A Statistical Assessment of Information, Knowledge and Attitudes of Medical Students Regarding Contraception Use

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\textbf{ABSTRACT}

\textbf{Objective:} To evaluate how contraception use is linked to information, knowledge and attitudes towards family planning and contraception of medical students.

\textbf{Methods:} This is a voluntary cross-sectional study using an anonymous questionnaire applied to 62 medical students. The questionnaire had the following main structure: characteristics of the studied population, information on contraception, knowledge about contraception methods, attitudes regarding family planning and contraception, and contraception use. Statistical analysis was performed using STATISTICA 8.0 software and statistical significance of the data was verified using the t-statistic test.

\textbf{Results:} The survey had a 95\% response rate. Seventy seven percent of the studied population consisted of females aged between 20-40 years, with 85.50\% of them being 20-25 years old. The overwhelming majority of respondents believed it was important to be informed on the subject and considered themselves to be well informed on contraception. The internet and courses are the main sources of information. Of all respondents, 75.41\% had routine discussions with their partners regarding contraception, 53.23\% talked about it with family members and 46.77\% with their physician; 90.16\% had at least one gynecological examination and 47.54\% got themselves tested for sexually transmitted diseases. The condom and the contraceptive pill were the main contraceptive methods for the respondents.

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INTRODUCTION

Reproductive life plans are the primary prophylactic mechanisms regarding maternal health worldwide. Yet, the use of contraceptives is closely linked to the acknowledgement and acceptance of their necessity, as well as their universal availability. At present, in Romania there is a particular situation regarding family planning, which is still far from being resolved. Abortion rate remains high and the number of teenage undesired pregnancies is still rising.

Before 1989, Romania had the highest incidence of maternal death related to illegal septic abortions (1) and family planning was an inexistent notion, the subject being banned from discussing in most social groups including the medical community.

After 1989, family planning entered its pioneer stage with the introduction of over the counter products, also attracting social interest. Thus, in 2009 abortion rates in Romania dropped significantly by 93% in comparison to 1990 (2). The once declining trend in Romania during 1990-2009 was not sustained in the following years. In 2012, Romania reported the highest number of on request abortions registered throughout Europe: 480 abortions per 1000 deliveries (3).

Pregnancy rates vary among the teen population in our country depending on the educational level, access to health care facilities as well as other personal, social, economic and demographic characteristics. In 2011, when teenage pregnancies across various countries worldwide where analyzed, Romania reported 61 pregnancies per 1000 teenage females and 17 abortions per 1000 teenage females (15-19 years old), the highest numbers compared to other countries from Central and Eastern European countries that were part of the former communist block (i.e., Slovakia had 33 pregnancies and six abortions per 1000 teenage females, Slovenia had 33 pregnancies and seven abortions per 1000 teenage females and Hungary 38 pregnancies and 16 abortions per 1000 teenage females). Quite strikingly, Romanian figures are close to those from the USA, where the reported data show 57 pregnancies and 15 abortions per 1000 teenage females, but most likely these figures hide the true dimension of the phenomenon, due to incomplete reported data for our country (4).

Our study aims to evaluate how the use of information obtained from different sources (including a medical specialized course) is linked to knowledge, attitudes and choices of contraceptive methods of the medical students at the end of their Obstetrics and Gynecology curriculum at “Carol Davila” University of Medicine and Pharmacy, Bucharest. This is a pilot study of how information, knowledge and attitudes on contraception may influence the choices of Romanian students regarding contraceptive methods and approaches towards family planning.

MATERIAL AND METHODS

In March 2014, we carried out a voluntary cross-sectional study among medical students, both males and females, at “Carol Davila” University of Medicine and Pharmacy. The selection of this group for conducting the study was based on an a priori belief that it should be the most knowledgeable about contraception as compared to their age peers, given their higher access to information throughout medical studies. Informed consent for data research and publication was obtained according to the Declaration of Helsinki, revised in 2000 in Edinburgh.

Intentionally, students were using contraception as they were before graduation and the internship exam, pregnancies being undesired at this point.

An anonymous 23-item questionnaire was voluntarily administered to obtain the necessary
information for the study. The subjects included in the study were students who completed the Obstetrics Gynecology module, which had two hours dedicated to contraception. The questionnaire had the following main structure: (i) five questions that depicted the characteristics of the studied population (questions 1 to 5); aspects that focused on age, gender, financial income and living conditions; (ii) one question (question number 6) asked what was the age of sexual debut; (iii) the remaining questions were grouped in three distinct categories: questions that tested their means of information, questions that tested their knowledge and questions that tested their ability to apply individual knowledge in daily life, as follows: (iii-1) information category questions (questions 9, 10, 19, 20): “Have you ever researched about contraceptive methods?”, “How have you been informed about contraceptives?”, “Do you consider it is important to be informed on methods of contraception?”, “Do you consider that the information you currently receive about contraceptives is satisfactory?”; (iii-2) Knowledge category questions, which referred to topics discussed during the two-hour course on contraception (questions 7 and 8): “Of the following contraceptive methods listed below, which is not an oral contraceptive?”; “Mark the principal mechanical barrier contraceptive method”; (iii-3) Attitudinal category questions (questions 12, 15, 16, 17, 18): “Do you discuss contraceptive methods with your partner?”, “In case of unprotected sexual intercourse, have you or your partner ever been tested for STDs (Sexually Transmitted Diseases: HIV, syphilis, gonorrhea, etc.)?”, “Have you or your partner ever been to a gynecological checkup?”, “Have you ever discussed contraception with you family physician or your school district assigned doctor?”, “Have you ever discussed contraceptive methods with family members?”; (iii-4) One question regarding contraceptive choice (question 14): “Which of the following contraceptive methods do you use?”. Also, questions 11 (Do you currently have a sexual partner?) and 13 (Do you have a sexual life?) aimed at uncovering the potential need for contraceptive use. At the end of the questionnaire a number of questions on respondents’ attitude towards some unsettled personal options with social implications were addressed: Question 21 asks if the respondent or respondent’s partner underwent an abortion on request procedure, Question 22 asks if the respondent or his/her partner carried out a pregnancy to full term and Question 23 asks the respondent if he or she personally would agree with the abolishment of abortion on request.

The original questionnaire (in Romanian) and the answers are available online (https://docs.google.com/forms/d/1PlXgrLy5m-fb1tdiylwmcnPtlvGucojTGSTboi56_o/edit). Statistical analysis was performed using the STATISTICA 8.0 software, and statistical significance of data was verified using t-statistic test (with a significance level of 95%), which is suited for small populations. Firstly, standard statistical analyses were performed individually for each particular question and the statistically significant differences between population groups depending on their answers were tested; secondly, the questions were intertwined in order to correlate the characteristics of the respondents to their level of knowledge, information and attitude toward contraception choice and these correlations were also tested for statistical significance.

RESULTS

Of the 64 students present at the module, 62 answered the questionnaire, summing a 95% response rate. Of all respondents, 79% answered all 23 questions (49 out of 62), and only fifteen of these attended the contraceptive course; interestingly, the most avoided question was the one regarding oral contraceptives (question 7) that was debated during the course.

Our research hypotheses were based on the likely influence of information, knowledge and attitudes on and towards contraception, as illustrated in Figure 1.
General characteristics of the sample population

Seventy seven percent of the studied population was represented by females aged between 20 and 40 years and 85.50% of them (20-25 years old) were at the peak of their fertility. Only one subject was not sexually active; 85.50% had single partner relationships; 14.50% had occasional sexual intercourse; 2% were married and 18.37% were currently residing alone; most of the subjects were either living with a stable partner or with friends.

Romanian students are generally sustained financially by their families, some holding temporary employment positions. Most universities support students with small social grants as well as full scholarships depending on the available resources. The monthly revenue level of the studied population was arbitrarily divided into five categories, from very low to very high, by taking into account the average grants’ level in Romanian universities (around 200-300 RON, approximately 50-60 USD). 43.10% of the respondents declared a monthly average level of revenues between 500 and 1000 RON (considered high from our survey’s perspective), 25.86% had revenues above 1000 RON (very high), while 13.79% declared a very small level of monthly revenues (below 100 RON); 40% of the respondents with a very high level of revenues were living with their boyfriend/girlfriend, while 55.56% with a very small level of revenues were living with their parents; 51.60% of respondents had their first sexual intercourse between the ages of 17 and 19, and 19.40% reported an earlier onset between the ages of 14-17.

Information on contraception

Of all respondents, 98.39% believed it was important to be informed on the subject and 96.77% (p-value<0.05) considered themselves to be well informed on contraception.

The question related to where their information came from had multiple choice answers, including the internet, the pharmacy, school related courses, discussions with family members and discussions with friends (Table 1).

Figure 2 shows that the internet and the Gynecology course were the main sources of information on contraception for our sample – 41.28% (p-value<0.05) of the responses indicated the course as the main information source, 36.70% (p-value<0.05) indicated the internet and 10.09% (p-value<0.05) friends.

At the same time, only 42 respondents (72.58%) thought that the information received by them on contraception was satisfactory, while 27.42% of them believed the information is unsatisfactory. Income level was inversely correlated with the degree of satisfaction with contraceptive information (-0.44).

Knowledge on contraception

Analyzing the knowledge category questions (7 and 8), we highlight the fact that 89.80% (p-value <0.05) of the responders knew that Pharmatex was not an oral contraceptive and only 50.82% (p-value<0.05) knew that condoms were mechanical contraceptives. A significant number of respondents [52.27% (p-value<0.05)] answered both questions correctly; of the 25 students who have properly classified the condom as a mechanical contraceptive method, 23 (92%) (p-value<0.05) answered the second question correctly as well, and 24 (49.98%) gave an incorrect answer to both questions. The two respondents who declared that they have had an abor-
tion on request offered the correct answer to the question regarding the method of oral contraception, but only one responded correctly to the second question.

**Attitudes on contraception**

Of all respondents, 85.50% were sexually active and involved in monogamous relationships; 75.41% (p-value<0.05) had routine discussions with their partners regarding contraception, 53.23% (p-value<0.05) discussed the subject with family members, and 46.77% (p-value<0.05) discussed it with their physician; 90.16% (p-value<0.05) had seen a gynecologist at least once; and 47.54% (p-value <0.05) have had themselves tested for STDs.

Fifty three respondents (86.89%) declared they had a partner, and eight (13.11%) reported they had no partner. Among those who had a partner, the majority [42 (79.25%) (p-value<0.05)] said they used to discuss with him/her about contraception, 10 (18.87%) reported they were discussing it only sometimes, while one (1.89%) stated he/she had no such discussions with his/her partner. Interestingly, of those who declared they had no partner, four students (50%) responded they talked with him/her about contraception and one (12.5%) answered he/she sometimes was discussing about contraception with his/her partner.

From the perspective of investigating attitudes to contraception, it is worthwhile observing the extent to which respondents discuss contraception issues with their doctor, family, and partner. Figure 3 shows in the mirror the answers to the questions regarding discussions with the doctor and family, respectively. Thus, most of those who said they were talking to their doctor or family [58.62% (p-value<0.05)], while the remaining 41.38% (p-value<0.05) stated they did not talk to their family. At the same time, almost half of those who said they did not talk to their doctor about contraception [48.48% (p-value<0.05)] reported that they discussed with their family, the remaining 51.52% (p-value<0.05) saying they did not.

Another interesting perspective is that of discussing with the doctor versus discussing with the partner (Figure 4). Thus, the overwhelming majority of those who responded with both “yes” or “no” to the question about discussing with the doctor answered they used to discuss with their partner too (78.57% (p-value<0.05) for “yes” respondents, and 72.73% for those who responded with “no”), adding to those who declared that they were sometimes discussing with their partner (14.29% for “yes” and 21.21% for “no”). If we look at the situation from the other perspective, we find that, regardless of the answer to the question about discussing contraceptive issues with...
the partner, at least half reported that they did not talk to the doctor, the highest percentage being recorded for those who said they were only occasionally discussing with their partner (63.64%). Alternatively, in the case of those who responded affirmatively to the question about discussing with the partner, both percentages of the answers for the discussions with the doctor – 47.83% (p-value<0.05) for “yes” and 52.17% for “no” – were statistically significant, which leads to the strong differentiation of these categories of respondents.

The correlation between gynecological examination and discussion with the doctor about contraception, illustrated in Figure 5, is also enlightening. Thus, 96.55% (p-value<0.05) of those who talked to their doctor about contraception answered they had at least one gynecological examination and only 50.91% of those who reported a visit to a gynecologist said they had also discussed with their doctor about contraception.

The responses also lead to the identification of statistically significant, positive or negative, correlations between the discussions with the partner and/or the family, on one hand, and certain characteristics of the respondents, on the other hand. Thus, the higher the respondents’ age, the more frequent the conversations with the partner (correlation of 0.53); also, the higher the incomes, the more numerous discussions with the family members (correlation of 0.39); and those who were parents tended to talk more with their partner about contraception (correlation 0.51).

Out of the 54 respondents who have had routine gynecological exams, 28 [51.85% (p-value<0.05)] confirmed they had routine STDs checkups, while 26 [48.15% (p-value<0.05)] had not.

**Contraception use**

Our study reveals, as shown in Table 2, that condoms represent the most used contraceptive method – 75.41% (p-value<0.05) of respondents and 58.23% (p-value<0.05) of responses –, followed by contraceptive pills and withdrawal method equally – 21.31% (p-value<0.05) of respondents and 16.46% (p-value<0.05) of responses. The calendar method is the least used contraceptive mean – 4.92% of respondents and 3.80% of responses. Interestingly, no respondent declared the use of chemical contraceptives and none reported to have used another contraceptive method.

Two respondents (one male and one female) declared that they or their partner had an abortion on request. The male student affirmed he does not use contraception (which might explain the undesired pregnancy), while the female student mentioned she was using the “withdrawal method” and the condom. At the same time, of the three respondents who were already parents, the female person did not answer the question about the contraceptive methods used, while the two male students were using the “withdrawal method” and “condom” (both), one of them saying he was also using the calendar method.

![FIGURE 5. Gynecological visit and counselling about contraception](image)

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<th>TABLE 2. Contraceptive use</th>
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Note: *denotes statistical significance at a minimum 95% level.
The students who talked to their doctor about contraceptives methods used the following contraceptives: 52.78% (p-value<0.05) condom, 19.44% pill, 13.89% coitus interruptus, 5.56% calendar rhythm method (Figure 6); 5.56% of respondents did not use any means of contraception, even though they affirmed they wanted to avoid an undesired pregnancy.

Regardless of the response to the question referring to discussions with their partner (“yes”, “sometimes” or “no”), the highest percentage of respondents indicates the condom as the preferred contraceptive mean: 62.96% (p-value<0.05) for “yes”, 60.00% for “no” and 44.44% for “sometimes” (Figure 7). The second most used contraceptive method is the contraceptive pill for “yes” respondents [22.22% (p-value<0.05)], the withdrawal method for “sometimes” respondents – 33.33% (p-value<0.05) – and also the withdrawal method and no method, to the same extent (20.00%) for “no” respondents. Moreover, none of the students who did not discuss with their partner used the contraceptive pill as a contraception method.

The condom was the most used method of contraception for our sample, regardless of the test for STDs or not; 67.86% (p-value<0.05) of respondents who declared to have tested for STDs use the condom, and 81.25% (p-value<0.05) of respondents who reported they had no test for STDs also used the condom (Figure 8).  

**DISCUSSION**

Our study aimed to uncover possible links between information, knowledge, attitude and, ultimately, choice and use of contraceptives for a group of medical students that need family planning methods.

This pilot study aligns its conclusions with various other articles on reproductive health (5-7), confirming that even medical students are not entirely knowledgeable regarding contraception. No notable differences were observed amongst medical students of Romania and other countries (8, 9). On the other hand, other Romanian authors (10) demonstrated that female medical students seemed to have more knowledge on contraception related questions in contrast to other university female students.

Evidence from the European Union indicates that the provision of free or subsidized contraceptives is associated with relatively low pregnancy and birth rates (11). After 1989, when family planning was introduced in Romania, some of the family planning centers distributed contraceptives for free, while contraceptives became available in pharmacies without a medical prescription. At the same time, there is a general lack of data regarding family planning issues in Romania, the last governmental report dating back to the year 2000; according to it, the main means of contraception became available, but only half of the female population knew how to properly use them (12). In 2005, reconfirmation came from an inter-
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There are three strong features of our study: population homogeneity (medical students), statistical analysis of the cross-sectional survey and its originality for a country where medical counselling is a preconceived idea. Given the changes in Romanians’ lifestyles after 1989, their sexual behavior suffered important transformations. These led to similar needs of Romanians in terms of family planning counselling and contraceptive use compared to their peers from Western Europe or United States.

The main limitation of our research comes from its nature of pilot study, which covered a small group consisting only in medical students. We intended to continue this study by addressing the questionnaire to other groups of students of various specializations, in order to gain more insight into the young Romanians’ knowledge on the attitude towards contraception and to be able to spot differences depending on their attributes.

In this framework, our study advocates for correcting misconceptions and misinformation regarding family planning and contraception by a more active involvement of health authorities and changes in public policies. The latter should focus more on knowledge, better understanding and bias elimination from behavior related to family planning and contraceptive choice.

**CONCLUSIONS**

Students’ level of information, knowledge and, most importantly, attitudes are correlated with their decisions regarding contraceptives. Medical students consider themselves to be accurately informed on contraception, their principal information sources being the university courses and the internet. Romanian medical students share similar features to their peers from European developed countries. Using statistical analysis, we demonstrated that information, knowledge and attitudes on contraception are closely linked to the contraceptive choice.

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REFERENCES


