

Knowledge and attitude towards emergency contraception among undergraduate medical students

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Received: 04 February 2017

Accepted: 02 March 2017

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ABSTRACT

Background: Studying the knowledge and attitude of medical students towards emergency contraception, as they are the future medical professionals and they will serve as the main channel for providing proper knowledge and making positive impression of it in general population. The objective of the study was to assess the knowledge and attitude of undergraduate medical students towards emergency contraception.

Methods: Medical students were given pre-validated questionnaire and divided in two groups. Group A students did not learn about emergency contraception, whereas group B students learnt about it. Interview of both groups were conducted separately. For group A, 1 hour seminar was conducted and after 7 days, same questionnaire was provided again for data collection.

Results: 154 students were included in group A whereas 162 students in group B. Average knowledge and attitude was significantly increased after seminar in group A [knowledge $41 \pm 16.88\%$ vs. $59.32 \pm 14.46\%$; $P < 0.05$; attitude 36.24 ± 10.93 vs. 41.5 ± 10.87 ; $P < 0.05$]. Average knowledge of group B students was $64.73 \pm 12.15\%$ whereas average attitude score was 42.9 ± 9.79 . Amongst all, 86.4%, 87% and 89.3% students were not able to describe about emergency contraception, different methods and advantages of intra-uterine device as emergency contraception, respectively. There are 82.1% students showed positive interest in learning more about emergency contraception and 70.1% agreed to recommend its use in future. Students having good knowledge showed more positive attitude towards emergency contraception [$r = 0.41$, $P < 0.05$].

Conclusions: Students have poor knowledge of special issues arises with emergency contraception. Proper attention should be given to these aspects during their teaching. Students have shown their positive interest to learn more about emergency contraception. Objective based seminar will be more helpful in improving knowledge and attitude.

Keywords: Emergency contraception, KAP study, Medical students, Unwanted pregnancy

INTRODUCTION

Emergency Contraception (EC) is a method of contraception used to prevent unintended pregnancy following unprotected intercourse or expected failure of contraception.¹ Despite availability of different contraceptive methods, unintended pregnancies continue to occur. Reasons for such pregnancies may be lack of awareness, negative attitude to contraception, low accessibility, sexual assault and/or rarely failure of contraception.² According to WHO, UNICEF and UNFPA estimates for the years 1990, 1995 and 2000,

more than 50 million women die of pregnancy related complications every year.³ EC plays a vital role in preventing unintended pregnancy and unsafe abortion.² If used after contraception failure, Emergency Contraception Pills (ECPs) could prevent 50% of unintended pregnancies.⁴ Given increasing adolescent sexual activity and decreasing age at first sex in developing countries the use of EC is especially important.⁵ Medical students are future health care providers of the country. Their knowledge and attitude towards EC can affect the attitude of large number of population towards EC to whom they will deal in future.

Therefore, to provide them proper training in such special issues, it is very important to know their current knowledge and attitude towards EC. Various studies have been conducted to evaluate knowledge and attitude of health and medical professionals towards EC. The present study is designed to evaluate the knowledge and attitude of medical students towards EC.

METHODS

After approval from Institutional Review Board (IRB), Government Medical College, Bhavnagar, Gujarat, India, undergraduate medical students from first year through third part II year were invited for the study. Those who gave the written informed consent were included in study and given questionnaire. Questionnaire was made by giving due consideration to knowledge and attitude of medical students towards EC. The majority questionnaires were prepared from the previously published studies to increase the quality and validity of the data and their easy comparability with other populations.^{2,6} Questionnaire was validated by two subject experts who are practicing physician and professor, having post-graduation in gynaecology and pharmacology, respectively. Questionnaire was tested on small group of students before applying to the study participants. Questionnaire was consisted of total 44 questions on demographics (n=14, no. 1 to 14), knowledge (n=15, no. 15 to 29), and attitudes (n=15, no. 30 to 44). Students were provided 45mins to complete the questionnaire. Students were divided in to two groups in response to question no. 11. Group A included students who did not learn about EC whereas Group B students learnt about EC through the topics covered in pharmacology, community medicine and gynaecology under their regular curriculum. Interview of both groups were conducted separately. For the participants of Group A, 1 hour seminar was conducted on EC after collecting filled in questionnaire. After 7 days of conducting seminar, same questionnaire was provided again to Group A.

Outcome Measures and Statistical Consideration

Data were expressed in proportions and descriptive statistics was used. Each knowledge question was evaluated for correct answer, amongst which subjective questions evaluated according to predetermined scoring and objective questions considered right if the answer is correct and wrong if incorrect or answered as "Don't know". Adequate knowledge was considered when score was $\geq 75\%$. Attitude score was calculated out of 75 after reversing the score for positive attitude questions. (Higher the score is better attitude) Comparisons of knowledge and attitude in participants of group A before and after seminar was performed using paired t-test and Wilcoxon matched pairs signed rank test, respectively. Comparisons of knowledge and attitude between participants of group A2 and B was done using unpaired t-test and Mann Whitney U test, respectively. Effect of

demographic variables on knowledge of study participants was evaluated by using Chi-square test. Regression analysis was performed to check correlation between knowledge and attitude of participants using linear regression model. Correlation coefficient was calculated and correlation was checked by using Spearman r test. All statistical analysis was done using GraphPadInstat3 software demo version. $P < 0.05$ was considered significant.

RESULTS

Demographic data

Total 316 undergraduate medical students participated. Group A had 154 (48.73%) students and 162 (51.26%) were enrolled in group B. Group A students were belong to first and second M.B.B.S. whereas group B students were from third first and final year M.B.B.S. Group A students were analyzed twice based on questionnaire filled by them before and 7 days after attending the seminar. Of 154 students, 146 (94.80%) students attended the post lecture session. Demographic details of study participants are given in Table 1. Figure 1 shows flow chart of study participants.

Assessment of knowledge and attitude

Of 154 participants in Group A1, 02 (1.3%) participants were having adequate knowledge about EC. After 7 days of conducting seminar, 20 (13.70%) out of 146 participants showed adequate knowledge. Among Group B participants who have previously attended lecture or seminar, 36 (22.22%) of 162 showed adequate knowledge. Of 308 total participants, 86.4%, 87% and 89.3% participants were not able to describe about EC, different methods of EC and advantages of IUD over EC pills, respectively. Average knowledge of participants of Group A1 was significantly increased after 1 hour seminar ($41 \pm 16.88\%$ vs. $59.32 \pm 14.46\%$; $P < 0.05$, Figure 2) however, it was not achieved up to the level of Group B. Average knowledge of participants of Group B was $64.73 \pm 12.15\%$ and that was significantly higher than Group A2 (Figure 3). Evaluation of individual questions is shown in Table 2. Effect of various demographic variables on knowledge about EC of all 308 (Group A2+B) participants is shown in Table 3. Academic year had significant impact on adequate knowledge of study participants. More number of participants had adequate knowledge among third year students and intern doctors as compared to first and second year students. ($P < 0.05$) Overall attitude of study participants was assessed by calculating attitude score. Average attitude score was 42.23 ± 10.33 (out of total score of 75). Attitude score in Group A was significantly improved after attending seminar (36.24 ± 10.93 vs. 41.5 ± 10.87 ; $P < 0.05$, Figure 2). It was equivalent to study participants of Group B (41.5 ± 10.87 vs. 42.9 ± 9.79 ; $P > 0.05$, Figure 3). Significant correlation was found between knowledge and attitude of study participants.

Table 1: Demographic details of study participants.

Demographic variables		Group A		Group B (n=162)
		Group A1 (n=154)	Group A2 (n=146)	
Age in years		18.3±0.8	18.3±0.7	21.0±1.1
Gender	Male	74 (48.1)	66 (45.2)	88 (54.3)
	Female	80 (51.9)	80 (54.8)	74 (45.7)
Academic year	First year	100 (64.9)	100 (68.5)	00
	Second year	54 (35.1)	46 (31.5)	00
	Third First	00	00	85 (52.5)
	Third Final	00	00	57 (35.2)
	Internship	00	00	20 (12.3)
Marital Status	Married	00	00	00
	Single	153 (99.4)	146 (100)	154 (95.1)
	Engaged	01 (0.6)	00	07 (4.3)
	Not attempted	00	00	01 (0.6)
Religion	Hindu	144 (93.5)	138 (94.5)	149 (92.1)
	Muslim	02 (1.3)	02 (1.4)	07 (4.4)
	Jain	08 (5.2)	06 (4.1)	04 (2.5)
	Christian	00	00	00
	Shikh	00	00	00
	Parsi	00	00	00
	Budhdhist	00	00	00
	Others	00	00	02
Domicile	Urban	113 (73.4)	105 (72.0)	136 (84.0)
	Rural	24 (15.6)	31 (21.2)	23 (14.1)
	Not attempted	17 (11.0)	10 (6.8)	03 (1.9)
Type of family	Nuclear	99 (64.3)	98 (67.1)	124 (76.5)
	Joint	49 (31.8)	42 (28.8)	33 (20.4)
	Not attempted	06 (3.9)	06 (4.1)	05 (3.1)
Living with	Parents	25 (16.2)	25 (17.1)	43 (26.5)
	Hostel	128 (83.1)	120 (82.2)	117 (72.2)
	Renting with friends	00	00	01 (0.65)
	Husband/wife	00	00	00
	Others	01 (0.7)	01 (0.7)	01 (0.65)
Father's education	Secondary	28 (18.2)	28 (19.2)	26 (16)
	Higher secondary	12 (7.8)	12 (8.2)	10 (6.2)
	Graduate	79 (51.3)	77 (52.7)	91 (56.2)
	Post graduate	32 (20.8)	25 (17.1)	25 (15.4)
	Not attempted	03 (1.9)	04 (2.8)	10 (6.2)
Mother's education	Secondary	39 (25.3)	39 (26.7)	42 (25.9)
	Higher secondary	18 (11.7)	18 (12.3)	20 (12.3)
	Graduate	66 (42.9)	62 (42.4)	59 (36.4)
	Post graduate	14 (9.1)	10 (6.8)	13 (8)
	Not attempted	17 (11.0)	17 (11.6)	28 (17.3)
Heard about EC	Yes	88 (57.1)	146 (100)	162 (100)
	No	66 (42.9)	00	00
Time heard about EC	< 6 months	59 (38.3)	139 (95.2)	53 (32.7)
	6months- 5 years	34 (22.1)	05 (3.4)	85 (52.5)
	Before 5 years	02 (1.3)	00	21 (13.0)
	Not attempted	59 (38.3)	02 (1.4)	03 (1.8)
Source of information about EC	Formal education	38 (24.7)	98 (67.1)	136 (84.0)
	Media	37 (24)	36 (24.7)	69 (42.6)
	Magazine	15 (9.7)	32 (21.9)	36 (22.2)
	Internet	19 (12.3)	35 (24)	36 (22.2)
	Health facilities	05 (3.2)	18 (12.3)	49 (30.2)
	Friends/Relative	31 (20.1)	33 (22.6)	55 (34)

Table 2: Evaluation of knowledge questions in study participants of various groups.

Knowledge questions	Group A		Group B (n=162)	Overall assessment (n=308)
	Group A1 (n=154)	Group A2 (n=146)		
Time limit to administer EC				
Correct	97 (63)	137 (93.8)	155 (95.7)	292 (94.8)
Incorrect	57 (37)	9 (6.2)	7 (4.3)	16 (5.2)
Effectiveness of EC				
Correct	66 (42.9)	125 (85.6)	135 (83.3)	260 (84.4)
Incorrect	88 (57.1)	21 (14.4)	27 (16.7)	48 (15.6)
Places to obtain EC (multiple answers)				
Health institutes	84 (54.5)	109 (74.7)	112 (69.1)	221 (71.8)
Medical stores	104 (67.5)	133 (91)	149 (92)	282 (91.6)
Social worker	11 (7.1)	41 (28)	60 (37)	101 (32.8)
Don't know	21 (13.6)	03 (2)	03 (1.9)	06 (1.9)
Impossible to obtain	00	01 (0.6)	00	01 (0.3)
Indications of EC (multiple answers)				
Post Rape	98 (63.6)	116 (79.4)	150 (93)	266 (86.4)
Back up when condom breaks	106 (68.8)	122 (83.6)	150 (93)	277 (89.9)
When OC pill forgotten	112 (72.7)	98 (67.1)	93 (57.4)	191 (62)
Mechanism of action of EC				
Prevent pregnancy	105 (68.1)	134 (91.8)	107 (66)	241 (78.2)
Induce abortion	15 (9.7)	29 (19.8)	45 (27.8)	74 (24)
Prevent pregnancy and induce abortion	53 (34.4)	33 (22.6)	69 (42.6)	102 (33.1)
Other	06 (3.8)	02 (1.3)	10 (6.1)	12 (3.9)
Possible side effects of EC (multiple answers)				
Nausea and vomiting	72 (46.8)	115 (78.7)	140 (86.4)	255 (82.8)
Altered menstrual bleeding	103 (66.9)	105 (71.9)	137 (84.5)	242 (78.6)
Congenital malformation	16 (10.4)	28 (19.2)	46 (28.4)	74 (24)
Lowered fertility	59 (38.3)	28 (19.2)	28 (17.2)	56 (18.2)
EC acts as an abortifacient				
Correct	48 (31.2)	92 (63)	62 (38.3)	154 (50)
Incorrect	106 (68.8)	54 (37)	100 (61.7)	154 (50)
Pregnancy test is necessary before EC				
Correct	45 (29.2)	68 (46.6)	118 (72.8)	186 (60.4)
Incorrect	109 (71.8)	78 (53.4)	44 (27.2)	122 (39.6)
Menstrual irregularity is common side effect				
Correct	80 (52)	94 (64.8)	138 (85.2)	232 (75.3)
Incorrect	74 (48)	52 (35.2)	24 (14.8)	76 (24.7)
After fertilization IUD can be effective as EC				
Correct	30 (19.5)	52 (35.6)	93 (57.4)	145 (47.1)
Incorrect	124 (80.5)	94 (64.4)	69 (42.6)	163 (52.9)
EC pill should be repeated if woman vomits within 2 hours of administration.				
Correct	25 (16.2)	47 (32.2)	81 (50)	128 (41.6)
Incorrect	139 (83.8)	99 (67.8)	81 (50)	180 (58.4)
EC provides protection against sexually transmitted diseases				
Correct	82 (53.2)	90 (61.6)	140 (86.4)	230 (74.7)
Incorrect	72 (46.8)	56 (38.4)	22 (13.6)	78 (25.3)

Participants having good knowledge showed more positive attitude towards EC. There are ($r=0.41$, $P<0.05$, Figure 4, $n=308$) 74.35% participants did not have any ethical or religious issues for suggesting EC. Amongst all 23% participants were not able to judge about suggesting EC to everyone in future whereas 38.5% participants denied suggesting EC to everyone. Those participants

who had positive attitude towards the benefits of EC against its risk were 63.6%. EC is appropriate for discussion with friends and family is believed by 83.1% of participants. Use of EC discourages the regular contraceptive use was considered true according to 37.1% whereas 28.2% participants were not able to judge the issue. Those who disagreed to the statement that EC may

affect pregnancy in future were 43.5% whereas 22.1% were not able to decide their attitude. EC should be more widely advertised is believed by 73.7% of participants whereas 58.1% believed that EC should be available without prescription. EC promotes promiscuity, agreed by 29.5% participants whereas 19.2% were neutral. Amongst all, 70.1% and 37.7% participants dis-agree the statement that EC should be available to victims of rape only and women over 18 years, respectively. Those who showed positive interest in learning more about EC were 82.1%

whereas 70.1% agreed to recommend use of EC in future.

DISCUSSION

Unwanted pregnancy has adverse impact on social and health outcomes in developing countries.⁷ EC helps in preventing pregnancy when routine contraception fails and unprotected intercourse happens. ECPs are effective within 72 hours after intercourse, but recent studies have confirmed that they are effective for up to 120 hours.^{8,9}

Table 3: Effect of demographic variables on knowledge of all study participants.

	Demographic variables	Adequate knowledge	Inadequate knowledge	P value (n=308)
Gender	Male	25 (8.1)	129 (41.9)	0.46
	Female	31 (10.1)	123 (39.9)	
Academic year	First year	9 (2.9)	91 (29.5)	0.019
	Second year	11 (3.6)	35 (11.4)	
	Third First	12 (3.9)	73 (23.7)	
	Third Final	19 (6.2)	38 (12.3)	
	Internship	5 (1.6)	15 (4.9)	
Marital Status	Single	55 (17.9)	245 (79.6)	0.67
	Engaged	1 (0.3)	6 (1.9)	
	Not attempted	0	1 (0.3)	
Religion	Hindu	50 (16.3)	237 (76.9)	0.08
	Muslim	1 (0.3)	8 (2.6)	
	Jain	5 (1.6)	5 (1.6)	
	Others	0	2 (0.7)	
Domicile	Urban	49 (15.8)	192 (62.3)	0.15
	Rural	5 (1.6)	49 (15.8)	
	Not attempted	2 (0.7)	11 (3.8)	
Type of family	Nuclear	45 (14.6)	177 (57.5)	0.27
	Joint	9 (2.9)	66 (21.4)	
	Not attempted	2 (0.7)	9 (2.9)	
Living with	Parents	13 (4.1)	55 (17.9)	0.96
	Hostel	43 (14)	194 (63)	
	Renting with friends	0	1 (0.3)	
	Others	0	2 (0.7)	
Father's education	Secondary	15 (4.9)	39 (12.7)	0.17
	Higher secondary	2 (0.7)	20 (6.5)	
	Graduate	25 (8.1)	143 (46.4)	
	Post graduate	11 (3.6)	39 (12.7)	
	Not attempted	3 (1)	11 (3.6)	
Mother's education	Secondary	18 (5.8)	63 (20.5)	0.19
	Higher secondary	6 (1.9)	32 (10.4)	
	Graduate	21 (6.8)	100 (32.5)	
	Post graduate	7 (2.3)	16 (5.2)	
	Not attempted	4 (1.3)	41 (13.3)	
Time heard about EC	< 6 months	30 (9.7)	162 (52.6)	0.33
	6months- 5 years	19 (6.2)	71 (23.1)	
	Before 5 years	5 (1.6)	16 (5.1)	
	Not attempted	2 (0.7)	3 (1)	
Source of information about EC	Formal education	49 (15.9)	185 (60.1)	0.67
	Media	26 (8.4)	79 (25.6)	
	Magazine	11 (3.6)	57 (18.5)	
	Internet	14 (4.5)	57 (18.5)	
	Health facilities	13 (4.2)	54 (17.5)	
	Friends/Relative	14 (4.5)	74 (24)	

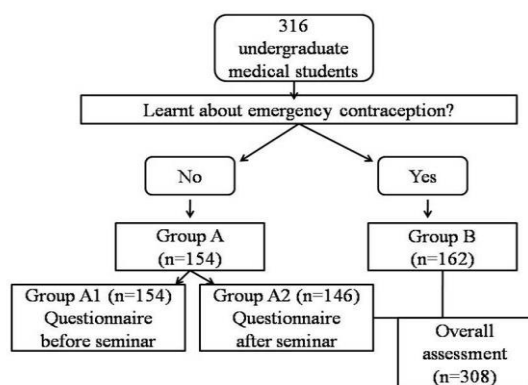
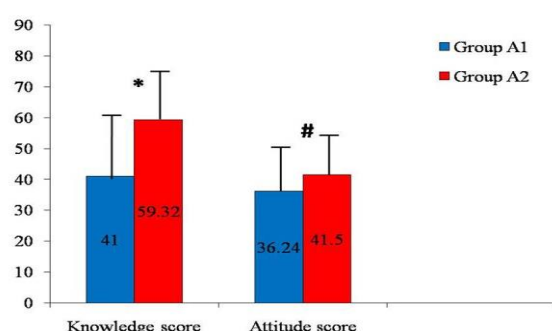
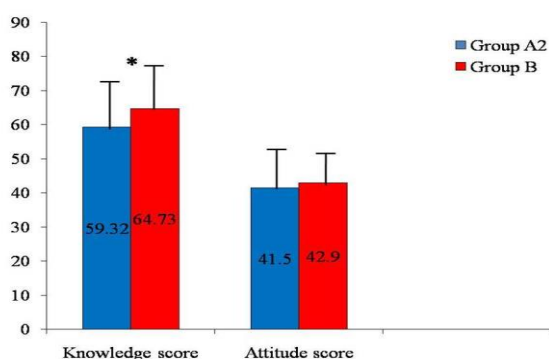


Figure 1: Flow chart of study participants.



*P < 0.05 by paired t-test, # P < 0.05 by Wilcoxon matched pairs signed rank test. Knowledge scores is in percentage and attitude scores is in absolute number out of 75.

Figure 2: Comparisons of knowledge and attitude scores in participants before and after attending seminar on EC.



*P < 0.05 by unpaired t-test. Knowledge score is in percentage and attitude scores is in absolute number out of 75.

Figure 3: Comparisons of knowledge and attitude scores between study participants.

In present study, we evaluated knowledge and attitude about EC in undergraduate medical students. One hour objective based seminar on EC to group A students significantly increased their knowledge and attitude scores. This shows importance of objective based seminar for providing complete information.

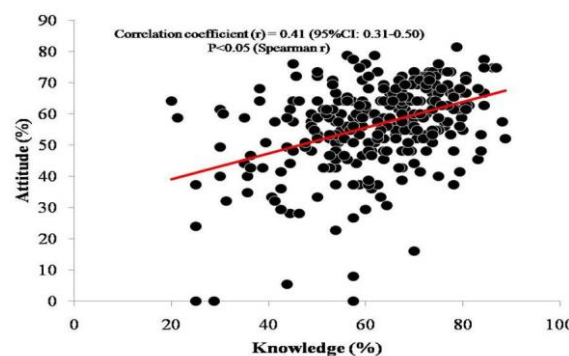


Figure 4: Correlation between knowledge and attitude of study participants.

After providing information, data of 146 students along with 162 students of group B were analyzed for overall assessment. Around 90% participants were not able to describe about EC and different methods of EC. Only 10% participants were able to describe IUD as method of EC. In one Indian study, 40% undergraduate students were able to describe IUD as a method of EC.¹⁰ In present study, 50% participants said that EC act as an abortifacient as compared to 25.5% and 8.1% participants from other studies.^{10,11} Knowledge about time limit of administration, effectiveness and common side effects of EC was better in our participants. This may be due to provided more importance to these issues during advertisement of EC. We covered some special issues those are common in clinical practice. Amongst all, 60.4% participants correctly mentioned that pregnancy test is not necessary for providing EC. EC is used to prevent the pregnancy and it does not induce abortion if woman is pregnant. There is no evidence for harmful effects of EC pills on pregnancy.¹² Only 74.7% participants correctly mentioned that EC cannot prevent the sexually transmitted diseases. This is necessary when you are suggesting EC. Chances of sexually transmitted diseases are high during unprotected intercourse and EC only prevents unwanted pregnancy not the sexually transmitted diseases. Health care professional should provide this information to the users of EC. Only 47.1% students thought that IUD is effective as EC. Students should be taught about different methods of EC. IUD is effective even after fertilization occurs and its use provides benefit of regular contraception for long duration.¹² Women should be motivated for use of regular contraception by health care professional and option of IUD should always be provided for EC.¹³ Amongst all 41.6% participants were able to mention that EC pills should be repeated if vomiting occurs within 2 hours of administration. Nausea and vomiting are common side effects of EC pills.¹⁴ If vomiting occurs within 2 hours of administration of EC pills, full doses should be repeated and this instruction should be given to the patient as it may reduce effectiveness of EC.¹⁵ Being future health care professionals, undergraduate students should be taught these kinds of special issues related with EC. Gender, religion, domicile, education status and

socioeconomic status have significant impact on unwanted pregnancy and use of contraception.⁷ In the present study, only academic year showed significant difference in knowledge. For obvious reason, final year students and interns have more knowledge than first and second year students. Final year students and interns have many opportunities to learn about EC and its practical aspects. Overall knowledge was still lower in final year and intern students that shows requirement of providing them training on EC. As knowledge about side effects of EC was good among participants their attitude for benefits vs. risk profile of EC was positive. More than half participants felt that EC discourages use of regular contraception. Easy availability of EC pills and its effectiveness in prevention of pregnancy after unprotected intercourse may discourage the use of regular contraceptive methods. Repeated use of EC pills is not recommended due to increased risk of side effects.¹⁶ However, pre-coital use of contraceptive pill is shown to be efficacious, safe and acceptable, it may warrant revision of current recommendations.¹³ Around one third participants believed that use of EC promotes promiscuity. Users should be warned for the fact that EC does not provide benefit for sexually transmitted diseases as the condom provide. Proper counselling should be done. So, they would avoid this risk taking behaviour. Amongst all, 58.1% participants believed that EC should be available with prescriptions only. More than eighty percent students agreed to discuss about EC with friends and relatives. Being future doctors, the undergraduate students should be taught all basic and special aspects of EC. As shown in Figure 3, higher knowledge improves the attitude. Results of this study are depended on the responses of students of our institute and are not applicable to students of other institutes or universities.

ACKNOWLEDGEMENTS

Author would like to thank Indian Council of Medical Research, New Delhi for selecting this project as a part of Short Term Studentship Program 2013 and providing scholarship to the student.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Gajera AN, Barvaliya MJ, Shukla A, Tripathi CB. Knowledge and attitude towards emergency contraception among undergraduate medical students. *Int J Basic Clin Pharmacol* 2017;6:955-61.