

Chapter 19

Optimizing the Decision-Making Process About Fertility Preservation in Young Female Cancer Patients: The Experience of the Portuguese Centre for Fertility Preservation

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Introduction

Currently, cancer is no longer synonymous with death. Despite the increasing number of new cases of cancer per year in the last decades, the survival rates have also been increasing steadily [46]. Specifically in Portugal, in 2009, the cancer incidence rate was 426.5 cases per 100,000 individuals, which was the highest value ever registered [16]. However, Portugal is reported to be one of the European countries with the highest 5-year survival rates for several types of cancer (e.g., melanoma and colon cancer; [14]). The intervention in oncology therefore needs to be focused not only on the life preservation of patients but also on the promotion of their quality of life after the completion of cancer treatment [30]. Specifically, the patients' reproductive future needs to be taken into account by health professionals during the process of cancer diagnosis, mainly due to the risk of infertility and the duration of cancer treatments as well as the current characteristics of cancer patients.

Over the past years, there have been major advances in cancer treatment protocols. Currently, there are more aggressive regimens that are more effective against malignancies. However, these regimens also have more side effects, including the risk of fertility impairment [38]. Specifically in female patients, the treatment of

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some types of cancer comprises hormonal therapy that can last for at least 5 years [23]. Given the normal ovarian reserve decline that registers significantly after the age of 32 [1], the combination of the impact of gonadotoxic cancer treatments and the postponement to later ages of attempts to become pregnant due to hormonal treatments may have a serious negative impact on female cancer patients' reproductive future [23].

Another important aspect to bear in mind is the characteristics of cancer patients at the present time. It is increasingly common to find cancer patients of reproductive age whose parental projects are not fully completed, mainly due to the increasing incidence of some types of tumors at young ages [29] and the current social trend of delaying childbearing until older ages [39]. This means that the reproductive future of many newly diagnosed cancer patients who are young and childless is at risk. However, despite the gonadotoxicity of cancer treatments, the possibility for these patients to have a biological child after surviving cancer is now a reality, mainly due to advances in fertility preservation (FP) methods. The decision-making process about FP is particularly demanding for female cancer patients for several reasons that are presented below.

The main aim of the present article was to describe the experience of the Portuguese Centre for Fertility Preservation in terms of the provision of support for the reproductive choices of young female cancer patients. To our knowledge, this is the first proposal of a prospective intervention model to counsel and support these patients with regard to their reproductive future.

Brief Notes on Female Fertility Preservation Methods

Retrospective data indicate that pregnancy after cancer can be safe for survivors and their offspring [43]. Research indicates that there does not seem to be an additional risk of death in survivors during subsequent pregnancies. The literature also suggests that the infants of cancer survivors do not have an increased risk of low birth weight, malformations [32], or cancer (in the absence of a genetic cancer syndrome) [6] when compared to the general population. However, pregnancy monitoring by a "high-risk obstetric service" ([38], p. 32) is recommended to supervise potential cancer treatment-related risks that are specifically associated with hormone-dependent tumors.

Taking into account the risk of future cancer-related infertility, both female and male FP techniques have been developed to attempt to ensure the possibility of cancer patients having biological children in the future. These methods comprise the cryopreservation of gametes before possibly gonadotoxic cancer treatments (e.g., chemo- or radiotherapy, surgery) and their subsequent use, after the recovery of the patient from the oncological disease, in case of fertility impairment [25].

Female FP methods consist of the cryopreservation of embryos, oocytes, or ovarian tissue.

Embryo cryopreservation comprises, first, the collection of oocytes from the female cancer patient (after an ovarian stimulation that can last 2 weeks) and, second, the in vitro fertilization (IVF) of these oocytes with sperm from the patient's partner. The obtained embryos are then stored. After cancer treatments, if the female patient is not able to conceive naturally, the patient and her partner can use their embryos to try to have a child. The cryopreservation of embryos is a well-established technique [25], and data have shown good success rates (i.e., the clinical pregnancy rate per transfer of frozen embryos is 22.3% on average; [19]). However, this method has drawbacks that should be considered. First, ovarian stimulation may imply the postponement of the beginning of cancer treatments and may have an impact on the growth of hormonal tumors, a risk that remains unclear in the research [25]. Second, this method does not maintain the reproductive autonomy of the female patient because it can only be performed in female patients who are married or in civil unions, and only the couple can use the previously cryopreserved embryos. It is important to note that in Portugal, since July 2015, embryo cryopreservation has been considered an unviable FP method given the related ethical, moral, and legal issues.

Cryopreservation of oocytes also involves ovarian stimulation and its disadvantages, as previously described. However, in this procedure, the collected oocytes are stored without being fertilized. After cancer treatments, if the female's reproductive function is affected, it is possible to collect sperm from her partner and perform an IVF with the previously cryopreserved oocytes [25]. Since 2013, this has been considered a well-established technique [2] due to the increasing number of live births resulting from oocyte cryopreservation (i.e., there have been more than 1000 children born through IVF with frozen oocytes; [13]).

Cryopreservation of ovarian tissue comprises the extraction of an ovary (partially or totally) through laparoscopy and the subsequent dissection and freezing of the ovarian cortex into small fragments. To reestablish the reproductive function of the female patient after the cancer treatments, the ovarian tissue slices are implanted, one by one, in the remaining ovary in the patient's uterus. It is hoped that this transplantation can restore the activity of the ovary that was subjected to the impact of the oncological treatment. This is a recent and still experimental technique [25], but clinical and research results have been improving in recent years (i.e., there are now more than 40 babies born through transplantation of frozen ovarian tissue; [17]). Despite its experimental label, this FP method has some cons that should be considered. This procedure does not require as much time as ovarian stimulation does, so it can be performed in patients who need to begin their cancer treatments as soon as possible. Moreover, in the case of a successful ovarian tissue transplant, there is no need to perform IVF and embryo transplant in the future to achieve pregnancy [25].

In conclusion, reproductive medicine now provides techniques that attempt to ensure the biological parenthood of cancer patients who plan to undergo treatments that may threaten their fertility. In this context, oncofertility is rising as an imperative research and clinical field that involves an "integrated network of clinical resources [to] focus on developing methods to spare or restore reproductive function in patients diagnosed with cancer" ([44], p. 2).

The Decision-Making Process About Female FP

The decision-making process about FP is complex in female cancer patients for two main reasons. First, and according to the description in the previous section, female FP techniques are invasive, and one of these techniques is still considered experimental. Second, in the decision-making process about female FP, it is necessary to consider several clinical (e.g., type of cancer, time until the beginning of cancer treatments, ovarian reserve), sociodemographic (e.g., age, marital status), and FP technique-related (e.g., success rates, medical procedures, risks, duration of the techniques, maintenance of the reproductive autonomy) variables. Often, there is little time to consider these variables [10, 25].

Although this may be a difficult and emotionally overwhelming process for recently diagnosed young adult female cancer patients [31], some data in the literature suggest the importance of this decision in these women's lives.

Research with Female Cancer Patients

Young female cancer patients seem to value the opportunity to make a decision about FP [33, 36]. These patients report the desire to receive as much information about fertility treatments and FP interventions as possible around the time of the diagnosis so they can play an active role regarding this decision [33]. This is particularly important because studies reveal that more informed patients who have the opportunity to make a decision about FP together with health professionals have lower decisional-conflict levels [24, 33], make higher-quality decisions [33], have greater satisfaction with their care after the decision [24], and have better psychological adjustment to the diagnosis [33] than patients who are less informed and do not have the opportunity to be part of this decision-making process. A study by Peate and colleagues [33] that evaluated women with breast cancer of reproductive age (21–40 years old) reported that a lack of information increases anxiety and negatively influences the quality of the decision-making experience. However, this study also revealed that the presence of anxiety levels in female breast cancer patients do not appear to be correlated with their fertility knowledge or with their desire for information, suggesting that fertility-related information should be provided to all women regardless of their emotional well-being.

Research with Female Cancer Survivors

Results on the motivations for parenthood among female cancer survivors and the impact of cancer-related infertility and of the FP decision in these women's psychological adaptation in survivorship suggest the key role of the FP decision before cancer treatment in these women's lives.

Research reveals that female cancer survivors have more positive motivations for childbirth than healthy women do (e.g., [48]). Despite the fear of a cancer recurrence after a pregnancy, these survivors associate having a child with happiness and a fulfilling life [18], value the family, and feel very competent to educate a child [41]. Through a systematic literature review, Gonçalves et al. [21] reported that childbearing seems to be an important issue for young female breast cancer survivors, even for those who are against having children after cancer due to the potential risks associated with some types of tumors.

The diagnosis of cancer-related infertility has been shown to have a negative impact on the individual adaptation of these survivors in terms of the experience of high levels of anxiety [28, 41], depression [8], sexual dysfunction [9, 37], disruptions to intimate relationships [37], and feelings of loss and anger [37, 40]. Moreover, infertile survivors also must address menopausal symptoms, such as vaginal dryness and hot flashes, which can have a negative impact on their quality of life [9]. Some female cancer survivors even describe the experience of being infertile as being as painful as the cancer diagnosis itself [18]. According to results reported by Canada and Schover [5], social parenting (i.e., adoption) does not completely resolve this distress.

Young adult female cancer survivors evaluate the opportunity to make a decision about FP before the cancer treatments as important because this experience can make them feel positive, peaceful, happy, and hopeful and can give them a reason to live [20, 47]. Many survivors report that one good thing about FP is that it is one of the few decisions that they can make themselves; it allows them to feel in control of an uncontrollable situation [20]. Furthermore, this decision-making process seems to have a positive impact on the adaptation of these female patients in survivorship. Letourneau and colleagues [26] performed a retrospective study with 1041 female cancer survivors of reproductive age (18–40 years old) who had previously submitted to fertility-threatening treatments and found higher levels of life satisfaction and quality of life and lower levels of regret in relation to the FP decision in women who were counseled by a specialist in reproductive medicine about FP before cancer treatments than in women who did not receive this consultation. These results were found regardless of the decision of the female patients about FP.

Despite the importance that the decision-making process about FP seems to have for young female cancer patients, these women note significant gaps in the information provided by their oncologists about the risks of a pregnancy in survivorship, the infertility risk associated with cancer treatments and possibilities to spare their fertility [4]. Moreover, the literature reveals a lack of or delayed referral of these patients to a fertility specialist consultation to make a decision about the preservation of their fertility (e.g., [20]). These two factors can prevent these patients from having a choice in this matter [4] because these cancer patients cite their oncologists as a critical source of support and information in the cancer diagnosis and treatment process [36]. The literature has also reported the key role of written information and web-based tools in the improvement of FP decision-making outcomes [34, 42].

Taking this situation into account, the guidelines for intervention of several oncology societies around the world (e.g., the American Society of Clinical

Oncology, Clinical Oncology Society of Australia [COSA], European Society for Medical Oncology, the European Society of Breast Cancer Specialists) emphasize the responsibility of all health professionals in oncology to inform all cancer patients about the risk of cancer treatment-related fertility and to refer them in a timely manner to a specialist in reproductive medicine to make a decision about FP [7, 12, 27, 35]. Specifically in Portugal, updated and general guidelines for intervention in oncology, with recommendations for the discussion with young adult cancer patients about their reproductive future, are needed (i.e., the existing guidelines are from 2009 and are specific to breast cancer patients; [15]).

The Prospective Intervention Model of the Portuguese Centre for Fertility Preservation

The PCFP of the Reproductive Medicine Department of the Coimbra Hospital and University Centre is the sole public center in Portugal that provides all the available FP options (i.e., cryopreservation of sperm, embryos, oocytes, and ovarian tissue) to patients facing treatments that may threaten their reproductive function. It was officially created in 2010 to meet the reproductive needs of patients whose fertility is at risk. Despite the availability since the 1990s of male FP in several Portuguese public institutions, female FP techniques were not previously available in Portuguese public practice. Thus, it is clearly important to attempt to ensure the potential for biological parenthood among female patients.

In the present day, the PCFP team is constituted by seven doctors, two embryologists, a psychologist, and a pharmacist. Its main goal is to support informed reproductive decisions through the life course of female cancer patients who are at risk of cancer treatment-related infertility. To achieve this aim, in the last 4 years, the team has worked through different but complementary pathways that are described below.

Clinical Practice

The PCFP provides reproductive monitoring and counseling to female cancer patients from all over the country who are planning to undergo treatments that may threaten their fertility.

These patients can be referred to the PCFP by their oncologists or can ask for a consultation. Regardless of the situation, the first appointment at the center is scheduled in the 24–48 h following the request.

In their first visit to the PCFP, female cancer patients are supported in making a decision about FP. They undergo (1) a medical appointment with a specialist in reproductive medicine, where they are informed about the available FP options in terms of medical procedures involved, costs, risks, and success rates, and the

adequacy of each method to each situation is discussed, taking into account sociodemographic, clinical, and reproductive variables; (2) medical exams to assess their baseline reproductive function; and (3) an appointment with the psychologist. The psychologist plays an important role in this process because this health professional assesses the psychological adaptation of the patient to the recent cancer diagnosis, the patient's attitudes toward the risk of future infertility, and their understandings and expectations of FP and discusses the pros and cons of each FP option (this appointment is also important to identify information that needs to be better clarified by the oncologist or the specialist in reproductive medicine). This process is always performed in collaboration with the patient's oncologist, which is essential to ensure that the decision about FP does not interfere with the cancer treatments. In this first visit to the center, the amount of time the patient has to make the final decision is defined, taking into account several variables, such as the date provided by the oncologist for the beginning of the gonadotoxic cancer treatments.

If the patient, together with the health professionals involved, decides to preserve her fertility, the next step is to perform the chosen technique. It is important to note that throughout the medical procedures involved, medical and psychological support is provided to patients according to their needs.

After this process, all patients are followed up regardless of whether they preserve their fertility. First, during the cancer treatments, the patients' follow-up is performed by phone calls made by the psychologist of the team every 6 months. These are important opportunities for the PCFP team to stay updated about the clinical situation of the patients and for the patients to maintain contact with the team that is available to support their reproductive decisions in the future. These phone calls are also important to provide emotional support and to identify patients in need of regular appointments with a psycho-oncologist. Second, after the completion of the cancer treatments, the patients are followed through visits to the PCFP every 6 months. As in the first visit to the center, in these follow-up visits, the patients undergo (1) a medical appointment where they are counseled about their reproductive health and decisions (e.g., the possibility of becoming pregnant naturally, the use of cryopreserved material in case of previous FP, implementation of assisted reproduction techniques [ART]); (2) medical exams to monitor their reproductive function after the cancer treatments and to assess the impact of the cancer treatments in ovarian function, taking into account the baseline assessment of the first visit to the PCFP; and (3) an appointment with the psychologist. The psychologist plays an important role in this process because this health professional assesses the patients' psychological adaptation to survivorship, their understandings and attitudes toward survivorship, and their expectations and plans about their parental project, provides emotional support in case of an infertility diagnosis, and supports decisions regarding the use of the cryopreserved material to achieve pregnancy (in case of previous FP) and attitudes about ART and even third-party techniques and adoption. It is important to note that the goals of each medical and psychological appointment in the follow-up phase are variable according to each patient, taking into account the patient's sociodemographic, reproductive, and clinical variables.

As of October 2015, 149 female cancer patients of reproductive age ($M=31.08$; $DP=5.43$; 18–42 years old) were counseled in the PCFP to make decisions about FP. Most of them were single (52%) but were involved in an intimate relationship (66%) and did not have a child at the time of the FP decision (83%). Breast cancer was the most prevalent diagnosis in these female patients (62%). Although the majority of the patients had preserved their fertility (12 patients cryopreserved embryos or zygotes before July 2015, 67 cryopreserved oocytes, and 27 patients cryopreserved ovarian tissue; note that some women used more than one FP technique), 55 women decided to not use any FP method. However, it is important to highlight that whatever their final decision about FP was, these female cancer patients revealed high levels of satisfaction with their decision-making process about FP and the clinical monitoring provided by the PCFP (these results were obtained from an online anonymous questionnaire that all female patients were asked to complete; 83% response rate). Specifically with regard to the psychological support provided, in the same questionnaire, patients revealed the importance of this appointment for their decision-making process: “the psychologist was truly important to help me and my husband to talk about my cancer and about our fears. Infertility is one of them. The psychologist helped us to think about our priorities and about what we were capable and up to do to preserve the fertility”; “important to help me anticipate me in the future and what I would think about my decision about FP”; “essential to translate the technical information provided by the doctor into simpler words... Really important for me to understand everything that every technique could involve in terms of physical procedures and emotional too”; “it was really important to express all the emotions that I was feeling through the last days of diagnosis and oncological appointments. It is overwhelming to make this important decisions so quickly and so vulnerable. The psychologist helped me to address my worries and to be capable to be rational to think about FP”.

The number of female cancer patients counseled in the PCFP for FP has been increasing in the past few years. So far in 2015, 47 women have been counseled; this is the year with the highest number of requests for an appointment in this center (there were 43 patients in 2014, 26 patients in 2013, 19 patients in 2012, 8 patients in 2011, and 10 patients counseled in the PCFP for an FP decision in 2010).

It is important to note that this intervention model has also been applied in PCFP to pre- and postpubertal girls. In these cases, the decision-making process and the follow-up consultations are developed with the participation of the parents (or other legal representatives of the child/adolescent), taking into account that the patients are underaged. At the time of the decision-making about FP, the psychologist consults with the child/adolescent alone, the parents, and the family together to discuss the topics described for the counseling of female adult patients. Talking about these reproductive health issues with underage girls is a great challenge. It needs to be done through language adapted to their age, their level of comprehension, and their emotional maturity. The use of specific communication tools, such as figures, toys, and videos, is important to make these patients interested and motivated to make a decision about FP. Parents and underage patients also revealed high levels of satisfaction with this intervention model through the online anonymous questionnaire.

Adaptation and Development of Information Resources for Shared Decision-Making About FP

Although most of the female cancer patients are referred to the PCFP by their oncologists (92%), some of them ask for a consultation on their own. Thus, one aim of the PCFP team is to attempt to better inform patients, health professionals, and the general population about the impact of cancer in fertility and the techniques of FP.

To achieve this goal, the team has adapted and developed several decision-making tools regarding FP to these target populations. First, some materials of the Oncofertility Consortium®, including the iSaveFertility application, the Myoncofertility website, and Repropedia, have been translated and adapted into European Portuguese. These tools are very helpful because they provide high-quality and organized information to the general population and to health professionals, leading to easier decision-making processes. Moreover, it is important to highlight that all these materials, together with the fact sheets and brochures developed by the PCFP team for the female cancer patients who are counseled in the center, are very helpful in clinical practice. These resources are explored at the psychologists' appointments with the patients, and the patients are advised to consult these resources at home and ask the team any questions. Thus, in the decision-making process about FP, patients are guided to have access to important information through specific and recommended tools.

Second, the development of the PCFP website has already begun. This native language online resource will include information and tools developed specifically for the Portuguese general population, patients, and health professionals. Moreover, it will include a tool to easily and rapidly ask for an appointment in the PCFP.

Beyond the development and adaptation of these decision-making tools and in collaboration with the Portuguese Society for Reproductive Medicine, the PCFP team also organized the first course about FP for health professionals in October 2013 at the 5th Portuguese Congress of Reproductive Medicine. This course was evaluated by the participants as extremely important for their clinical practice. Other courses are being scheduled for 2015, not only for health professionals but also for the general population and cancer patients.

Research Projects

It is also important to highlight that research projects are being implemented by some members of the PCFP team, particularly with regard to the decision-making process about FP in female cancer patients, the impact of this decision for future individual adaptation, the impact of cancer treatments on patients' reproductive function, and the FP techniques themselves. These projects are being developed in collaboration with several departments of the University of Coimbra, and most of them are funded by Portuguese organizations such as the Portuguese Foundation for

Science and Technology and the Portuguese League Against Cancer. More recently, in 2015, a proposal for a major research project in the field of pediatric oncofertility was developed, and an application for funding was submitted (proposal under evaluation).

Oncofertility Consortium® Global Partner

In 2013, the PCFP became a partner of the Oncofertility Consortium®. This is an interdisciplinary consortium that was established in 2007 at the Northwestern University of Chicago “to expand research in fertility loss in cancer patients, accelerate clinical translation of fertility preservation techniques and address the complex health care and quality of life issues that concern young cancer patients whose fertility may be threatened by their disease or its treatment” ([3], p. 5).

Participation in this intercultural network with 17 global partners ([3], p. 5) allows the PCFP to collaborate with medical specialists and scientists from several countries who are working in the oncofertility field and to share methodologies, tools, and experiences of clinical research and practice. In this context, and as described, the PCFP has already translated and adapted some information and decision-making tools of the Oncofertility Consortium® to European Portuguese and has provided the community with tools that the PCFP team has developed that can be used and disseminated by the other global partners. This exchange of materials leads to a major dissemination across the globe of useful resources and information about the reproductive health of cancer patients.

Discussion

This article presents the experience of the CPFP throughout the last 5 years in supporting the reproductive decisions of Portuguese young female cancer patients. In particular, it describes the first proposal of a prospective model of intervention and support of these patients in terms of their reproductive future.

Decisions in clinical practice have changed in recent years. A shift has occurred from the paternalistic model of practice to a new paradigm of shared decision-making. Paternalistic physician practices, characterized by full authority to make medical decisions for their patients, have been replaced by shared decision-making with patients. In this new paradigm, patients are integrated into clinical decisions, and they should obtain the best medical information to make their decisions about their treatment. The shared decision-making model includes increased autonomy for the patient and respect for patients’ beliefs, goals, and priorities [11, 45].

In terms of cancer patients and reproductive decisions such as FP, there are clinical international guidelines that highlight the need for the inclusion of patients in this decision and the need to provide them with information about their fertility

risks and about FP options as early as possible to give them the opportunity to decide (e.g., [27]). This decision-making process is particularly demanding for female patients [10]. Nevertheless, the literature reveals that this is an important opportunity for these patients that improves their individual adaptation to the diagnosis and their well-being in survivorship (e.g., [26, 33]). Thus, not informing these patients and preventing them from making their own decision about FP can have a negative impact on their quality of life later in survivorship. However, female cancer patients often lack information about their reproductive future and about the opportunity for FP [4]. In this context, CPFPP has worked for the last 5 years to promote the reproductive decisions of Portuguese female cancer patients, not only to support their FP decision-making process but also to provide these patients with reproductive follow-up and counseling throughout the course of the disease and in survivorship.

CPFPP is the sole Portuguese center that offers all the female FP techniques and is the only one that has a prospective and multidisciplinary intervention model to support the reproductive decisions of female cancer patients. To our knowledge, there are no international guidelines about the intervention and support of reproductive decisions in female cancer patients and future survivors. Therefore, the CPFPP has developed and implemented the first proposal of a prospective model for intervention and support for young female cancer patients in terms of their reproductive decisions.

This model has two main innovative characteristics: three phases of intervention and counseling of young female cancer patients and the integration of a multidisciplinary team, highlighting the role of the psychologist in supporting these patients' decisions. First, the intervention model that CPFPP proposes is prospective, providing counseling and support to patients in three main phases: (1) before the beginning of cancer treatments, (2) during cancer treatments, and (3) after the completion of cancer treatments. Second, it emphasizes the importance of a multidisciplinary intervention, highlighting the role of psychologists in supporting these patients' decisions along with specialists in reproductive medicine, oncologists, and other health professionals. It is important to highlight that this model was developed and implemented in collaboration with the team of the unit of psychological intervention of a central Portuguese maternity ward, which is particularly experienced in providing psychological support to patients in the context of other reproductive decisions (e.g., infertility diagnosis, prenatal diagnosis, pregnancy in the context of a human immunodeficiency virus diagnosis, voluntary interruption of pregnancy). The psychologist seems to play an important role in the three phases of the intervention for the provision of emotional support and for counseling with regard to reproductive decisions. It is important to note that at the time of the FP decision, the presence of psychopathology symptoms is frequent (e.g., high levels of anxiety and depression) given the recent cancer diagnosis and the anticipation of the cancer treatments [22]. Anxiety and depressive symptoms can have a considerable impact on cognitive functioning and, subsequently, on the decision-making process. Thus, we must bear in mind that these symptoms may influence patients' FP decisions, possibly leading them to undervalue this decision at that time. Psychological

support seems crucial at this phase to identify these particularly emotionally vulnerable patients and to try to help them decrease their anxiety levels and support them in making an informed and conscious decision while anticipating how they will live with it the future. The same process can occur in survivorship, where psychopathology symptoms are also frequent [22].

In addition to clinical activity, the CPFPP team has also been working on the development and implementation of several types of information aids for the general population, patients, and physicians as well as scientific events to attempt to enhance knowledge about oncofertility in Portugal. Some members of the CPFPP team are also working on research projects with funding from relevant Portuguese organizations to increase the quality of FP techniques and to better understand the importance of this decision to these patients. Becoming a Global Partner of the Oncofertility Consortium® network was also extremely important for the CPFPP because it allows the CPFPP team to be part of a community of researchers and clinicians from all over the world, to exchange knowledge, skills, and experience and to develop and implement the European Portuguese versions of some information aids that were previously developed and that are very useful for the Portuguese population.

Throughout its 5 years of existence and activity, the CPFPP has contributed to informing and supporting female cancer patients about their reproductive decisions, namely, about FP. Patients from public institutions from all over the country are referred for consultations to this center to make decisions about FP, and the number of patients counseled has been increasing. This increase can be associated with oncofertility information dissemination and increasing awareness that CPFPP has promoted through the development of the previously described resources.

There are some reproductive and clinical characteristics of the patients referred to the center that should be noted. First, although most of the patients referred to the center for FP decisions did not have children, 27% were already mothers; nevertheless, they wanted to be referred to make their decision. Thus, this cannot be a criterion for oncologists to avoid discussing these options with patients. Second, it is important to highlight that the most prevalent diagnosis in the female cancer patients counseled in this center has been breast cancer. This may be because this is the most prevalent cancer diagnosis in young women, but it may also be that gynecologists may be more aware of fertility issues than other specialists who treat other types of cancer. Thus, this increased awareness should be generalized to all specialties. Lastly, it is important to note that despite the experimental label of the ovarian tissue cryopreservation method, this procedure has been performed on 27 patients, which can be explained by the fact that this technique does not require as much time as oocyte cryopreservation. This situation calls attention to the importance of the early referral of patients to make a decision about FP so they can have access to all the techniques and choose the one they prefer without time pressure and without the need to postpone the beginning of cancer treatments.

Implications for Research and Clinical Practice

Future research should be conducted to confirm the value of the proposed intervention model and its components and to help to create national and international guidelines for the support of high-quality reproductive decisions by young female cancer patients and survivors.

Furthermore, more studies are needed about the FP decision-making process of recently diagnosed female cancer patients. The few existing international studies (only three, to our knowledge) have some limitations that should be considered, such as the cross-sectional design, the sample size, the focus on women with breast cancer, and the small spectrum of variables assessed. Despite the existence of more research with survivors about their fertility concerns and decisions, these studies have some limitations, such as the heterogeneous samples in terms of time since diagnosis and the age of the patients at the time of diagnosis; furthermore, most of the research is qualitative. Moreover, the literature on survivors lacks information about the impact of the FP decision in individual adaptation in survivorship and the attitudes of cancer survivors about ART and third-party techniques.

Specifically in Portugal, to our knowledge, there are no studies about the FP decision-making process of female cancer patients and survivors. It would be important to develop research to understand the information needs of Portuguese patients about FP and their reproductive future and to study the profiles of patients who decide to preserve their fertility and those who decide not to preserve. This research would make it possible to understand the factors that influence the FP decision. Likewise, there is no research about the knowledge, practices, and attitudes of Portuguese oncologists about oncofertility. This research would be essential to help physicians to communicate fertility issues with their patients and to develop resources that are specifically developed to meet their patients' needs.

In terms of implications for clinical practice, this article highlights the importance of a prospective and multidisciplinary approach to support the reproductive decisions of young female cancer patients, who reveal high levels of satisfaction with it. In particular, the inclusion of psychologists in the teams and the communication between oncologists and specialists of reproductive medicine seem essential for this intervention. Moreover, doctors from all specialties should have knowledge and awareness of fertility issues to inform patients and to refer them to fertility centers in time to make a decision about FP before cancer treatments. Taking into account the international guidelines on oncofertility and the experience of the CPFPP, all patients should be informed about the infertility risk of cancer treatments and FP options so they can have the opportunity to make a decision about their FP. Specifically in Portugal, clinical guidelines about the referral of patients to FP centers should be developed.

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