



ARAŞTIRMA / RESEARCH

Knowledge and attitudes of medical students about emergency contraception

Acil kontrasepsiyon hakkında tıp öğrencilerinin bilgi ve tutumları

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Abstract

Purpose: The objective of this study was to evaluate the knowledge and behaviours of the first year students of a medical school on emergency contraception in Nicosia.

Materials and Methods: The data of this cross-sectional study were collected in February 2016 by a questionnaire administered under observation Of the 467 first year students of the Medical School, 418 responded to the questionnaire, with a response rate of 89.5%.

Results: Students were from 24 countries but the majority were from Turkey (58.0%), Nigeria (11.8%) and Northern Cyprus (8.2%). The correct knowledge of definition of emergency contraception (EC) level was 57.6% and 57.2% knew the purpose. There was a significant difference regarding knowledge of correct definitions of emergency contraception and emergency contraception pills among continental groups, with lowest level of knowledge for Asian country members. Of the total, only 33.9% of the participants had correct knowledge of effective timing for and 14.2% of the definition of emergency contraception pills. Excluding those who stated having no knowledge of emergency contraceptives and effective timing for EC, only 36.7% -for each concept- of the remaining participants claiming to be informed about these concepts, defined them correctly. The use of contraceptive methods was 49.5% and emergency contraception 23.1% among sexually active participants.

Conclusions: The knowledge level and behaviours of medical students on emergency contraception were insufficient. Emergency contraception education should be provided for all first year medical students, as well as other university beginners.

Keywords: Emergency contraception, knowledge, behaviour, medical students, Nicosia

Öz

Amaç: Bu araştırmanın amacı, Lefkoşa'daki bir tıp fakültesinin birinci sınıf öğrencilerinde acil kontrasepsiyon konusundaki bilgi ve davranışları değerlendirmek olarak belirlenmiştir.

Gereç ve Yöntem: Bu kesitsel araştırmanın verileri Şubat 2016'da gözlem altında anket uygulanarak toplanmıştır. Tıp Fakültesi'nin toplam 467 birinci sınıf öğrencisinden 418'i anket sorularına yanıt vermiştir (yanıt hızı %89.5).

Bulgular: Öğrenciler 24 ülkeden gelmekle birlikte, çoğunluk Türkiye (%58.0), Nijerya (%11.8) ve Kuzey Kıbrıs (8.2%) yurttaşlarıdır. Acil kontrasepsiyonun tanımını doğru bilme düzeyi %57.6, amacını doğru bilme %57.2'dir. Acil kontrasepsiyonun ve acil kontrasepsiyon haplarının tanımını bilme açısından ülke kıta grupları arasında önemli fark bulunmuştur, en düşük oran Asya ülkeleri üyeleri arasındadır. Acil kontrasepsiyonun etkili olduğu zaman süresini doğru bilenler toplamda %33.9, acil kontrasepsiyon haplarının tanımını doğru bilenler ise %14.2'dir. Acil kontraseptif hapları ve en etkili zaman süresi konusunda bilgisi olmadığını söyleyenler dışarıda bıraktığında, bildiğini belirtenlerin bu iki kavramı bilme düzeyi her biri için %36.7'dir. Seksüel aktif katılımcılar arasında aile planlaması kullanımı %49.5, acil kontrasepsiyon uygulama %23.1'dir

Sonuç: Tıp öğrencilerinin acil kontrasepsiyon konusundaki bilgi düzeyi ve davranışları yetersiz bulunmuştur. Tıp öğrencilerine ve üniversiteye yeni başlayan tüm diğer öğrencilere acil kontrasepsiyon eğitimi sağlanmalıdır.

Anahtar kelimeler: Acil kontrasepsiyon, bilgi, davranış, tıp öğrencisi, Lefkoşa

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INTRODUCTION

Emergency contraception (EC) is the general term for defining prevention methods of pregnancy in the first few days after sexual intercourse applied after unplanned, unprotected, forced sexual interactions, sexual assault or contraceptive failure. The appropriate practice of this method results in the reduction of unintended pregnancies by 74%. EC has been initially introduced in 1966 by the use of high doses of estrogens. In 1977, Yuzpe et al. suggested the use of a combination of estrogens and progesterone as a new method for EC, declared as the Yuzpe method: Ethinyl estradiol plus levonorgestrel. On the other hand, the use of intra-uterine devices (IUD) as a method of EC was started in 1976¹⁻⁵.

According to International Consortium for Emergency Contraception (ICEC) guidelines, emergency contraceptive pills (ECPs) are indicated for EC by three ECP regimens: levonorgestrel 1.5mg, ulipristal acetate 30mg, mifepristone 10-25mg⁵.

The World Health Organization (WHO) proposes contraceptive pills and post-coital IUD insertion for EC. As EC pills, the WHO recommends levonorgestrel 1.5mg or ulipristal 30mg within five days of sexual relation, or two doses of combined oral contraceptive pills⁴. For hormonal EC, high dose estrogen, estrogen and progesterone combinations, progesterone and mifepristone (Ru 486) may be alternatives. Mifepristone is a drug used in early abortions in many countries, also effective for preventing pregnancy at a lower dose, used for this purpose in some countries⁶. This medication is suggested to be used by the WHO preferably in the first 72 hours after unprotected sexual intercourse, also effective up to 120 hours^{7,8}.

Copper IUD should be inserted in the first five days, being the most effective method by 99% and can be used as a permanent contraceptive method afterwards⁴. ECPs do not cause abortion of a pregnancy. The levonorgestrel regimen reduces pregnancy risk by up to 80-90%. The ulipristal and mifepristone regimens are more effective than levonorgestrel. Oral contraceptives used as EC (the "Yuzpe regimen") are less effective⁵.

University students are a special group under the risk of unintended pregnancies, which influence their academic success. Studies reveal that up to 80% of higher education students may be sexually active. The primary reason of unplanned pregnancies among

them is the ineffective or non-use of contraceptives. This may result in failure to complete their education, may prevent their employment and free marital decisions^{9,10}.

According to a university student study in Finland, 65% of males and 79% of females declared using contraception. Hormonal contraception for women and condom for men were the most preferred methods. On the other hand, EC was generally used in case of condom failure¹⁰.

The Turkish Republic of Northern Cyprus (TRNC) is a country having a number universities with students from all over the world, mostly from the Middle East Asia and Africa. Ulipristal (Ella), the Yuzpe regimen, and the IUDs are available for EC in the TRNC. The individuals have to pay the expenses of the drugs or devices out of pockets because these medications are not covered by the social security system in the country. In spite of the massive research on emergency contraception globally, no such data are available in the Turkish Republic of Northern Cyprus (TRNC)¹¹⁻¹³.

The international status of Near East University offered the opportunity to compare the knowledge and behaviours about emergency contraception of young people from a number of countries, mainly Middle East and Africa. Our intention was to initiate a starting point for further studies to be performed on this issue in the TRNC.

The aim of the present study was to evaluate the knowledge and behaviours on EC of the first year medical students of an international university (Near East University Faculty of Medicine-NEUFM) in TRNC and to increase awareness on the issue for future interventions.

MATERIALS AND METHODS

This study was planned as cross-sectional and quantitative. The Near East University Faculty of Medicine (NEUFM) in Nicosia was the setting of the study conducted in February 2016.

The universe of the survey were the first year students of the NEUFM, coming from from a number of countries of the world with different socio-economic conditions, mainly from the Middle East and Africa as well as a small number from Europe. The whole group of 467 students enrolled in the 2 medical education programs of the faculty in English and in

Turkish were planned to be accepted as the study group without selecting a sample. Of the students, 418 accepted to complete the questionnaire, with a response rate of 89.51%.

The essential permission from the Dean of the NEUFM was provided and the conduction of the study was approved by the Ethics Committee of NEU. The reference number of the approval is 2015/35, Project No. 264. The informed written consent of the participants has been provided.

Data collection

A self – administered questionnaire of 36 questions designed by the researchers in English and Turkish was applied to the students by five intern doctors under the observation of the researchers. The Turkish students responded to the questionnaire in Turkish and the others in English. The questionnaire was distributed to the students during their classes. Confidentiality and anonymity of the study were

guaranteed by informed written consents of the participants. Independent variables in the study included age, gender, nationality, main location of residence until the age of 12, marital status, parents' education, the age of first sexual activity and the status of current regular sexual activity. Dependent variables included the knowledge of the definition, purpose and methods of EC; the knowledge of the indications of EC, the most effective timing for EC use; the knowledge of the definition of the ECPs and of the use of EC methods.

For consistency in the text, the following terms and criteria were accepted: "Emergency contraception (or post-coital contraception) refers to methods of contraception that can be used to prevent pregnancy in the first 5 days after sexual intercourse. It is intended for use following unprotected intercourse, concerns about possible contraceptive failure, incorrect use of contraceptives, and sexual assault if without contraception coverage"¹⁴.

Table 1. Socio-demographic characteristics of first year medical students of NEU, Nicosia, 2016 (N= 418)

Variable				
Age (n=403)	Mean: 19.4 ± Standard Deviation 1.7			
	Median: 19.0			
	Minimum - Maximum: 16 - 32			
Gender (n=418)	Male		Female	
	n	%	n	%
	208	49.8	210	50.2
Marital status (n=410)	Married		Single	
	n	%	n	%
	7	1.7	403	98.3
Country	Nationality		Country of residence until age 12	
TR	240	58.0	246	59.4
Nigeria	49	11.8	49	11.9
TRNC	34	8.2	28	6.8
Syria	23	5.6	11	2.7
Jordan	22	5.3	17	4.1
Palestine	8	1.9	8	1.9
Lebanon	7	1.7	6	1.4
Libya	5	1.2	5	1.2
Saudi Arabia	3	0.7	16	3.9
Iraq	3	0.7	3	0.7
Iran	3	0.7	2	0.5
Kuwait	2	0.5	3	0.8
UAE *	1	0.2	12	2.9
Other	14**	3.4	8***	1.9
Total	414	100.0	414	100.0

*UAE: United Arab Emirates; **Other: UK(2), Egypt(2), Russian Federation (2), India(2), Somalia, Kenya, Canada, Zimbabwe, Sweden, Sudan; ***UK, USA, Kenya, Egypt, Russian Federation, Oman, Zimbabwe, Sweden

Statistical analysis

The data were evaluated by the SPSS 18.0 statistical program and descriptive statistics were attained. The differences of variables between the groups were evaluated by Chi - square test, $p \leq 0.05$ being accepted as significant

RESULTS

Of the total 467 students of NEUFM first grade, 418 students responded to the questionnaire, with a response rate of 89.5%. Some socio-demographic characteristics of the participants are presented in Table 1. The students comprising the study were 16-32 years of age, with a mean and median age of 19 and the majority were from five countries: Turkey (TR)(58.0%), Nigeria(11.8%), the Turkish Republic of Northern Cyprus (TRNC)(8.2%), Syria(5.6%) and Jordan(5.3%). The marital status results revealed that seven of the students were married (1.7%). The results regarding the knowledge of the participants on

EC are presented in Table 2. The students with correct knowledge of EC were approximately 57%, regarding definition (57.6%), purpose (57.2%) and best known method(s) of EC (56.6%). However, knowledge of EC methods other than emergency contraception pills (ECPs), which are IUD and combined oral contraceptives, was low. There were only six persons (1.6%) who expressed three of the the emergency contraceptive methods correctly.

The knowledge of the definition of EC was lower among TR citizens with 54.5% and Asian country citizens with 47.6%, compared to TRNC citizens with 73.5% and African country citizens with 71.7%. The most effective timing for EC was correctly answered by 33.9% of the responders. Excluding those who stated having no knowledge of emergency contraceptives and effective timing for EC, only 36.7% -for each concept- of the remaining participants claiming to be informed about these concepts, defined them correctly (58 of 158 participants and 123 of 335 students respectively).

Table 2. Knowledge on emergency contraception of the first year medical students (n=418)

Variable		n	%
Knowledge of definition (n=380)	Correct	219	57.6
	Incorrect	161	42.4
Knowledge of purpose (n=383)	Correct	219	57.2
	Incorrect	164	42.8
Knowledge of methods (n=371) *	ECP	210	56.6
	Intra-uterine device	29	7.8
	Combined oral contraceptive	108	29.1
Complete knowledge of methods (n=371)	Complete	6	1.6
	Not complete	365	98.4
Knowledge of the definition of ECP (n=409)	Correct	58	14.2
	Incorrect	32	7.8
	Insufficient	68	16.6
Knowledge of the definition of EC according to nationality (n=376)	No knowledge	251	61.4
	TRNC	25	73.5
	TR	120	54.5
	African countries	38	71.7
	Asian countries	30	47.6
The knowledge of the most effective timing for emergency contraception (n=363)	European countries	5	83.3
	Correct	123	33.9
	Incorrect	164	45.2
	Insufficient	48	13.2
	No knowledge	28	7.7

*Row percentages over 371

Regarding knowledge of students on indications of emergency contraception methods, the least known of the indications of EC was contraception failure, known by 19.7%.

Only 4.2% had complete knowledge of the four indications of EC. Abortion was evaluated as a

method of EC by 25.9% of 402 respondents (not shown in tables). As shown in Table 3, the knowledge of the definition of ECPs was significantly higher in participants who had had prior sexual experience in comparison to those without a sexual experience ($\chi^2=13.86$, $p<0.001$).

Table 3. Knowledge on the definition of ECPs according to prior sexual experience

Knowledge of the definition of ECP (n=391)						
	Correct		Incorrect		Total	
	n	%	n	%	n	%
Prior sexual experience	27	25.0	81	75.0	108	100
No sexual experience	29	10.2	254	89.8	283	100
Total	56	14.3	335	85.7	391	100
	$\chi^2=13.86$		P < 0.001			

The sexual activity behaviours and contraceptive method and emergency contraception use of participants are presented in Table 4. Of the participants, 108 persons (27.6%) indicated having a previous sexual experience. The mean age of first sexual intercourse was 17.1 ± 1.9 with minimum age

of 12 and maximum of 23. Of the 99 respondents, 49.5% had used a contraceptive method at first sexual relationship. The method preferred most at first sexual interaction was male condom by 79.6%. Of the students with previous sexual intercourse experience, 23.1% stated having used EC in the past.

Table 4. The sexual activity behaviours and family planning and emergency contraception use of first year medical students of NEU

Variable		n	%
Sexual activity (n=391)	Yes	108	27.6
	No	283	72.4
Age of first sexual intercourse (n=94)	<14	4	4.3
	14	5	5.3
	15	10	10.6
	16	12	12.8
	17	22	23.4
	18	19	20.2
	19	16	17.0
	≥ 20	6	6.4
Mean: $17.1 \pm SD 1.9$ Median: 17 Minimum - Maximum: 12 – 23			
Use of family planning method at first sexual intercourse (n=99)	Yes	49	49.5
	No	50	50.5
Family planning method used at first sexual relation (n=49)*	Male condom	39	79.6
	Withdrawal	8	16.3
	Oral contraceptive pill	3	6.1
	Spermicide	1	2.0
	ECP	1	2.0
Current regular sexual life (n=109)	Yes	44	40.4
	No	65	59.6
Use of emergency contraception (n=104)	Yes	24	23.1
	No	80	76.9

* Each percentage was calculated over 49 persons and 3 students stated more than one answer

The knowledge of the definition of EC was slightly higher in women, but the gender difference was non-significant. The comparison of the correct knowledge of the definition of EC among age groups yielded a significantly higher value for the ≥ 20 age group ($p=0.03$). The country of residence until age 12 did not have a significant influence on the knowledge of EC (not shown in tables).

The educational level of mothers was not found to be influential on the knowledge of definition and purpose of EC. However, the education of the fathers of the students was significantly related to the knowledge of EC; 61.5% of the students whose fathers had university education had correct knowledge, compared to 45.0% correct knowledge of those with fathers' education high school and under ($\chi^2=8.20, p=0.004$). The results were similar as to the knowledge of the definition of EC. For the participants whose fathers had university education, correct responses were received from 61.1% compared to 47.4% whose fathers had high school

education or under ($\chi^2 =5.56, p=0.018$) (data not in tables).

The distribution of knowledge and behaviours of participants on EC according to their gender and nationality are presented in Table 5. The knowledge of the purpose of EC was higher among African country citizens than other countries with statistical significance ($p=0.01$). The information that abortion is not a method of EC was significantly higher among European country citizens including TRNC and TR, compared to Asian and African country citizens ($p<0.001$). The knowledge of the ECPs was low in general but significantly lower among Asian country citizens.

Use of contraceptive method at first sexual intercourse was 49.5% in 99 participants who had had a previous sexual experience. The frequency was highest among African country citizens but the differences of the groups were not statistically significant.

Table 5. Correct knowledge and behaviour of participants on emergency contraception according to gender and nationality

Gender	Male		Female		χ^2	p		
	n	%	n	%				
Knowledge of purpose of emergency contraception (n=383)	107	56.0	112	58.3	0.21	0.65		
Knowledge of most effective period for emergency contraception (n=363)	22	12.0	26	14.4	2.81	0.42		
Knowledge of ECPs (n=409)	26	12.7	32	15.6	1.12	0.77		
Age of first sexual interaction being under or equal to 17 years (n=94)	46	57.5	7	50.0	0.27	0.60		
Use of contraceptive method at first sexual intercourse (n=99)	38	46.3	11	64.7	1.90	0.16		
Current regular sexual intercourse (n=109)	33	36.7	11	57.9	2.94	0.09		
Use of previous emergency contraception method (n=104)	17	20.0	7	36.8	F*	0.14		
Nationality	European **		African		Asian		χ^2	p
	n	%	n	%	n	%		
Knowledge of purpose of emergency contraception (n=379)	143	55.6	41	74.5	33	49.3	8.74	0.01
Age of first sexual interaction being under or equal to 17 years (n=92)	45	58.4	2	40.0	5	50.0	F*	0.66
Use of contraceptive method at first sexual intercourse (n=98)	42	51.9	4	80.0	3	25	4.91	0.09
Current regular sexual relationship (n=106)	34	40.5	3	37.5	6	42.9	0.06	0.97
Knowing abortion is not a method of emergency contraception (n=398)	105	38.5	7	12.7	10	14.3	31.37	<0.001
Knowledge of ECPs (n=405)	43	15.6	10	17.5	5	6.8	16.21	0.01

*Analysed by Fisher's exact test *,**Includes European countries,TR and TRNC

DISCUSSION

Of the study participants from 24 countries, most were from Turkey, Nigeria, TRNC, Syria and Jordan in descending order. The international status of NEU and the conduction of medical education in English offered the opportunity for the international character of the study. Regarding EC knowledge, more than half of the students knew the definition and purpose of emergency contraception. These results are similar to a study performed in a university of Ethiopia¹⁵. More than half of both men and women knew the definition of EC, with a higher frequency for women but the difference was not statistically significant.

More than half of the participants had the information that ECP is a method of EC. However, only 8% were aware of the fact that IUD is also a method of EC. These results are similar to a study in India, where 17-25 year-old adolescents and young people were investigated. The best known emergency contraceptive method was the ECP and the knowledge of the use of IUD as an EC method was quite low, similar to our study¹⁶. The conditions for using EC were expressed mostly as unprotected sex (58.9%) and unintended pregnancy (53.1%) by our participants. Only one fifth of the participants (18.3%) knew that EC is used in case of contraceptive failure. This finding differs from a study in a university of Ethiopia, where the best known indication of EC was indicated as contraceptive failure¹⁷. In another study conducted in South Africa among university students, the most frequently expressed indication of EC was stated as sexual assault¹¹.

Of the participants in our study, 45% expressed EC as a contraceptive method, which should be considered a high prevalence. Most of the participants (66.1%) did not have correct knowledge of the most effective timing for EC. Studies with university students of South Africa by 90% and Indian adolescents and young people by 73% revealed similar results^{11,16}. On the contrary, a study in the university students of North West Ethiopia has pointed out that the majority of the participants had correct knowledge of the most effective timing for EC by 70%²⁰. In our study, the most effective timing of EC was found to be better known by men but the gender difference was not statistically significant. This finding differs from the results of a study among the university students of Ghana, where women had

better knowledge of the most effective timing for EC¹⁸.

The majority of the participants (72.4%) stated not having any previous sexual experience, which was similar to the findings of Adis Ababa University female undergraduate students¹⁹. The mean age of first sexual intercourse in those students who had a former sexual experience was found to be 17. This finding is similar to the results of university students of North West and South West Ethiopia, Brazil and also medical school students of India^{15,17,20,21}.

More than half of those participants who had had a previous sexual relation declared having first sexual intercourse before or equal to age 17. Regarding the age of first sexual intercourse, our findings are similar to other country study results, but their frequencies for first sexual activity at age ≤ 17 were lower than 40%^{15,17,20,21,22}. According to the study among Aberdeen University female students, 40% had experienced a prior sexual intercourse²³.

More than half of the men who had previous sexual activity expressed their first sexual experience at age 17 or under and nearly half of them stated use of contraceptive method during this intercourse. In the Aberdeen University study, contraceptive method use at first sexual experience was found to be less than half of the participants²³. On the other hand, most (65%) of the women with previous sexual experience declared using a method in their first sexual intercourse in our study. Male condom was the most frequently used method at first sexual intercourse (80%). The knowledge of the definition of ECPs was significantly higher in those who had prior sexual experience. These findings are in compliance with the survey carried out among adolescents in Nigeria²⁴.

The level of knowledge of the students on EC concept and methods was low. Similar findings on this issue were determined in other studies such as Hoque and Ghuman's study among university students in South Africa, Addo and Tagoe-Darko's study among university students in Ghana, Puri's study among adolescents and young people in India and Martins' study among high school students in Brazil^{11,16,17,18}. On the contrary, EC knowledge was found to be high in some studies like Aziken et al. among university students in Nigeria, a study among women in Sweden and the broad EC survey in Camerun²⁵⁻²⁷. Similarly, the study among female undergraduate students in Adis Ababa University

revealed 84.2% knowledge of EC²³. Finally, a study in Bareilly, India found that awareness about ECPs was very high among female college students especially regarding correct timing of its use²⁸. Another study in Mullana, India among first year medical students showed 100% awareness ECPs and the majority knew the correct timing of EC²⁹.

Regarding medical education on contraception in general, students expressed that they desired education on contraception but perceived limited exposure during their medical education, due to systemic and faculty-related barriers in a study among third year medical students in Chicago, USA. Most students were aware of abortion but lacked information and abortion procedural skills³⁰.

Thus, it may be concluded that the knowledge level on EC of young people, including medical students in different communities reveals diversity but inadequacy in general, especially in middle and low income countries. EC is an area where strategies to increase awareness and acceptability need to be promoted to prevent unintended pregnancies. There seems to be a necessity for a global systemic approach of planning the relevant education and information programs on EC of young people throughout the world, starting with medical students.

Since there were questions on sexual issues, the responses may be equivocal. To minimize the negative influence of this problem, the participants were told to answer the questionnaires anonymous and that the data would be used only for scientific purposes. The evaluations are based on the assumption that correct answers were provided.

Another limitation of the study is the coverage of only first year medical students. Consequently, the results of this study cannot be generalized to all university or medical students in the Turkish Republic of Northern Cyprus, but giving just a clue for the general population, to be pursued in broader research.

In conclusion, the knowledge level on EC of first year medical students was concluded as insufficient, although ECP was the best known method of EC. Our results reveal that EC education, as well as education on other modern methods of contraception should be provided for the students at the first years of all faculties, starting of course with medical students. The education should include the EC methods, the implementation forms and the effective timing of EC. Since the contraceptive

method use of adolescents differs significantly from married couples, the adolescents and young university students need a relevant education program on contraceptive methods and EC. Education should be carried out in the health centers of university campuses assisted with the relevant consultancy approaches and also should be covered in the medical education curricula for medical students. Similarly, public services should be available for university students and all young people to cover the expenses of all contraceptive methods and EC and to provide the relevant consultancy services.

Yazar Katkıları: Çalışma konsepti/Tasarımı: ÖA, SV, ŞÇ; Veri toplama: SV, ÖA; Veri analizi ve yorumlama: ÖA, SV, ŞÇ; Yazı taslağı: ÖA; İçerğin eleştirel incelenmesi: SV, ŞÇ, ÖA; Son onay ve sorumluluk: ÖA, SV, ŞÇ; Teknik ve malzeme desteği: -; Süpervizyon: ÖA, SV, ŞÇ; Fon sağlama (mevcut ise): yok.

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REFERENCES

1. Öztaş Ö, Artantaş AB, Tetik BK, Yalçıntaş A, Üstü Y, Uğurlu M. 18-49 yaş grubu evli kadınların ureme sağlığı ve kontrasepsiyon hakkındaki bilgi, tutum ve davranışları. *Ankara Med J.* 2015;15:67-76.
2. United Nations Department of Economic and Social Affairs Population Division. Trends in contraceptive use worldwide. Geneva, United Nations. 2015.
3. Alkema L, Kantorova V, Menozzi C, Biddlecom A. National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: a systematic and comprehensive analysis. *Lancet* 2013;381:1642–52.
4. World Health Organization Media Centre, EC, Fact Sheet N244, 2012. Geneva, WHO, 2012.
5. ICEC and FIGO. Emergency Contraceptive pills. p. 5. Available at: http://www.cccinfo.org/custom-content/uploads/2014/01/ICEC_Medical-and-Service-Delivery-Guidelines-English_June-2013.pdf (Accessed Jul 2018).
6. How emergency contraception works - How are emergency contraceptive pills different from the abortion pill (Mifeprex, also referred to as RU-486)? Available at: <http://ec.princeton.edu/questions/ecnotru.html> (Accessed 29 Sep 2016).

7. Premila W, Ashok, Prabhath T. Wagaarachchi1, Gillian M. Flett, Templeton A. Mifepristone as a late post-coital contraceptive. *Human Reprod.* 2001;16:72-5.
8. Medical methods for first trimester abortion. RHL Summary14 March 2016 Key findings. <http://apps.who.int/rhl/fertility/abortion/cd002855/en/> (Accessed 29 Sept 2016).
9. Coetzee MH, Ngunyulu RN. Assessing the use of contraceptives by female undergraduate students in a selected higher educational institution in Gauteng. *Curationis.* 2015;38(2):Art.#1535.
10. Virtala A. Family planning among university students in Finland (Academic dissertation). Tampere, University of Tampere, 2007.
11. Hoque ME, Ghuman S. Knowledge, practices, and attitudes of emergency contraception among female university students in KwaZulu-Natal, South Africa. *PLoS One.* 2012;7:e46346.
12. Daniels K, Jones J, Abma J. Use of EC among women aged 15-44: United States, 2006-2010. Washington, US Department of Health and Human Services, Centers for Disease Control and Prevention, 2013.
13. Craig AD, Dehlendorf C, Borrero S, Harper CC, Rocca CH. Exploring young adults' contraceptive knowledge and attitudes: Disparities by race/ethnicity and age. *Womens Health Issues* 2014;24:281-9.
14. World Health Organisation. Emergency contraception. Geneva, WHO, 2018.
15. Shiferaw BZ, Gashaw BT, Tesso FY. Factors associated with utilization of emergency contraception among female students in Mizan-Tepi University, South West Ethiopia. *BMC Res Notes* 2015;8:817.
16. Puri S, Bhatia V, Swami HM, Singh A, Sehgal A, Kaur AP. Awareness of emergency contraception among female college students in Chandigarh, India. *Indian J Med Sci.* 2007;61:338-46.
17. Martins LBM, Costa-Paiva L, Osis MJD, de Sousa MH, Pinto Neto, AM Tadini V. Knowledge of contraceptive methods among adolescent students. *Rev Saude Publica.* 2006;40:57-64.
18. Addo VN, Tagoe-Darko ED. Knowledge, practices, and attitudes regarding emergency contraception among students at a university in Ghana. *Int J Gynecol Obstet.* 2009;105:206-9.
19. Ahmed FA, Moussa KM, Petterson KO, Asamoah BO. Assessing knowledge, attitude, and practice of emergency contraception: a cross-sectional study among Ethiopian undergraduate female students. *BMC Public Health* 2012;12:110.
20. Wasie B, Belyhun Y, Moges B, Amare B. Effect of emergency oral contraceptive use on condom utilization and sexual risk taking behaviours among university students, Northwest Ethiopia: a cross-sectional study. *BMC Res Notes* 2012;5:501.
21. Aggarwal O, Sharma AK, Chhabra P. Study in sexuality of medical college students in India. *J Adolesc Health.* 2000;26:226-9.
22. Fantahun M, Chala F, Loha M. Knowledge, attitude and practice of family planning among senior high school students in North Gondar. *Ethiop Med J.* 1995;33:21-9.
23. McCance C, Hall DJ. Sexual behaviour and contraceptive practice of unmarried female undergraduates at Aberdeen University. *BMJ.* 1972;2:694-700.
24. Araoye MO, Fakeye OO, Jolayemi ET. Contraceptive method choices among adolescents in a Nigerian tertiary institution. *West Afr J Med.* 1998;17:227-31.
25. Aziken ME, Okonta PI, Ande ABA. Knowledge and perception of emergency contraception among female Nigerian undergraduates. *Int Fam Plan Perspect.* 2003;29:84-7.
26. Larsson M, Aneblom G, Eurenus K, Westerling R, Tydén T. The adoption of new contraceptives methods- surveys and intervention regarding emergency contraception. *Acta Obstet Gynecol Scand.* 2006;85:1142-3.
27. Goulard H, Moreau C, Gilbert F, Job-Spira N, Bajos N. Contraceptive failures and determinants of emergency contraception use. *Contraception.* 2006;74:208-13.
28. Agrawal VK, Agrawal P. Knowledge, awareness and perception of female students of emergency contraceptive pills. *J Behav Health* 2013;2:230-5.
29. Chandna A, Nath J, Dhingra D. Awareness of emergency contraception among 1st year medical students. *International Journal of Contemporary Medical Research.* 2016;3:1568-70.
30. Smith KG, Gilliam ML, Leboeuf M, Neustadt A, Stulberg D. Perceived benefits and barriers to family planning education among third year medical students. *Med Educ Online* 2008; 13:4.