15]. What's more, the channel and content of messages appear to be more important in terms of inculcating safer sex practices and condom use [16].

According to the WHO, prevention should include programs to promote male and female condoms for dual protection against STIs and unwanted pregnancy [17].

In Morocco, as part of the national program to combat STIs and AIDS, condom use is indicated as a dual method of protection against unwanted pregnancy and sexually transmitted infections, as indicated by the WHO [17]. To our knowledge, no study has been devoted to condom use as a means of protection against STI and HIV infection among women of childbearing age in our country.

## **2. Methods**

The data analyzed in this study were part of a series of studies aimed at investigating STIs in women of childbearing age in the province of Essaouira, Morocco [18,19,20].

### **2.1 Design**

A cross-sectional study was conducted with women in the age range of procreation in 20 urban and rural health circles in the Moroccan province of Essaouira. As a result, 1100 women were included. During their visits to the health center, participants were chosen at random until the target number of participants per center was reached. Following authorization from the health authorities and the research ethics committee, we conducted structured interviews. A high degree of intimacy, confidentiality, and trust are necessary while researching sexual behavior in a culturally sensitive setting like Morocco. As a result, before the questionnaire was administered, the willing participants were given all the information they needed to understand the study and were asked to sign an explicit consent form. The women who declined to take part in the study and those whose health prevented them from participating were not included. After giving their informed consent, socio-demographic information was collected, as well as data on condom use.

### **2.2 Data management and analysis**

The sociodemographic characteristics and the use of the preserver have been described using descriptive statistics. In order to investigate the relationship between the acceptance of the use of the preservative and the sociodemographic factors of logistic regression models, significant variables have been determined.

The findings are displayed as probability density functions with 95% confidence intervals and corresponding p values; a value of less than 0.05 is deemed significant.

## **3. Results**

### **3.1 Characteristicis of the study population**

The study reveals that women in Essaouira's city and rural communities have varying ages and healthcare access (Table 1). The majority of women have completed at least one grade level, with 96.7% being matriarchal. The

majority of women are over 18 years old at first intercourse, and 78.2% are younger than their partners. The woman and her partner (50.2%) make the majority of decisions regarding healthcare access jointly.

**Table1: Characteristics of the study population**

Variables	Modalities	N	%
Age	< 35	704	64.0
	≥ 35	396	36.0
Place of residence	Urban	409	37.2
	Rural	691	62.8
Distance to care facilities	< or = 3km	326	29.6
	>3km and < or = 6 km	407	37.70
	>6 km	367	33.4
Marital status	Married	1040	94.6
	Unmarried	60	5.4
Educational level	Literate	388	35.2
	Primary	478	43.5
	Secondary and above	234	21.3
Professional activity	Active (SPC 1 ; SPC 2)	129	11.8
	Inactive (SPC 3)	971	88.2
Socio-economic level by household income	≤ GIMW	886	80.5
	> GIMW	214	19.5
Age of first sexual intercourse	More than 18 years	983	89.4
	Less than 18 years	117	10.6
Multiple sexual partners in the last 12 months	Yes	46	4.0
	No	1054	96.0
Age differential	Participant younger	860	78.2
	Similar age	182	16.5
	Participant older	58	5.3
Healthcare decision-making	Women	265	24.1
	Husband	250	22.7
	Joint decision	553	50.2
	Someone else	32	3.0

N : Number ; % : Percentage ; CSP : Socio-professional category ; CSP1 : Shopkeepers and professionals, civil servants and managers ; CSP2 : Craftsmen, salaried workers, blue-collar and white-collar workers, farmers, labourers, cab and lorry drivers, shop assistants... ; CSP3 : No profession.

### 3.2 Knowledge and use of condoms in the 12 months preceding the study

Condom use depends on users' knowledge of condoms. Sixty-eight women (62.5%) in this study had heard of condom. However, only 115 women (10.5%) reported using preservatives in the 12 months prior to the study.

### 3.3 Reasons for not using a condom

We questioned the women on why they didn't use condoms. The responders could select multiple reasons (table 2). The women cited non-acceptance from the partner (85.6%), fear of the partner's negative reaction (81.2%), lack of bargaining power (79%) and the belief that using a condom indicates infidelity or having multiple partners (77.5%) as the main reasons. Additionally, the women mentioned that they were uncomfortable and did not feel sexually satisfied when using condoms (79%).

**Table 2: Reasons for not using condoms according to women of childbearing age**

Variables	Modalities	N	%
Non-acceptance by sexual partner	Yes	942	85,6

	<i>No</i>	158	14,4
Perceived ineffectiveness	<i>Yes</i>	576	52,4
	<i>No</i>	524	47,6
Fear of negative reactions from partner	<i>Yes</i>	893	81,2
	<i>No</i>	207	18,8
Lack of comfort and sexual satisfaction with condoms	<i>Yes</i>	839	76,3
	<i>No</i>	261	23,7
Lack of negotiating power	<i>Yes</i>	869	79,0
	<i>No</i>	231	21,0
Asking to use a condom indicates infidelity or multiple partners	<i>Yes</i>	852	77,5
	<i>No</i>	248	22,5

N: Number of respondents to the given question, %: Percentage

### 3.4 Factors associated with condom use by women of childbearing age

Numerous individual traits, such as sociodemographic traits, sexual history, and behavior, were linked to condom use in the previous 12 months. Merely 10.5% of the women who participated in the poll had used condoms in the 12 months before it, 13.7% in cities, and 8.5% in the countryside ( $p < 0.01$ ).

Additionally, it was noted that sixteen (26.7%) of the single women used condoms, compared to 9.5% of the married women, with a significant difference based on marital status ( $p < 0.001$ ). Condom use was higher among women who made decisions about their healthcare independently (15.6%) and jointly with their partners (13.4%) ( $p < 0.05$ ). Just 6.5% of expectant mothers reported using condoms ( $p < 0.01$ ), compared to 36.8% of women under the age of 18 who reported using them for the first time ( $p < 0.01$ ), 21.7% of women who reported having multiple partners in the last 12 months, and 22.2% of those who reported suspecting their husbands of having other sexual partners ( $p < 0.05$ ).

**Table 3: Factors associated with condom use by women of childbearing age**

	Condom use	Yes		No		$\chi^2/p$
		N	%	N	%	
Age	<i>15-24</i>	28	8.7	293	91.3	1,625 <sup>ns</sup>
	<i>25-34</i>	41	10.7	342	89.3	
	<i>35 and over</i>	46	11.6	350	88.4	
Place of residence	<i>Urban</i>	56	13.7	353	86.3	7,289 <sup>**</sup>
	<i>Rural</i>	59	8.5	632	91.5	
Educational level	<i>Literate</i>	48	12.4	340	87.6	2,423 <sup>ns</sup>
	<i>Primary</i>	46	9.6	432	90.4	
	<i>Secondary and above</i>	21	9.0	213	91.0	
Marital status	<i>Married</i>	99	9.5	941	90.5	17,817 <sup>***</sup>
	<i>Unmarried</i>	16	26.7	44	73.3	
Professional activity	<i>Active (SPC 1 ; SPC 2)</i>	43	8.6	459	91.4	3,519 <sup>ns</sup>
	<i>Inactive (SPC 3)</i>	72	12.0	526	88.0	
Socio-economic level by household income	$\leq$ GIMW	98	11.1	788	88.9	1,789 <sup>ns</sup>
	$>$ GIMW	17	7.9	197	92.1	
Household structure	<i>Nuclear</i>	355	40.5	521	59.5	0,897 <sup>ns</sup>
	<i>Multiple</i>	83	37.1	141	62.9	
Healthcare decision-making	<i>Women</i>	36	15.6	229	84.4	8,072 <sup>**</sup>
	<i>Husband</i>	22	8.8	228	91.8	
	<i>Joint decision</i>	52	13.4	501	86.6	
	<i>Someone else</i>	5	8.6	27	91.4	
Condom knowledge	<i>Yes</i>	25	6.5	359	93.5	9,803 <sup>**</sup>
	<i>No</i>	90	12.6	626	87.4	
Age of first sexual intercourse	<i>More than 18 years</i>	82	8.3	901	91.7	5,580 <sup>*</sup>
	<i>Less than 18 years</i>	43	36.8	74	63.2	
	<i>Yes</i>	10	21.7	36	78.3	

Multiple sexual partners in the last 12 months	<i>No</i>	105	10.5	985	89.5	
Husband suspected of having other sexual partners	<i>Yes</i>	6	22.2	21	77.8	3,729 <sup>ns</sup>
	<i>No</i>	109	9.6	964	90.4	

N: Number; %: Percentage; ddl: Degree of freedom; \*\*\*: p < 0.001; \*\*: p<0.01; \*: p<0.05; ns: Not significant; p>0.05; CSP: socio-professional category; CSP1: Large-scale retailers and the professions, civil servants and executives; CSP2 : Craftsmen, salaried employees, blue-collar workers, white-collar workers, farmers, laborers, cab and truck drivers, shop assistants, etc.; CSP3 : No profession.

A binary logistic regression was performed to capture the weight of factors associated with condom use. The variables selected for this analysis were those that had demonstrated statistical significance in previous tests. Examination of the results obtained from the binary logistic regression model that the factors with the greatest influence on condom use by women in the twelve months preceding the survey, in order of priority, were marital status [OR 3.380; 95% CI: 1.372- 8.322; p < 0.01], healthcare decision-making [OR 1.127; 95% CI: 0.645- 2.331; p < 0.01], place of residence [OR 1.569; 95% CI: 0.359- 1.900; p < 0.05] and condom knowledge [OR 3.365; 95% CI: 1.279- 8.857; p < 0.05].Conflicts Of Interest.

**Table 4: Binary logistic regression model for condom use**

Associated Factors	Logistical regression					
	<i>A</i>	$\chi^2$	<i>p</i>	<i>OR</i>	<i>IC95 %</i>	
Place of residence	0.564	5.815*	0.016	1.569	0.359	0.900
Marital status	1.218	7.014**	0.008	3.380	1.372	8.322
Health care decision-making	1.204	7.119**	0.028	1.227	0.645	2.331
Condom knowledge	0.521	6.040*	0.014	3.365	1.279	8.857
Age at first sexual intercourse	0.064	1.137 <sup>ns</sup>	0.971	0.988	0.517	1.890
Multiple sexual partners in past 12 months	0.116	0.025 <sup>ns</sup>	0.873	1.123	0.270	4.671

A: Constant,  $\chi^2$ : Chi-square value, OR: Odds ratio, CI: Confidence interval; \*\*\*: p<0.001; \*\*: p<0.01; \*: p<0.05; NS: Not significant; p>0.05

## 4. Discussion

The management of sexually transmitted infections is a constantly evolving field [21]. Prevention through systematic screening is crucial, particularly for women of childbearing age and adolescents, who are at greater risk due to behavioral, cognitive, and biological factors [22].

There are many strategies to reinforce the prevention of STI transmission, including condom use [23]. Condom knowledge is universal, but there are differences between rural and urban areas [24]. In a study carried out in India [24], around 85% and 69% of women in urban and rural areas, respectively had heard of condoms. Only 9.8% of urban married women and 3.2% of rural women used condoms. It was also observed that among the sexually active unmarried population, 72.4% of women and 98% of men used condoms.

In the present study, 688 women (62.5%) had heard of condoms. Indeed, condom use is a crucial factor in STI prevention (Cotte, 2019) [25]. However, a decline in condom use, despite its recognized effectiveness, has been reported by Legros (2020) [5]. The situation is further complicated by the fact that many STIs are asymptomatic, leading to an underestimation of their prevalence [26]. It is therefore necessary to step up education and promotion of condom use, particularly among at-risk populations. This study showed that only (10.5%) of female respondents had reported condom use in the last twelve months prior to the survey. This result is a far cry from other studies, which found that among women who had had sexual intercourse in the last three months, 40% said they had used a condom the last time they had sex [27]. Women who said they didn't use condoms gave a number of reasons. They thought that condom use indicated infidelity or having several partners (77.5%), that they had no bargaining power (79%), that condoms were not accepted by their partner (85.6%), and that they were afraid of their partner's negative reaction (81.2%). Women also said that when they used condoms, they felt uncomfortable and sexually unsatisfied. These results are in line with other studies that have pointed out that in many cultures, women may face social or gender pressures that limit their ability to negotiate condom use with their partner [13].

They may fear negative reactions from their partner if they suggest condom use, or they may fear being perceived as distrustful or unfaithful [28]. In addition, some women may not be fully aware of the risks associated with STIs and the importance of systematic condom use to protect themselves. A lack of awareness and education about STIs and prevention methods can lead to a low rate of condom use [29].

Factors associated with condom use corresponded to individual and relationship characteristics. The binary logistic regression model revealed that marital status, whether the husband was suspected of having other sexual partners, place of residence, and monthly family income were factors influencing condom use. This means that women with access to the resources available through access to care, female empowerment, and financial stability would use condoms more if needed.

## 5. Conclusion

To reduce the impact of STIs on the individual and the community, it would seem necessary to encourage women to go for STI screening, treatment, and prevention, particularly in public facilities that are free of charge, and to ensure that they benefit from appropriate STI care.

Health program managers can make greater efforts in health education by adopting new communication and awareness-raising strategies. The determinants observed in this study may help shape STI control interventions in a context marked by illiteracy and poverty. Further investigations are needed to compare these results.

### Conflicts of interest

The authors declare no conflicts of interest.

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## References

- [1] World Health Organization. Sexually transmitted infections (STIs). 2023. Available from: [https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-\(stis\)](https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis)). Accessed Jan 26, 2023.
- [2] M. Potoczny, F. Truchetet, G. Gratier de Saint Louis. The male condom as a means of protection against sexually transmitted infections. What factors influence its use? Multicenter observational survey of 303 male students from Metz - November to December 2015. *Rev Sage-Femme*. 16, 2 (2017).
- [3] E. Ntirampeba, P. De Sutter. Factors influencing low condom use among the sexually active population of Burundi. *Sexologies*. 26, 4 (2017).
- [4] S. Prabhu, A. Oakley, D.H. Félix. Sexually Transmitted Infection Prevention: An Overview - Sexually Transmissible Oral Diseases - Wiley Online (2022). Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/9781119826781.ch4>. Accessed Jan 14, 2023.
- [5] S. Legros, A. Meyer. Prescription of the male condom: a qualitative study of the opinion of general practitioners and midwives in the Grenoble conurbation. *Dumas-02879874*. 126 (2020).
- [6] F. Dubois-Arber. Condom use. In: *Sexual Behaviour and HIV/AIDS in Europe* (1998). Available at: <https://doi.org/10.4324/9781003015420>. Accessed Jan 2, 2023.
- [7] S. Hosseini Hooshyar, M. Karamouzian, A. Mirzazadeh, A.A. Haghdoost AA, H. Sharifi, M. Shokoochi. Condom Use and its Associated Factors Among Iranian Youth: Results From a Population-Based Study. *Int J Health Policy Manag*. 7, 11 (2018).
- [8] M. Beksinska, R. Wong, J. Smit. Male and female condoms: Their key role in pregnancy and STI/HIV prevention. *Best Pract Res Clin Obstet Gynaecol*. 66 (2020).
- [9] S. Weller, K. Davis-Beatty. Condom use systematically reduces sexual transmission of HIV infection (2012). Available at: [https://www.cochrane.org/fr/CD003255/HIV\\_utilisation-de-preservatifs-reduit-de-maniere-systematique-la-transmission-sexuelle-de-linfection](https://www.cochrane.org/fr/CD003255/HIV_utilisation-de-preservatifs-reduit-de-maniere-systematique-la-transmission-sexuelle-de-linfection). Accessed Jan 12, 2024.
- [10] M.F. Gallo, M.J. Steine, L. Warner, T. Hylton-Kong, J.P. Figueroa, M.M. Hobbs, and al. Self-reported condom use is associated with reduced risk of chlamydia, gonorrhoea, and trichomoniasis. *Sex Transm Dis*. 34, 10 (2007).
- [11] A.I. Ajayi, K.O. Ismail, W. Akpan. Factors associated with consistent condom use: a cross-sectional survey of two Nigerian universities. *BMC Public Health*. 19, 1 (2019).
- [12] E. Vigneswaran, R. Padmanabha, N., M. Devanna, M. Jaffar Sadiq, B. Manojkumar, S. Rubia, et al. Evaluation of Barriers on condom use - A cross sectional surveys. *Int J Res Pharm Biomed Sci*. 2 (2011).
- [13] World Health Organization. Sexually transmitted infections: implementing the Global STI Strategy. 2017. Available from: <https://apps.who.int/iris/bitstream/handle/10665/258740/WHO-RHR-17.18-eng.pdf?sequence=1>. Accessed Jan 6, 2024.
- [14] N.N. Sarkar. Barriers to condom use. *Eur J Contracept Reprod Health Care* 13, 2 (2008).
- [15] C.A. Attinsounon, A. Akonakpo, T. Adoukonou, C.A. Dovonou. Risk factors for sexually transmitted infections and condom use among students in 2022. *Médecine Mal Infect Form*. 2, 2 (2023).
- [16] R. Bessinger, C. Katende, N. Gupta. Multi-media campaign exposure effects on knowledge and use of condoms for STI and HIV/AIDS prevention in Uganda. *Eval Program Plann*. 27, 4 (2004).
- [17] World Health Organization. Guide to the management of sexually transmitted infection. 2005. Available at: [https://applications.emro.who.int/aiecf/guide\\_prise\\_infections\\_sexuellement\\_transmissibles\\_fr.pdf](https://applications.emro.who.int/aiecf/guide_prise_infections_sexuellement_transmissibles_fr.pdf). Accessed Jan 13, 2024.
- [18] N. Nacer, N. Fatimi, S. Rkha, N. Ouzennou. Syndromes associated with sexually transmitted infections: Prevalence and risk factors among women of childbearing age in Morocco. *Afr J Reprod Health*. 26, 9 (2022).
- [19] N. Nacer, N. Ouzennou, N. El Fatimi, S. Rkha. Knowledge and Attitudes about Mother-to-Child Transmission of the Human Immunodeficiency Virus in a Context of Social Vulnerability: The Case of the Province of Essaouira, Morocco. *Ethiop J Health Sci*. 33, 3 (2023).
- [20] N. Nacer, S. Rkha, J. Chouikh, H. Mejdouli, N. Ouzennou. Self-treatment in a health environment marked by social vulnerability: The case of sexually transmitted infections in Morocco | E3S Web of Conferences. Available at: [https://www.e3s-conferences.org/articles/e3sconf/abs/2024/07/e3sconf\\_star2024\\_00087/e3sconf\\_star2024\\_00087.html](https://www.e3s-conferences.org/articles/e3sconf/abs/2024/07/e3sconf_star2024_00087/e3sconf_star2024_00087.html). Accessed Jan 25, 2024.
- [21] O. Peuchant, C. Bébéar. Sexually transmitted infections with Chlamydia trachomatis. *Rev Francoph Lab*. 530, 29 (2021).
- [22] S. Shakya, S. Thingulstad, U. Syversen, S.A. Nordbø, S. Arne, S. Madhup, et al. Prevalence of Sexually Transmitted Infections among Married Women in Rural Nepal. 2018. Available at: <https://www.hindawi.com/journals/idoj/2018/4980396/>. Accessed Oct 3, 2023.
- [23] J.A. Berg, J. Shaver, N.F. Woods, E.A. Kostas-Polston. American Academy of Nursing on Policy Women's Sexual/Reproductive Health and Access Challenges Amid COVID-19 Pandemic From the Women's Health Expert Panel of the American Academy of Nursing. *Nurs Outlook*. 2022. Available at: <https://www.sciencedirect.com/science/article/pii/S0029655422000033>. Accessed Jan 18, 2023.
- [24] B. Donta, S. Begum, D.D. Naik. Acceptability of male condom: An Indian scenario. *Indian J Med Res*. 140, 1 (2014).
- [25] L. Cotte, S. Giaché, M. Godinot, A. Pansu, T. Perpoint, E. Braun, et al. Knowledge of sexually transmitted infections in at-risk populations. *Médecine Mal Infect*. 49, 4 (2019).

- [26] J. Flandrin, L. Duranteau. Sexually transmitted infections in adolescents: diagnosis, treatment and prevention. *Perfect In Pediatrics*. **1**, 4 (2018).
- [27] K.A. Jones, E. Miller. Associations Between Condom Attitudes, STI Diagnosis and Treatment, Condom Use, and Non-Condom Contraceptive Use. *J Pediatr Adolesc Gynecol*. 29,2 (2016).
- [28] R. Bame, C.S. Wiysonge, E.J. Kongnyuy. Female condom for preventing HIV and sexually transmitted infections. *Cochrane Database Syst Rev*. **2**, (2018).
- [29] Y.S. Marfatia, I. Pandya, K. Mehta. Condoms: Past, present, and future. *Indian J Sex Transm Dis AIDS*. 36, 2 (2015).