ACTA MÉDICA PORTUGUESA
A Revista Científica da Ordem dos Médicos

EDITORIAL
PERSPECTIVA
ARTIGO ORIGINAL
ARTIGO DE REVISÃO
CASO CLÍNICO
IMAGENS MÉDICAS
NORMAS ORIENTAÇÃO
CARTAS

Long-Term Reversible Contraception in Adolescence: The Reality of a Tertiary Pediatric Hospital in Portugal

Contraceção Reversível de Longa Duração na Adolescência: A Realidade de um Hospital Pediátrico Terciário em Portugal

Beatriz FERRO✉*[1,2], Mafalda SIMÕES*[1], Bárbara GOMES[1], Ângela RODRIGUES[1], Fernanda GERALDES[1], Fernanda ÁGUAS[1]
Acta Med Port 2023 Jun;36(6):394-400 ▪ https://doi.org/10.20344/amp.18753

ABSTRACT

Introduction: Contraception in adolescence is essential to prevent unwanted pregnancies, abortion and sexually transmitted diseases. The use of long-acting reversible contraceptive methods (LARCs) has been highly recommended due to their efficacy since they are user independent methods. The aim of this study was to evaluate the use of LARCs in adolescence in the population of a Childhood and Adolescence Gynecology clinic, and to describe the sociodemographic characteristics of the adolescents as well as previous contraceptive practices.

Methods: Retrospective analysis that included adolescents using LARCs, monitored in a Childhood and Adolescence Gynecology clinic of a Portuguese tertiary pediatric hospital, between June 2012 and June 2021.

Results: A total of 122 adolescents were included, with a median age of 16 (11 – 18) years and 62.3% (n = 76) were sexually active. The preferred method was the subcutaneous implant, placed in 82.3% (n = 101), followed by the Levonorgestrel-Intrauterine System in 16.4% (n = 20) and the copper intrauterine device in 1.3% (n = 1). The main indications for LARCs were contraceptive needs 90.2% (n = 110), abnormal uterine bleeding during puberty in 14.8% (n = 18), dysmenorrhea in 10.7% (n = 13) and need for amenorrhea in 0.8% (n = 1). The median time of implant use was 20 (1 – 48) months and of the LNG-IUS it was 20 (1 – 36) months. The 12-month adherence rate for both was 76.2% (n = 93). The removal rate for reasons besides the expiration date was 9.8% (n = 12) in adolescents who had implants, and no LNG-IUS or copper intrauterine devices were removed. There were no pregnancies after insertion of LARCs.

Conclusion: Contraceptive needs were the main reason for choosing LARCs, followed by abnormal uterine bleeding during puberty management and dysmenorrhea. All these factors may contribute to the high rate of satisfaction and continuity of these methods.

Keywords: Adolescent; Contraception; Long-Acting Reversible Contraception

RESUMO

Introdução: A contraceção na adolescência tem um papel fundamental na sociedade por prevenir gravidezes indesejadas e infeções sexualmente transmissíveis. O uso de métodos contracetivos reversíveis de longa duração (LARCs) tem vindo a ser recomendado pela sua eficácia e perfil de segurança nesta faixa etária. O objetivo deste estudo foi avaliar a utilização de LARCs na população de uma consulta de Ginecologia da Infância e Adolescência e descrever as características sociodemográficas das adolescentes assim como a prática contracetiva prévia.

Métodos: Análise retrospetiva que incluiu as adolescentes utilizadoras de LARCs, acompanhadas na consulta de Ginecologia da Infância e Adolescência de um hospital pediátrico terciário português, no período entre junho de 2012 e junho de 2021.

Resultados: Foram incluídas 122 adolescentes, cuja mediana de idades foi 16 (11 – 18) anos. Destas, 62,3% (n = 76) eram sexualmente ativas. O método preferencial foi o implante subcutâneo, colocado em 82,3% (n = 101), seguido do sistema intrauterino de Levonorgestrel (SIU-LNG) em 16,4% (n = 20) e o dispositivo intrauterino de cobre em 1,3% (n = 1). As principais indicações para a escolha de LARCs foram desejo contracetivo em 90,2% (n = 110), hemorragia uterina anormal da puberdade em 14,8% (n = 18), dismenorreia em 10,7% (n = 13) e necessidade de amenorreia em 0,8% (n = 1). O tempo mediano de utilização do implante foi 20 (1 – 48) meses e do SIU-LNG 20 (1 – 36) meses. A taxa de continuidade aos 12 meses para ambos foi de 76,2% (n = 93). A taxa de remoção antes do tempo padronizado foi de 9,8% (n = 12) nas adolescentes que colocaram implante, sendo que não foram removidos SIU-LNG ou dispositivo intrauterino de cobre. Não se registaram gravidezes após a colocação de LARCs.

Conclusão: O desejo contracetivo foi o primeiro motivo para a escolha de um LARC seguido do controlo da hemorragia uterina anormal e da dismenorreia. Todos estes fatores poderão contribuir para a elevada taxa de satisfação e continuidade destes métodos.

Palavras-chave: Adolescente; Contracepção; Contracepção Reversível de Longo Prazo

INTRODUCTION

Adolescence is a period of discovery of sexuality and is associated with risks related to women's sexual and reproductive health, namely unplanned pregnancy, abortion, and sexually transmitted infections (STIs).[1]

Contraception plays a crucial social role since pregnant teenagers are more likely to drop out of school and therefore having a lower level of education and are more likely to be unemployed and/or having lowest-paying jobs.[2] Portugal was in 2017 the 25th European country and the 8th in the European Union with the highest pregnancy rate in women under 20.[3,4] Nevertheless, a 20% decrease in pregnancies in childhood and adolescence has been found from 2016 (n = 2,208) to 2020 (n = 1,763).[5]

Initiation of contraception should be a shared decision between healthcare professionals and adolescents (or her legal guardian, in specific situations), and the adolescent's

* Co-primeiras-autoras.
1. Serviço de Ginecologia. Centro Hospitalar e Universitário de Coimbra. Coimbra. Portugal.
2. Clínica Universitária de Ginecologia. Faculdade de Medicina. Universidade de Coimbra. Coimbra. Portugal.
✉ **Autor correspondente:** Beatriz Ferro. mariabiaferro@hotmail.com
Recebido/*Received*: 23/06/2022 - **Aceite/*Accepted*:** 14/10/2022 - **Publicado *Online*/*Published Online*:** 03/03/2023 - **Publicado/*Published*:** 01/06/2023

will to initiate or discontinue a particular method should always be respected.[6]

In Portugal, oral combined hormonal contraception (CHC) and condoms are the most used methods in this age group. However, a 30% - 35% continuation rate has been found after 12 months. There is twice the risk of contraceptive failure in women under 21 on oral CHC, vaginal ring or transdermal patch, compared to older women.[7] In addition, 17% of young women have described forgetting to take the pill more than once a month.[8]

The use of long-acting reversible contraceptive methods (LARCs) in adolescence is recommended by the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP), due to their safety and effectiveness in preventing unwanted pregnancies in this age group.[2] The Portuguese Society of Contraception (SPDC), the Portuguese Society of Gynecology (*Sociedade Portuguesa de Ginecologia* - SPG) and the Portuguese Society of Reproductive Medicine (*Sociedade Portuguesa de Medicina Reprodutiva* - SPMR) also recommend that the use of LARCs should be encouraged.[5] As they are not user dependent, their efficacy and effectiveness are comparable, and there are no differences between women over and under 20.[9]

The subcutaneous implant is the most effective LARC (99%), and abnormal (dysfunctional) uterine bleeding (AUB) is the most common side effect, tending to improve over time. The fact that no uterine manipulation is required for placement, associated with anxiety in some young women is its main advantage over the intrauterine system/device (IUS/IUD).[9]

The reduction in menstrual volume by up to 90%, with amenorrhea rates of 20% to 40%, are included as the main non-contraceptive benefits of the levonorgestrel intrauterine system/device (LNG-IUS/IUD), which can be extremely important in adolescents who are totally dependent on caregivers, or in cases of exacerbation of pathologies in the catamenial period, such as epilepsy.[9] The 52 mg LNG IUS is approved for the treatment of AUB and may be beneficial for these adolescents, as well as for those with dysmenorrhea, haematological diseases or hypocoagulated patients.[1] As it is not dependent on oral absorption, it is advantageous for patients with gastrointestinal or liver disorders and, as it is a progestogen, it is eligible for adolescents with thromboembolic risk.[5]

The medroxyprogesterone acetate is the injectable progesterone available in Portugal and is associated with a small reduction in bone mass, with no evidence of long-term effects in adolescents.[5]

There are several myths perpetuated by society regarding the use of LARCs, especially IUS/IUD. One of these is related to the difficult insertion in nulliparous women. However, in a cohort of 1,177 adolescents, 96% were able to use them correctly, showing that there is no major difficulty in this population.[10]

The use of IUS/IUD and subcutaneous implants in girls aged 15-18 has increased from 1.5% to 4.3% between 2009 and 2012, according to an American study.[11]

The CHOICE study involved 9,256 women of different age groups who were offered free long-acting methods, with the aim of increasing the choice of LARCs, reducing the rate of unintended pregnancy, and assessing the continuation rate of these methods[12]; 63% of the study participants aged 14-17 opted for the implant. This study also showed that 80.6% of LNG-IUS/IUD adolescent users, 82.2% subcutaneous implant users and 75.6% copper IUD users were still using the method one year later. Globally, 81% and 75% continuation and satisfaction rates were found as regards LARCs in adolescents, respectively, at the end of the study period - higher than CHC and older women.[9]

This study was aimed at the assessment of the use of LARCs in patients attending a childhood and adolescent gynaecology outpatient clinic and the description of the sociodemographic characteristics of adolescents as well as their previous contraceptive practice.

METHODS

This study included a retrospective analysis of adolescent LARC users attending the paediatric and adolescent gynaecology outpatient clinic of a Portuguese tertiary paediatric hospital between June 2012 and June 2021 (n = 122).

The following parameters were analysed: age, age at menarche and first coitus, active sex life, institutionalisation, body mass index (BMI), associated pathology, previous contraceptive practice, indication for LARC placement and evaluation of efficacy, bleeding pattern, adverse effects, satisfaction and LARC removal rate.

The normality of the distributions was assessed using the Shapiro-Wilk test. Categorical variables were described as number of cases and percentage (%), and continuous variables as mean (standard deviation) whenever a normal distribution was followed, and median and minimum and maximum values otherwise. The statistical analysis was carried out using IBM® Corp. Released 2020. IBM® SPSS Statistics for Windows® software, Version 27.0. Armonk, NY: IBM® Corp.

The research was conducted in accordance with the regulations established by the heads of the Clinical Research and Ethics Committee and in accordance with the Declaration of Helsinki of the World Medical Association.

RESULTS

In total, 122 adolescents were included in the study

[median age 16 (11 - 18) years; mean body mass index (BMI) of 23.2 ± 4.1 kg/m^2; median age at menarche of 12 (9-15) years and at first coitus of 15 (11 - 17) years]; 62.3% (n = 76) of the adolescents had an active sex life, from which 7.4% (n = 9) had become pregnant; 29.5% of the participants (n = 36) were institutionalised.

The main reasons for referral included contraceptive use intention in 50% of the patients (n = 61), contraceptive advice due to high-risk sexual behaviour in 24.6% (n = 30), AUB in 13.9% (n = 17) and dysmenorrhoea in 13.9% (n = 17) (Fig. 1).

Most patients (66.4%, n = 81) presented with comorbidities, mainly psychiatric, in 50.6% (n = 41), followed by neurological in 25.9% (n = 21), kidney-related in 12.3% (n = 10), gastrointestinal in 11.1% (n = 9), haematological in 9.9% (n = 8), rheumatological in 6.2% (n = 5), cardiovascular in 3.7% (n = 3) and lung-related in 3.7% (n = 3). The main causes of psychoneurological disorders included anxiety disorders, self-injurious behaviour, cognitive impairment, depression, and epilepsy.

Contraception was used by 54.9% of the participants (n = 67), mostly oral CHC in 68.7% (n = 46), followed by subcutaneous implant in 20.9% (n = 14), condom alone in 4.5% (n = 3), oral progesterone in 3% (n = 2) and combined transdermal patch in 3% (n = 2) (Fig. 2).

The median time of previous contraceptive use was 12 (1 - 39) months with a 65.7% continuation rate at 12 months (n = 44).

The main reasons for switching birth control method included irregular use in 34.3% (n = 23), AUB in 13.4% (n = 9), need for non-user dependent methods in 11.9% (n = 8), contraindication due to an associated pathology in 7.5% (n = 5), at the adolescent's choice in 7.5% (n = 5), weight gain in 4.5% (n = 3), persistent dysmenorrhoea in 3% (n = 2) and pregnancy intention in 1.5% (n = 1).

Considering previous users of subcutaneous implant (n = 14), 71.4% (n = 10) decided to keep the implant, while 28.6% (n = 4) switched to the LNG-IUS due to AUB (n = 3) and weight gain (n = 1). The median time of use was 16 (2 - 36) months.

Considering all the participants, the subcutaneous implant was preferred by 82.8% (n = 101), the LNG-IUS by 16.4% (n = 20) and the copper IUD by 0.8% (n = 1), while 13.5 mg LNG-IUS was used by 60% (n = 12) of those using the LNG-IUS, 52 mg by 30% (n = 6) and 19.5 mg by 10% (n = 2) (Fig. 3).

Contraceptive intention was the main indication for LARC placement in 90.2% (n = 110) of the patients, AUB in 14.8% (n = 18), dysmenorrhoea in 10.7% (n = 13) and medically induced amenorrhoea in 0.8% (n = 1).

There was a non-contraceptive benefit in 36.6 % (n = 37) of implant users, in 70 % (n = 14) of LNG-IUS users and there was no non-contraceptive benefit in copper IUD users. There were no pregnancies following the LARC placement.

As regards the bleeding pattern at six months after

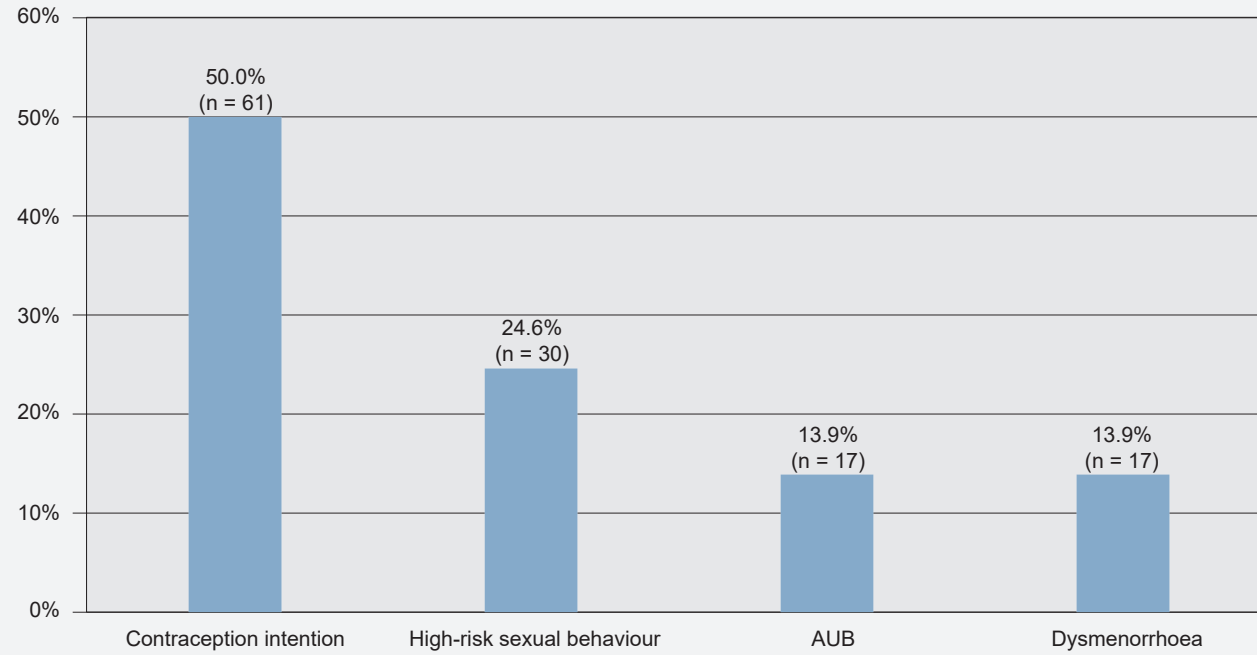

Figure 1 – Most frequent reasons for referral to childhood and adolescence gynaecology outpatient clinic
AUB: abnormal uterine bleeding

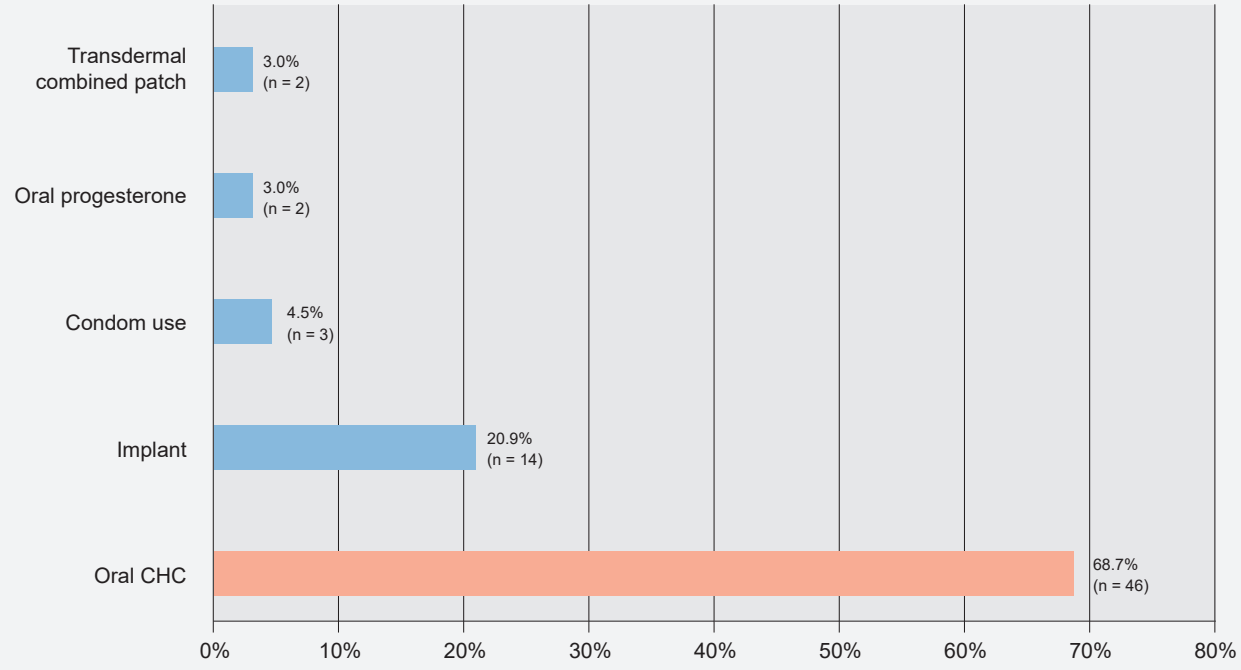

Figure 2 – Contraceptive method used by study participants
CHC: combined hormonal contraception

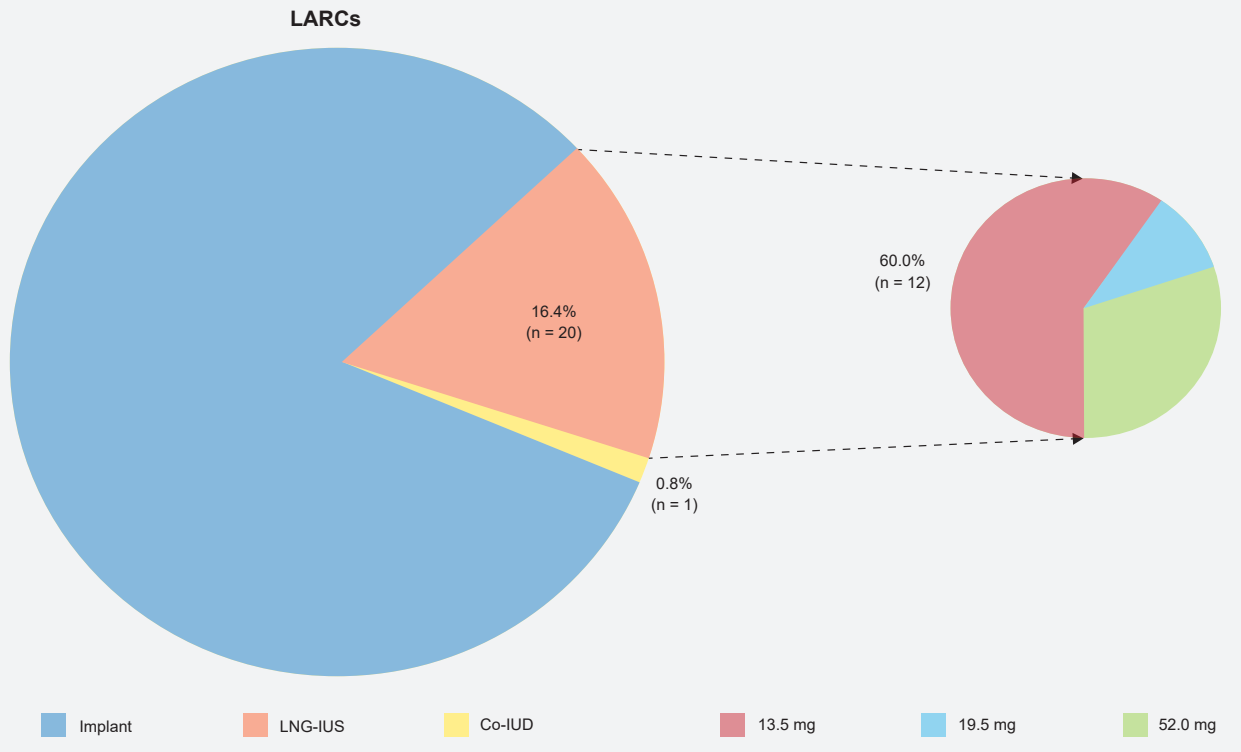

Figura 3 – Long-acting reversible contraceptive methods (LARCs) used by study participants
Co-IUD: copper intrauterine device; LNG-IUS: levonorgestrel intrauterine system

placement, 37.6% (n = 38) of implant users presented with amenorrhoea, 8.3% (n = 1) of 13.5 mg LNG-IUS users, 100% (n = 2) of 19.5 mg LNG-IUS users and 83.3% (n = 5) of 52 mg LNG-IUS users; AUB in 14.9% (n = 15) of implant users, 33.3% (n = 4) of 13.5 mg LNG-IUS users and 100% (n = 1) of copper IUD users; spotting in 28.7% (n = 29) of implant users, 58.3% (n = 7) of 13.5 mg LNG-IUS users and 16.7% (n = 1) of 52 mg LNG-IUS users; prolonged AUB in 7.9% (n = 8) of implant users.

Adverse effects were described by 3% (n = 3) of implant users, namely excessive weight gain (n = 1), pain at the implant site (n = 1) and signs of hyperandrogenism (n = 1). No severe adverse effects were described.

The median time of use of the implant was 20 (1 - 48) months and 20 (1 - 36) months for LNG-IUS users. A 76.2% continuation rate at 12 months has been found for both (n = 93). The copper IUD was used for 40 months.

The rate of removal before the standardised time was 9.8% (n = 12) in implant users, and no LNG-IUS or copper IUD were removed.

Severe AUB in 7.9% (n = 8), pregnancy intention in 2% (n = 2) and the intention to start an oral contraceptive method in 2% (n = 2) were the reasons for removal.

Switching birth control to a new method was found in 6.9% (n = 7) of the adolescents who had an implant inserted, and no switch has been found in users of copper IUD/LNG-IUS. The implant was switched to oral CHC by four of these patients, to LNG-IUS by 2 and to oral progesterone by the remaining patient.

The median follow-up time was 18 (0 - 60) months.

DISCUSSION

A total of 122 patients referred to the Paediatric and Adolescence Gynaecology clinic during the study period were LARC users. The median age of coitus was 15 years, lower than in most Western countries (17 years),[1] and 62.3% (n = 76) had an active sex life. Sexual activity is considered precocious when it occurs before the age of 16, which is considered a risky behaviour.[13]

Although the rate of teenage pregnancy is decreasing, 7.4% (n = 9) of the study participants had this history, a lower rate than worldwide (11%),[1] even though higher than the average for the European Union (3.7%) and Portugal (3.2%), according to 2019 Eurostat. In fact, although the teenage pregnancy rate has been falling in an effort by society to strengthen sexual and reproductive healthcare, there has been a progressive decrease in the average age at first coitus.

In addition, 29.5% (n = 36) of the adolescents in our study were institutionalised and, even though living conditions like those of a family environment tend to be ensured at foster homes, emotional support is limited and there is a greater tendency towards risky behaviours.[14,15]

Regarding medical history, 66.4% (n = 81) of the participants presented with some conditions, mostly psychoneurological disorders and attended paediatric psychiatry and/or neurodevelopmental clinics, either due to dysfunctional family context or due to intellectual disability or hyperactivity disorder. Contraceptive counselling for these patients is explained by the preference for medically induced amenorrhoea in patients with intellectual disabilities.[11] The remaining cases presented with kidney, gastrointestinal, haematological, rheumatological, cardiovascular and lung disorders, and these may correspond to limitations in their eligibility for combined hormonal contraception, hence the need for a specific referral.[5]

Considering the 122 LARC users, 50% (n = 61) sought contraceptive advice, 24.6% (n = 30) were referred due to high-risk behaviours, 13.9% (n = 17) presented with AUB and 13.9% (n = 17) with dysmenorrhoea.

LARCs are currently the first line of contraception for adolescents, and like other hormonal contraceptive methods, they can also have non-contraceptive benefits, such as the treatment of AUB and dysmenorrhoea.[2,5] A review study showed that contraception is the main indication for the use of LNG-IUS, while treatment indications include AUB, dysmenorrhoea and medically induced amenorrhoea.[11]

However, as shown in this study, LARC are still not the preferred method. The multidisciplinary nature of medical care for this population could be considered as one of the reasons for this. A 2019 Portuguese study found that although gynaecologists feel more comfortable with the use of LARC by adolescents, paediatricians and family doctors tend to have a more conservative opinion, possibly due to a lower degree of familiarity with the method and its application.[16]

Regarding previous contraceptive practice, most patients (54.6%) had already started a method before being referred to the clinic, with a 65.7% usage rate at 12 months (n = 44), mostly oral CHC - 68.7% (n = 46), followed by subcutaneous implants [20.9% (n = 14)]. These data are partially in line with other studies.[8] It is worth mentioning the increasing preference for LARC at primary care, since the implant was the second most common prior contraceptive method in our sample. The CHOICE study showed that the use of long-acting methods not only reduced the number of unwanted pregnancies, but also showed continuity rates at 12 months of 81% and satisfaction rates of 75%.[12] Most of the patients were on oral CHC and the main reason for switching was irregular use, supporting the hypothesis that LARC should be used as an initial contraceptive approach.

Contraceptive intention (90.2%) was the main reason for LARC use, with AUB and dysmenorrhoea as other less common reasons. From the different LARC available, the

implant was the method selected by 82.3% (n = 101) of adolescents, followed by the LNG-IUS, mostly at the lowest dose of 13.5 mg and a minority at the intermediate dose of 19.5 mg. A copper IUD was inserted in one patient presenting with focal nodular hyperplasia of the liver.

The greater adherence to subcutaneous implants is probably explained by the fact that it is a long-lasting method, easy to apply and not requiring any gynaecological examination.[10]

A slight increase was found in the continuity rate of LARC placed at the clinic, compared to the methods previously used, although with a lower rate than what was found in the CHOICE study (69.1% *vs.* 81%).[12] This difference could be explained by the fact that some adolescents started using the method during 2021 and had not yet completed 12 months of use, or by the loss to follow-up at primary care after discharge.

In this study, a 100% effectiveness rate of LARC has been found, in line with many other studies.[11]

Implantation involves an unpredictable bleeding pattern. In addition, spotting has been found as the most frequent pattern in different studies (33.6%), followed by amenorrhoea (22%), prolonged bleeding (17.7%) and regular cycles (6.7%).[17] In our study, amenorrhoea was the most common pattern found, followed by spotting, showing a similar rate of heavy bleeding.

The same analysis was carried out for the different LNG-IUS. Considering the 13.5 mg LNG-IUS users, 8.3% presented with amenorrhoea, a lower percentage than what has been found elsewhere (12.7%); 100% and 83.3% of 19.5 mg and 52 mg LNG-IUS users presented with amenorrhoea, compared to the expected 18.9% and 23.6%, although no direct comparison was allowed by the small size of the study sample.[18,19]

During the study period, only 6.6% (n = 8) of the patients presented with side effects leading to discontinuation of the method, and the satisfaction rate was higher than what was found in the CHOICE study (75%).[12]

The fact that this was a retrospective study, with a convenience sample, possibly not representative of the adolescents in the general population were the main limitations of this study. However, it shows the type of population that is usually referred to the paediatric and adolescence gynaecology clinic at a tertiary hospital.

Teenage pregnancy is a public health issue due to its strong association with dropping out of school, the breakdown of life projects and precarious and undifferentiated work. For this reason, adolescents should have easier access to sexual and reproductive health care, including contraceptive counselling.

In Portugal, family planning consultations and medical consultations for children are free of charge, as well as most contraceptive methods, in favour of equality in individual choice, regardless of family income.

Therefore, when counselling adolescents on the available contraceptive methods, the undeniable benefits of LARCs should be stressed. Training of all health professionals in this area should be encouraged, particularly in primary care, representing those with greater proximity to adolescents.

CONCLUSION

In line with national data, this study suggests that condoms and CHC are still the most used methods in adolescence, even though long-acting reversible contraceptive methods (LARC) are recommended as the first line of contraception by the main national and international societies.

The high contraceptive efficacy of LARCs has been confirmed, in line with literature, explained by their non-user dependent characteristics and safety profile, with no severe side effects. In adolescence, there is an increasing interest in LARCs due to non-contraceptive benefits, particularly in controlling AUB and preventing pregnancy in young people at social risk. All these factors contribute to the high acceptability rate, good adaptation, and low complication rate of these methods in this age group.

AUTHOR CONTRIBUTION

BF, MS, BG: Data collection, statistical analysis, writing of the manuscript.

ÂR, FG, FÁ: Study supervision, final revision of the manuscript.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

HUMAN AND ANIMAL PROTECTION

The authors declare that this project complied with the regulations that were established by the Ethics and Clinical Research Committee, according to the 2013 update of the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

FINANCIAL SUPPORT

The authors declare that there was no financial support in writing this manuscript.

REFERENCES

1. Todd N, Black A. Contraception for adolescents. J Clin Res Pediatr Endocrinol. 2020;12:28.
2. Raidoo S, Kaneshiro B. Contraception counseling for adolescents. Curr Opin Obstet Gynecol. 2017;29:310-5.
3. Statista. Share of live births to mothers aged under 20 years in Europe in 2017. [accessed 2022 Jan 17]. Available from: https://www.statista.com/statistics/921890/rate-of-births-to-teenage-mothers-in-europe-by-country.
4. Metis. Gravidez na adolescência. [accessed 2022 Jan 01]. Available from: http://www.metis.med.up.pt/index.php/Gravidez_na_adolesc%C3%AAncia.
5. Sociedade Portuguesa da Contraceção, Sociedade Portuguesa de Ginecologia, Sociedade Portuguesa de Medicina da Reprodução. Consenso sobre Contraceção 2020 - Versão Digital. [accessed 2022 Jan 01]. Available from: https://www.spdc.pt/11- noticias/210-consenso-sobre-contracecao-2020.
6. Portugal. Decreto-Lei n.º 52/85. Diário da República, I Série (1985/01/26). p. 219-20.
7. McNicholas C, Peipert JF. Long-acting reversible contraception (LARC) for adolescent. Curr Opin Obstet Gynecol. 2012;24:293.
8. Águas F, Bombas T, da Silva DP. Evaluation on portuguese women contraceptive practice Avaliação das práticas contracetivas das mulheres em Portugal. Acta Obstet Ginecol Port. 2016;10:184-92.
9. Rosenstock JR, Peipert JF, Madden T, Zhao Q, Secura GM. Continuation of reversible contraception in teenagers and young women. Obstet Gynecol. 2012;120:1298.
10. Committee on Adolescent Health Care Long-Acting Reversible Contraception Working Group, The American College of Obstetricians and Gynecologists. Committee opinion no. 539: adolescents and long-acting reversible contraception: implants and intrauterine devices. Obstet Gynecol. 2012;120:983-8.
11. Kavanaugh ML, Jerman J, Finer LB. Changes in use of long-acting reversible contraceptive methods among US women, 2009–2012. Obstet Gynecol. 2015;126:917.
12. McNicholas C, Tessa M, Secura G, Peipert JF. The contraceptive CHOICE project round up: what we did and what we learned. Clin Obstet Gynecol. 2014;57:635.
13. Gazendam N, Cleverley K, King N, Pickett W, Phillips SP. Individual and social determinants of early sexual activity: a study of gender-based differences using the 2018 Canadian Health Behaviour in School-aged Children Study (HBSC). Plos One. 2020;15:e0238515.
14. Gonçalves PS. A institucionalização de crianças e jovens e processos de definição identitária: o caso de três acolhimentos residenciais. Porto: Instituto Superior de Serviço Social do Porto; 2020.
15. Zappe JG, Dell'Aglio DD. Risco e proteção no desenvolvimento de adolescentes que vivem em diferentes contextos: família e institucionalização. Rev Colomb de Psicol. 2016;25:289-305.
16. Miranda P, Moleiro P, Gaspar P, Luz A. Contraceção em adolescentes: conhecimentos e práticas em Portugal. Acta Med Port. 2019;32:505-13.
17. Mansour D, Korver T, Marintcheva-Petrova M, Fraser IS. The effects of Implanon® on menstrual bleeding patterns. Eur J Contracept Reprod Health Care. 2008;13:13-28.
18. Bayer PLC. Jaydess 13.5 mg intrauterine delivery system: summary of product characteristics. London: Bayer PLC; 2014.
19. Bayer PLC. Mirena: summary of product characteristics. London: Bayer PLC; 2013.