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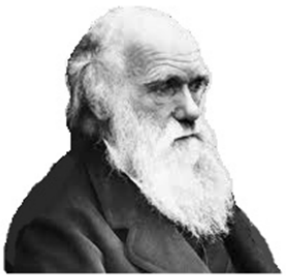

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Assessment of the knowledge about HIV-infectious materials in Poland

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ABSTRACT

Malignancies were one of the earliest diagnosed manifestations that resulted in the description of acquired immunodeficiency syndrome (AIDS). Most cancers in AIDS patients are associated with coinfection with oncogenic viruses. Knowledge and public awareness about HIV infectious materials are important elements in preventing the spread of HIV infections. The aim of the study was to assess the knowledge about HIV infectious materials among three populations in Poland. A Poland-wide on-line survey was conducted and 2205 anonymous answers were analysed. Almost half of the answers came from students, of which 40% were medical students.

***Keywords*:** HIV infection, HIV infectious materials, survey, Poland

1. INTRODUCTION

Human immunodeficiency virus (HIV) infection probably spread to humans sporadically throughout the 1900s [1, 2]. However, it wasn't until the 1980s that the world became interested in the virus when homosexual men in urban centers began to report to healthcare workers with advanced and unexplained immunodeficiency [3].

Eradication of HIV cannot be achieved with current therapies due to the pool of latently infected CD4 T cells established early during acute infection. However, they can reduce HIV-associated morbidity, prolong survival and prevent subsequent transmission of HIV [4-7]. In HIV-infected people, low levels of HIV RNA in plasma are associated with reduced levels of HIV in genital secretions [8-10] and the risk of HIV transmission is low when plasma viral loads are <400 copies/mL [11].

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Figure 1. Kaposi's sarcoma in the mouth on the upper gums of an AIDS patient [23]

Figure 2. Kaposi's sarcoma on the skin of an AIDS patient [23]

Malignancies were one of the earliest diagnosed symptoms that resulted in the description of acquired immunodeficiency syndrome (AIDS). Most cancers in AIDS patients are associated with coinfection with oncogenic viruses (such as Epstein-Barr virus, human herpesvirus 8 and human papillomavirus), resulting in cancers secondary to reduced immune competence against viruses and cancer cells infected with the virus. Over 50% of AIDS lymphomas are associated with Epstein-Barr virus and/or HHV8 infection. HHV8-related diseases include Kaposi sarcoma, primary effusion lymphoma and multicentric Castleman disease [12]. The initial period from infection of the first cell to the first detection of the virus in the blood is called the eclipse phase. The duration of this period was estimated to be about 7-21 days [13-18] and mathematical modeling of HIV-1 replication [19-20].

During the early AIDS epidemic, a significant percentage of AIDS patients developed Kaposi sarcoma, an important cause of morbidity and mortality [21]. Even so, Kaposi sarcoma remains the second commonest malignancy in HIV patients, with approximately 900 cases per year in the United States [22]. Examples of Kaposi sarcoma are shown in Figures 1-2. Knowledge and public awareness are important elements in preventing the spread of HIV infections.

2. AIM OF THE STUDY

The aim of the study was to assess the knowledge about the ways of HIV infection among three populations in Poland: heterosexuals excluding medical students, non-heterosexuals excluding medical students and medical students.

3. MATERIALS AND METHODS

A Poland-wide on-line survey was conducted between January and March 2019. 2205 anonymous answers were analysed. The research included 1356 (61.5%) women, 681 (31%) men, 46 (2%) trans men, 12 (0.5%) trans women and 110 (5%) non-binary people. 95.4% were aged 16-29. In order to interpret the results, we divided the study group into people who defined themselves as heterosexual persons (heterosexuals) and people who defined themselves in any other way (non-heterosexuals) constituting the LGBT+ community. 1122 (51%) of the respondents described themselves as non-heterosexuals and 1083 (49%) – as heterosexuals. Almost half of the answers (n=1080; 49%) came from students, of which 40% were medical students (n=435). Among medical students most responses came from students of the fourth year (n=95; 4.3%). Nearly half of the respondents (n=1077; 49%) lived in cities with a population of over 250,000. To compare the knowledge of heterosexual and non-heterosexual persons, medical students were excluded from both groups. Finally, three studied populations were identified: heterosexuals excluding medical students [HS] (n=735), non-heterosexuals excluding medical students [non-HS] (n=1035) and medical students [MS] (n=435). The detailed characteristics of the study group is presented in Table 1.

We asked two questions: “Choose from the following materials that are definitely HIV-infectious materials…” and “The average risk of HIV infection after cutting with a tool contaminated with HIV-infected blood is approximately...”. We have also included two short sentences: “A drop of infected blood that has already dried up is still a threat” and “Contact of

infected blood with intact skin is completely safe". Each respondent had to take a stance to them by choosing one of the following options: “True”, “False” or “I do not know”.

Table 1. Demographic data and characteristics of the study group (n=2205)

Parameter		**Value (n)**	**Value (%)**
Age	16–19	820	37,2
	20–29	1283	58,2
	30–39	79	3,6
	40–49	13	0,6
	50–59	7	0,3
	60–69	3	0,1
Sex	Women	1356	61,5
	Men	681	31
	Trans men	46	2
	Trans women	12	0,5
	Non-binary	110	5
Sexual orientation	Heterosexual	1083	49
	Non-heterosexual	1122	51
Place of residence	Village	331	15
	City with up to 50,000 inhabitants	301	13,5
	City of 50,000 to 150,000 inhabitants	263	12
	City of 150,000 to 250,000 inhabitants	233	10,5
	City of over 250,000 inhabitants	1077	49
Education	Not studying	353	16
	Disciples	772	35
	Medical students • 1st year • 2nd year	435 71 85	20 3,3 3,9

	• 3rd year • 4th year • 5th year • 6th year	85 95 86 13	3,9 4,3 3,9 0,7
	Non-medical students	645	29
Membership in the International Federation of Medical Students' Associations (IFMSA-Poland)	Yes	60	2,7
	No	2145	97,3

4. RESULTS

4. 1. The question: "Choose from the following materials that are definitely HIV-infectious materials…" (multiple choice question)

The three most frequently indicated answers in each group are: blood (99% HS, 98% non-HS, 98% MS), semen (84% HS, 90% non-HS, 94% MS), vaginal discharge (73% HS, 78% non-HS, 86% MS) - Figures 3–5.

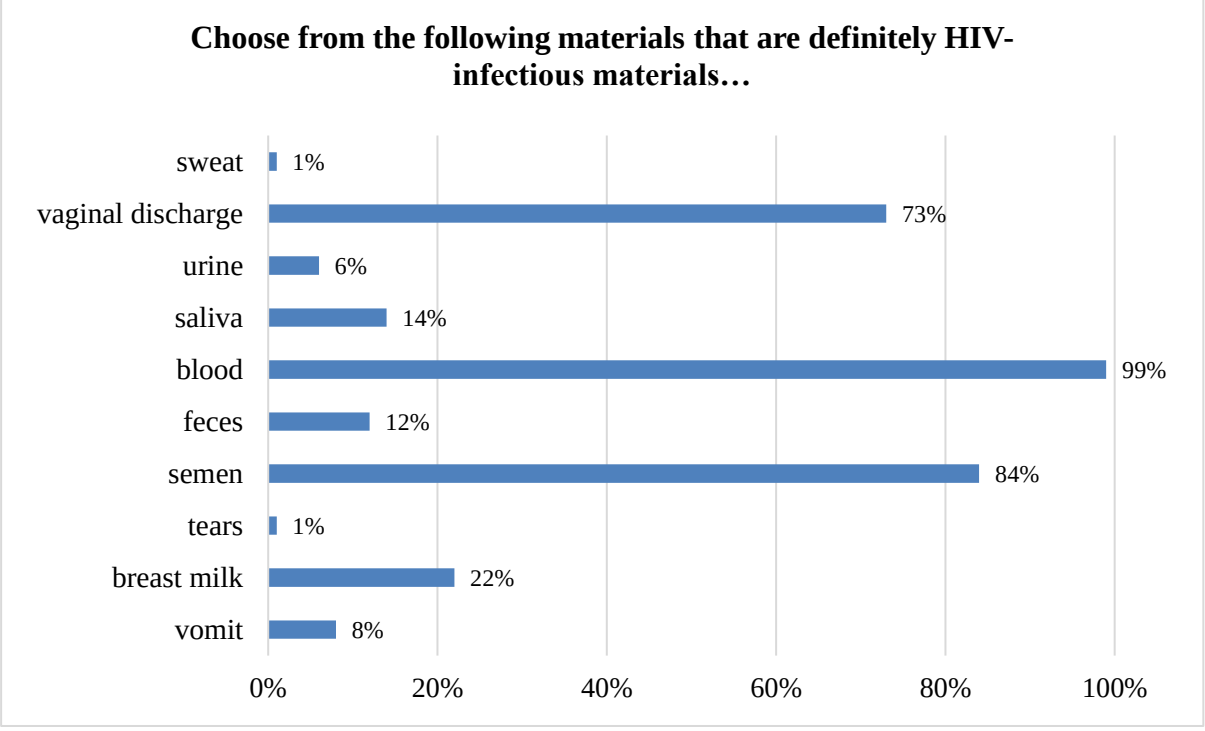

Figure 3. HS group answers to the question: "Choose from the following materials that are definitely HIV-infectious materials…" (multiple choice question)

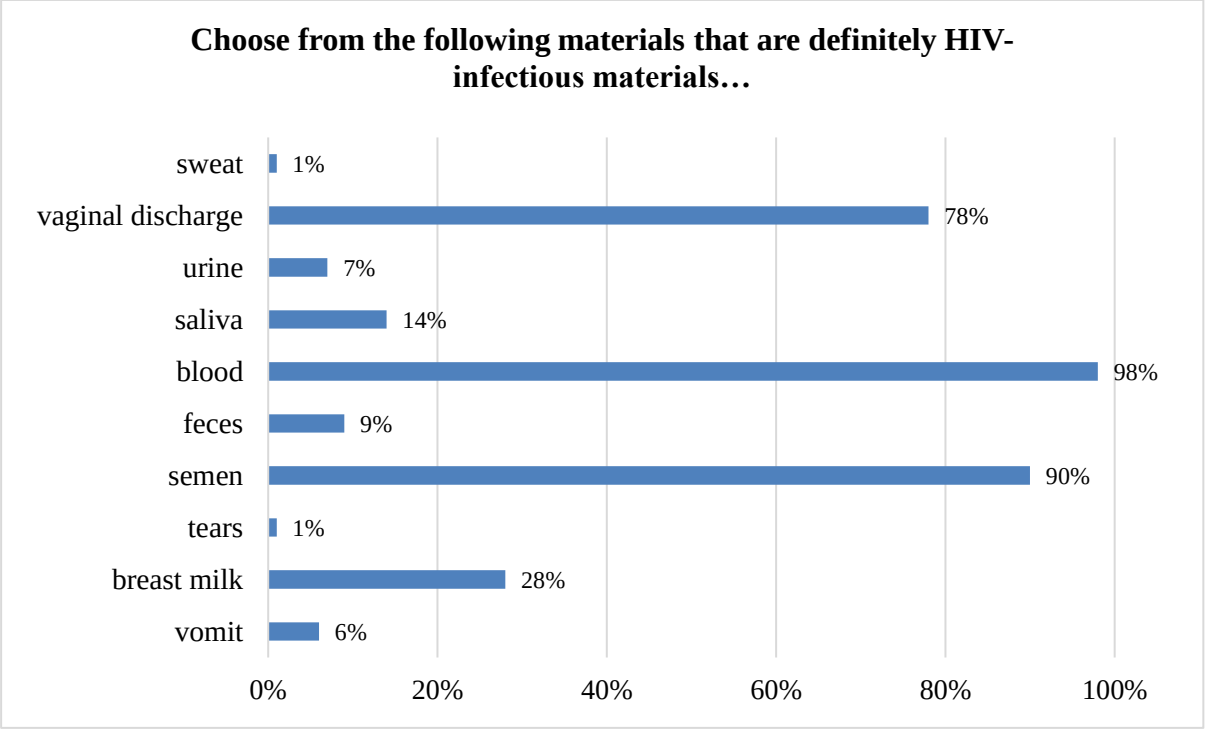

Figure 4. Non-HS group answers to the question: "Choose from the following materials that are definitely HIV-infectious materials…" (multiple choice question)

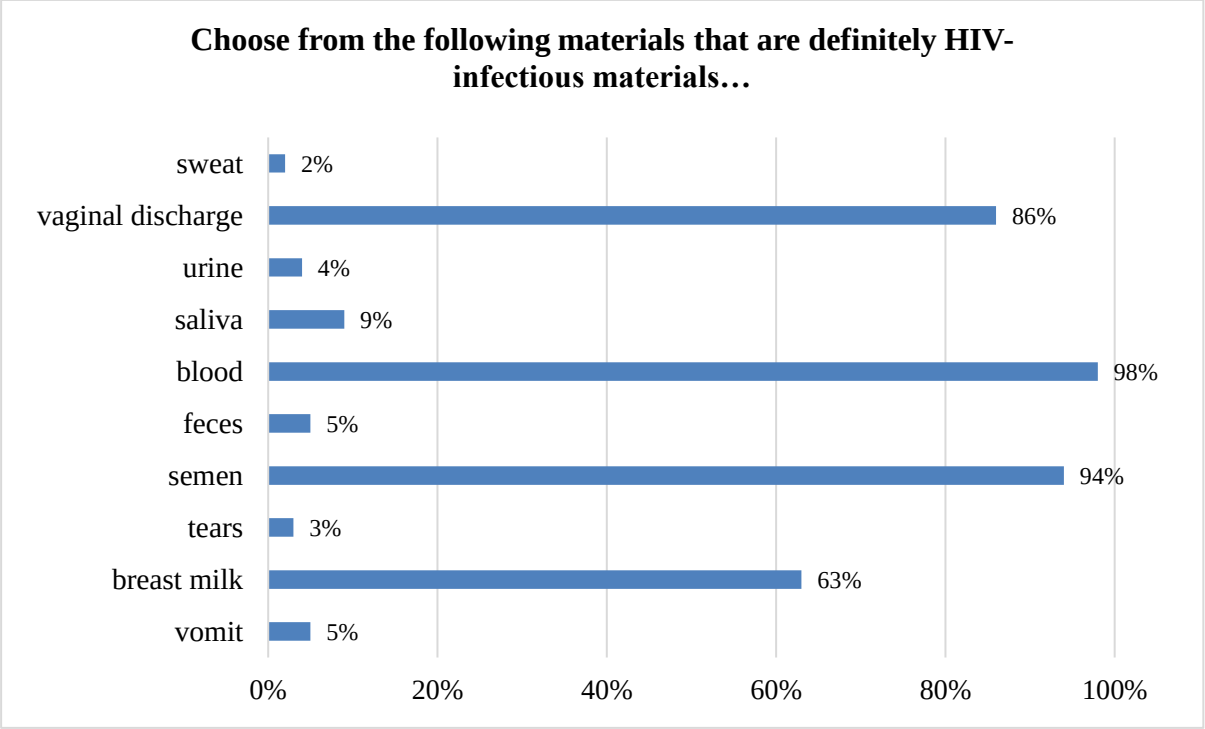

Figure 5. MS group answers to the question: "Choose from the following materials that are definitely HIV-infectious materials…" (multiple choice question)

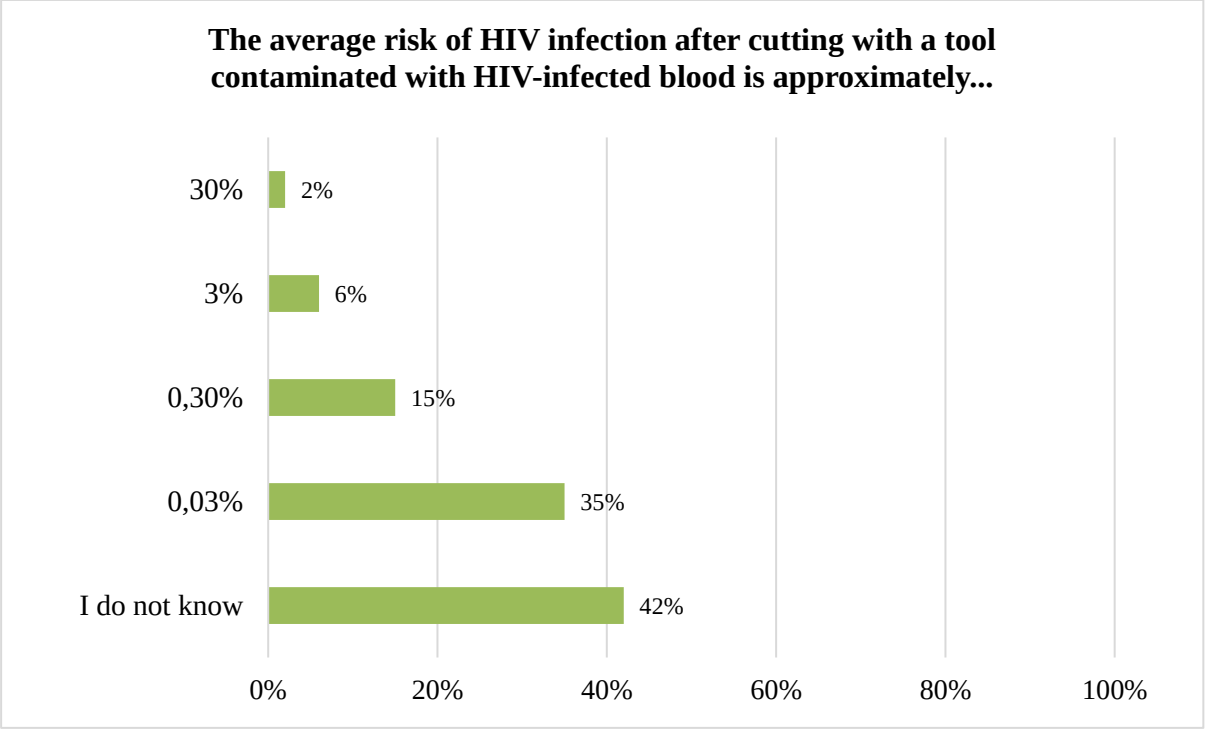

Figure 6. HS group answers to the question: "The average risk of HIV infection after cutting with a tool contaminated with HIV-infected blood is approximately..."

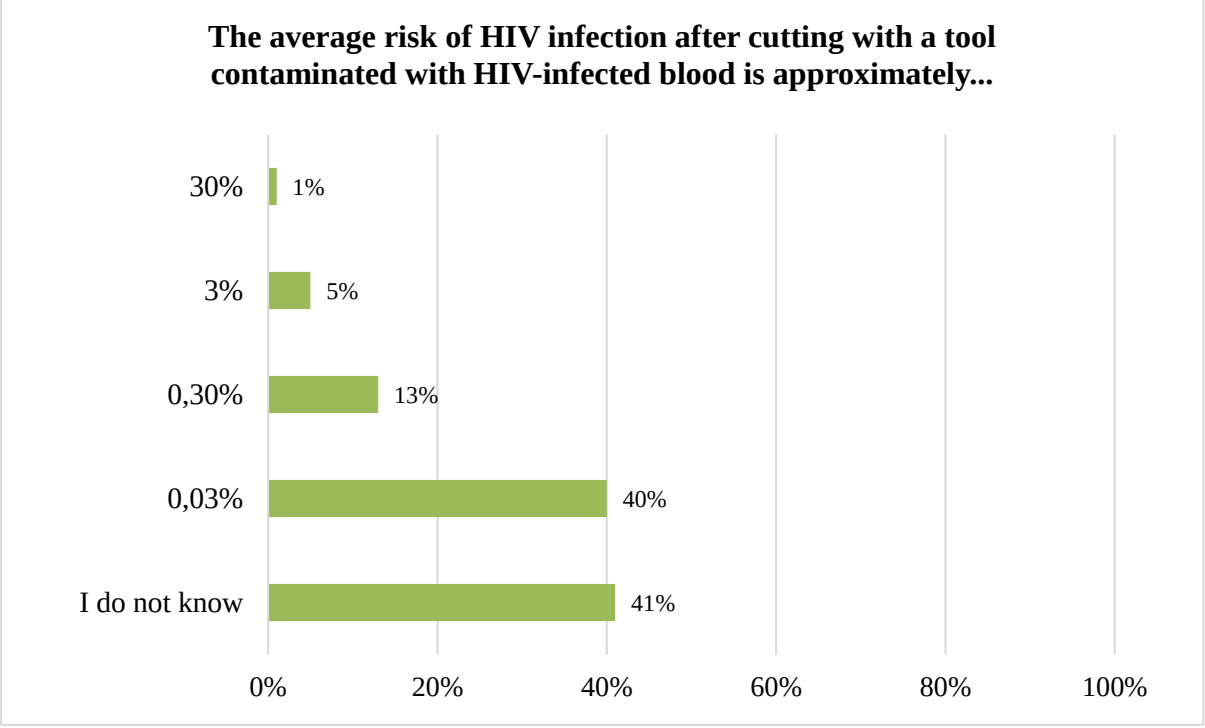

Figure 7. Non-HS group answers to the question: "The average risk of HIV infection after cutting with a tool contaminated with HIV-infected blood is approximately..."

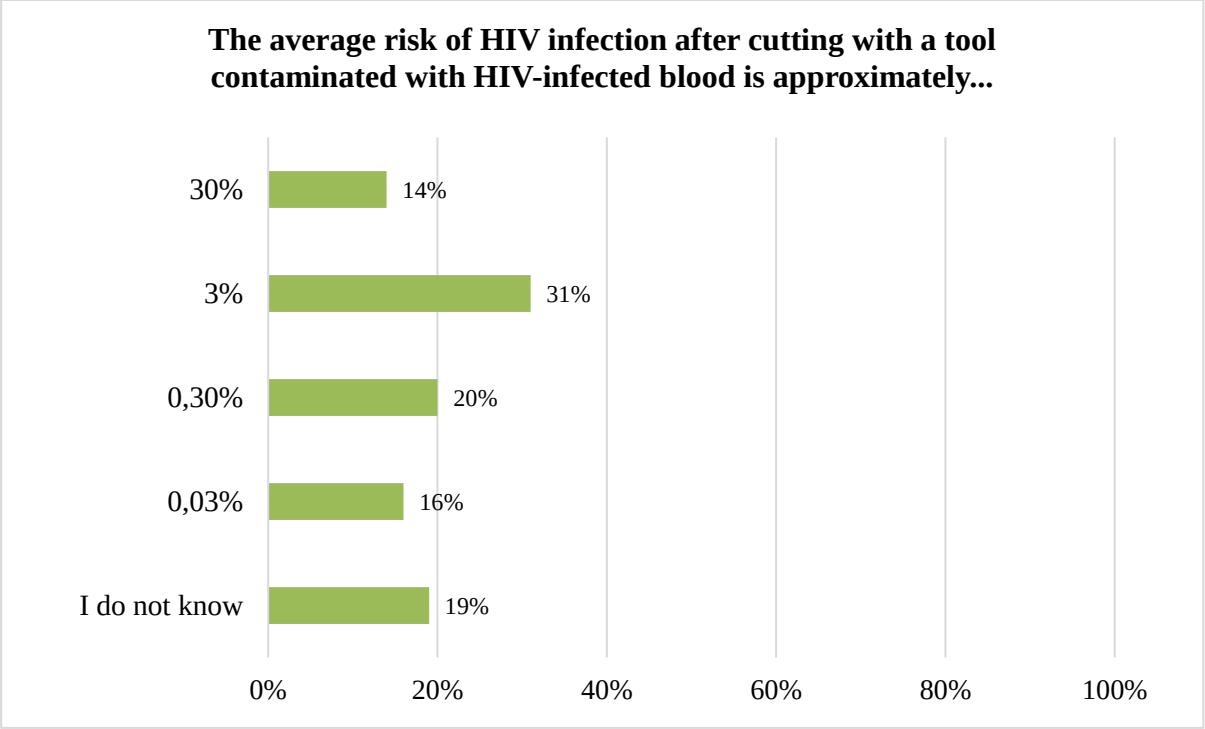

Figure 8. MS group answers to the question: "The average risk of HIV infection after cutting with a tool contaminated with HIV-infected blood is approximately..."

4. 2. The question: "The average risk of HIV infection after cutting with a tool contaminated with HIV-infected blood is approximately..."

The correct answer ("0.3%") was indicated by 15% HS (Figure 6), 13% non-HS (Figure 7) and 20% MS (Figure 8).

4. 3. The statement: "A drop of infected blood that has already dried up is still a threat"

The correct answer ("false") was indicated by 11% HS (Figure 9), 17% non-HS (Figure 10) and 32% MS (Figure 11).

4. 4. The statement: "Contact of infected blood with intact skin is completely safe"

The correct answer ("true") was indicated by 47% HS (Figure 12), 47% non-HS (Figure 13) and 59% MS (Figure 14).

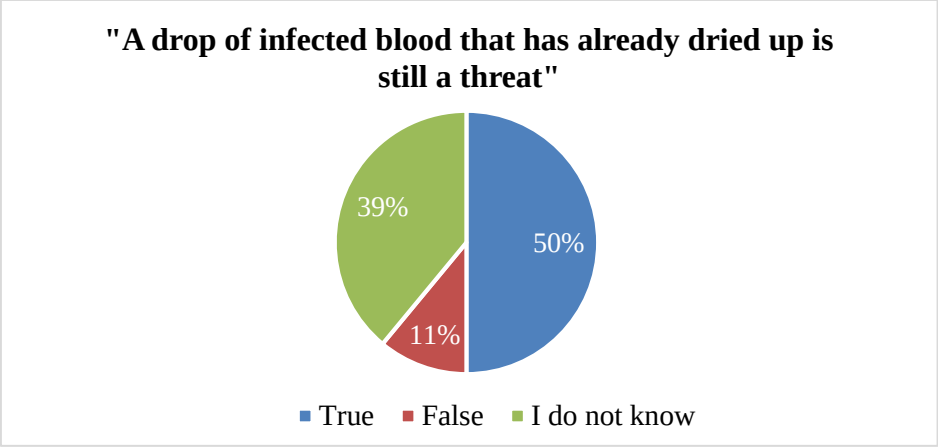

Figure 9. HS group answers to the statement: "A drop of infected blood that has already dried up is still a threat"

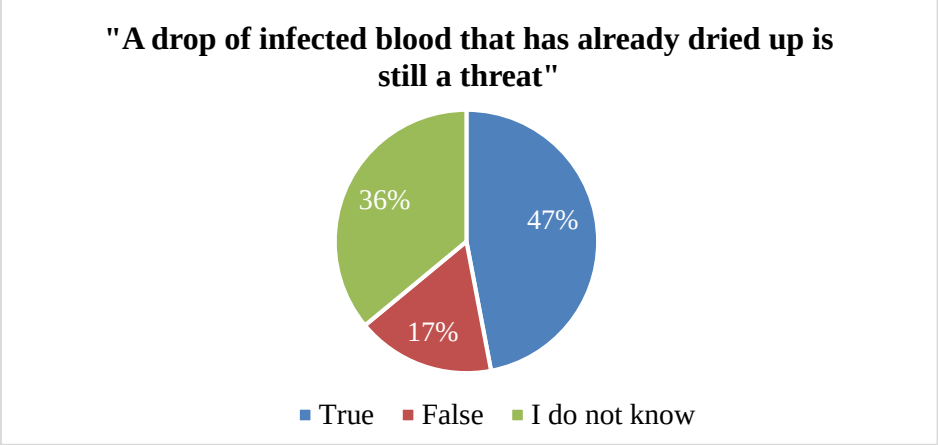

Figure 10. Non-HS group answers to the statement: "A drop of infected blood that has already dried up is still a threat"

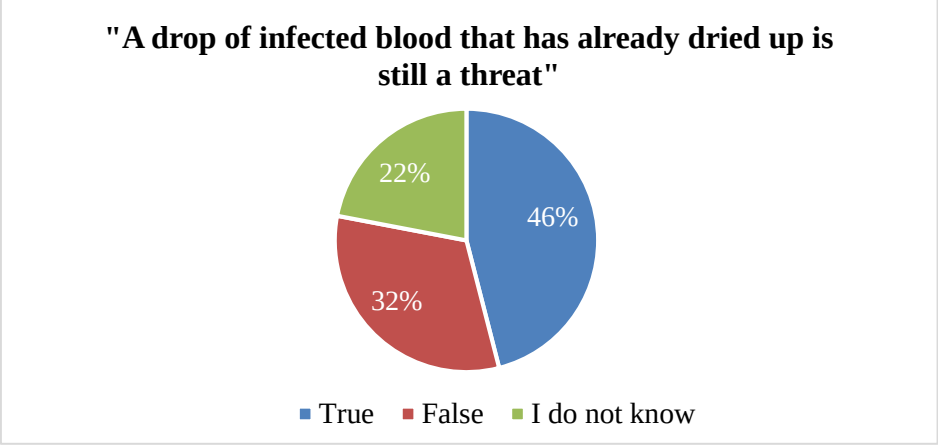

Figure 11. MS group answers to the statement: "A drop of infected blood that has already dried up is still a threat"

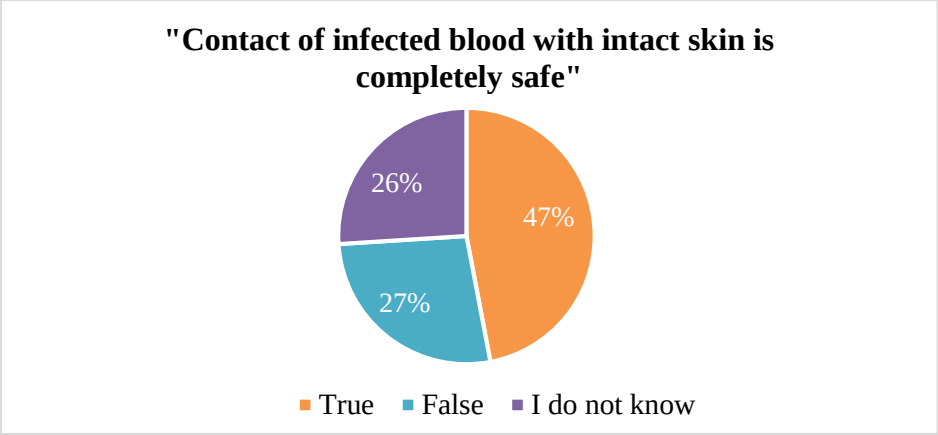

Figure 12. HS group answers to the statement: "Contact of infected blood with intact skin is completely safe"

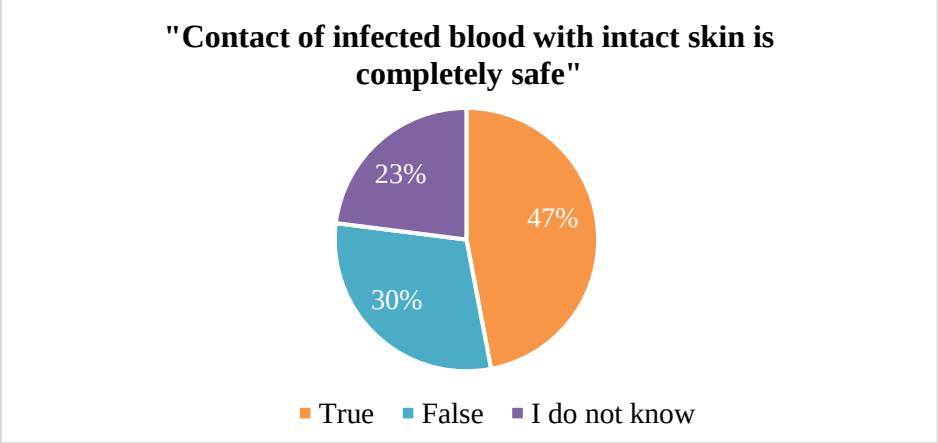

Figure 13. Non-HS group answers to the statement: "Contact of infected blood with intact skin is completely safe"

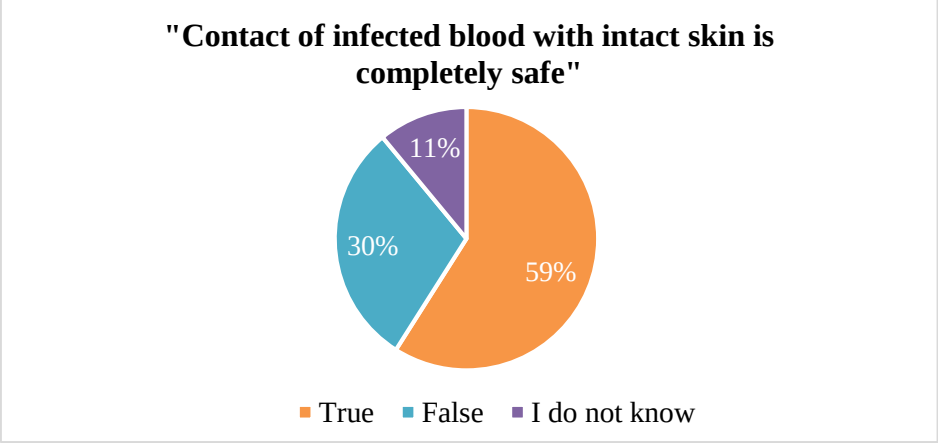

Figure 14. MS group answers to the statement: "Contact of infected blood with intact skin is completely safe"

5. CONCLUSIONS

The three most frequently indicated answers in each group about ways of HIV infection were: blood, semen and vaginal discharge. Most respondents cannot estimate the average risk of HIV infection after cutting with a tool contaminated with HIV-infected blood. Most respondents also do not know or give the wrong answer to the statement that a drop of infected blood that has already dried up is still a threat. Except for medical students, most respondents are unable to correctly assess whether contact of infected blood with intact skin is completely safe.

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