

'You'll always stay right': understanding vaginal products and the motivations for use among adolescent and young women in rural KZN

Hilton Humphries, Celia Mehrou-Loko, Sithembile Phakathi, Makhosazana Mdladla, Lauren Fynn, Lucia Knight and Quarraisha Abdool Karim

Abstract

The use of vaginal products may increase the risk of HIV infection by affecting the vaginal biome. Understanding what vaginal products young women are using, and why, is key to assessing the complexity of sexual health and risk. This study reports on findings from research with adolescent and young women in rural KwaZulu-Natal about the vaginal products they use and motivations for using them. The study identified over 26 products that young women used to enhance their sexual experience and found some young women spent time preparing and sourcing vaginal products in order to pleasure and retain partners. Opinions differed about vaginal product use. While some women perceived that vaginal products could provide a means of out-performing other women, retaining a partner and providing sexual autonomy, there was a stigma attached to using them. Study findings highlight the social value of using vaginal products, especially in settings where partner retention is linked to economic survival. Expanding our understanding of what products are used and the reasons young women use them warrants continued investigation.

Background

Vaginal practices can potentially enhance the risk of HIV infection. While research has identified the use of vaginal products amongst women (McClelland et al. 2006; Scorgie et al. 2009; Smit et al. 2011; World Health Organization 2012), understanding what and how vaginal products are used by young women in different contexts remains important considering their risk of HIV infection. Globally, over four million young people aged 15–24 years are infected with HIV (UNAIDS 2016). Young women are at particularly high risk with around 25% of new HIV infections occurring in those aged 15–24 years in sub-Saharan Africa (SSA) (Bekker and Hosek 2015; Shisana et al. 2012). Rural girls in KwaZulu-Natal are particularly vulnerable, with antenatal studies showing that women 16 years old or younger already have an 11.5% HIV prevalence (Abdool Karim, Baxter, and Birx 2017).

Research from multiple African countries suggests that the use of vaginal products is often motivated by a strong focus on hygiene, and ensuring that the enjoyment of sex is enhanced by drying, tightening or raising the vaginal temperature (Francis et al. 2013; Scorgie et al. 2009; World Health Organization 2012). There can be strong social motivations to use vaginal products and this is

sanctioned by partners and learned from peers and family (Lees et al. 2014; Scorgie et al. 2009). Women use a broad range of vaginal products that are often context specific and have important social value for managing personal well-being, from perceived assistance in managing relationship security, preserving a 'virgin-like' vagina, to managing sexual pleasure (Lees et al. 2014; Martin Hilber et al. 2012; Smit et al. 2011; World Health Organization 2012). While epidemiological study of how the use of vaginal products may enhance risk requires more research (Low et al. 2011; Myer et al. 2006), cross-sectional and cohort study data show that women using vaginal products may be at increased risk for acquiring HIV-1, raising questions about how different products affect risk of HIV (Low et al. 2011; Martin Hilber et al. 2007, 2012; McClelland et al. 2006; Myer et al. 2006; Van Der Straten et al. 2010). In the context of sexual relationships characterised by age-disparity, gender-based violence, multiple sexual partners, sex for survival and forced sex (Blum et al. 2012; Patton et al. 2016), how additional behavioural factors such as vaginal practices increases risk, needs to be explored.

Evidence suggests that women's risk for HIV acquisition may be enhanced through the presence of genital inflammation (Masson et al. 2015; Selhorst et al. 2017) and bacteria which reduce the efficacy of Tenofovir-based microbicides (Klatt et al. 2017). Studies on the efficacy of Tenofovir gel for HIV prevention showed that the lack of *Lactobacillus* species bacteria (characterising a healthy vaginal biome) was associated with a reduction of vaginal Tenofovir concentrations, and gel efficacy (Klatt et al. 2017). Vaginal practices may also be associated with increased risk of HIV when they facilitate increased friction during sex and dry the vagina (Myer et al. 2005; Van Der Straten et al. 2010). Female intravaginal practices can result in genital mucosal abrasions, cause inflammation and may negatively impact the vaginal biome.

Considering the vulnerability of young women to HIV infection (Abdool Karim et al. 2014; Abdool Karim, Baxter, and Birx 2017), their role in the transmission cycle of HIV (de Oliveira et al. 2016), and the link between vaginal practices and HIV infection (Low et al. 2011; McClelland et al. 2006; Myer et al. 2006), understanding what vaginal products young women are using, and their motivations for using them is essential. This study, in one of the highest burdened HIV districts in the world, explores what vaginal products are used, how they are used, their social importance as part of sex and partner retention, their social sanctioning, as well as social motivations for use amongst rural adolescent women.

Methods

Study Community

Vulindlela is a rural community situated 150 km west of Durban, KwaZulu-Natal, South Africa. In this study, data were collected from adolescent and young women the Adolescent Sexual Reproductive Health (SRH) Services run by the Centre for the AIDS Programme of Research in South Africa (CAPRISA)¹.

Procedure

Data were collected from CAP072 – a sexual and reproductive health clinic providing in- and out-of-school young people aged 12–24, with family planning, HIV testing and counselling, Tuberculosis

(TB) and sexually transmitted infections (STI) screening and referral as required. The sexual and reproductive health service was provided to five high schools a week between 2013 and 2016. Additionally, the clinic service conducted quarterly group workshops (named 'boot-camps') with young people. In the current study two sources of information were used:

(1) output from participatory exercises conducted during these boot-camps, and (2) transcripts from focus group discussions (FGD) conducted with young women recruited from the CAP072 service.

The boot-camps facilitated the dissemination of relevant health information and provided opportunities for young people to discuss sexual health and issues relating to empowerment, school, sex and partnerships. In total, six such camps were conducted; two sessions were excluded from the current analysis as they were introductory sessions. Each included on average 40 female participants, aged 13–24 years, and was divided into several 90-min sessions, delivered over one or two days. Workshops were led by two or more trained facilitators fluent in English and *isiZulu*. The sessions were designed to provide participants with an open, non-judgemental platform on which to express their opinions. Activities began with an ice-breaker, followed by information dissemination. Activities were interspersed with games and lunch was provided. Discussion was guided by a schedule of questions addressing topics relevant to youth. Participants provided consent to participate in these workshops, and parental permission was obtained for those under 18 years of age. The review of data from the CAP072 clinic was approved by the University of KwaZulu-Natal's Biomedical Research Ethics Committee (BE396/13).

To facilitate the FGDs a topic guide was developed based on a literature review, existing data from the boot-camps, and in consultation with local research and community partners. The FGDs were designed to capture information regarding the perceived determinants of risk, including vaginal practices. Discussion was facilitated by a trained facilitator, who spoke English and *isiZulu*, assisted by a research fellow trained in note-taking techniques. Six FGDs were completed with between six and 12 participants in each, aged 18–24 years. Participants were not excluded if they had attended a boot-camp session before. Participants were offered refreshments, received reimbursement of 30 ZAR for their time and were given transport to and from the research site. The FGDs were audio recorded, transcribed and then translated into English. Transcripts of the FGDs were reviewed by the research team to ensure accuracy. FGD analysis was completed as part of an ongoing doctoral study approved by the University of KwaZulu-Natal Biomedical Research Ethics Committee (BE 523/14).

Analysis

The boot-camp data related to the types of vaginal products, their use and the purpose of use, collated into a summary table. FGDs provided more detailed data about why products were used and their links to sexual practices. Transcripts were coded using NVivo 11. Field notes were reviewed to ensure the clarity of the FGD sessions. Thematic coding of data was guided by the research questions, and inductively developed based on multiple readings of the data. Members of the primary research team met to discuss and gain consensus on emerging themes.

Table 1. Description of boot-camp and FGD samples.

	Boot-camps	FGDs
Number included	6	6
Number of Respondents	272	52
Gender Make up	Female	Female
Age Range	14–24	18–24

Results

In total, the research includes information from 324 participants (Table 1). For FGD data, participants used self-allocated pseudonyms to ensure anonymity.

Vaginal products, their application and purpose

The collated boot-camp data are presented in Table 2. It shows (1) the vaginal and oral products participants reported using to improve sexual intercourse, (2) a brief description of each and (3) the intended effects of use. Of the products mentioned by the participants, not all were inserted vaginally, some were ingested orally. While orally ingested products are less likely to have a direct impact on the vaginal biome, they are included to highlight the diversity of products used.

Vaginal practices as part of sexual preparation

The analysis of the FGD data concentrated on understanding the social motivations relating to vaginal practices as part of sexual preparation. A number of key themes emerged as follows

Preparing for and being ready for sex

Young women interviewed claimed to be familiar with a variety of methods of enhancing sexual intercourse, ranging from ingesting or inserting products, to bathing or washing the vagina externally or internally with various substances, although only some openly admitted to having used any of them. These products were perceived to have different effects, some caused a rise in vaginal temperature, ‘making you hot’, others caused a tightening of the vagina, rendering women, ‘tight like virgins’ and some products made the vagina dry, ‘removing all that foul moisture’ (Table 2). Many products could not simply be inserted before intercourse; participants explained that for optimal results, the product needed to be applied several hours beforehand so they remained in the body for longer and were more effective during sex.

Maybe you drink it in the morning if you will have sex at night, it needs to stay in the blood stream. (Funky girl)

Table 2. Products used for vaginal practices and their purpose as identified during 'boot-camp' discussions*.

Product	Obtained	Description	Application	Purpose
Alum	Informal traders and some pharmacies	Powder dissolved in water	External and intravaginal cleansing: rinsing outside/inside the vagina	Tightening
<i>Bhubesi</i>	Traditional chemist	Vaseline-like cream	External or intravaginal insertion: applied to the vagina (both inside or out) and/or the penis	Heating: Both man and woman feel the heat from it
Black tea	Commercially	Plain black tea brewed in water	External and intravaginal washing: used to rinse outside and inside the vagina	Tightening
Blue Stone	Traditional chemist/ informal traders	Copper sulphate powder	External application: Added to cold water and used to wash the vulva	Tightening
Boiled potato	Commercially	Normal potato	Intravaginal insertion: boiling a potato and inserting it while still hot in the vagina	Tightening
<i>Ibhodwe/labafazi</i> (women's pot)	Primarily traditional chemist but can also be obtained commercially	'Pink Vaseline' – pink cream, similar to Vaseline,	External application: Applied to the vulva	Heats up the vagina
<i>Impukane</i>	Traditional chemist	Oil in a small blue bottle	External application: Applied on the vulva	Drying, sexual stimulant
<i>Itshishi lam</i> (my virgin)	Traditional chemist	Green powder mixed with cold water	External and intravaginal washing: used to rinse outside and inside the vagina	Tightening effect
Kuber	Commercially	Powder	Intravaginal insertion/oral: inserted into vagina or placed under the tongue	Drying agent
Newspapers	Commercially	Any plain print newspaper. (preferably soft paper, like that in a telephone directory)	Intravaginal insertion: place small damp pieces in the vagina/use a dry rolled up piece to wipe moisture from the vagina/cut long, thin strips and insert them into the vagina	Meant to absorb moisture – drying, tightening and swelling
<i>Snuff/Ntsu/Dosh/Sne/Data/Whatsapp/Thambo/Nyoni</i>	Commercially	Tobacco	Intravaginal or oral application: inserted in the mouth or vagina	Sexual stimulant, believed to cause heat and tightening of the vagina

(Continued)

Table 2. (Continued).

Product	Obtained	Description	Application	Purpose
Traditional herbs	Traditional healers	A variety of herbs	Vaginal steaming: brewed in a pot and used to steam the vagina.	Tightening
Straws	Commercially	Beer-like drink	Oral ingestion or external application	Sexual stimulant
<i>Tshitshi lam</i>	Traditional chemist	Vaseline-like cream,	External or intravaginal application: apply outside or in the vagina, melts inside	Tightening
UGazi (also known as yeast)	Traditional chemist	Yeast-like powder	External washing or intravaginal insertion: mixed with warm water and applied on/in the vagina	Sexual stimulant and love potion
<i>Umilo wabafazi</i>	Traditional chemist	Vaseline-like cream– 1 teaspoon in a glass of warm milk	External application or intravaginal insertion: used to rinse outside/inside the vagina	Sexual stimulant/heats up the vagina/felt by the partner
<i>Vutha</i>	Traditional chemist	Brown liquid	Intravaginal insertion: inserted in a small quantity in the vagina, using the fingertip	Keeps you awake and heats up the vagina.
Black tea and sugar (mixed with amoeba)	Amoeba obtained from the ocean.	Mix the two and let it rest for days, until it becomes 'gel-like'	Oral ingestion or external washing: washing and drinking it	Tightens, love potion
<i>ukhero</i>	From nature and informal traders	Small, edible rock	Oral ingestion: chewing	Heating
<i>Msundu</i>	Informal traders	Sweets that look like earthworms	Oral ingestion: chewing	Heating
oChinese	Commercially	Small sweets to chew also called China fruit	Oral ingestion: sucking or chewing.	Heating and 'makes you irresistible'
Stoney (ginger flavoured soft drink) mixed with milk	Commercially	Mix half and half Some people add cinnamon	Oral ingestion: drinking	Tightening, causes heat and increase fertility
Stoney (ginger flavoured soft drink) MedLemon (flu medicine) Lemon Twist (lemon flavoured soda) mixed with black Halls mints (menthol throat lozenges)	Commercially	Melt four mints in a glass of soft drink.	Oral ingestion: drinking	Tightening and causes heat
Zahara	Commercially	8 teabags of Trinco (a brand of tea) in 2L of water	Oral ingestion: drinking	Detoxing prior to sex, to clean and stimulate.

*Please note: Products inserted into the vagina are highlighted in grey, whilst those in white were ingested orally.

Some participants described the process of sourcing and preparing the products as time-and resource-consuming. Although some products such as the creams and powders could be purchased over the counter in pharmacies or from street-vendors, others took several days to prepare at home.

Interviewer: We've heard of Ntsu², Jellyfish/Amoeba³?

Participant: You find it in the ocean but now you can find it here. They separate it and you have to wait for it to grow [before you can use it]. They say you make tea and then you add it into the tea. You drink that sour tasting tea. (Delicious)

The notion of preparedness was considered independently of intercourse, with an emphasis on being ready for sex with your partner regardless of whether or not intercourse actually occurred. This may be because young women are unable to predict when sex will take place. One participant highlighted always being ready for sex in the FGD by saying:

[When you use said products] you feel like a virgin to your partner. [you always use it] so you'll always stay right [ready for sex]. (Flavour princess)

Preparing for sex and being ready for sex often involved learning which products were best to use.

Women do these things because they hear from their friends how these things work and they want to try it out. Then I also spread the word too once [I] have tried it out. If something works for you, you won't hide it from your friend. (Michelle)

Highlighting social learning and the spread of information, young women reported that products that were rumoured to 'work' were often discussed with other women. In particular, participants stressed the importance of sharing when the use of products was 'successful'.

Using products to make the vagina 'dry/hot/tight' in order to retain a partner

For some young women, a key social motivator for using vaginal products was to ensure that they did not lose their male partners. Participants perceived improved partner retention by making their vagina hotter/tighter/drier so as to be more sexually pleasing to their partner. Two sub-themes related to this: (1) using vaginal products to make the vagina 'dry/hot/ tight' in order to compete with other women to retain a partner and (2) prioritising partner satisfaction.

Like a virgin

Gaining sexual superiority over other women was a recurring theme, and a strong motivator for using vaginal- or sex-enhancing products among some participants. Sexual superiority could be obtained through the use of vaginal products to make the vagina tighter, hotter and/or drier than other girls. Notably the motivation was often to be the preferred partner, not necessarily the only one:

You do not become a virgin [by using the product], you just become tighter... [therefore] he loves you a lot...More than his other girlfriends (Wandie)

Tightness was described as very important because it created the impression of being *itshitshi* or 'like a virgin', which was perceived as essential to keeping your partner happy and ensuring he did not leave. In addition to tightness, one participant explained that 'being hot' by raising the vaginal temperature, made you more desirable partner and thus better able to retain a partner.

Some women use [products to keep them hot] so that partners won't leave them. (Mlungu)
Another young woman noted something similar:

I know of what they call "oChinese". It looks like a small sweet. They say you eat it and a man will never leave you once you've used it... Maybe it's because you become hot or something like that. [Laughs]
Then he enjoys having sex with you and no one else (Big Eye)

Specific products were used to make the vagina dry.

Participant: You insert it in your vagina
Interviewer: What does it do?
Interviewer: It is for dryness? [...]
Participant: yes
Interviewer: and then [you] take it out. Wait, is dryness good?
Participant: yes
Interviewer: they [male partners] want [you] to be dry...
Participant: yes
Interviewer: why? Is it for you or is it for him?
Participant: for you because you want to be tighter
Interviewer: so that means it is for him because you want him to feel this dryness? Participant:
but you want to be nicer [for him]. (Andile)

The use of products did not always have the intended outcome, however. While one young woman described that her peers promoted the use of a certain products, her partner was not happy with the effects of the product.

Participant: I can comment on Kuber⁴ because my friend made me taste it. That thing made me drunk, even alcohol does not have the same effect on me.
Interviewer: What happened?
Participant: I was sitting on top of her bed so I could feel everything. The feeling started from my toes, heat, like hot porridge was poured on me that is how I felt. That was the last time I used it.
Interviewer: So, did you have sex? Could your partner feel the difference?
Participant: He hit me because I was too hot. (Beyonce)

Prioritising partner satisfaction.

Some young women's motivation to use products was linked to the intention of retaining a relationship. Pleasuring the partner seemed to take precedence over the pleasure of the young woman herself in many cases. One respondent explained that the use of products was for the benefit of her partner, not for her. When probed about whether she enjoyed the sex she had when using products to make her vagina tight, she remarked, 'How can one feel pleasure when your vagina is closed?'

The need to ensure that a partner was satisfied often meant that young women used vaginal products despite the risks or potentially harmful side effects. Another respondent described how, despite feeling pain as a result using a product to tighten her vagina, she felt she had to continue to have sex with her partner.

Participant: I drank it in the afternoon, I was going to visit him that night. I will never do it again; I couldn't even sit. My private part was too tight, I couldn't do anything and when we had sex my partner was relentless.

Interviewer: Could he feel the difference?

Participant: Clearly, he did, we had sex till dawn [Laugh] when you try to urinate it hurts and stings. That was the last time I use anything, I almost died.

Interviewer: Did you tell him that you were hurt?

Participant: I told him that he hurt me, and he apologised.

Interviewer: So, you continued to have sex even though you were in pain?

Participant: What was I supposed to do? (Nicky Angel)

Perceptions and social sanctioning of vaginal products

Despite widespread familiarity with vaginal practices among participants, many young women did not sanction using the products. While women acknowledged the need to use them to retain a partner, some viewed these practices as potentially problematic on several accounts; first, they were considered a means of disguising promiscuity; and second, they were seen as deceitful to the partner. The way in which many young women spoke about these practices suggested the presence of stigma associated with their use or admitting to their use. It was commonly suggested, for example, that only promiscuous or 'loose' women needed to use products as a way of disguising the fact that they have had multiple partners. The products were seen as a way of tightening the vagina in order to ensure that the main partner remained unaware of their infidelity.

Naughty women use [these products] ... Women who have multiple sexual partners, their vaginas expand and are big when she wants to sleep with her main partner. (Slender)

Another woman described her observations thus:

A friend of my friend came to see my friend and she was worried because she slept with her side partner the night before and her main partner wanted to see her that day. My friend suggested that

she should eat the black Halls mint and drink Stoney⁵ so her private parts [vagina] would be tight. Later we got feedback that everything went well. (Diva)

Other participants stated that using products was deceitful and that using them at the start of a relationship could cause problems as they would be exposed as frauds once they stopped. While acknowledging that vaginal products were able to make the vagina hot, they felt it was wrong to deceive a partner. One young woman explained,

I can say that females use many things that make you hot underneath/vagina but that is not constructive because in some instances when you stop using those things, you and your partner break up because your vagina is not as tight as when you were using those things. I think it is important to be yourself at all times. (Nicki)

Some young women reported that they would not disclose the use of products unless their partner asked them to use one. Even then, young women felt that their partners might ask them to use products in order to test whether or not they were willing, and thereby assess their faithfulness. As respondents in one focus group said

Interviewer: I would like to ask, do you let your partner know that you are using enhancers?

Participant 1: No

Interviewer: Wait, you don't tell them? But if he suggests that you try something?

Participant 1: You would do it

Participant 2: I would not do it because he might just want to test you [your faithfulness].
(Sam and Jo)

Participants further indicated that the use of vaginal products went against what was considered natural.

They say that putting [dosh: snuff] into your mouth is also harmful. I do not promote the use of the "dosh" because God created us the way he did knowing that we would be able to be satisfied by the way we were created. (Diva)

Discussion

This study has explored and described the vaginal products young women use, the social importance of these products as part of sex and partner retention, and the additional social motivations promoting the use of these products in rural KwaZulu-Natal. We found that knowledge of vaginal products was widespread amongst young women in this setting, and that motivations for using them were often linked to managing subjective/personal well-being (retaining a partner, sexual enhancement) and social norms (sexual pleasure, morality and hygiene), but were often mediated through the gender and power dynamics seen in previous studies (Lees et al. 2014; Myer et al. 2006; Scorgie et al. 2009).

Our discussions revealed that a broad range of products were available to young women. Local knowledge about these products varied but young women reported that products could be ingested, applied topically, used intra-vaginally, or brewed for steaming. Although their application varied, the products are easily accessible, and their properties appeared well understood within this community of young women. While some products were used for hygiene purposes, participants identified many whose application was linked specifically to enhancing sex by tightening, heating, and drying the vagina or acting as a general sexual enhancer. Importantly, inserting products into the vagina can have implications for the vaginal biome. It may also result in abrasions increasing the chances of inflammation, and increasing the chance of infection or reducing the potential efficacy of antiretroviral-based prevention options. While our research reveals the variety of products used by young women, research examining the links between the different vaginal products and risk of HIV is needed (Low et al. 2011; World Health Organization 2012).

It is important to understand why some young women use vaginal products as part of sexual intercourse. Our findings suggest that some young women actively plan for the possibility of a sexual encounter. The motivation for doing so is tied to the social and personal value attached to sexual relations, as well as the importance of maintaining relationships through sexual appeal without necessarily letting the partner know about product use. This highlights how product use may provide a means of independently managing the sexual role, while also managing personal well-being through the securing of relationships (Lees et al. 2014). This suggests that as prevention options such PrEP become available, how these options link to the social norms and subjective values of young women will likely be critical to their uptake.

For some young women, the use of vaginal products (with or without a partner's knowledge or permission) played a role in how they negotiated their relationships, especially with respect to partner satisfaction. The social value placed on having a tight, hot and dry vagina was important to some young women, not only satisfy a partner but also to retain him or to become the preferred partner (Duby et al. 2017). However, vaginal practices were not socially sanctioned by many young women, and were considered unnatural, deceitful and potentially damaging to a relationship. Some young women associated vaginal practices with promiscuity, leading partners to question their fidelity and negatively impacting on the retention of a partner.

As identified in previous research (Lees et al. 2014; Martin Hilber et al. 2010), vaginal practices may be a motivator among women in difficult social and economic situations (Dellar, Dlamini, and Abdool Karim 2015; Leclerc-Madlala 2008), enhancing material benefit and offering a means of survival. For some young women, sexual pleasure may be secondary to partner retention and personal beliefs about the value of vaginal products. Importantly, while many young women had knowledge of products and their purpose, some distanced themselves from using them because of their association with perceptions of promiscuity. Pleasure, sexual experimentation and personal satisfaction were rarely at the forefront of young women's discussions about sex.

There are limitations to our findings. Young women in our FGDs were selected from participants at one health centre and had thus been exposed to health messaging about risk and their sexual

reproductive health. This may have biased their perceptions about sexual pleasure, protection against STIs and relationships with partners. Our data were also collected from FGDs and boot-camp sessions in which young women were asked to articulate their views in front of others, and responses may have been influenced by bystander and reactivity effects. However, our results are consistent with previous research and may have relevance to other similar rural contexts.

Conclusion

Study findings suggest that vaginal product use is motivated by the role they are perceived to play in assisting young women to navigate complex social and relational expectations. For young women in this study, vaginal practices offered a means of maintaining personal well-being and managing cultural norms through pleasuring and retaining a partner, as well as out-performing other potential or current partners. While the use of vaginal products may afford young women a level of autonomy over the sexual experience and may be important for young women in situations where partner retention is of priority, social disapproval of vaginal practices beyond the purpose of hygiene remained strong. Our exploratory research highlights the need for sexual health programmes that recognise and respond to the issues highlighted here and research into how male partners understand and encourage vaginal practices. Broadening our understanding of the impact these behaviours may have on HIV risk, and how these may contribute to high-infection rates in young women remains imperative.

Notes

1. CAPRISA is a HIV research organisation based in KwaZulu-Natal, South Africa. CAPRISA conducts research in four main Scientific Programmes namely: HIV Pathogenesis and vaccines, HIV and TB treatment, Microbicides, and Prevention and Epidemiology.
2. Ntsu is a commercially obtained tobacco inserted intra-vaginally or ingested. It is perceived to tighten and heat up the vagina.
3. Amoeba/Jelly-fish is obtained from the ocean and mixed with sugar and black tea. It is perceived to tighten and act as a love potion.
4. Commercially obtained powder inserted into vagina or placed under the tongue. It is perceived to have a drying effect on the vagina.
5. Stoney (ginger flavoured soft drink) mixed with black Halls mints (menthol throat lozenges).
Ingested orally. It is perceived to have a heating and drying effect.

Acknowledgements

We thank the study staff, the CAPRISA Vulindlela Community Research Support Group, the CAPRISA School Research Support Groups, the Vulindlela community and uMgungundlovu District. We also we acknowledge the CAPRISA 072 study team who were instrumental in collecting our data. HH and CML conceptualised and designed the analysis. HH and CML completed the primary draft paper and completed all additional drafts after feedback from additional authors. HH, CML, LF, SP, MM were involved in data collection. HH, CML, LK and QAK contributed to data analysis and interpretation. All authors contributed to either the preparation of or edits to the final manuscript and approved the revisions.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

Funding for the study was provided by MACAIDS Foundation via the Tides Foundation (Grant No.: TFR13-02228). The career development of HH was supported by the Columbia University-Southern African Fogarty AIDS International Training and Research Programme (AITRP) supported by a Fogarty International Center, US National Institutes of Health grant (#D43TW00231). This research was conducted as part of the DST-NRF Centre of Excellence in HIV Prevention, which is supported by the South African Department of Science and Technology and the South African National Research Foundation.

ORCID

Lucia Knight <http://orcid.org/0000-0001-9938-6887>

References

- Abdool Karim, Q., A. B. M. Kharsany, K. Leask, F. Ntombela, H. Humphries, J. A. Frohlich, N. Samsunder, A. Grobler, R. Dellar, and S. S. Abdool Karim. 2014. "Prevalence of HIV, HSV-2 and Pregnancy among High School Students in Rural KwaZulu-Natal, South Africa: A Bio-Behavioural Cross-Sectional Survey....." *Sexually Transmitted Infections* 90 (8): 620–626.
- Abdool Karim, Q., C. Baxter, and D. Birx. 2017. "Prevention of HIV in Adolescent Girls and Young Women....." *Journal of Acquired Immune Deficiency Syndromes* 75: S17–S26. doi:10.1097/QAI.0000000000001316
- Bekker, L.-G., and S. Hosek. 2015. "HIV and Adolescents: Focus on Young Key Populations....." *Journal of the International AIDS Society* 18 (2Suppl 1): 20076.
- Blum, R. W., F. I. P. M. Bastos, C. W. Kabiru, and L. C. Le. 2012. "Adolescent Health in the 21st Century....." *The Lancet* 379 (9826): 1567–1568.
- Dellar, R. C., S. Dlamini, and Q. Abdool Karim. 2015. "Adolescent Girls and Young Women: Key Populations for HIV Epidemic Control....." *Journal of the International AIDS Society* 18 (2 Suppl 1): 19408.
- Duby, Z., B. Mensch, M. Hartmann, E. Montgomery, I. Mahaka, L. G. Bekker, and A. van der Straten. 2017. "Achieving the Optimal Vaginal State: Using Vaginal Products and Study Gels in Uganda, Zimbabwe, and South Africa....." *International Journal of Sexual Health* 29 (3): 247–257.
- Francis, S. C., K. Baisley, S. S. Lees, B. Andrew, F. Zalwango, J. Seeley, J. Vandepitte, et al. 2013. "Vaginal Practices among Women at High Risk of HIV Infection in Uganda and Tanzania: Recorded Behaviour from a Daily Pictorial Diary....." *PLoS ONE* 8 (3): e59085.
- Klatt, N. R., R. Cheu, K. Birse, A. S. Zevin, M. Perner, L. Noël-Romas, A. Grobler, et al. 2017. "Vaginal Bacteria Modify HIV Tenofovir Microbicide Efficacy in African Women....." *Science* 356 (6341): 938–945.
- Leclerc-Madlala, S. 2008. "Age-Disparate and Intergenerational Sex in Southern Africa: The Dynamics of Hypervulnerability....." *AIDS* 22 (Suppl 4): S17–S25.
- Lees, S., F. Zalwango, B. Andrew, J. Vandepitte, J. Seeley, R. J. Hayes, and S. C. Francis. 2014. "Understanding Motives for Intravaginal Practices amongst Tanzanian and Ugandan Women at High Risk of HIV Infection: The Embodiment of Social and Cultural Norms and Well-Being." *Social Science & Medicine* 102 (2014): 165–173.
- Low, N., M. F. Chersich, K. Schmidlin, M. Egger, S. C. Francis, J. H. H. M. van de Wijgert, R. J. Hayes, et al. 2011. "Intravaginal Practices, Bacterial Vaginosis, and HIV Infection in Women: Individual Participant Data Meta-Analysis." *PLoS Medicine* 8 (2): e1000416.
- Martin Hilber, A., M. F. Chersich, J. H. H. M. van de Wijgert, H. Rees, and M. Temmerman. 2007. "Vaginal Practices, Microbicides and HIV: What Do We Need to Know?" *Sexually Transmitted Infections* 83 (7): 503–505.
- Martin Hilber, A., T. H. Hull, E. Preston-Whyte, B. Bagnol, J. Smit, C. Wacharasin, and N. Widyantoro. 2010. "A Cross Cultural Study of Vaginal Practices and Sexuality: Implications for Sexual Health." *Social Science & Medicine* 70 (3): 392–400.
- Martin Hilber, A., E. Kenter, S. Redmond, S. Merten, B. Bagnol, N. Low, and R. Garside. 2012. "Vaginal Practices as Women's Agency in Sub-Saharan Africa: A Synthesis of Meaning and Motivation through Meta-Ethnography." *Social Science & Medicine* 74 (9): 1311–1323.

- Masson, L., J. A. S. Passmore, L. J. Liebenberg, L. Werner, C. Baxter, K. B. Arnold, C. Williamson, et al. 2015. "Genital Inflammation and the Risk of HIV Acquisition in Women." *Clinical Infectious Diseases* 61 (2): 260–269.
- McClelland, R. S., L. Lavreys, W. M. Hassan, K. Mandaliya, J. O. Ndinya-Achola, and J. M. Baeten. 2006. "Vaginal Washing and Increased Risk of HIV-1 Acquisition among African Women: A 10-Year Prospective Study." *AIDS* 20 (2): 269–273.
- Myer, L., L. Kuhn, Z. A. Stein, T. C. Wright, Jr., and L. Denny. 2005. "Intravaginal Practices, Bacterial Vaginosis, and Women's Susceptibility to HIV Infection: Epidemiological Evidence and Biological Mechanisms." *The Lancet Infectious Diseases* 5 (12): 786–794.
- Myer, L., L. Denny, M. de Souza, T. C. Wright, and L. Kuhn. 2006. "Distinguishing the Temporal Association between Women's Intravaginal Practices and Risk of Human Immunodeficiency Virus Infection: A Prospective Study of South African Women." *American Journal of Epidemiology* 163 (6): 552–560.
- de Oliveira, T., A. B. M. Kharsany, T. Gräf, C. Cawood, D. Khanyile, A. Grobler, A. Puren, et al. 2016. "Transmission Networks and Risk of HIV Infection in KwaZulu-Natal, South Africa: A Community-Wide Phylogenetic Study." *The Lancet HIV* 4 (1): e41–e50.
- Patton, G. C., S. M. Sawyer, J. S. Santelli, D. A. Ross, R. Afifi, N. B. Allen, M. Arora, et al. 2016. "Our Future: A Lancet Commission on Adolescent Health and Wellbeing." *The Lancet* 387 (10036): 2423–2478.
- Scorgie, F., B. Kunene, J. A. Smit, N. Manzini, M. F. Chersich, and E. M. Preston-Whyte. 2009. "In Search of Sexual Pleasure and Fidelity: Vaginal Practices in KwaZulu-Natal, South Africa." *Culture, Health & Sexuality* 11 (3): 267–283.
- Selhorst, P., L. Masson, S. D. Ismail, N. Samsunder, N. Garrett, L. E. Mansoor, Q. Abdool Karim, et al. 2017. "Cervicovaginal Inflammation Facilitates Acquisition of Less Infectious HIV Variants." *Clinical Infectious Diseases* 64 (1): 79–82.
- Shisana, O., T. Rehle, L. C. Simbayi, K. Zuma, S. Jooste, N. Zungu, D. Labadarios, et al. 2012. *South African National HIV Prevalence, Incidence and Behaviour Survey, 2012*. Cape Town: Human Science Research Council.
- Smit, J., F. Chersich, M. Beksinska, B. Kunene, N. Manzini, A. Martin Hilber, and F. Scorgie. 2011. "Prevalence and Self-Reported Health Consequences of Vaginal Practices in KwaZulu-Natal, South Africa: Findings from a Household Survey." *Tropical Medicine and International Health* 16 (2): 245–256.
- UNAIDS. 2016. *Global AIDS Update 2016*. Geneva: UNAIDS.
- Van Der Straten, A., H. Cheng, A. Chidanyika, G. De Bruyn, and N. Padian. 2010. "Vaginal Practices and Associations with Barrier Methods and Gel Use among Sub-Saharan African Women Enrolled in an HIV Prevention Trial." *AIDS & Behavior* 14 (3): 590–599.
- World Health Organization. 2012. "A Multi-Country Study on Gender, Sexuality and Vaginal Practices: Implications for Sexual Health." http://apps.who.int/iris/bitstream/10665/75182/1/WHO_RHR_HRP_12.25_eng.pdf