

## RESEARCH ARTICLE

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## Investigation of the Knowledge of Family Physicians regarding Oocyte Cryopreservation

### ABSTRACT

**Objective:** Oocyte cryopreservation is a subject of great interest today. The aim of this study was to measure the knowledge and approach of primary health care practitioners about oocyte cryopreservation.

**Methods:** This is a cross-sectional study, which is prepared online and has a total of 15 questions with 4 subtitles and sent to the physicians who have obtained Family Medicine Certificate issued by the Ministry of Health. An online survey was emailed with one email reminder, to 2,140 family physicians for whom email addresses were available and up to date.

**Results:** 408 completed questionnaires were received giving a 19.1 % response rate. The mean age of the participants was  $34.9 \pm 6.6$ . All of the participants (100%) stated that they had not previously received any training on oocyte cryopreservation. 25% of the participants stated that they had patients who had consulted them on this subject but that they did not know enough about the subject and referred them to a gynecologist. When the meaning of the word cryopreservation was asked of the participants, it was seen that 36.8% responded correctly. 69.1% of the family physicians who participated in the study responded positively to the question of whether they believe that they should be trained in oocyte cryopreservation.

**Conclusions:** Since the concept of fertility preservation is becoming more and more important, family physicians should be aware of this issue. Apparently; their lack of knowledge about oocyte cryopreservation indicates that they cannot help their clients sufficiently. Therefore, trainings on this subject should be organized and, if necessary, included in the specialist training program.

**Keywords:** Fertility Preservation, Oocyte Cryopreservation, Family Physician

## Aile Hekimlerinin Oosit Kriyoprezervasyonu İle İlgili Bilgi Düzeylerinin İncelenmesi

### ÖZET

**Amaç:** Oosit kriyoprezervasyonu günümüzde oldukça ilgi çekici bir konudur. Çalışmanın amacı, birinci basamak sağlık hizmeti uygulayıcıları olan aile hekimlerinin oosit kriyoprezervasyonu hakkındaki bilgi düzeylerini ölçmek ve yaklaşımlarını değerlendirmektir.

**Gereç ve Yöntem:** Online olarak hazırlanan, 4 alt başlık altında toplanan ve toplam 15 sorudan oluşan bir anket formunun Sağlık Bakanlığı tarafından Aile Hekimliği sertifikası olan hekimlere gönderildiği kesitsel bir çalışmadır. Form 2140 aile hekiminin güncel mail adreslerine bir kez hatırlatma ile gönderildi.

**Bulgular:** % 19,1 yanıt oranı ile 408 tamamlanmış anket alınmıştır. Katılımcıların ortalama yaşı  $34,9 \pm 6,6$ 'dır. Tüm katılımcılar (% 100) daha önce oosit kriyoprezervasyonu ile ilgili herhangi bir eğitim almadığını belirtmiştir. Katılımcıların % 25'i bu konuda kendilerine danışmış olan hastaları olduğunu ancak konu hakkında yeterince bilgi sahibi olmadıklarını ve bir jinekoloğa yönlendirdiklerini belirtmiş, %36,8 ' i kriyoprezervasyonunun kelime anlamını bilmiştir. Çalışmaya katılan aile hekimlerinin% 69,1'i oosit kriyoprezervasyonu konusunda eğitim almaları gerektiğine inanıp inanmadıkları sorusuna olumlu yanıt vermiştir.

**Sonuç:** Fertilitenin korunması kavramı günümüzde gittikçe daha da önemli hale geldiğinden dolayı, birinci basamak sağlık hizmeti uygulayıcıları olan aile hekimlerinin bu konudaki farkındalığının artırılması gerekmektedir. Oosit kriyoprezervasyonu konusundaki bilgi eksiklikleri, aile hekimlerinin bu konuda danışanlarına ve hastalarına yeterince yardımcı olamayacaklarını göstermektedir. Bu nedenle, bu konuda eğitimler düzenlenmeli ve gerekirse uzmanlık eğitimi programlarına dahil edilmelidir.

**Anahtar Kelimeler:** Fertilite Korunması, Oosit Kriyoprezervasyonu, Aile Hekimi

## INTRODUCTION

The preservation of the reproduction of women involves the storage of oocytes, ovaries or embryos to ensure the continuity of fertility (1). Any situation that may pose a risk of a decrease in the reproductive capacity of women is an indication of the need for the preservation of fertility. Various methods, which have been on the agenda for cancer patients for many years, became official in 2006 with the introduction of the term 'Oncofertility' (2,3). Oncofertility has been described as a new sub-specialty that focuses on the future of reproduction for people with cancer who may face infertility as a result of chemotherapy, radiotherapy or surgery (4).

Increasing survival rates due to advances in cancer treatment have increased the importance of the concept of protection of reproduction. Medical interventions such as chemotherapy, radiotherapy and surgery have adverse effects on ovarian reserves and may cause premature ovarian failure and infertility (5). The maintenance of fertility is not limited to cancer patients. As with cancer, there are certain autoimmune and hematological systemic diseases that are treated with chemotherapy or radiotherapy. In addition, changing socioeconomic conditions, the increasing involvements of women in business life and increasing educational periods have tended to lead to an increase in the child bearing of women (5). Nowadays, many women postpone having children, but are worried about whether or not they will be able to have children later. The increase in the age of marriage and the postponement of marriage have made women particularly interested in oocyte cryopreservation, which is a non-partner technique (6). In addition, this method has become particularly interesting for women who do not agree with embryo freezing ethically or religiously (6,7,8).

In recent years, the most important task in informing and guiding patients regarding oocyte cryopreservation, which is the most popular fertility preservation method, is undertaken by family physicians who are primary health care practitioners. In order for family physicians to provide this service, it is necessary to determine how much they know about this subject. However, no studies examining the level of knowledge on this subject are currently available in the literature.

Therefore, this survey was planned in order to understand the level of knowledge of family physicians regarding oocyte cryopreservation and the extent to which they know the legal regulations in Turkey. According to the data obtained from this study, if the level of knowledge of family physicians on this issue is insufficient, they will be able to be made aware of the training that is able to be provided to them and it may even be possible considering including such information in assistant training programs.

## MATERIAL AND METHODS

The data used in this study was based on a cross-sectional survey on the examination of the knowledge of family physicians about oocyte cryopreservation in Turkey, conducted between June and October 2019. The survey aimed to reach all accredited family physicians in Turkey. All physicians who were invited to participate in the study were certified by the Ministry of Health certified Family Medicine program. An online survey was emailed, with one email reminder, to 2,140 family physicians for whom email addresses were available and up to date.

The questionnaire was designed specifically in order to understand the basic knowledge regarding oocyte cryopreservation of family physicians, whether they are aware of the draft laws in our country, and whether they can provide patients with adequate information.

The questionnaire was composed of fifteen questions with four sub-headings as follows; four questions that enabled us to learn the demographic characteristics of the participants, three questions about whether or not they have previously heard about the topic, seven questions about general information regarding the topic and the method of application in Turkey, and a question that asks whether they would like to receive training on this topic.

Personal data such as names and addresses were not requested or stored and participation was voluntary. Surveys in which answers were not marked were excluded. Within the relevant period, 425 of the family physician specialists, to whom we sent an e-mail with a reminder, received feedback. As some of these questions were left incomplete, 17 questionnaires were excluded from the study and the remaining 408 questionnaires were evaluated. The questionnaire is presented at the end of the study.

Data was analysed using SPSS Statistics version 21. The number and percentage values for the categorical data and mean and standard deviation values for the numerical data are presented in this paper. The consistency of numerical variables to normal variation is evaluated by a Histogram graphic.

The local Ethics Committee approved the study (Karadeniz Technical University Ethics Committee, 2019/289). The study was created based on the principles set out in the Declaration of Helsinki.

## RESULTS

Overall, 408 completed questionnaires were received giving a 19.1% response rate. The first four questions in the questionnaire showed the demographic characteristics of the participants. The mean age of the participants was  $34.9 \pm 6.6$ . Of the total population, 67.6% were female, 61% were married. All of the participants were Ministry of Health certified family physician specialists and the

number of years the participants have worked in this area of expertise and other demographic characteristics are as shown in Table 1.

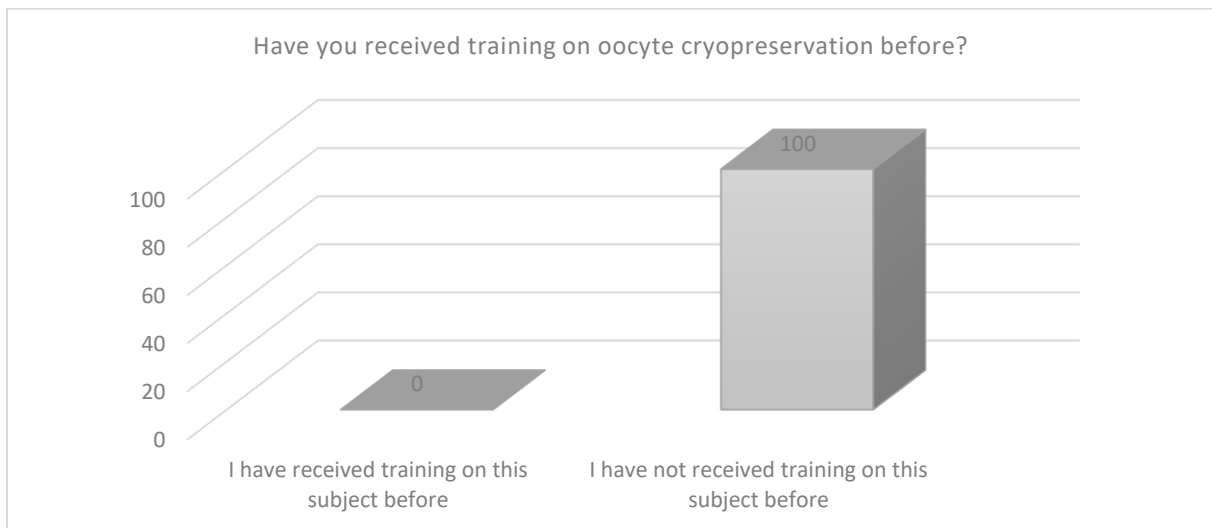
**Table 1.** Characteristics of study participants

|  | N          | %          |
|--|------------|------------|
| <b>Gender</b>                              | <b>408</b> | <b>100</b> |
| Male                                       | 132        | 32.4       |
| Female                                     | 276        | 67.6       |
| <b>Age</b>                                 |            |            |
| < 30 years                                 | 30         | 7.4        |
| 30 – 40 years                              | 321        | 78.6       |
| 40 – 50 years                              | 33         | 8.1        |
| > 50 years                                 | 24         | 5.9        |
| <b>Marital Status</b>                      |            |            |
| Single                                     | 159        | 39         |
| Married                                    | 249        | 61         |
| <b>Physician in private practice since</b> |            |            |
| 1 – 5 years                                | 252        | 61.8       |
| 5 – 10 years                               | 105        | 25.8       |
| > 10 years                                 | 51         | 12.4       |

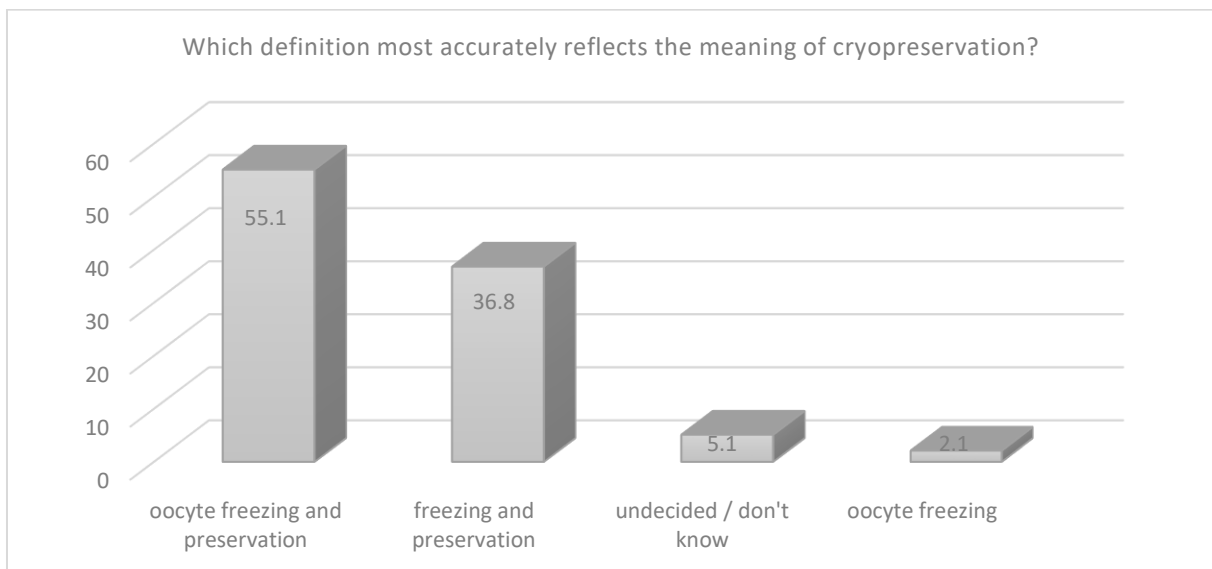
All of the participants (100%) stated that they had not previously received any training on oocyte cryopreservation.

When asked if they had patients who had previously requested information; 72.8% of the participants stated that they had no patients who had requested counseling. 25% of the participants stated that they had patients who had consulted them on this subject but that they did not know enough about the subject and referred them to a gynecologist. 1.5% of the participants stated that they had enough information about this subject and informed the patients.

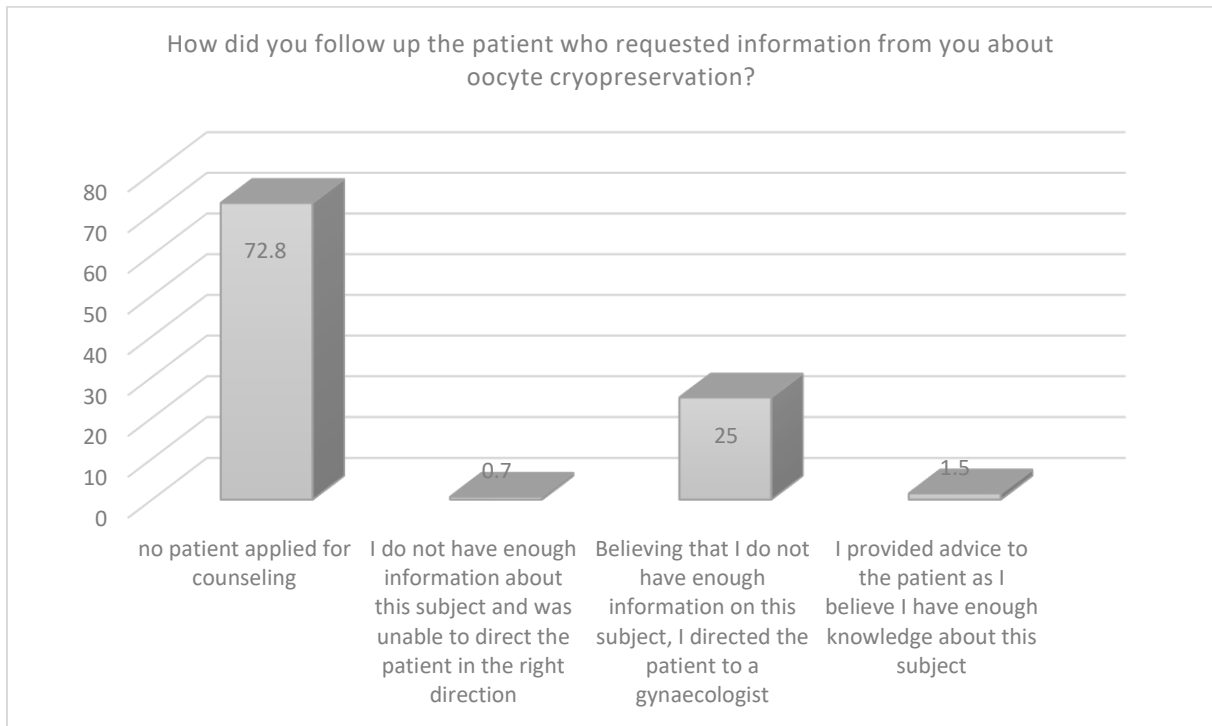
When the meaning of the word cryopreservation was asked of the participants, it was seen that 36.8% responded correctly. The answers to the questions under the second sub-heading that asked whether the participants were aware of the topic are as shown in Figures 1, 2 and 3.



**Figure 1.** Have you received training on oocyte cryopreservation before?



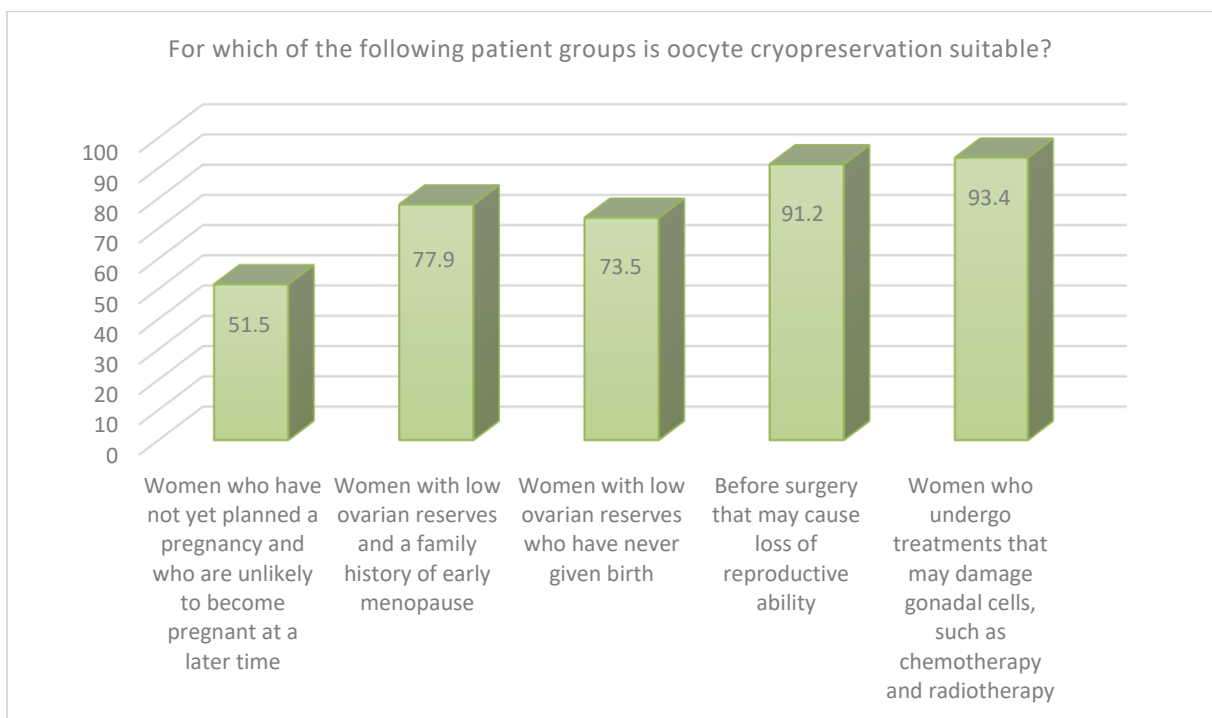
**Figure 2.** Which definition most accurately reflects the meaning of cryopreservation?



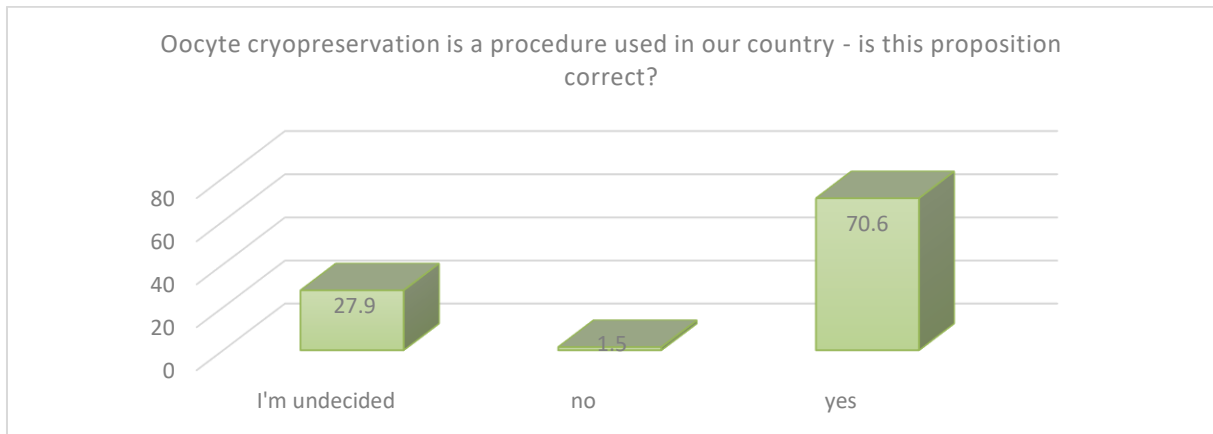
**Figure 3.** How did you follow up the patient who requested information from you about oocyte cryopreservation?

Almost half (51.5%) of the family physicians who participated in the study thought that oocyte cryopreservation was not suitable for women who have not yet planned a pregnancy and who are unlikely to become pregnant afterwards. 75% of the participants stated that oocyte cryopreservation should be undertaken before the age of 35 years. Approximately 30% of respondents said they were uncertain about the success of the

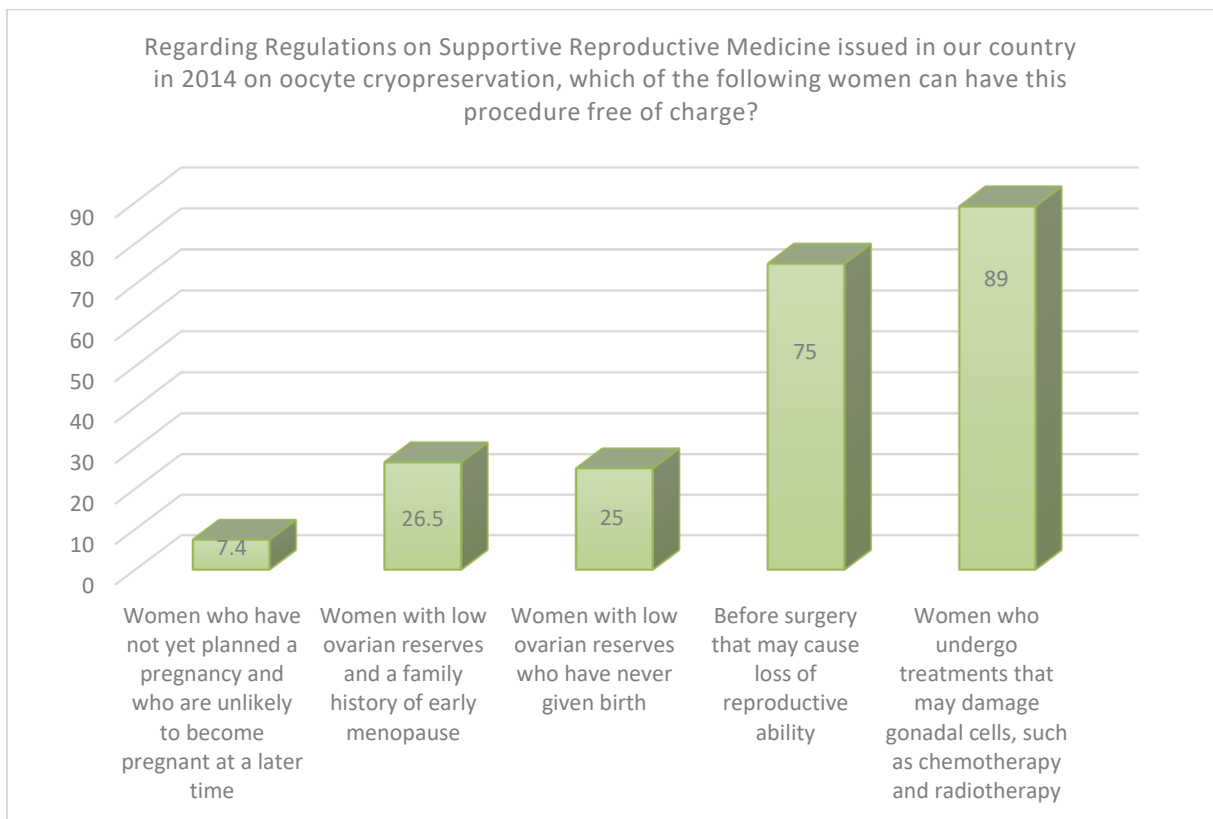
procedure. Approximately 37.5% of attending family physicians said that they believed that oocytes could be frozen forever. When participants were asked about the chance of conception using frozen oocytes during the menopause period, 53.7% stated that it would not be possible to fall pregnant. The answers to the questions are as shown in Figures 4-10.



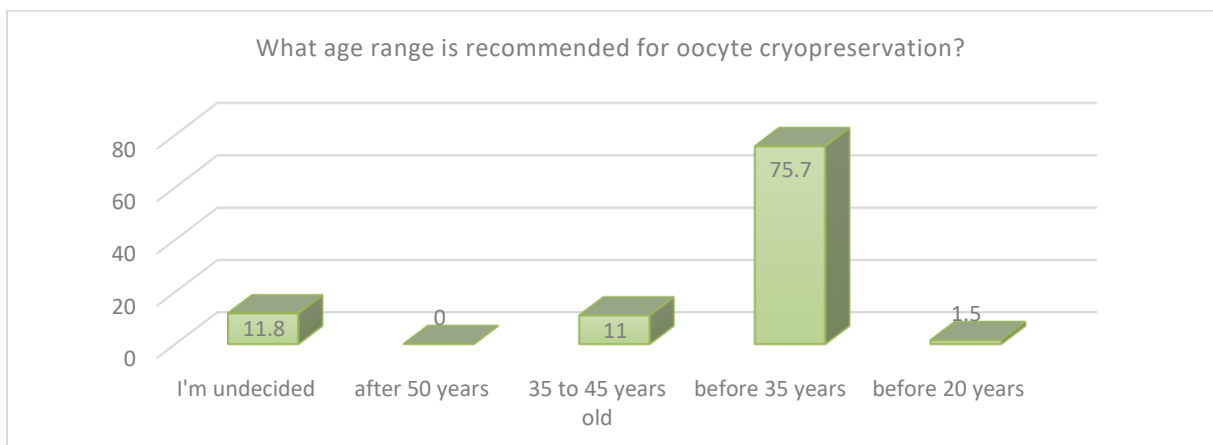
**Figure 4.** For which of the following patient groups is oocyte cryopreservation suitable?



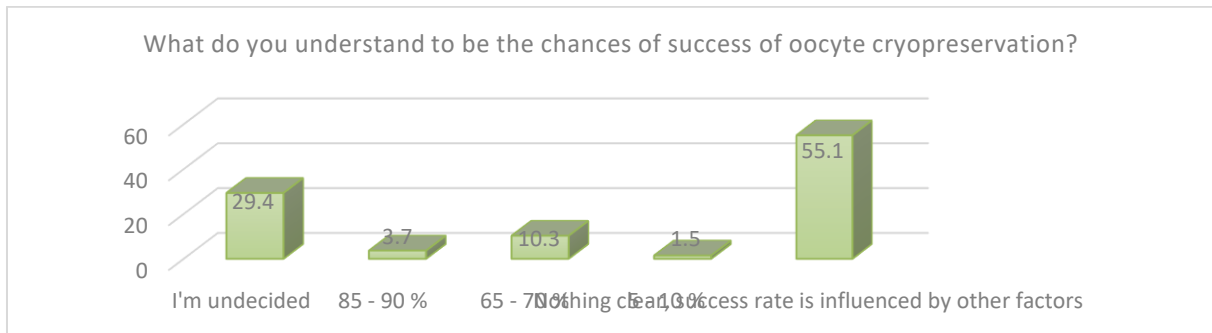
**Figure 5.** Oocyte cryopreservation is a procedure used in our country - is this proposition correct?



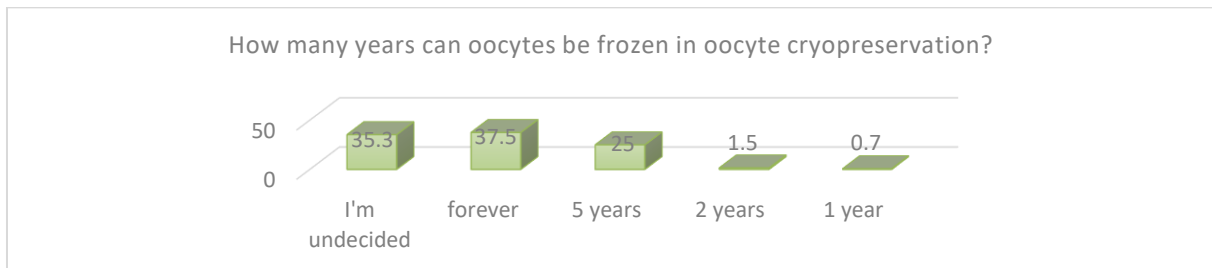
**Figure 6.** Regarding Regulations on Supportive Reproductive Medicine issued in our country in 2014 on oocyte cryopreservation, which of the following women can have this procedure free of charge?



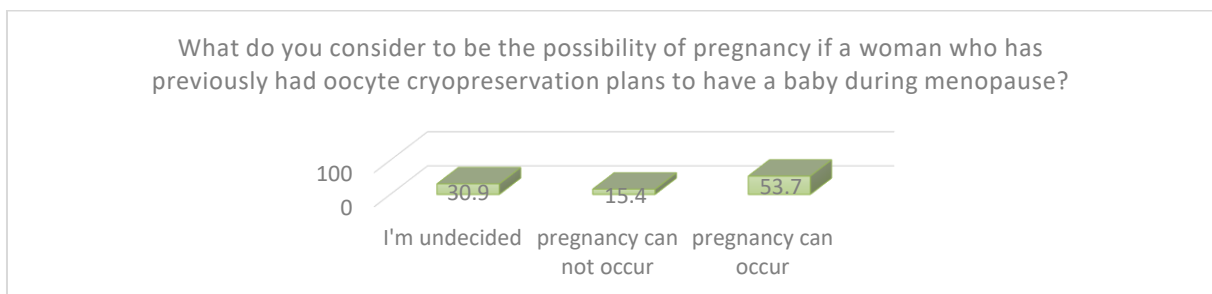
**Figure 7.** What age range is recommended for oocyte cryopreservation?



**Figure 8.** What do you understand to be the chances of success of oocyte cryopreservation?



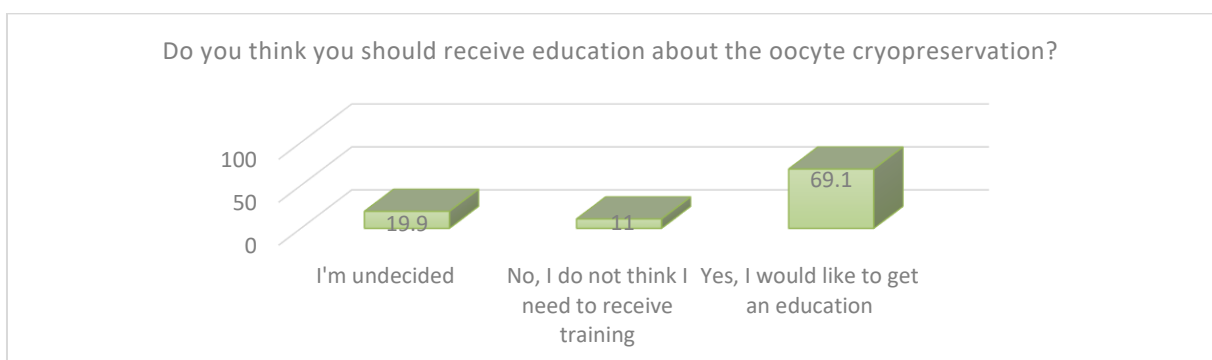
**Figure 9.** How many years can oocytes be frozen in oocyte cryopreservation?



**Figure 10.** What do you consider to be the possibility of pregnancy if a woman who has previously had oocyte cryopreservation plans to have a baby during menopause?

69.1% of the family physicians who participated in the study responded positively to the

question of whether they believe that they should be trained in oocyte cryopreservation (Figure 11).



**Figure 11.** Do you think you should receive education about the oocyte cryopreservation?

## DISCUSSION

In countries where the health system is conducted based on the socialization of the state, primary health care practitioners take the role family physicians. In recent years, the importance of family physicians has been well understood and the foundations of all health policies of the state have been established and gradually distributed

having regard to their role in the health system. Therefore, the expectations of family physicians is at the same rate. Since they are expected to have an view on every subject, to have baseline knowledge on every topic as well as to their patients, they bear considerable responsibility. This requires them to constantly update their expertise and knowledge,

especially since they need to follow a wide range of current health issues regardless of their field of practice.

In recent years, the concept of fertility preservation, which has become a very popular topic and which primarily concerns healthcare professionals engaged in gynecology, has become an essential topic for family physicians to understand. As people now consult with family physicians regarding issues about which they are curious and want to be informed, they are then able to be directed to other relevant branches if necessary after informing themselves. Therefore, this study was conducted to evaluate the level of knowledge of family physicians, who are primary health care practitioners, in relation to oocyte cryopreservation which has become a very popular topic in recent years.

This study is the first study on this subject. In the literature review, no study has been conducted to measure the knowledge level of family physicians regarding the concept of oocyte cryopreservation or fertility preservation. Therefore, there is no study with which to compare the results, notwithstanding that fact it is proposed to discuss and interpret the results from this survey.

It was observed that 26.5% of the family physicians who participated in the study had patients who had applied for information about this subject and only 1.5% of them were able to inform the patients. The remaining 25% of family physicians stated that they had referred their clients to an obstetrician. 5% of the family physicians who participated in the study stated that they did not know the meaning of cryopreservation and when asked to define the concept 58% of them answered incorrectly. Therefore, based on these three specific questions, it came to be understood that a substantial proportion of the patient population considered the subject applied to them, and that family physicians did not have enough information about the subject.

When questioned as to the relevant populations for whom oocyte cryopreservation is considered to be appropriate, it was seen that approximately half of the participants believed that this procedure was not suitable for women who were not considering pregnancy for the time being, but who were considering the possibility in the future. However, both in our country and in most of developed countries, it has become accepted that this is a reasonable desire having regard to the legalities and the socio-economic conditions of our age. In addition, 77.9% of the participants believe that the procedure is appropriate for women with

low ovarian reserves and a family history of early menopause. The percentage of participants who believed that it was an appropriate procedure for women who had not previously given birth and who had low ovarian reserves was found to be 73.5%. Considering that these three percentages are not at the desired levels, it can be concluded that family physicians do not yet have sufficient information on this topic. The percentage of participants who believe that this procedure could be performed prior to any surgery that may lead to loss of fertility, and treatments such as chemotherapy and radiotherapy that may affect ovarian function, exceeded 90%. These rates show that family physicians have heard the term oncofertility and are aware of this concept.

When the answers of the family physicians to the survey questions were examined it was seen that; 77% of them believe that the most reasonable age range to undertake the procedure was before the age of 35; 55% believed the success of the procedure could be affected by multiple factors; 37.5% stated that frozen oocytes could be stored forever, while 25% thought that oocytes could only be stored for 5 years, and 53.7% stated that frozen oocytes can be used to result in pregnancy during menopause. It is concluded that these rates are not at the desired levels and that there is insufficient information about the subject and that there is also insufficient understanding.

The last question of the survey related to whether the participants would like to receive training on oocyte cryopreservation; 69.1% of participants responded positively, 11% thought it was unnecessary, and the remaining 19.9% stated that they were unsure and undecided. After a comprehensive review of the literature, it was determined that no studies of fertility preservation-oocyte cryopreservation and family physicians have been previously conducted previously. This study is a first.

Thanks to this study, the level of knowledge of primary health care practitioners, on a topic which has become popular topic in recent years, has been measured and certain conclusions can be drawn from the results. When the results of the study are examined, it is possible to conclude that family physicians have partial awareness about oocyte cryopreservation but have not received training and wish to do so.

In this manner, this topic can be added to training programs and their knowledge levels will be increased during their training. After the training is provided, the effectiveness of the trainings will be able to be determined and the continuity of the relevant training can be ensured.

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