




Emergency hormonal contraception in adolescence

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SUMMARY

OBJECTIVE: To analyze the degree of knowledge of Brazilian adolescents regarding emergency contraception (EC) such as correct administration, frequency of use, efficacy, mechanism of action, adverse effects, and complications.

METHODS: Cross-sectional study. Adolescents aged 11-19 years answered a questionnaire containing questions about sexuality, knowledge, and use of EC.

RESULTS: Out of 148 adolescents who were interviewed 8% did not know about the EC. Among the sexually active, 56.7% used EC at least once. The chance of obtaining EC information with friends triples between 15-19 years old [$p=0.04$; $OR=3.18$ (1.08-10.53)]. Most used single-dose EC. They said that EC prevents 80% of pregnancy and should be used within 72 hours after unprotected sex. Only 41.2% between 10-14 years old and 82.4% between 15-19 years old know that it prevents fertilization. As reasons for using they cited: rape and unprotected sex in 58.3% of those aged 10-14 years old and 79.6% between 15-19 years old. About side effects, 58.8% of 10-14 years old and 17.6% of those aged ≥ 15 years old could not answer, but 60.5% between 15-19 years old mentioned nausea and vomiting. A significant portion (17.6-41.2%) believes that EC causes abortion, cancer, infertility, and fetal malformations. Over 80% of the girls agree that it can cause menstrual irregularity.

CONCLUSION: Knowledge regarding EC is not satisfactory, especially regarding its risks, regardless of the age and education of the groups evaluated. Improved knowledge may lead to greater adherence to EC and lead to a reduction in unplanned pregnancies. **Keywords:** Contraception. Contraception, Postcoital. Adolescent.

INTRODUCTION

Emergency contraception (EC) is defined by the World Health Organization (WHO) as a contraceptive method to be used after sexual intercourse¹. It is recommended in cases of failure or incorrect use of contraceptive therapy, rupture or non-use of condoms, and in cases of sexual violence².

In Brasil, the EC options available are the progestogen pill, with 1.5 mg of levonorgestrel in a single dose or in two doses of 0.75 mg with a 12-hour interval, the combined pill of estrogen and progestogen in high doses (Yuzpe method), and the copper intrauterine device (IUD). **The effectiveness of the levonorgestrel**

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pill is 95% when taken within 24 hours, decreasing to 45-79% after this period. It can be effective for at least four days and, potentially, up to five days after sexual intercourse¹⁻³. The effectiveness of the Yuzpe method varies between 56% and 86%¹.

The Copper IUD is the most effective emergency contraception method since it provides a pregnancy rate of less than 0.1%. Its advantage is that it is a non-hormonal method that can be used until the fifth day after unprotected sexual intercourse^{2,3}.

The adolescent population has a high rate of discontinuity and failure in the use of contraception. Sexual and reproductive health education in adolescence can lead to a reduction in the rate of pregnancy and stress the importance of a healthy sex life^{2,4}.

The objective of this study was to investigate adolescents' level of knowledge on EC, such as its correct use, effectiveness, mechanism of action, frequency of use, adverse effects, and possible complications. The results obtained can be used as a strategy in the design of public health policies, assisting in the prevention of unplanned pregnancy in adolescence.

METHODS

Study design: A cross-sectional descriptive study.

Study population: Female adolescents aged between 11 and 19 years were divided into two groups: early adolescence (10 to 14 years) and late adolescence (15 to 19 years).

Sample: This research is an arm of an international study conducted in 13 countries of Latin America and the Caribbean. The sample of each region was estimated by taking into account the population of female adolescents in each country participating in the study. With a confidence level of 95% and an alpha error of 5%, the necessary number of participants per country was 77. In the present study, we will describe the results from Brazilian adolescents residing in the southeastern and southern regions.

Study region and time: The adolescents were interviewed in schools, outpatient clinics of the Unified Health System (SUS), and private clinics in several cities. The interviews took place between July and December 2016.

Measuring Instrument: We used an anonymous questionnaire with 21 questions related to sexuality and the use of EC methods. At the time the participation of adolescents in the study was requested, an informed consent form (ICF) was read and signed by

the participant. When the adolescent was not 18 years old yet, the authorization from a tutor was required. Then, the questionnaire was applied for data collection. The teenagers who were unaware of EC were instructed to interrupt the filling out of the questionnaire at question number eight.

Study variables: The outcome of the study was the level of knowledge of EC. The variables collected were: age, age at menarche, age of sexual initiation, number and sex of partners, formal education, whether they worked or studied, public or private school, city/region of residence, knowledge on EC, if participants had ever used EC and how was the use was done, the effectiveness of the medication, situations of use, adverse consequences of use, frequency of use, and previous pregnancies.

Inclusion criteria: Adolescents who sought medical help, regardless of the reason, both in public and private clinics, able to read and understand the questionnaire.

Exclusion criteria: Adolescents who did not want to participate in the research.

Data Analysis: The data were described using proportions, means, standard deviations, medians, and their respective confidence intervals of 95% were estimated. The magnitude of the associations was evaluated by calculating the measures of associations (odds ratio) and their respective 95% CI. The entry and statistical analysis processes were carried out using Epi-info 3.5.2.

Ethical aspects: The research project was conducted within the standards set forth by the Declaration of Helsinki and Resolution No. 466 of the National Health Council of 12th December 2012. The project was submitted to the Brasil platform and approved by the CAAE decision No 57857316.2.1001.5259 on 31/07/2016.

RESULTS

We studied 148 adolescents residents of the southeastern and southern regions of Brasil. The mean age was 16.2 ± 2.0 years. Basic formal education was 47.3%, 6% were not studying at the moment, and 13% reported working. Menarche occurred, on average, at the age of 11.7 ± 1.4 . Sexual activity was reported by 40.5% (60) of the group, and its initiation was, on average, at the age of 15.7 ± 1.3 . For those in basic education, 30% reported having an active sex life. In secondary education, that number increased to 46.3%; for higher education, it was 81.8%. The number of

partners ranged from 1 to 13 (mean=3.1±2.8). Sexual intercourse was with males in 90% of cases, 3.3% was with girls and 6.7% with both genders (Table 1).

Those unaware of EC stopped filling out of the questionnaire (8.1% -12/148). The subsequent questions were answered by 136 adolescents (17 were 10-14 years old and 119 were 15-19 years).

The adolescents between 10 and 14 years became aware of EC through their parents (35.3%) and teachers (35.3%), followed by friends (29.4%). Those aged 15-19 years obtained information mainly from friends (65.5%), followed by teachers (35.3%), physicians (33.6%), parents (27.6%), and other sources. The odds of obtaining information about EC from friends is

three times higher among late teens [$p=0.04$; OR=3.18 (1.08-10.53)] than early ones (Table 2).

Of the total of 60 sexually active adolescents, 56.7% (34) used EC at least once. From the group aged between 10 and 14 years, two reported sexual activity and having already made use of the medication in the form of a single-dose pill. In the group aged between 15-19 years, 58 were sexually active and 56.9% (33) of them had already used EC ($p=0.84$). Among those aged 15-19 years, 21 had used the single-dose pill, 14 took the pill in two doses, and four used the Yuzpe method, ingesting several combined oral contraceptive pills (ACO). Only one teenager claimed to have been pregnant and reported never having used any EC.

Between the aged 10 to 14 years, 41.2% answered that prevent fertilization and, among adolescents aged from 15 to 19 years, 82.4% responded that EC prevents fertilization. In relation to the method of use, a large part of participants replied that it should be taken up to 72 hours after unprotected sexual intercourse (70.6% aged between 10-14 years, and 84% between 15-19 years).

On the effectiveness of EC, most believe that it prevents pregnancy in 80% of cases and can be used in cases of rape and unprotected sexual intercourse. In both groups, a large number of participants (58.8% aged between 10-14 years, and 79.6% between 15-19 years) said that the EC should be used in both situations and should not replace conventional contraceptives.

On the frequency that EC can be used, 11.8% of adolescents aged 10-14 years and 5% between 15-19 years stated that it should never be used because it is not effective and/or is abortive. On the other hand, 5.9% of patients aged between 10-14 years and 34.5% of the older ones thought it should only be used once a year, and approximately 30% of the two groups responded that it could be used once a month. Almost half of the youngest group (47%) and almost 1/3 of the older group (28.6%) answered the question correctly: whenever necessary. The minority of participants claimed to be unaware of how to use it (5.9% of the younger group and 2.5% of the older group).

In relation to the side effects, 58.8% of the younger participants did not know how to answer, and 60.5% of those aged between 15-19 years mentioned that the major side effects are nausea and vomiting (Table 2).

Table 3 evaluated the knowledge of adolescents about possible complications from the use of EC. On abortion, 6% of adolescents aged 10-14 years and 30.3% of the group aged 15-19 years did not know how to

TABLE 1. SOCIODEMOGRAPHIC AND SEXUAL CHARACTERISTICS OF THE ADOLESCENTS

Variable studied		Freq.	%	CI 95%
Age	10 a 14	27/148	18.2	12.4-25.4
	(mean: 16.2±2.0 years)	15 a 19	121/148	81.8
Formal education	Primary	70/148	47.3	39.0-55.7
	Medium	67/148	45.3	37.1-53.7
	Top	11/148	7.4	3.8-12.9
Type of School	Private	88/135	65.2	56.5-73.2
	Public	47/135	34.8	26.8-43.5
Studies	Yes	138/147	93.9	88.7-97.2
	No	9/147	6.1	2.8-11.3
Works	Yes	19/145	13.1	8.1-19.7
	No	126/145	86.9	80.3-91.9
Menarche (mean: 11.7±1.4)	8 a 11	64/141	45.4	37.0-54.0
	12 a 17	77/141	54.6	46.0-63.0
Has had sexual intercourse	Yes	60/148	40.5	51.1-67.4
	No	88/148	59.5	32.6-48.9
Age of sexual initiation	13 a 14	13/60	21.7	12.1-34.2
	(mean: 15.7±1.3 years)	15 a 19	47/60	78.3
No. of Partners	1 to 2	31/57	54.4	40.7-67.6
	3 a 13	26/57	45.6	32.4-59.3
Partner sex	Male	54/60	90	79.5-96.2
	Female	2/60	3.3	0.4-11.5
	Both	4/60	6.7	1.8-16.2

Freq.: frequency; number of adolescents/total of respondents

TABLE 2. KNOWLEDGE ON THE USE OF EC

Variable studied	10 to 14 years	15 to 19 years
How they heard about EC		
Doctor/Nurse	4 (23.5%)	39 (33%)
Teacher	6 (35.3%)	41 (35.3%)
Parent	6 (35.3%)	32 (27.6%)
Friends	5 (29.4%)	76 (65.5%)
Others (internet, TV)	2 (11.8%)	12 (10.3%)
How EC works		
Causes abortion	2/17 (11.8%)	7/119 (5.9%)
Prevents fertilization	7/17 (41.2%)	98/119 (82.4%)
Both	1/17 (5.9%)	6/119 (5.0%)
Doesn't know	7/17 (41.2%)	8/119 (6.7%)
How it is used		
72h before intercourse	0	7/119 (5.9%)
Up to 72h after intercourse	12/17 (70.6%)	100/119 (84.0%)
Doesn't know	5/17 (29.4%)	12/119 (10.1%)
The time doesn't matter	0	0
Effectiveness of EC		
Prevents 100%	1/17 (5.9%)	18/119 (15.1%)
Prevents 80%	10/17 (58.8%)	72/119 (60.5%)
Prevents 30%	1/17 (5.9%)	5/119 (5.0%)
Doesn't know	5/17 (29.4%)	23/119 (19.3%)
When EC should be used		
Rape	2/17 (11.8%)	3/117 (2.6%)
Unprotected intercourse	4/17 (23.5%)	24/117 (20.5%)
Both	10/17 (58.8%)	90/117 (79.6%)
Doesn't know	1/17 (5.9%)	0
It is to right to say that		
It can replace other contraceptives	3/17 (17.6%)	8/117 (6.8%)
It can be used in intercourse with no contraceptives	12/17 (70.6%)	99/117 (84.6%)
Both are correct	0	8/117 (6.8%)
Doesn't know	2/17 (11.8%)	2/117 (1.8%)
Frequency of use of EC		
1x/year	1/17 (5.9%)	41/119 (34.5%)
1x/month	5/17 (29.4%)	35/119 (29.4%)
Whenever necessary	8/17 (47.0%)	34/119 (28.6%)
Doesn't know	1/17 (5.9%)	3/119 (2.5%)
Never, because it is not effective and/or can be abortive	2/17 (11.8%)	6/119 (5.0%)
Adverse effects of EC		
Nausea and vomiting	5/17 (29.4%)	72/119 (60.5%)
Headache and/or convulsions	1/17 (5.9%)	20/119 (16.8%)
Fever and sweating	2/17 (11.8%)	11/119 (9.2%)
All the above	0	17/119 (14.3%)
None of the above	10/17 (58.8%)	21/119 (17.6%)

Obs.1: The total number is greater than 100% in questions that allowed for more than one answer.

answer. The answer "I don't know" ranged from 3.4 to 9.2% in the other four questions. A significant number of the two groups (ranging from 17.6 to 41.2%) believe

that EC causes abortion, cancer, infertility, and fetal malformations. On the other hand, more than 80% agree that it can cause menstrual irregularity. There was no significant difference in any of the questions, which demonstrates that knowledge is not dependent on age (Table 3)

DISCUSSION

In this study, the age of sexual initiation was in line with that found by another Brazilian study, i.e., ≥ 15 years in 59.3%⁴. The rate of sexual activity of 30% among adolescents of basic education is in line with that presented by the National Survey on School Health (PeNSE)⁵, which pointed out that 28.7% of the students of the ninth year were sexually active. This proportion increased with age, from 13.7% in children up to 13 years to 22.9% in those up to 14 years and to 48.1% by the age of 15 years, something that was also observed in this study.

Upon analyzing the adolescents' knowledge on and frequency of use of EC, over half reported having used it at least once, and only 8.1% were unaware of the method, which is consistent with a study from Nigeria, in which the main predictor for the use of EC is the knowledge on its ease of use and effectiveness⁶. Chofankian et al.⁴ assessed patients from the southeast of Brasil and also found that more than half of adolescents use EC, a result higher than those from other studies⁷⁻⁹.

The adolescents' knowledge is unsatisfactory in several aspects in both groups (how it works, its effectiveness, and frequency of use); however, this does not prevent the use of EC. Chofakian et al.⁴ found that adolescents make use of the method even without adequate knowledge.

In the present study, wrong answers or questions among younger participants ranged between 23,4-58,9%, and only one adolescent from this age group had used EC. A study from Ethiopia associated the frequency of EC use with age, showing that the lower the age, the less frequent the use of the medication, a fact that can be explained by more difficult access. These data are consistent with studies conducted in Hawaii, Nicaragua, and Africa^{8,10,11}. According to Rafie et al.¹² those under 16 years of age tend to use EC incorrectly, and studies have found that adolescents up to 12 years old have a incorrect understanding of its use^{13,14}.

Adolescents believe that EC causes many complications, which may be responsible for their

TABLE 3. KNOWLEDGE OF THE ADOLESCENTS ABOUT POSSIBLE COMPLICATIONS FROM THE USE OF EC

What can EC cause	10 to 14 years	15 to 19 years	OR (CI 95%)	p-value
Causes abortion				
Yes	7 /17 (41.2%)	29/119 (24.4%)	1.44 (0.46-4.36)	0.5
No	9/17 (52.9%)	54/119 (45.4%)		
Doesn't know	1/17 (5.9%)	36/119 (30.3%)		
Causes cancer				
Yes	3/17 (17.6%)	35/119 (29.4%)	0.48 (0.10-1.7)	0.27
No	13/17 (76.5%)	73/119 (61.3%)		
Doesn't know	1/17 (5.9%)	11/119 (9.2%)		
Causes infertility				
Yes	5/17 (29.4%)	43/117 (36.8%)	0.71 (0.21-2.2)	0.54
No	11/17 (64.7%)	67/117 (57.2%)		
Doesn't know	1/17 (5.9%)	7/117 (6.0%)		
Causes menstrual irregularity				
Yes	14/17 (82.3%)	102/119 (85.7%)	0.89 (0.19-6.4)	0.89
No	2/17 (11.8%)	13/119 (10.9%)		
Doesn't know	1/17 (5.9%)	4/119 (3.4%)		
Causes fetal malformations				
Yes	5/17 (29.4)	42/119 (35.3)	0.74 (0.22-2.25)	0.6
No	11/17 (64.7)	68/119 (52.1)		
Doesn't know	1/17 (5.9)	9/119 (7.6)		

non-adherence to the method. Picavet et al.¹⁵ claim that knowledge about the positive aspects of EC can increase the intention of use, while knowledge of the negative aspects can reduce it. However, the act of using EC is more important than knowledge. Schragar et al.¹⁶ highlighted that knowledge about EC and its correct use were related to a future predisposition for its use, understanding that information about the drug may be relevant to the planned parenthood

Younger adolescents obtained information on EC, in most cases, from teachers or parents. Whereas among older adolescents information came predominantly from friends, which is not as reliable since the degree of the friends' knowledge is unknown.

Chofakian et al.⁴ related the use of EC with its ease of access, such as where to find it, information that can be provided by acquaintances who have previously used it, and can also warn about the side effects of the drug. In England, partners and friends are usually responsible for purchasing the medication or accompanying the adolescent during its purchase¹⁷. In the USA, a recent study found that EC is only accessible to adolescents in 28% of pharmacies in the south-west states¹⁸.

In the present study, most adolescents replied that EC should be taken until 72 hours after unprotected sexual intercourse. However, it can be used up to 120

hours after it¹; however, the later it is used, the lower its effectiveness. Many adolescents may not seek the method after this period because they do not know it is still effective, information that could benefit more women¹⁹.

In this study, 21% said that EC is 100% effective, unlike in the study by Nappi et al.²⁰, in which 42% of the women interviewed believed that its effectiveness was 100% when used within 24 hours. With levonorgestrel, pregnancy is avoided in 85% of cases, and with the Yuzpe method, the effectiveness varies between 56-86%^{1,21}. Ulipristal acetate is effective if used up to five days after intercourse, but is not available in Brasil²². The copper IUD can be indicated as a long-term contraception method, but if inserted within five days of unprotected sexual intercourse, it works as EC. The IUD prevents fertilization, causing chemical changes in the sperm and ovum before they meet. Its advantages are its inexpensive cost and no need to be removed because it can be used for up to 10 years as an effective contraceptive method^{1,3,23}.

In relation to the adverse effects, 60.5% of those aged between 15-19 years reported that its main effects are nausea and vomiting. The literature supports the use of levonorgestrel as a safe EC. Among the most common adverse effects are nausea (14%) and menstrual irregularity (31%), it can also cause abdominal pain (14%), fatigue (13%), headache (10%), and dizziness

(10%)²⁴. Younger adolescents show less knowledge about the adverse effects than the older ones. In the present study, 35.8% of the adolescents believed that EC causes infertility, and 6% did not know how to answer the question. Nappi et al.²⁰ found that 46% of interviewees did not know whether the use of EC causes infertility.

The belief that it caused abortion was the same among adolescents aged between 10-14 years and older ones ($p=0.5$). A study from Spain showed that 30% of women had already used EC and over half of the interviewees stated that it an abortive drug²⁵, while a third interviewed by Nappi et al.²⁰ also shared the same belief.

CONCLUSION

The study concluded that among the adolescents interviewed, 8% were unaware of EC, and over half of them reported having used it at least once. Many adolescents believe that EC should not be used because it causes miscarriage or significant consequences, such as cancer, infertility, and fetal malformations, which reveals an important degree of ignorance and low adherence to the use of EC.

RESUMO

OBJETIVO: Analisar o grau de conhecimento das adolescentes brasileiras em relação à contracepção de emergência (CE) como administração correta, frequência de uso, eficácia, mecanismo de ação, efeitos adversos e complicações.

MÉTODO: Estudo transversal. Adolescentes de 11 a 19 anos responderam questionário contendo questões sobre sexualidade, conhecimento e uso de CE.

RESULTADOS: Das 148 adolescentes entrevistadas, 8% desconheciam a CE. Entre as sexualmente ativas, 56,7% utilizaram a CE pelo menos uma vez. A chance de obter informação sobre CE com amigos triplica entre 15-19 anos [$p=0,04$; $OR=3,18(1,08-10,53)$]. A maioria usou a CE em dose única, afirmou que evita gravidez em 80% e que deve ser usada até 72 horas após relação sexual desprotegida. Somente 41,2% entre 10-14 anos e 82,4% entre 15-19 anos sabem que evita a fecundação. Uso em casos de estupro e relação sexual desprotegida foi citado por 58,3% nas com 10-14 anos e 79,6% entre 15-19 anos. Quanto aos efeitos colaterais, 58,8% de 10-14 e 17,6% das com ≥ 15 anos não souberam responder, mas 60,5% entre 15-19 anos citaram náuseas e vômitos. Importante parcela (17,6-41,2%) acredita que a CE causa aborto, câncer, infertilidade e malformações fetais. Mais de 80% concorda que pode causar irregularidade menstrual.

CONCLUSÃO: O conhecimento em relação à CE não é satisfatório, principalmente quanto aos seus riscos, independente da idade e escolaridade dos grupos avaliados. A melhora do conhecimento pode proporcionar maior adesão à CE e acarretar redução da gravidez não planejada.

PALAVRAS-CHAVE: Anticoncepção. Anticoncepção pós-coito. Adolescente.

Adequate knowledge was not associated with age or schooling. The improvement of knowledge can provide greater adherence to EC, which, in turn, could become an important tool to reduce unplanned pregnancy in adolescence

Ethical aspects

The research project was conducted within the standards set forth by the Declaration of Helsinki and Resolution No. 466 of the National Health Council of 12th December 2012. The project was submitted to the Brasil platform and approved by the CAAE decision No 57857316.2.1001.5259 on 31/07/2016.

Conflict of interest

No competing financial interests exist

Authors' contributions

DLMM and LDH developed the design and method of the study. DLMM, MFVRP, LDH, and RA assessed the data and participated in the elaboration of the results. DLMM, MFVRP, LDH, RA, and RMR drafted the manuscript. DLMM, LDH, and RMR edited the manuscript. All authors read and approved the final version of the manuscript.

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