Esc Anna Nery 2021;25(1):e20190374

Fertility and contraception in women with cancer treatment undergoing chemotherapy

Fertilidade e contracepção em mulheres com câncer em tratamento quimioterápico

Fertilidad y anticoncepción en mujeres con cáncer en tratamiento quimioterápico

Stephanie da Silva[1]
Renata Boer[2]
Lóris Aparecida Prado da Cruz[2]
Thais de Oliveira Gozzo[3]

1. Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto. Ribeirão Preto, SP, Brasil.

2. Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto, Programa de Pós-graduação Enfermagem em Saúde Pública. Ribeirão Preto, SP, Brasil.

3. Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto, Departamento Materno Infantil e Saúde Pública. Ribeirão Preto, SP, Brasil.

ABSTRACT

Objective: to identify in women of reproductive age, with cancer and during chemotherapy treatment, the guidelines on fertility preservation and reproductive planning and to know the information provided by the health team. **Methods:** descriptive study, conducted with premenopausal women diagnosed with cancer and undergoing chemotherapy. Data collection was performed with the support of an instrument with sociodemographic information about cancer and its treatments, information regarding the preservation of fertility and the use of contraceptive methods before and after cancer diagnosis. Data analysis was performed using descriptive statistics. **Results:** the average age of the 49 participants was 38.2 years (SD=6.1) and 79.6% were being treated for breast cancer. Regarding the information received about the importance of reproductive planning, 77.6% of participants reported that they were oriented and 59.2% received such guidance from the medical team. However, regarding counseling on methods to maintain fertility, only 6.1% of participants were counseled. **Conclusion and Implications for practice:** consideration should be given to the importance of expert counseling and the maintenance of active decision making by women about preserving their fertility.

Keywords: Neoplasms; Combined Chemotherapy; Infertility; Family Planning.

RESUMO

Objetivo: identificar em mulheres em idade reprodutiva, com câncer e durante o tratamento quimioterápico, as orientações sobre preservação de fertilidade e planejamento reprodutivo e conhecer as informações fornecidas pela equipe de saúde. **Métodos:** estudo descritivo, realizado com mulheres na pré-menopausa, com diagnóstico de câncer e em tratamento quimioterápico. A coleta de dados foi realizada com apoio de um instrumento com informações sociodemográficas, sobre o câncer e seus tratamentos, informações referentes a preservação de fertilidade e uso de métodos contraceptivos antes e após o diagnóstico do câncer. A análise dos dados foi feita por meio de estatística descritiva. **Resultados:** a média de idade das 49 participantes foi de 38,2 anos (DP=6,1) e 79,6% estavam em tratamento devido ao câncer de mama. Quanto as informações recebidas sobre a importância do planejamento reprodutivo, 77,6% das participantes referiram que foram orientadas e 59,2% receberam tais orientações da equipe médica. Entretanto, em relação ao aconselhamento sobre métodos para manter a fertilidade, apenas, 6,1% das participantes foram orientadas. **Conclusão e Implicações para a prática**: Deve-se considerar a relevância do aconselhamento especializado e a da manutenção de tomada de decisões ativas da mulher sobre a preservação de sua fertilidade.

Palavras-chave: Neoplasias; Quimioterapia Combinada; Infertilidade; Planejamento Familiar.

RESUMEN

Objetivo: identificar en mujeres en edad reproductiva, con cáncer y durante el tratamiento de quimioterapia, las orientaciones sobre preservación de la fertilidad y planificación reproductiva y conocer las informaciones proporcionadas por el equipo de salud. **Métodos:** estudio descriptivo, realizado con mujeres premenopáusicas diagnosticadas con cáncer y sometidas a quimioterapia. La recolección de datos se realizó con apoyo de un instrumento con información sociodemográfica sobre el cáncer y sus tratamientos, información sobre la preservación de la fertilidad y uso de métodos anticonceptivos antes y después del diagnóstico del cáncer. El análisis de los datos se realizó mediante estadística descriptiva. **Resultados:** la media de edad fue de 38,2 años (DE=6,1), y 79,6% estaban en tratamiento para el cáncer de mama. Cuanto a la información recibida sobre la importancia de la planificación reproductiva, 77,6% de los participantes informaron que estaban orientados y 59,2% recibió orientación del equipo médico. Sin embargo, con respecto al asesoramiento sobre métodos para mantener la fertilidad, solo 6,1% de las participantes recibieron asesoramiento. **Conclusión e Implicaciones para la práctica:** Debe tenerse en cuenta la importancia de la asesoría experta y el mantenimiento de una toma de decisiones activa por parte de las mujeres para preservar su fertilidad.

Palabras clave: Neoplasias; Quimioterapia Combinada; Infertilidad; Planificación Familiar.

Corresponding author:
Thais de Oliveira Gozzo.
E-mail: thaisog@eerp.usp.br.

Submitted on 03/24/2020.
Accepted on 06/23/2020.

DOI:https://doi.org/10.1590/2177-9465-EAN-2019-0374

INTRODUCTION

Approximately 13% of all types of neoplasms affect people considered to be young or under 50 years.[1] When planning cancer treatment for young women, it should be considered that fertility can be directly affected by cancer, as it can interfere with reproductive organs and/or by local and systemic treatments. Chemotherapy, one of the most widely used systemic treatments, has a significant impact on fertility, with different drugs having different degrees of toxicity, ranging from no effect to transient amenorrhea or permanent ovarian failure and infertility.[2] It should be noted that infertility can impact negatively in the reproductive plans of the woman and/or couple who do not yet have constituted offspring.[3]

Concerns about fertility and reproductive planning are key issues in working with this group of patients. However, they are considered different actions, because while the preservation of fertility is concentrated on gonadotrophic toxicity caused by chemotherapeutic agents; reproductive counseling recognizes the potential for a pregnancy to occur during chemotherapy, especially unplanned ones, and is focused on the importance of avoiding it.[4]

With this, oncofertility appears in the aid of merging knowledge of reproductive endocrinology with oncology.[5] The ideal time for referral of women and this type of service is a short period of time, between diagnosis and the beginning of treatment.[6] Nowadays, preserving the fertility potential, guiding and stimulating the use of contraceptive methods, has become essential in the care of young women who are submitted to cancer treatment,[7] especially chemotherapy, and essential in the modern treatment of cancer.

It is pertinent to emphasize that, individuals undergoing cancer treatment, feel the need for health professionals, especially doctors, to support them regarding concerns related to fertility after cancer. Data observed in a systematic review of the need to support oncofertility for cancer patients of reproductive age (14 to 45 years), found that they want to receive adequate information, have access to oncofertility services, have time to discuss the impact of treatment on fertility and, specialized psychological support.[7]

Such concern is justified when observing a study[8] that aimed to identify, among 630 young women with breast cancer, how much concerns about fertility affect decisions about treatments against the disease. The results indicated that 37% of the participants wished to have children in the future, 51% were concerned about the risk of infertility and 26% said that this risk was decisive in relation to treatment.

It should also be considered that the concern with infertility secondary to chemotherapy is associated with the decrease in psychological well-being and acceptance of the disease, negatively impacting the quality of life of cancer survivors, especially those without children. Furthermore, it is still possible to identify that the threat to fertility can cause feelings of loss and grief, and conflicts in the marital relationship.[9]

In contrast, results of a study carried out with women with neoplasms pointed out that, despite not having a clinical diagnosis of infertility, many believed that they were infertile and, due to this belief, did not use contraception during treatment, which led to unplanned pregnancy.[10] Another survey conducted with women with cancer revealed that 55% believed that they could not become pregnant after cancer treatment and in this perspective 45% reported that they did not use any contraceptive method.[11]

Despite advances in the preservation of fertility and the availability of contraceptive methods for individuals with cancer, there is still a need for information on these issues for women of reproductive age. Therefore, this study aimed to identify, in women of reproductive age, with cancer and during chemotherapy treatment, the guidelines on preservation of fertility and reproductive planning and, to know the information provided by the health team.

METHODS

Descriptive study, developed in a university hospital in the interior of the state of São Paulo with women diagnosed with cancer while in chemotherapy treatment. Data collection took place from January to December 2018.

Inclusion criteria were women aged between 18 and 45 years old, premenopausal and who were undergoing chemotherapy during the data collection period. Women who were in the pregnancy-puerperal cycle at the time of chemotherapy and/or diagnosis of metastasis were excluded.

To classify menopausal status, the criteria proposed by the Breast Cancer Surveillance Consortium (BCSC) were used. The BCSC was established in 1994 with the purpose of improving the understanding of breast cancer screening practices in the United States of America. To identify menopausal status, participants must meet one or more of the criteria presented in Chart 1.[12]

The eligible women answered a questionnaire that contained sociodemographic information, type of tumor, cancer treatments performed, obstetric history and information regarding the preservation of fertility and the use of contraceptive methods before and after cancer diagnosis.

The data were stored in an Excel 2010® spreadsheet with double entry and analyzed by IBM SPSS 20 (Statistical Package for the Social Sciences). Descriptive, central tendency and dispersion analyses were performed for numerical variables and simple frequency for absolute and relative variables.

The study was approved by the Research Ethics Committee (Protocol CAAE: 72423417.3.0000.5393), according to the guidelines and regulatory standards for research involving human beings, contained in the Resolution of the National Health Council 466/2012.

RESULTS

Were included 49 women, whose age ranged from 24 to 45 years, with a mean age of 38.2 years (SD=6.1), there was a predominance (48.9%) of the age group from 40 to 45 years. Most participants reported having a partner (75.5%), attended school for a period of nine to 12 years (46.9%) and at the time of the interview they were on sick leave (46.9%), (Table 1).

Chart 1. Criteria for classification of Menopausal Status according to Breast Cancer Surveillance Consortium.[12]

Classification of Menopausal Status	
Premenopause	- Menstrual cycles have not stopped - Current use of hormonal contraceptives - Less than 180 days since the last menstrual cycle
Perimenopause	- Not sure if menstrual cycles have stopped - From 180 to 364 days since the last menstrual cycle
Postmenopause	- Age ≥55 years - Report of natural menopause - Bilateral oophorectomy - Current use of hormone replacement therapy - 365 days or more since the last menstrual cycle
Surgical menopause / others	- Hysterectomy without bilateral oophorectomy

Table 1. Distribution of women according to age, marital status, years of study and occupation (n=49). Ribeirão Preto, São Paulo, Brazil, 2018.

Variables	Absolute Frequency	%
Age		
24 – 29 years	6	12.2%
30 – 34 years	5	10.2%
35 – 39 years	14	28.5%
40 – 45 years	24	48.9%
Marital status		
With companion	37	75.5%
Without companion	12	24.4%
Years of study		
Did not attend	1	2%
Up to four years	8	16.3%
Five to eight years	10	20.4%
Nine to 12 years	23	46.9%
Above 13 years	7	14.3%
Occupation		
Homemaker	15	30.6%
Sick leave	23	46.9%
Autonomous	11	22.4%

Source: Study database

Regarding the participants' obstetric history, 89.8% reported that they had already become pregnant at some point in their life cycle and 16.3% had the intention of becoming pregnant for the first time or having more children. Among the participants who had already become pregnant, 31.8% had two pregnancies and 6.8% had an abortion, (Table 2).

As for the location of the tumor, there was a predominance of participants with breast cancer (79.6%), followed by cervix (4.1%), ovary (2%) and other locations (14.3%). The most used therapeutic modality, in addition to chemotherapy, was the surgical procedure (55.1%), radiotherapy (12.2%) and hormone therapy (8.2%).

Of the participants, 57.1% reported using some contraceptive method before the diagnosis of cancer, and after the diagnosis 67.3%. There was a change in the method used, being that before the diagnosis, the contraceptive pill was the most used (32.7%) and after the diagnosis of the disease, the intrauterine device (IUD) became the method of choice (42.9%), (Table 3).

With reference to the information received on the importance of reproductive planning, 77.6% of the participants reported that they were instructed and 59.2% received such guidance from the medical team. However, regarding counseling on maintaining fertility, only three participants reported having received information (Table 4).

Of the participants who were instructed on maintaining fertility, they pointed out that the recommended methods were egg freezing (66.6%) and the use of the drug goserelin acetate (33.3%). However, only one participant accepted the proposed resource, due to the possibility of resuming her maternity plans after the completion of treatment. The other two participants refused the intervention because of the high financial cost of the medication and the possibility of delaying cancer treatment.

In addition, 100% of participants point out the importance of receiving such information before starting cancer therapy, as they increase their autonomy and can direct them in the decision making. Among the answers about the reasons for pointing out this information as relevant, it was found as an explanation that this information gives them more security when prioritizing cancer treatment (44.8%), help them to better understand the health condition in which they are (32.7%), avoid possible damage to the fetus in case of unexpected pregnancy during treatment (18.4%) and the possibility of maintaining fertility was mentioned by 4.1% of the participants.

Table 2. Distribution of women according to pregnancy, number of pregnancies, number of abortions and intention to have more children. Ribeirão Preto, São Paulo, Brazil, 2018.

Variables	Absolute Frequency	%
Have you ever become pregnant at some point in life?		
Yes	44	89.8%
No	5	10.2%
Number of pregnancies		
1	10	22.7%
2	14	31.8%
3	12	27.2%
4	3	6.8%
5 or more	5	11.2%
Number of abortions		
None	41	93.1%
1	3	6.8%
Intention to get pregnant for the 1st time or have more children		
Yes	8	16.3%
No	41	83.7%

Source: Study database

Table 3. Distribution of women according to the use of contraceptive methods before and after the diagnosis of cancer. Ribeirão Preto, São Paulo, Brazil, 2018.

Variables	Absolute Frequency	%
Use of contraceptive methods before diagnosis		
Yes	28	57.1%
No	21	42.9%
Method used		
Contraceptive pill	16	32.7%
Contraceptive injection	7	14.3%
Male condom	3	6.1%
Intrauterine device (IUD)	2	4.1%
Use of contraceptive methods after diagnosis		
Yes	33	67.3%
No	16	32.6%
Method used		
Intrauterine device (IUD)	21	42.9%
Male condom	10	20.4%
Contraceptive pill	1	2%
Contraceptive injection	1	2%

Source: Study database

DISCUSSION

In the present study, the participants were aged between 24 and 45 years, undergoing chemotherapy for different types of cancer, 83.7% reported that they did not want to have more children, however 32.6% did not use methods of contraception, being at risk of unplanned pregnancy. Data corroborated by a study[13] that questioned 175 women with breast cancer about the current use of contraceptives and their intention to become pregnant in the future, and 64% reported that they did not use

Table 4. Distribution of women according to the guidelines received regarding avoiding pregnancy during treatment and advice on methods to maintain fertility. Ribeirão Preto, São Paulo, Brazil, 2018.

Variables	Absolute Frequency	%
Received guidance on the importance of not getting pregnant during cancer treatment		
Yes	38	77.6%
No	11	22.4%
Professional who did the orientation		
Doctor	29	59.2%
Nurse	6	12.2%
Doctor and Nurse	3	6.1%
Received counseling on maintaining fertility		
Yes	3	6.1%
No	46	93.9%

Source: Study database

any method at the time of the research, despite not having the intention to become pregnant. Results also observed in a study[10] that analyzed the use of contraceptives during cancer treatment in a group of 107 women of reproductive age, and found that 40 of them were sexually active during treatment and, of these, six do not make use of any method of contraception.

It should be considered that all sexually active women of reproductive age are at risk for unplanned pregnancy in the absence of contraception. This includes women diagnosed with current or previous cancer. Unplanned pregnancy in the context of cancer treatment or surveillance is a sensitive issue and can lead to clinical and ethical dilemmas for women, partners, family and healthcare staff.[14]

When contraception rates between cancer survivors of reproductive age and women in the general population were compared, the age-adjusted rates and the use of contraceptive methods were lower among survivors than in the general population (34% [28.8-40.0] compared to 53% [51.5-54.5], P <0.01). In addition, only 56% of survivors reported having received some type of care or guidance regarding reproductive planning (counseling, prescription or procedure related to fertility control) since the cancer diagnosis.[15]

Such data corroborate what was observed in the present study, where 22.4% of the participants pointed out that no professional from the health team advised on the importance of using contraceptive methods during cancer treatment. Similar data was observed in a study carried out with women with cancer from Mexico City, where contraceptive counseling during chemotherapy was also precarious.[16]

There is a difficulty for the health team to address issues related to reproductive planning, resulting in a gap in the care of young women diagnosed with cancer. It is known that the moment of diagnosis is distressing and overloaded with information, as pointed out in a review[17] that discussed aspects related to contraception in cancer survivors of reproductive age, and concluded that contraceptive guidelines are crucial during therapy, as they promote safety and autonomy to women, and strengthen their commitment to treatment.

It is observed that if the woman's reproductive goals are not specifically addressed, there is the possibility of an unwanted pregnancy and not preserving fertility.[18] Thus, it is essential that all women are informed about the risk of decreased or loss of fertility after using cancer therapy.

Another important point to be considered during cancer treatment in women of reproductive age is the preservation of fertility. It should be noted that maintaining fertility during the disease process involves aspects beyond the physical context of the life of women, since they describe the infertility induced by chemotherapy as a feeling of agony, which jeopardizes their sense of self-fulfillment and female identity.[19]

In the present study, it was observed that 16.3% of the participants indicated the desire to become pregnant after the end of chemotherapy treatment, however only 6.1% received counseling to preserve fertility. Data corroborated by an American study with 211 women with breast cancer undergoing chemotherapy, where 52% did not receive advice on preserving fertility.[4] Also observed in a study conducted in Lebanon[20] with 39 women with breast cancer and 76.9% did not discuss with the oncologist the possibility of infertility.

According to the recommendations of the American Society of Clinical Oncology (ASCO),[21] oncologists should prepare to discuss infertility and the potential risk of therapies, as soon as possible after the cancer diagnosis, which can be simultaneous with staging and planning treatment. They also recommend referring women who express an interest in fertility, as well as those who are unsure, to reproductive specialists as soon as possible; in addition to referring to psychological care.

Although several fertility preservation techniques are available, their use has been limited due to a lack of advising on the subject.[17] Addressing fertility and its preservation has been a little explored topic, as shown in the scoping review results,[22] highlighting that the difficulties and barriers to access specialized services are similar between developed and developing countries. In this sense, it is noted that one of the implications for the practice is that women with cancer or a history of cancer need access to services that offer options for reproductive planning and fertility preservation.[22]

Barriers to the preservation of fertility were also considered: lack of communication with patients by the health team,[22] difficulty in referring patients to specialized services,[6,22] level of training/knowledge of different health professionals working with this population,[6,22] patients' hesitation regarding the desire to preserve fertility[22] and costs.[22]

As for costs, these vary from country to country, and are influenced by legal aspects, the patient's age, local culture, and the coverage of different health systems, as described in the study[6] developed in 40 oncofertility centers in 28 countries. This study also points out the cost coverage estimates for different countries, and states that in Brazil the costs regarding the cryopreservation of embryos, ovarian tissue and sperm are the responsibility of the patient and vary from region to region.

In addition to these aspects, specialized advice on the loss of reproductive function and preservation of fertility stands out, as demonstrated by the results of a recent study[23] that sought to understand the practice and perceptions of medical professionals and nurses regarding barriers to screening and referring young women for contraception and preserving fertility during cancer treatment. The professionals were not clear about their roles and responsibilities regarding the theme and assumed that another team member had approached the woman. In conclusion, the team did not have training on contraception and preservation of fertility, which prevented appropriate and timely discussions and advice.

Among the health professionals working with this group of patients, the nurse navigator stands out, who favors that they have information to actively participate in the care process. In addition to establishing communication between the different health professionals involved in the care, facilitating the journey of the cancer patient.[22]

CONCLUSION AND IMPLICATIONS FOR PRACTICE

Although most of the participants in the current study receive guidance on the use of contraceptive methods to avoid an unplanned pregnancy during cancer treatment, it was observed that there is still a lack of information on this subject. The same can be observed with regard to methods of preserving fertility, which made it possible to identify that despite being a relevant and current issue, it is not yet part of the routine to offer this information or the means to achieve it. Consideration should be given to the relevance of expert advice and the maintenance of active women's decision-making about their reproductive planning.

In this sense, the image of the nurse stands out to act in counseling for the use of contraceptive methods and for the preservation of fertility, since this professional is prepared to perform his/her functions in the various stages of cancer treatment.

It can be pointed out as limitations of the study the number of participants and data collection in a single service, however, this hospital is a reference for infertility treatment and offers assistance for contraception and preservation of fertility for cancer patients.

FINANCIAL SUPPORT

"The present work was carried out with the support of the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – CAPES Brasil (Coordination for the Improvement of Higher Education Personnel, in free translation) – Financing Code 001", Master's scholarship granted to Renata Boer and doctoral scholarship granted to Lóris Aparecida Prado da Cruz.

AUTHOR'S CONTRIBUTIONS

Review study design. Data collection and analysis. Interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Thais Oliveira Oliveira.

Data collection and analysis. Interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Stephanie da Silva. Lóris Aparecida Prado da Cruz.

Data analysis and interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Renata Boer.

ASSOCIATE EDITOR

Aline Aparecida Monroe

REFERENCES

1. American Cancer Society. Cancer facts and figures 2017. Atlanta: American Cancer Society, 2017 [citado 2019 nov 14]. Disponível em: https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2017/cancer-facts-and-figures-2017.pdf
2. Jayasinghe YL, Wallace WHB, Anderson RA. Ovarian function, fertility and reproductive lifespan in cancer patients. Expert Rev Endocrinol Metab. 2018;13(3):125-36. http://dx.doi.org/10.1080/17446651.2018.1455498. PMid:30058903.
3. Madrigal JM, Atluri M, Radeke EK, Patel A. Looking through the lens of a family planner to prioritize reproductive health among women with cancer. J Oncol Pract. 2019;15(2):e141-52. http://dx.doi.org/10.1200/JOP.18.00429. PMid:30763204.
4. Johansen SL, Lerma K, Shaw KA. Contraceptive counseling in reproductive-age women treated for breast cancer at a tertiary care

institution: a retrospective analysis. Contraception. 2017;96(4):248-53. http://dx.doi.org/10.1016/j.contraception.2017.06.004. PMid:28645785.

5. Ashizawa M, Kanda Y. Preservation of fertility in patients with hematological malignancies. Jpn J Clin Oncol. 2020;50(7):729-42. http://dx.doi.org/10.1093/jjco/hyaa043. PMid:32419028.
6. Rashedi AS, Roo SF, Atamen LM, Edmonds ME, Silva AA, Scarella A et al. Survey of fertility preservation options available to patients with cancer around the globe. JCO Glob Oncol. 2020;6:JGO.2016.008144. PMid:32259160.
7. Logan S, Perz J, Ussher JM, Peate M, Anazodo A. A systematic review of patient oncofertility support needs in reproductive cancer patients aged 14 to 45 years of age. Psychooncology. 2018;27(2):401-9. http://dx.doi.org/10.1002/pon.4502. PMid:28734119.
8. Ruddy KJ, Gelber SI, Tamimi RM, Ginsburg ES, Schapira L, Come SE et al. Prospective study of fertility concerns and preservation strategies in young women with breast cancer. J Clin Oncol. 2014 abr 10;32(11):1151-6. http://dx.doi.org/10.1200/JCO.2013.52.8877. PMid:24567428.
9. Ussher JM, Perz J. Infertility-related distress following cancer for women and men: a mixed method study. Psychooncology. 2019;28(3):607-14. http://dx.doi.org/10.1002/pon.4990. PMid:30659694.
10. Maslow BS, Morse CB, Schanne A, Loren A, Domchek SM, Gracia CR. Contraceptive use and the role of contraceptive counseling in reproductive-aged women with cancer. Contraception. 2014 jul;90(1):79-85. http://dx.doi.org/10.1016/j.contraception.2014.03.002. PMid:24792148.
11. Patel A, Sreedevi M, Malapati R, Sutaria R, Schoenhage MB, Patel AR et al. Reproductive health assessment for women with cancer: a pilot study. Am J Obstet Gynecol. 2009;201(2):191.e1-4. http://dx.doi.org/10.1016/j.ajog.2009.04.021. PMid:19539896.
12. Ballard-Barbash R, Taplin SH, Yankaskas BC, Ernster VL, Rosenberg RD, Carney PA et al. Breast Cancer Surveillance Consortium: a national mammography screening and outcomes database. AJR Am J Roentgenol. 1997 out;169(4):1001-8. http://dx.doi.org/10.2214/ajr.169.4.9308451. PMid:9308451.
13. Kopeika J, Bhaduri M, Kugadas A, Reddy N, Shewbridge A, Mukherji D et al. Planned and unplanned pregnancies in breast cancer survivor. Breast. 2019;46:75-80. http://dx.doi.org/10.1016/j.breast.2019.05.004. PMid:31100574.
14. Crafton SM, Lynch CD, Cohn DE, Eisenhauer EL. Reproductive counseling, contraception, and unplanned pregnancy in fertile women treated by gynecologic oncologists. Gynecol Oncol Rep. 2016;19:22-6. http://dx.doi.org/10.1016/j.gore.2016.11.006. PMid:28018956.
15. Dominick SA, McLean MR, Whitcomb BW, Gorman JR, Mersereau JE, Bouknight JM et al. Contraceptive practices among female cancer survivors of reproductive age. Obstet Gynecol. 2015;126(3):498-507. http://dx.doi.org/10.1097/AOG.0000000000000963. PMid:26181090.
16. Castro-Sanchez A, Martinez-Cannon BA, Platas A, Mohar A, Fonseca A, Vega Y et al. Suboptimal use of effective contraceptive methods in young Mexican women with breast cancer. J Glob Oncol. 2018;4(4):1-7. http://dx.doi.org/10.1200/JGO.18.00064. PMid:30300053.
17. Shliakhtsitsava K, Suresh D, Hadnott T, Su IH. Best practices in counseling young female cancer survivors on reproductive health. Semin Reprod Med. 2017;35(4):378-89. http://dx.doi.org/10.1055/s-0037-1603770. PMid:29036745.
18. Crafton S, Nekkanti S, Lynch C, Cohn DE, Fowler JM, Copeland LJ et al. Documentation of pregnancy risk assessment and pregnancy among women presenting for gynaecologic oncology consultation. Int J Gynecol Cancer. 2016;26(1):35-42. http://dx.doi.org/10.1097/IGC.0000000000000576. PMid:26658364.
19. Dagan E, Modiano-Gattegno S, Birenbaum-Carmeli D. "My choice": breast cancer patients recollect doctors fertility preservation recommendations. Support Care Cancer. 2017;25(8):2421-8. http://dx.doi.org/10.1007/s00520-017-3648-1. PMid:28238094.
20. Assi HI, Kakati RT, Attieh RM, Khoury J, Sukhon F, Berro J et al. Fertility in breast cancer survivors in the Middle East: a retrospective study. Breast. 2020;52:58-63. http://dx.doi.org/10.1016/j.breast.2020.04.010. PMid:32388348.
21. Oktay K, Harvey BE, Partridge AH, Quinn GP, Reinecke J, Taylor HS et al. Fertility preservation in patients with cancer: ASCO clinical practice guideline update. J Clin Oncol. 2018;36(19):1994-2001. http://dx.doi.org/10.1200/JCO.2018.78.1914. PMid:29620997.
22. Anazodo A, Laws P, Logan S, Saunders C, Travaglia J, Gerstl B et al. How cam we improve oncofertulity care for patients? A sistematic scoping review of current international practice and models of care. Hum Reprod Update. 2019;25(2):159-79. http://dx.doi.org/10.1093/humupd/dmy038. PMid:30462263.
23. Lindsay SF, Woodhams EJ, White KO, Drainoni ML, Johnson NL, Yinusa-Nyahkoon L. Understanding barriers to contraception screening and referral in female adolescents and young adults with cancer. J Adolesc Young Adult Oncol. 2020;9(1):63-71. http://dx.doi.org/10.1089/jayao.2019.0074. PMid:31634022.