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Brief Research Article

Female condom color and scent preference in Durban, South Africa

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ABSTRACT

Objectives: To assess preferences for female condom (FC) colors and scents.
Study design: Women aged 18–40 years were randomized to one of three FCs (FC2, Cupid1, Cupid2) two of which offered a choice of color and scent (red/strawberry, purple/vanilla, natural/unscented). Women could choose any variety within condom types while participating in an FC contraceptive efficacy study in South Africa.
Results: One hundred and thirty-three women were allocated to each FC type. Strawberry was the most popular variety for both FC2 and Cupid1 (60.9%, 78.3% respectively). Some women chose more than one variety but few chose the natural.
Conclusions: Data support a clear preference for colored and scented FCs.
Implications: These data can inform FC programme managers to predict demand for different varieties of FC and can adjust supply of FCs accordingly.
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1. Introduction

Condom promotion in low-resource settings is challenging and often associated with high failure rates, reduction in pleasure, and suggestive of a lack of trust between partners [1]. Condom manufacturers have introduced different flavors, shapes, textures, sensations, and materials to make them more attractive, acceptable, and pleasurable to users.

The smell and color of latex condoms are unattractive to many users [2,3]; however, both these features—scents (masked by flavored and/or scented lubricants) and pigments—are available that are compatible with condoms, and do not affect their structural integrity (strength) [4,5]. Although colored and scented male condoms have been available for many years [1], colored and scented female condoms (FCs) were not available globally until 2019. The South African FC program, implemented in the public sector since 1998 [6], introduced the strawberry and vanilla-scented female condom varieties in 2019.

Limited data exist on preferences for the scent and color of male condoms [2]. No data exist on user preferences for FC scent and color. We conducted a secondary analysis of the choice of scent/color of FCs when users are offered the natural unscented, red/strawberry scented, and purple/vanilla scented FCs in a female condom trial in Durban, SA.

2. Methods

This was a randomized comparative study testing the contraceptive efficacy of three FCs (Cupid 1, Cupid 2, and FC2) in 400 women enrolled at one research center in South Africa. The study population was sexually active women aged 18–35 who had previous experience (at least one use) of any type of FC and were willing to use FCs as their sole method of contraception for 6–12 months. A daily diary was used to record menstrual patterns, acts of intercourse, details of condom usage/nonusage, including condom failures, and emergency contraception use. Monthly follow-ups were conducted on-site every 3 months and telephonically between quarterly visits. The study was conducted between November 2019 and November 2021. This trial is registered on ClinicalTrials.gov Identifier: NCT04233632.

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Fig. 1. Female condom evaluated by women in South Africa in the user preference study. From left to right: FC2 strawberry, vanilla and natural, Cupid1 strawberry, and natural.

For those randomized to FC2, women could choose to take one or a combination of any of the available three colors/scents (natural/unscented, red/strawberry, or purple/vanilla). For Cupid1 the strawberry option became available later in the trial and the third FC type—Cupid2 is only available with a vanilla scent (purple color)-as no choice was available with this condom type, it was excluded from the analysis. The condoms used in the study are shown in Figure 1. The woman made their initial choice of color/scent at the baseline visit and subsequently, at follow-up visits, could keep to the same or change to different varieties of the same FC type.

During COVID-19 lockdown levels five through to three in SA (March to October 2020), there were stock-outs of the colored/scented condoms due to transport restrictions; however, the natural unscented variety was always available for FC2 and Cupid1. The stockouts meant that all participants who preferred the colored varieties were given the natural variety. As women were scheduled for a study visit every 3 months this meant that all women were not offered the different options on at least two visits. COVID-19 restrictions and study protocol did not allow women to come in between scheduled appointments to change their choice. However, the natural unscented variety was always available.

Women's choice of condom variety at each visit was captured using the REDCap electronic data capture tools hosted at the University of the Witwatersrand [7]. During times of stock-outs women were given the natural unscented FCs, and as soon as their color/scent option became available again they were able to access it at their next visit. We restricted our data analysis to the dates when all three varieties of FC2 and the two varieties of Cupid1 were available. Data were analyzed using Stata statistical software, version 15 (StataCorp LP, College Station, TX). Descriptive analyses were conducted for the purpose of the study. Reasons given for the color/scent preference were not collected as this was not one of the original study outcomes.

3. Results

A total of 133 were allocated to FC2, and 133 to Cupid1. Women had similar characteristics across the two randomized FC types. The mean age was 25 years in each group and the same proportion had completed secondary education (85.9%, $n = 119$). Respondents were Black and over 50% were unemployed, with over 90% reporting that they were not married or living together.

At baseline 105 of the 133 women randomized to FC2 had a choice of all three FC2 varieties. As the strawberry-scented Cupid1 was introduced later in the study, only 23 women had a choice at baseline; however, subsequently, they had a choice of the two varieties at follow-up visits. Table 1 shows the choice of FC color/scent within each FC type at baseline. For FC2 at baseline all but two women chose a scented/colored variety when all options were available.

Table 1
Female condom color/scent variety chosen by the participant at baseline study visit

Color/scent of FC	FC2 *N* = 105 *N* %	Cupid1 *N* = 23 *N* %
Strawberry/red	64 (60.9)	18 (78.3)
Vanilla/purple	19 (18.1)	N/A
Natural/unscented	2 (1.9)	3 (13.0)
Strawberry/red & vanilla/purple	14 (13.3)	N/A
Strawberry/red & natural/unscented	1 (0.9)	2 (8.7)
Vanilla/purple & natural/unscented	2 (1.9)	N/A
Strawberry, vanilla, & natural	3 (2.9)	N/A

Although questions were not asked about reasons for the choice, one participant reported she was worried about possible allergies to the colors/scents and chose the natural/unscented variety. In the FC2 group, the strawberry/red condoms were more popular than the vanilla/purple. Although women were able to choose both FC2 colors/scents varieties only 14 women chose to do so, with an additional three women who chose both scents plus the natural variety. For Cupid1, three-quarters (78.3%, $n = 18$) chose the strawberry scent, three the natural, and two both strawberry and natural.

All women using FC2, who attended follow-up when a choice was available, chose at least one FC2-scented/colored condom—aside from the two users who chose the natural variety at baseline and continued using this variety. The red/strawberry variety continued to be the most popular. Similarly, all Cupid1 users enrolled before the strawberry scent was available either switched to the strawberry scent or took both natural and strawberry condoms. Women who chose the natural unscented Cupid1 at baseline ($n = 3$) continued to use the natural variety. Approximately 10% of the additional FC2 users who had originally chosen one scented and colored variety at baseline switched to the other scented/colored variety or asked for both types.

4. Discussion

This is the first study to report on female condom scent and color preferences and results indicate a strong preference for colored and scented FCs. The strawberry scent was the most popular choice at baseline and follow-up for FC2, although some women chose to use both colored and scented varieties.

The COVID-19 restrictions on movement and travel between provinces resulted in stockouts of the colored varieties for 8 months in total during which time at least one colored variety was not available. Although women were always supplied with the natural as an alternative it may have possibly influenced future choices. However, as the COVID-19 restrictions were relaxed and the supply of colored FCs was made available all women who had originally chosen a color/scent requested to go back to a colored variety indicating that they wished to return to their original choice.

The "maxima" FC and "max" male condoms are now available in a range of colors and scents in the South African public sector program. Our findings have been disseminated to the SA National Department of Health to inform health programs on the demand for different FC scent/color varieties and can be built into condom ordering logistics.

The fact that women almost entirely chose the colored and scented condoms at baseline and when the choice was available in the study indicates that offering a range of options may improve overall acceptability and continuation of use. Positive feedback from users could translate into increased uptake of condoms in individuals who are reluctant to use them.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

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