Adolescent Contraception Before and After Pregnancy—Choices and Challenges for the Future

Contracepção em adolescentes antes e depois do parto: escolhas e desafios para o futuro

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Abstract

Objective To determine methods of contraception used by adolescents before and after pregnancy.

Methods A cross-sectional study was performed, and data were collected from medical records of all teens in puerperal consultation at the Hospital da Mulher – José Aristodemo Pinotti (Caism), Universidade Estadual de Campinas (CAISM), **São Paulo, Brazil**, between July 2011 and September 2013. The inclusion criterion was being 10 to 19 years old, and the exclusion criterion was having a first consultation 90 days after childbirth. Statistical analyses were performed with averages, standard deviations, percentages, correlations and Fisher's exact tests using the SAS program, version 9.4.

Results A total of 196 adolescents in postpartum consultation were included (44 days after childbirth on average). The majority was older than 14 years (89%), with an average age of 16.2 years, and the most were exclusively breast-feeding (70%). Before pregnancy, the use of any contraceptive methods was mentioned by 74% adolescents; the most frequent use was combined oral contraceptive followed by condom. The main reason for abandoning the use of contraception was the occurrence of an unintended pregnancy (41%), followed by reports of side effects (22%), behavior issues (18%) and desire for pregnancy (16%). A positive correlation was found between the age of the adolescent at the moment of childbirth, the age of menarche ($r = 0.3$), and the first sexual intercourse ($r = 0.419$). Vaginal delivery occurred in 76% of the cases. After birth, depot medroxyprogesterone acetate (DMPA) was the contraception method most frequently used (71%), followed by oral contraceptives (11.8%) and intrauterine devices (IUDs, 11.2%).

Conclusions The most prescribed contraceptive method before pregnancy in adolescents who had childbirth was combined oral contraceptives. Many of the study participants had an unintended pregnancy. After childbirth, the most used contraceptive method was DMPA. To improve contraception and reduce the chance of unintended pregnancies among adolescents, we should promote the use of long-acting reversible contraceptives (LARCS).

Keywords
- adolescents
- contraception
- postpartum period

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Resumo

Objetivo Conhecer os métodos contraceptivos utilizados por adolescentes antes e após a gravidez.

Métodos Estudo transversal, os dados foram coletados de prontuários médicos de todas as adolescentes em consulta puerperal do Hospital da Mulher – José Aristodemo Pinotti (CAISM), Unicamp, São Paulo, Brasil, entre julho de 2011 e setembro de 2013. O critério de inclusão foi idade entre 10 e 19 anos, e o critério de exclusão foi primeira consulta com mais de 90 dias após o parto. As análises estatísticas foram realizadas com médias, desvios-padrão, porcentagens, correlações e teste exato de Fisher utilizando o pro grama SAS, versão 9.4.

Resultados Um total de 196 adolescentes em consulta pós-parto foram incluídas (em média 44 dias após o parto). A maioria tinha mais do que 14 anos (89%), com idade média de 16,2 anos, e estava em aleitamento exclusivo (70%). Antes da gravidez, o uso de quaisquer métodos anticoncepcionais foi mencionado por 74% das adolescentes; o mais frequente foi contraceptivo oral combinado seguido de preservativo. A principal razão para abandonar o uso de contracepção foi a ocorrência de gravidez indesejada (41%), seguido por relatos de efeitos colaterais (22%), problemas comportamentais (18%) e desejo de gravidez (16%). Uma correlação positiva foi encontrada entre a idade da adolescente no momento do parto, a idade da menarca ($r = 0,3$), e a primeira relação sexual ($r = 0,419$). O parto vaginal ocorreu em 76% dos casos. Após o nascimento, acetato de medroxiprogesterona de depósito (DMPA) foi o método de contracepção mais utilizado (71%), seguido do contraceptivo oral (11,8%) e do dispositivo intrauterino (DIU) (11,2%).

Conclusões O método anticoncepcional mais prescrito antes da gravidez em adolescentes que tiveram parto no serviço foi contraceptivo combinado oral. Muitas participantes do estudo tiveram uma gravidez indesejada. Após o parto, o método contraceptivo mais utilizado foi DMPA. Para melhor contracepção e reduzir a chance de gravidez indesejada entre adolescentes, devemos promover e estimular o uso de contraceptivos reversíveis longa ação.

Palavras-chave

- adolescentes
- contracepção
- período pós-parto

Introduction

About 16 million girls aged 15 to 19, and around 1 million girls under 15, give birth every year in the world. Most of these cases occur in developing countries.[1] Complications during pregnancy and childbirth are the second cause of death for 15–19-year-old girls globally.[1] Even though pregnancy at an early age may pose challenges, like social, economic, and educational ones, adolescents are at a high risk for rapid repeat pregnancy: $\sim$ 12–49% of adolescent mothers are pregnant again in the first year after delivery.[2] From 1990 to the early 2000s, adolescent pregnancy rates declined markedly, and 86% of this decline was attributed to increased consistent contraceptive use.[3]

Unintended pregnancy in adolescents may be accompanied by morbidities that can be potentially dangerous. The base to prevent an unwanted pregnancy and its complications is effective contraception.[4] The contraceptive method most commonly used by adolescents is the condom (96% of young women who have ever used a contraceptive reported previous condom use), followed by withdrawal (57%).[4] Among hormonal methods, experience with combined oral contraceptives is most common (56%), followed by depot medroxyprogesterone acetate (DPMA) injection (20%). More than 13% of adolescents have used emergency contraception, and 15% have used periodic abstinence.[4] Frequent follow-up is important to maximize adherence for all methods of contraception, and to promote and reinforce healthy decision-making.[5,6] Moreover, regularly scheduled contraceptive follow-up visits should address use, adherence, adverse effects, and complications.[5,6] An opportune time to introduce or to talk about contraceptive methods with adolescents is the postpartum period. Effective postpartum contraception is a unique opportunity to lengthen interpregnancy intervals.[7] The aim of this study was to determine which methods of contraception are used before and after pregnancy among adolescents who have had children.

Methods

A cross-sectional study was performed, and data was obtained from medical records of all adolescents who underwent childbirth review consultation at the Hospital da Mulher, Universidade Estadual de Campinas – CAISM, Brazil, between July 2011 and September 2013. CAISM is a reference center that has a specialized area with a multidisciplinary

team to take care of adolescents during pregnancy and the postpartum period. Routinely, in a pre-consultation talk, the teenagers received explanations about adequate contraception methods for this period by a trained professional, and the importance of double protection to avoid sexual transmitted diseases is emphasized. Moreover, when necessary, psychologists and social workers can evaluate them.

The inclusion criterion was adolescents aged between 10 and 19 years who were attended in puerperal medical consultation. The exclusion criterion was a first consultation after 90 days postpartum. All data were routinely transcribed into a specific form and inserted into a spreadsheet created in Epi Info 7, a public domain suite of inter-operable software tools. Statistical analyses were performed using averages, standard deviation, percentage correlations, and Fisher's exact test. The statistical software used was the Statistical Analysis System (SAS) version 9.4 for Windows, Copyright © SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA. and p-values < 0.05 were considered statistically significant.

The study was approved by the Research Ethics Committee (CAAE number – 11909413.6.0000.5404). The recommendations of the Declaration of Helsinki were followed.

All recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement were followed.

Results

A total of 196 postpartum adolescents were included. The first postpartum follow-up consultation happened between 20 and 83 days after birth (the average was 44 days), and the majority (70%) was exclusively breast-feeding.

Sociodemographic and gynecologic characteristics, as well as mode of delivery and habits, are described in ►**Table 1**. The average age of patients was 16.18 years (± 1.43); more than half had the menarche at the age of 12 years or younger (65%), the first sexual intercourse occurred between 13 and 14 years for 49% of them, and 76% had a vaginal delivery.

There are positive correlations between the age of the adolescent at the moment of childbirth and the age at menarche (r = 0.3), between the age of the adolescent at the moment of childbirth and at the first sexual intercourse (r = 0.419), and also between the age at menarche and the age of the first sexual intercourse (r = 0.46) (►**Table 2**).

Contraception before pregnancy was used by 74% of these adolescents. The most frequent method used was combined oral contraceptives (COCs, 56.85%) followed by condoms (34.4%) (data not shown). Among the primiparas, 57% used COCs before pregnancy, and 37% reported the use of condoms. Among adolescents with two or more deliveries, 57% reported the use of COCs, and 22% used DMPA (data not shown). Comparing primiparas and adolescents with two or more births, the type of contraceptive used prior to pregnancy is statistically different ($p = 0.0086$ in Fisher's exact test).

Table 1 Sociodemographic and gynecologic characteristics, mode of delivery, and habits of postpartum adolescents

	Average (SD)	N	%
Age at birth	16.18 (1.43)		
≤14		21	10.8
≥15		175	89.2
Menarche*	11.9 (1.4)		
≤1/212		113	65
> 12		60	35
First sexual intercourse**	14.06 (1.32)		
≤12		24	13.6
13–14		86	49.0
≥15		66	37.4
Parity			
1		176	89.8
≥2		20	10.2
Mode of delivery			
Vaginal		149	76
C-section		47	24
Breastfeeding***			
Exclusive		125	70
Mixed		37	21
Artificial		15	9
Schooling****			
Elementary		84	57
High School		64	43
Smoking*****		9	5
Alcohol*****		8	4
Total		196	

Abbreviation: SD, standard deviation.
Missing:*23; **20; ***19;****48;*****8

The main reason for abandoning the use of contraception was the occurrence of an unintended pregnancy (41%), followed by reports of side effects (22%), behavior issues (18%), desire for pregnancy (16%), and difficult access to contraception (3%) (data not shown).

Among the included patients, the majority (134) mentioned a preferential contraception method to use after delivery, and 62 were indifferent and required the recommendation of a physician to decide what method was the best for them at that moment.

After the births, DMPA was the contraception method most frequently used (71%), followed by oral contraceptives (11.8%) and intrauterine devices (IUDs, 11.2%).

►**Table 3** shows a comparison between the desired contraceptive method and the prescribed method during postpartum follow-up consultations among 134 girls who manifested a preferred contraceptive method. There is a

Table 2 Correlation between maternal age at birth, at menarche, and at first sexual intercourse in adolescents

	Age	Menarche	First sexual intercourse	
	196	**173**	**163**	**N of observations**
Age	1	0.29933	0.41877	Spearman coefficient
		< 0.0001	< 0.0001	*p*
	173	173	163	N of observations
Menarche	0.29933	1	0.4626	Spearman coefficient
	< 0.0001		< 0.0001	*p*
	176	163	176	N of observations
First sexual intercourse	0.41877	0.4626	1	Spearman coefficient
	< 0.0001	< 0.0001		*p*

good agreement between the two categories analyzed (Kappa agreement coefficient of 0.75).

Discussion

This study aimed to evaluate the contraception before and after a pregnancy in adolescents. Our data show that the most used method before pregnancy was COC, and the most prescribed method was DMPA, followed by COC and IUD. Among teenagers with two or more deliveries, the contraception method most used before pregnancy was COC as well. The age at the childbirth was influenced by the age at menarche and at the first sexual intercourse.

Teen childbearing is a public health care problem that has potential negative health, economic, and social consequences for mother and child. More important than the first pregnancy in adolescence, repeated teen childbearing further constrains a mother's education and employment opportunities.[8] Another problem is that in the second pregnancy, the rates of preterm low birth weights are higher when compared with the first birth.[8] One study that evaluated 365,000 births in adolescents aged 15 to 19 in the United States showed that 18% were repeated births.[8] A Brazilian study showed that 61% of adolescents who have had a pregnancy during the adolescent period had another pregnancy in the 5 subsequent years.[9]

Our data show us that the later menarche is, the later is the start of sexual activity, and pregnancy also happens later. Because we cannot delay addressing menarche during the medical consultation, the subject of abstinence is very important. According to the orientation of the American Academy of Pediatrics, when used consistently, abstinence can be an effective means of contraception and sexual transmitted infections (STIs) prevention, and a viable strategy for reducing unintended pregnancies and STI.[5] In Brazil, a study showed that the main risk factor for a pregnancy in adolescents was the first sexual intercourse before the age of 15 years, with an odds ratio (OR) of 3.6.[10]

The fact is that once sexual activity begins, it is necessary to initiate effective contraceptive methods. Moreover, for patients with a history of a pregnancy during adolescence, it is necessary to intensify the guidance and prescription of effective methods of long duration. One study showed that of 367,000 births among adolescents aged 15–19 years, 18.3% were repeat births. In that study, 91% of adolescents used contraceptive methods for 2 to 6 months after delivery; however, only 22% were using the most effective methods.[8]

Our data also show that the rate of previous use of contraception prior to pregnancy among adolescents was of 74%. Fifty-seven percent of patients used COCs, and 34% used condoms. Our numbers differ from those found by the

Table 3 Correlation between desired contraceptive method and prescribed contraceptive method in adolescents at the first postpartum consultation

Desired contraceptive method	Prescribed contraceptive method				
Frequency	**Oral contraceptive**	**DMPA**	**IUD**	**Others**	**Total**
Oral contraceptive	17	8	0	2	27
DMPA	0	77	0	2	79
IUD	1	5	17	0	23
Others	0	0	0	5	5
Total	18	90	17	9	134

Abbreviations: DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device.
Frequency missing = 62; Symmetry test, $p = 0.05$; Kappa = 0.75 (CI 95% 0.65–0.85).

American Academy of Pediatrics, which estimated that among adolescents who had already used some form of contraception, condoms were the most used, followed by withdrawal and the pill.[5] But these numbers do not reflect routine use, only knowledge and perhaps irregular use of any method. A systematic review conducted by Meade found that 31–66% of pregnant women and mothers had never used any contraception, and over a third had never used condoms.[2]

Another problem is that these data can imply that teens are not worried about sexually transmitted diseases. If adolescents use condoms correctly, the condoms are effective in reducing the incidence of these diseases.[2,6] However, they are less effective than hormonal contraceptives in preventing pregnancy.[2,6] Thus, the recommendation is to use dual protection; in addition to condoms, the use of long-acting hormonal contraception should be encouraged.[2,6]

The CAISM, offers a referral service for high-risk and teenage pregnancy. It was the first hospital in Brazil to start giving special attention to adolescents by promoting a differentiated service. The accompaniment of the teenagers starts in prenatal care, and the hospital has a multidisciplinary approach with good adherence in the postpartum consultation. This is why we decided to initiate the contraception method study at this time. Nevertheless, the teenagers stay in our service for at least 6 months or until they are secure and have adapted to the contraceptive method.

We found that DMPA was the main prescribed contraception at first visit postpartum (67%). This number differs from those found by Dozier et al[11]; they found that 31.3% of patients in the postpartum period used DMPA, and of these, 62% had received the injection before hospital delivery. This is a particularly favorable strategy for avoiding repeated pregnancy in adolescents because the failure rate of the DMPA method when used perfectly is of 0.2%. However, in the clinical practice, considering the typical use, the percentage of unintended pregnancies is 6%.[5] Even though our professionals are promoting the use of long-acting reversible contraceptive (LARC) methods during pre-consultation and during consultation, our population is somewhat resistant to using them. Our problem is that the public health care system does not offer intradermal implants, and due to cultural factors, the teenagers do not want to use IUDs. Because of this, our best option is DMPA, which can be used in the postpartum period with breast-feeding, and has minor dependence on the reliability of teenagers. It is probable that this is the reason for our high index of prescriptions of DMPA. In recent years, it has been noted that this trend has been changing, and we are seeing higher rates of IUD insertions, mainly after the inclusion of Levonorgestrel IUD in our service. Teenagers favor the use of Levonorgestrel IUD, principally due to the possibility of amenorrhea.

Our study has some limitations. It was a retrospective study using medical records, data collection was not controlled, and we had some data loss. Despite that, it is possible for us to know about our population and to plan how to approach the teenagers when the topic is contraception after childbirth. However, few studies have comparatively evaluated the contraceptive methods used before and after a pregnancy in adolescence. Other institutions should review their management protocols in contraception for adolescents to decrease the incidence of unintended pregnancies.

As the main reason to prescribe contraception for teenagers in the postpartum period is to prevent unintended pregnancies, the most suitable contraception is the use of LARCs, basically represented by the IUDs and the implants. The American College of Obstetricians and Gynecologists recommends the insertion of LARC methods as a first line contraceptive option to avoid unintended pregnancies, and one of the strategies is to not only clarify patients about the method, but more than that: to stimulate the prescription by the providers.[12] Improving the knowledge of the providers about LARC methods can decrease the barriers and improve the prescription of these methods.[13] The percentage of women experiencing an unintended pregnancy within the first year of use was similarly down between the IUD user (copper and levonorgestrel) and single-rod contraceptive implant (respectively 0.05, 0.8 and 0.2).[5] A study involving 10,000 women showed that the methods with most rates of unintended pregnancy are patch, ring, oral and injectable. It shows that the cause most related with the failure of LARC methods is the delay between the choice of the method and the day of the insertion. The study suggests that it is better for women to insert the method in the day they decide to use them.[14]

Another advantage of using LARCs is the high adherence rate to the method after months of insertion. A study by Secura et al[15] found that LARCs, basically comprising intrauterine devices and implants, showed a lower rate of discontinuation among adolescents after 24 months of follow-up compared with non-LARC methods (⅔ LARC × ⅓ non-LARC).[15,16] Another study showed that, after one year, 82% of adolescents were still using LARC methods compared with 49% that were still using non- LARC methods. After two years, those numbers were 67% and 37% respectively.[17]

In the years of monitoring, the methods that did not register any pregnancy were copper IUD and subdermal etonogestrel implant. Levonorgestrel IUD and DMPA showed a low failure rate (~ 5 failures per 1,000 teenagers).[5] The methods with the highest failure rate among teenagers were oral contraceptive pills, contraceptive patch, and the ring.[5]

Long-acting reversible contraceptives have another advantage when considering the possibility of inclusion of contraception in the postpartum period. A study made by Han et al showed that offering an immediate postpartum implant (IPI) for teenage mothers is cost-effective, comparing the costs of the insertion and removal of the implant and the cost of the etonogestrel implant with pre-natal costs and an infant's medical care for the first year of life.[18] According to a Centers for Disease Control and Prevention (CDC) publication, offering LARCs immediately in the postpartum period is an example of how to facilitate access to contraception for adolescent mothers.[8]

In the data presented in the CDC publication, ⅕ of teens using contraception postpartum reported the use of LARCs

(18% reported IUD and 3.3%, implant).[8] The use of contraceptive pills and DMPA was reported by 29% and 21% of postpartum teen mothers respectively.[8] Our data are smaller than that reported by the CDC. For our adolescents, IUD insertion rate in the postpartum period (after 42 days postpartum) was of 13%. The rate of teen mothers who wanted IUD as a contraceptive method in the postpartum period was of 17%, but for some reason it was not entered, either by the difficulty of insertion, pain, or the impossibility of insertion at the time of the query (such as the presence of discharge or absence of suitable material). Implants are not offered in the public health care system. This study served as a warning to our service, and we are in the process of increasing the integration of LARCs.

Long-acting reversible contraceptive methods are safe and effective for most teenagers, as this population is at a high risk for inconsistent use of methods that are dependent on users.[6,19] In addition, they should be the option of choice because they are independent of the user and require no effort after insertion.[16] However, teens face several barriers to the use of LARCs, such as cost, difficulty of access, and lack of offer of the method.[20]

More than the difficulties in the use of LARCs, we see that adolescents from Latin America continue to face problems and substantial barriers to education and development services in sexual and reproductive health care. Consequently, the majority of sexually active adolescents do not use modern contraceptive methods consistently to prevent pregnancy and sexually transmitted diseases.[21] In the region, 50% of women have their first pregnancy during adolescence.[22,23] A study conducted in three countries (Bolivia, Ecuador, and Nicaragua) evaluated sexual and reproductive health, and concluded that when teenagers develop strong relationships in a secure, safe environment, they can build the life skills that they need to take control of their own destinies. And there must also be a clear focus on the macro-level, with a political and financial commitment to create empowering legal frameworks, and to implement sexual and reproductive health care programs for adolescents.[21]

Contraception in adolescents is a challenge before a pregnancy, but we believe that it is of special importance in the postpartum period. It is necessary to explain to the girls about contraceptive methods and what risks of pregnancy they are exposed to when using the method chosen. Our efforts must be concentrated on methods that are independent of teenage behavior: that is the best way to avoid pregnancy in the years after the childbirth. If it is not possible to use LARC methods, it is important to evaluate the adaptation of the girls to the method chosen and, only after that, refer the teenagers for primary health care.

Working with contraception among adolescents involves several political, medical, cultural, and social issues that would culminate with the increasing number of services and the dissemination of the importance of contraception. In particular for people in this age group, it is important to increase accessibility to the services and, especially, to demystify prejudices related to the subject.

Conclusions

The most popular used contraceptive method before pregnancy was COC, and the main justification to stop contraception was the occurrence of an unintended pregnancy. After delivery, the more desired and prescribed method was DMPA, in accordance with the choice of the adolescent. Nevertheless, it is important to promote the use of LARCs to avoid unintended pregnancies among teenagers.

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