KNOWLEDGE, ATTITUDE AND ACCEPTABILITY OF SPERMICIDAL CONTRACEPTION AMONG UNIVERSITY STUDENTS IN DAR ES SALAAM

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Abstract

Objectives: The aim of this study was to assess the knowledge, acceptability and attitude towards the use of spermicides among students of University of Dar es Salaam (UDSM).

Methodology: This was a descriptive cross-sectional study conducted over four-month period among UDSM students. A random sample of students was recruited from all three university campus namely University College of Land and Architectural Studies (UCLAS), Muhimbili University College of Health Sciences (MUCHS) and Mlimani Campus (MC). Questionnaires with both closed and open end-questions were used for data collection in which knowledge, attitude, and acceptability of spermicides were determined. The collected data were analyzed using SPSS/PC+ version 10.0, 1999 computer package.

Results: A total of 300 students participated in this study, out of which 154 (51.3%) were females and 146 (48.7%) males. Majority of the students 276 (92%) had poor knowledge of spermicidal products, and out of these, 146 (53%) were absolutely unable to describe the use of spermicides. Ninety-three percent of the students had never used spermicides. Of those who had never used spermicides, 84 (30%) said because they used other contraceptive means, 50 (17.8%) said they are expensive, 29 (10.3%) attributed this to unavailability of the products, 3(1.1%) to fear of “contracting” cancer and 13(4.6%) to the unreliability. Furthermore, a few who had used them didn’t trust the products as ideal means of contraception.

Conclusion: The respondents had poor knowledge of spermicides. Spermicides were not accepted by the students because of the presumed side-effects, being very expensive and unreliable for contraception purpose. However, the respondents accepted spermicides usage as an ideal alternative to condom and effective means for a female-controlled method to prevent/reduce unwanted pregnancy and HIV risk. The study recommends that the Government/responsible authorities should encourage spermicides usage, particularly when coupled with microbicides, in reduction of unplanned pregnancies, sexually transmitted diseases (STDs) and HIV infection inclusive.

Key words: knowledge, attitude, acceptability, spermicides/microbicides and contraception

Introduction

Spermicides are chemical products inserted in a woman's vagina before sexual intercourse that inactivate or kill sperm. They have been available for more than 40 years; however the rigorous contraceptive testing was not required at the time of their approval [1]. The main chemicals used in spermicides are nonoxynol-9 (N-9), octoxynol-9, menfegol, and benzalkonium chloride. Of these, N-9 is the most common. Spermicides often are used as a temporary method while waiting for a long-term method or by couples who have intercourse infrequently. Many breastfeeding women, who need contraception use spermicides since they increase vaginal lubrication, can be used immediately after childbirth, and have no hormonal side effects [2]. Spermicides come in several different forms-cream, jelly (gels), melting suppository, foaming tablet, aerosol foam, and C-film. Some condoms also come lubricated with spermicides. When used alone, spermicides provide some contraceptive protection, but are best when used with a barrier method to prevent pregnancy. Spermicide products can vary in the concentration of principal active ingredient. But the form of the product does not appear to have significant influence [2].

Nevertheless, researches on the effectiveness of spermicides, particularly N-9, to reduce STI transmission have provided conflicting results [3-7]. Laboratory tests of N-9 consistently show that N-9 kills HIV and other STI pathogens [3-4]. But with recently accelerated support for the development of microbicides, inclusively spermicides, to prevent HIV transmission and the urgency of the global AIDS epidemic, it is important to begin to identify strategies for introducing a microbicide once it is proven safe and effective and is approved for use [8-12]. Spermicides are effective with only 20-25% failures rate. Its efficacy is improved in conjunction with mechanical barrier methods such as condom, diaphragm, and cervical cap. They have no age or parity limitations. Moreover, they have no drug interaction, used at or near the time of intercourse and most importantly they allow return to fertility immediately upon discontinuation [13].

On the other hand, high rate of population growth is among the problems facing African countries, Tanzania inclusive, which does not correlated with the rate of economic growth. For instance, the rate of population growth in a 14 year-period (1998-2002) was 49% that is equivalent to an increase of approximately 11.3 million persons (14). The very first question that arises, in our search for the cause of slow rate of economic growth and/or widespread poverty, is whether it is the result of our own inexorable fertility. What really happens is that human population tends to grow at a geometrical rate, while our ability to produce subsistence increases at a merely arithmetical rate, and so we find ourselves in an ever-deepening spiral of suffering caused by overpopulation [14-15]. This process could only be slowed by the "preventive check" of decreased fertility, or the "positive check" of increased mortality [16]. In this case preventive check seems to be more practical, thus acceptable means of controlling unplanned pregnancies should be established. One of the methods that can be adopted is by the use of spermicides.

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Methodology

Study design:
This was a cross sectional study involving University students irrespective of their ages, sex and marital status, conducted over four months period, from March- June 2006.

Study area and population:
Three University Colleges of University of Dar es Salaam viz. MUCHS, UCLAS, and MC with a total of approximately 10,000 students were involved.

Sample size:
Sample size was determined basing on the allocated resources and time after being pilot-studied. Therefore, a sample size of 300 students was randomly sampled by a stratified sampling technique, which was obtained by independently selecting a separate simple random sample from each population sub-group viz. MUCHS, UCLAS and MC; and sampling frame for the three campus was 3000, 1600 and 5400 subjects respectively. Thus the study population was constituted by 150 students from MC, 100 from MUCHS and 50 students from UCLAS. Nevertheless, all students voluntarily participated in this study under both informed verbal and written consents, after being succinctly explained the purpose of the study.

Ethical considerations:
Ethical approval for the conduction of the study was addressed to the MUCHS relevant authorities; and permission to conduct the study was requested and obtained from the respective Deans /Heads of Departments. The consenting students were also assured of confidentiality of the volunteered information.

Data collection:
A pilot-tested questionnaire with both closed-and open-ended questions was employed to collect information from the student. Each questionnaire was personally administered to the student by the researchers, in which the following parameters were investigated: knowledge, attitude and acceptability of spermicides. All approached students were willing to participate in this study. To assess the knowledge of spermicides, the students were asked whether they had have ever heard of the spermicides. To validate this, the respondents were asked to mention some of the side effects they knew.

The questionnaire was constituted by the following key questions: Have you ever heard of spermicides? Which spermicidal product(s) you know or usually use? What is/are the use of spermicides? In your opinion, how do you think spermicides act in controlling pregnancy, and STDs? Have you ever used spermicides? Why have you never used them? What did you use spermicides for? Were the spermicides you used effective? What are your opinions regarding the effectiveness of spermicides in controlling infectious diseases/pregnancy? What kinds of disease conditions do you think spermicides can effectively control? Are there any side effects associated with spermicides usage? In your opinion, why do you think spermicides have side effects? Which is/are the side effect(s) associated with spermicides usage you know or have encountered?

Data analysis:

At the end of the survey all data were cleaned and validated to ensure objectivity and all the consistent questionnaires were numbered and compiled. All the opened ended questions were coded prior data entry into the Statistical Package for the Social Sciences (SPSS/PC+ version 10.0, 1999) computer software (SPSS Inc., Chicago, IL). Descriptive statistics (cross-tabulations, frequencies and explorative analysis) were carried out to explore on the students’ responses on knowledge, attitude and acceptability of spermicides usage. Associations and differences on the assayed parameters among the students’ sex and age groups were analyzed by the Chi-Squared test. Significance level was set at p<0.05.

Results

Socio-demographic characteristics of the study population

The study involved 300 University students from whom knowledge, attitude and acceptability of spermoidal contraception were investigated. Of those 300 students, 146 (48.7%) were males and 154 (51.3%) males. Twenty-six of them were married (8.7%) and 274 (91.3%) were singles, as indicated on Figure 1. The ages of the respondents ranged from 19-36 years, categorized into 4 groups with an average of 26 years of age as shown on Table 1. However, no significant differences (p<0.05) on age was observed either between females and males, or married and single respondents as depicted on Figure 2.
Figure 1: Socio-demographic characteristics of the study population

Table 1: Students’ responses on whether had have heard (knowledge) of spermicides with regard to the socio-demographic characteristics of the respondents.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Age group</th>
<th>Sex (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Females</td>
<td>Males</td>
</tr>
<tr>
<td>None</td>
<td>19-22</td>
<td>2 (0.66)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td></td>
<td>31-35</td>
<td>3 (1.0)</td>
<td>1 (0.33)</td>
</tr>
<tr>
<td>Not yet</td>
<td>19-22</td>
<td>14 (4.67)</td>
<td>18 (6.0)</td>
</tr>
<tr>
<td></td>
<td>23-26</td>
<td>22 (7.33)</td>
<td>19 (6.33)</td>
</tr>
<tr>
<td></td>
<td>27-30</td>
<td>6 (2.0)</td>
<td>10 (9.33)</td>
</tr>
<tr>
<td></td>
<td>31-35</td>
<td>20 (6.67)</td>
<td>13 (4.33)</td>
</tr>
<tr>
<td>Yes</td>
<td>19-22</td>
<td>29 (9.67)</td>
<td>24 (8.0)</td>
</tr>
<tr>
<td></td>
<td>23-26</td>
<td>23 (7.67)</td>
<td>18 (6.0)</td>
</tr>
<tr>
<td></td>
<td>27-30</td>
<td>7 (2.33)</td>
<td>20 (6.67)</td>
</tr>
<tr>
<td></td>
<td>31-35</td>
<td>20 (6.67)</td>
<td>31 (10.33)</td>
</tr>
<tr>
<td>Total</td>
<td>146 (48.68)</td>
<td>154 (51.32)</td>
<td>300 (100.0)</td>
</tr>
</tbody>
</table>

Assessment of knowledge of spermicides

Majority of the students 172 (57.3%) had heard of the spermicidal products, 122 (40.7%) had never heard, while 6 (2%) could not respond to the question as depicted on Table 1. Of the 172 respondents who had heard of the spermicides, only 8 (4.65%) were capable of mentioning some of the spermicidal products. Forty-nine percent of the respondents were unable to state the use of spermicides, 12 (3.7%) said were for prevention of STDs and pregnancy while only 47% (142) described them correctly. There was no significant difference on knowledge of spermicides between female and male students with respect to their ages ($X^2= 18.24$, df = 1, $p= 0.403$). The study also revealed that age and /or marital status had no influence on the knowledge of spermicides, since single and married students’ ages were comparable ($p<0.05$) as indicated on Figure 2. Minority of the students 18 (6%) had notion of the use of intravaginal microbicides; they confused spermicides with the former.

Students’ acceptability and attitudes towards the use of spermicides

The study revealed that only 2 (0.7%) students had ever used spermicides as lubricant and 1 (0.3%) out of curiosity, whilst 280 (93.3%) said had never used spermicidal products. Giving reasons to why they had never used spermicides, 38.6% of the 280 students said the products were unfamiliar to them, and 84 (30%) said they use other means; other reasons are summarized on Table 2. Furthermore, when asked whether spermicides application was an effective contraceptive measure, 220 (73.3%) said
were not sure, 61 (20.3%) were affirmative, and 19 (6.3%) did not respond to the question. The acceptability of spermicidal products was comparable among the studied age-groups (p<0.05) as indicated on Figure 3. Nonetheless, more than a half of the interviewed students 153 (51%) agreed that spermicides could be the best alternative to women, since they are female initiated prevention options due to widespread resistance to male condom usage. The investigation on the students’ reluctance to use spermicides revealed that most of them were afraid of possible side effects as summarized on Table 3.

![Figure 3: Students responses to whether spermicides are effective contraception means (n = 300).](image)

Table 2: Students responses as to why had never used spermicides

<table>
<thead>
<tr>
<th>Reasons</th>
<th>No. of students</th>
<th>%</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No responses</td>
<td>13</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Use other means</td>
<td>84</td>
<td>30</td>
<td>32.3</td>
</tr>
<tr>
<td>Unfamiliar product</td>
<td>108</td>
<td>36</td>
<td>68.3</td>
</tr>
<tr>
<td>Unavailable</td>
<td>29</td>
<td>9.7</td>
<td>78.0</td>
</tr>
<tr>
<td>Expansive</td>
<td>50</td>
<td>16.7</td>
<td>94.7</td>
</tr>
<tr>
<td>Possibility of cancer</td>
<td>3</td>
<td>1.0</td>
<td>95.7</td>
</tr>
<tr>
<td>Unreliable</td>
<td>13</td>
<td>4.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: The side effects mentioned as obstacles to spermicides usage

<table>
<thead>
<tr>
<th>Side effects</th>
<th>No. respondents</th>
<th>%</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No responses</td>
<td>191</td>
<td>63.7</td>
<td>63.7</td>
</tr>
<tr>
<td>Irritants/allergic</td>
<td>91</td>
<td>30.3</td>
<td>94.0</td>
</tr>
<tr>
<td>Infertility</td>
<td>12</td>
<td>4.0</td>
<td>98.0</td>
</tr>
<tr>
<td>Foam formation</td>
<td>3</td>
<td>1.0</td>
<td>99.0</td>
</tr>
<tr>
<td>Bad smell</td>
<td>3</td>
<td>1.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Discussion

Condoms, diaphragms, sponges, caps just mentioning a few; they are among the most popular forms of contraception around. What they have in common is that they are all "barriers"- they block the sperm from ever reaching the uterus, thus preventing fertilization and pregnancy. But though they work in similar ways, each form of barrier contraception has its advantages and disadvantages, regardless their contradictory results [4-5, 19].

The respondents conveyed a poor understanding of spermicides, but high acceptance of the reality of women’s social vulnerability to unplanned pregnancies and the limits on women’s ability to protect themselves, including the need for female initiated prevention options due to widespread resistance to male condom use. Nevertheless, the respondents felt uneasy and were reluctant to use spermicidal products due to possible side effects. But with the recent introduction of vaginal anti-HIV agents [8-9, 17-19], it is presumed that intravaginal spermicides/microbicides application might provide an important option in giving women the ability to protect themselves with or without their partners’ support.

According to the ‘epidemiological’ prevention equation [8], it is unquestionable that a lower-efficacy product used consistently could have a greater impact on reducing infection at the individual and population level than a higher-efficacy product that is used less consistently. In actual fact, although condoms are highly effective when used “perfectly,” are often used incorrectly or not at all because they can be difficult to use and are perceived as reducing sexual pleasure [20-21]. Therefore, spermicides/microbicides may be used more consistently if they are easier to use, perceived as interfering less with sexual pleasure, and their use can be initiated by women. The use of intravaginal microbicides such as polybiganuines (PBGs), WHI-07® (which is a novel dual-function aryl phosphate derivative of zidovudine with potent anti-HIV with spermicidal activities), PRO 2000 gel®, vanadocene dithiocarbamate (VDDTC), sodium dodecyl sulfate plus C31G® has gained support as a strategy for the protection of women against HIV-1 and other STD pathogens [9-12, 21-22]. However, it is succinctly clear now that no single agent will be able to prevent sexual transmission of HIV long term. Consequently, one would be wise to plan the control of HIV infection globally over the next decade without assuming that a vaccine will be available.

Finally, since condoms remain almost exclusively under the control of the male partner, and in many societies’ women simply cannot negotiate condom use [8, 20]. A female-controlled method to prevent or reduce unwanted pregnancies, with the potential for an additive effect on the reduction of HIV transmission if used with a condom or other barrier methods is more preferable. In order to be successfully utilized spermicides/microbicides must be widely accepted and available. Lastly, limitation of resource and time factor were one of the major drawbacks for this
study, and for that matter it covered only about 3% of the study population. This calls for further studies that may involve a larger sample size, and investigate much more parameters, and exhaustively compare the advantages and disadvantages of spermicides usage in our society.

Conclusion and Recommendations

The respondents had poor knowledge of spermicides and their application. Spermicides were not very much accepted by the respondents due to the presumed side effects, being very expensive and unavailability. However, the respondents accepted spermicides usage as an ideal alternative to condom and effective means for a female-controlled method to prevent or reduce conception of unwanted pregnancy and risk of HIV infection. Majority of the studied population do not trust spermicides as efficacious contraceptive agents. The study recommends that the Government/responsible authorities should encourage spermicides usage, particularly when coupled with microbicides, in reduction of unplanned pregnancies, STDs and HIV infection inclusive.

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