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Knowledge, Attitude, and Practice about Fertility Preservation among Oncologist-A Cross-Sectional Study

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Abstract

Background

Fertility Preservation is the process of saving or protecting a person's ability to have children in the future. It is often considered for individuals who are about to undergo medical treatments that may impact their fertility, such as chemotherapy. Hence, the current study is aimed to assess clinical practitioners' knowledge, practice, and attitude toward fertility preservation among oncologists.

Methods

A cross-sectional survey was carried out to identify the current knowledge, attitudes, and practices regarding fertility preservation among oncologists—a total of seventy-nine oncologists in Karachi working in different public and private sectors. The study was conducted between January to August 2022. The data was gathered using a self-designed questionnaire that was distributed via email.

Result

One hundred and eighty oncologists were provided with the survey form via email. The response rate was 47.22% (n=85). Out of which, six questionnaires were excluded due to incomplete information. The total questionnaire analyzed was n=79, which included 58 (73.41%) males and 21 (16.59%) females.

Conclusion

The results revealed that oncologists had a compromised knowledge regarding fertility preservation for cancer patients. Despite weak knowledge, most oncologists believe that more elaborative measures should be taken to overcome this issue.

Keywords

Attitude, Fertility Preservation, Knowledge, Oncologist

Introduction

Fertility Preservation (FP) is the process of saving or protecting a person's ability to have children in the future. This method can be done through various methods, such as freezing eggs or sperm or ovarian tissue freezing¹. FP is often considered for individuals who are about to undergo medical treatments that may impact their fertility, such as chemotherapy, radiation therapy, or surgery². Chemotherapy can cause infertility in both men and women. The drugs used in chemotherapy can damage the ovaries or testes, resulting in a temporary or permanent loss of fertility. The risk of infertility depends on the specific drugs used, the dosages, and the duration of treatment³. Some patients may be able to preserve their fertility by freezing eggs or sperm before starting chemotherapy. Discussing potential fertility risks with a healthcare provider before beginning chemotherapy is essential. As per World Health Organization, cancer is the leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths⁴. Before beginning any gonadotoxic therapy, the American Society of Clinical Oncology (ASCO) and the American Society of Reproductive Medicine (ASRM) advise discussing potential FP procedures with cancer patients⁵. Despite the guidelines of global organizations, more than half of cancer patients do not obtain all the information they require about FP choices, and minimal people underwent any FP procedure^{6,7}.

Infertility has many causes that differ from person to person. The primary therapeutic options are pharmaceutical therapy, surgical therapy (mainly endoscopy), and Assisted Reproductive Technology (ART). ART has made significant advances in recent decades, leading to the effective management of once-incurable situations in the area of fertility preservation in particular⁸. Numerous literature has quoted the significance of FP among cancer patients before giving them chemotherapy. As quoted in the study of Jensen et al., FP must be conversed and implemented as soon as feasible and before starting therapy. Currently, FP alternatives include sperm banking, ovarian tissue freezing, and emergency embryo and oocyte cryopreservation⁹. Hence, the oncologist's role in increasing the patient's awareness cannot be over-emphasized about the side effects that may endanger their fertility. The oncologists must brief patients about possible treatment options to prevent future sterility and safeguard cancer survivors'

reproductive potential¹⁰. A study was conducted in Iran in 2018 to assess oncologists' knowledge level of FP. The result revealed that most oncologists did not give their patients written information on FP. However, 72.5% indicated they directed cancer patients to fertility specialists¹¹. Another study conducted in 2020 on the awareness of FP among female patients with gynecological cancer revealed that out of 100 patients, 68% of the patients were not aware or informed about the FP option by their physicians signifying the gap lies in the healthcare system¹². Another study conducted in 2018 in France concluded that Physicians acknowledged a lack of expertise and instruments to offer adequate information to patients about FP¹⁶. To the author's knowledge, no study has evaluated the understanding of FP among oncologists and clinical practitioners in Pakistan. Hence, the objectives of this study are: (i) to test clinical practitioners' knowledge and awareness of FP, (ii) to obtain evidence of oncologists' perceptions and practice patterns towards FP as well as their openness to discuss FP with their patients and possible referral to a fertility specialist.

Methodology

A cross-sectional survey was carried out to identify the current knowledge, attitudes, and practices regarding fertility preservation among oncologists of Karachi working in different public and private sectors. The study was conducted between January to August 2022. Eligible participants were identified from the specialist data of the Health Council. Participants who specialized in clinical oncology and surgery working in different public hospitals were enrolled in the study. Potential candidates were chosen randomly, and their email addresses were found using the Hospital Authority intranet's electronic staff directory or organizational chart. A total of 188 oncologists were invited to take part. The data was collected using a self-administered questionnaire. Survey was developed by a clinician and a researcher with experience in fertility preservation and survey development. Before survey distribution, face and content validity was assessed by pilot testing the survey among ten oncologists. Based on the consensus reached in this focus group, the survey was improved and authorized by the research ethics board before being distributed. The questionnaire was divided into three sections; the first section asked oncologists about their knowledge regarding fertility preservation. In the second section, the questions were related to the attitude of oncologists toward FP, and the third section focused on

their practical approach towards FP. The time needed to complete the survey is about 20 minutes. The questionnaire was provided in Google Docs and distributed via email to participants. Before data collection, all participants were provided with consent forms to ensure their voluntary participation.

Statistical Analysis

Data was analyzed in MedCalc statistical software, version 18.11.3. Mean, median, and percentages were used to depict demographic data. For categorical data, such as comparing the level of awareness of fertility preservation among various specialties and demographic backgrounds, the Chi-squared tests were run while p-value (<0.05) was considered statistically significant.

Results

One hundred and eighty oncologists were provided with the survey form via email. The response rate was 47.22% ($n=85$). Out of which, six questionnaires were excluded due to incomplete information. The total questionnaire analyzed was $n=79$, which included $n=58$ (73.41%) males and 21 (26.58%) females. Most of the participants were between the age ranges of 41-45 years, $n=38$ (48.10%), belonging to the field of medical oncology/hematology $n=41$ (51.89%). The demographic details are depicted in Table-1.

Table-1 Demographic details of participants

No. of Participants	n=79
Age (Years) <ul style="list-style-type: none"> 25-30 31-35 36-40 41-45 >45 	7 (8.86%) 12 (15.18%) 14 (17.72%) 38 (48.10%) 8 (10.12%)
Gender <ul style="list-style-type: none"> Male Female 	58 (73.41%) 21 (26.58%)
Specialty <ul style="list-style-type: none"> Medical oncology/hematology Gynecologic oncology Surgical oncology Musculoskeletal/orthopedic oncology 	41 (51.89%) 24 (30.37%) 6 (7.59%) 8 (10.12%)
Primary Practice Location <ul style="list-style-type: none"> Private oncology practice Public oncology practice 	16 (20.25%) 63 (82.27%)

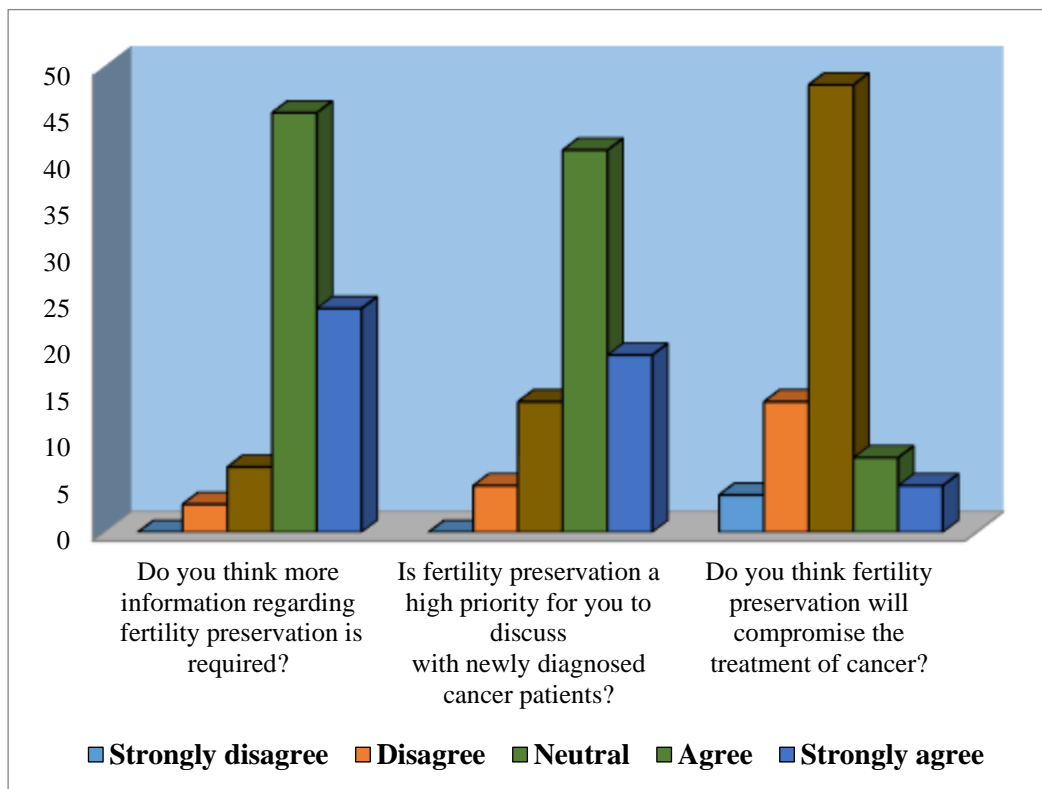


Figure-1 Attitude among Oncologists on Fertility Preservation

Oncologists' responses to questions about their knowledge regarding fertility preservation are listed in Table-2. Only 8 participants (10.12%) believe that with today's advanced chemotherapy, patients will retain their fertility, 25 (31.64%) believe that even with this advancement in medicine, infertility may occur, whereas 46 (58.22%) were not sure. Regarding questions related to fertility preservation methods, 64 (81.01%) participants were aware of both methods. Despite the lack of knowledge observed among oncologists, most of the oncologists, n=45 (56.96%), agree that more information regarding fertility preservation is required among oncologists. The same response was observed when participants were asked if fertility preservation is essential to discuss with patients before treatment; n=41 (51.89%) agreed that patients' fertility is their priority, and n=48 (60.79%) were unsure if fertility preservation can compromise cancer treatment. The details are listed in Table-2.

Table-2 Knowledge of fertility preservation among Oncologists

Items	Response (%)
In Pakistan there are no FP units/centers <ul style="list-style-type: none"> • Yes • No • There are few • There are many 	6 (7.59%) 41 (51.89%) 8 (10.12%) 24 (30.37%)
With today's cancer treatment, most patients will retain or regain adequate fertility post cancer treatment and therefore cryopreservation is not necessary; <ul style="list-style-type: none"> • True • False • Not sure 	8 (10.12%) 25 (31.64%) 46 (58.22%)
Which fertility preservation option you are familiar with? <ul style="list-style-type: none"> • Oocyte cryopreservation • Ovarian tissue cryopreservation • Both • Not familiar with any 	4 (5.06%) 8 (10.12%) 64 (81.01%) 3 (3.79%)
When should sperm/oocyte cryopreservation be done? <ul style="list-style-type: none"> • Before treatment • Anytime • During therapy • Not sure 	71 (89.87%) 6 (7.59%) 2 (2.53%) 0 (0%)
Patients need to bank 3–6 semen samples before cancer treatment begins to make fertility preservation worthwhile; <ul style="list-style-type: none"> • True • False • Don't know 	15 (18.98%) 9 (11.39%) 55 (69.62%)

There is a maximum length of storage years for banked sperm and cryopreserved eggs; <ul style="list-style-type: none"> • True • False • Don't know 	<p>7 (8.86%) 15 (18.98%) 57 (72.15%)</p>
Egg banking is currently less efficient than sperm banking as oocytes are more sensitive to freezing than sperm; <ul style="list-style-type: none"> • True • False • Don't know 	<p>9 (11.39%) 8 (10.12%) 62 (78.48%)</p>

The practical approach of oncologists regarding fertility preservation before going to chemotherapy sessions was similar to their level of knowledge. Most of the oncologists n=29 (36.70%) do not explain the harmful effects of chemotherapy on fertility, whereas n=24 (30.37%) explain it to patients. When asked if they discuss fertility options, n=26 (32.91%) never discuss it with patients, whereas n=16 (20.25%) sometimes discuss it with patients. The details of responses are depicted in Figure-2.

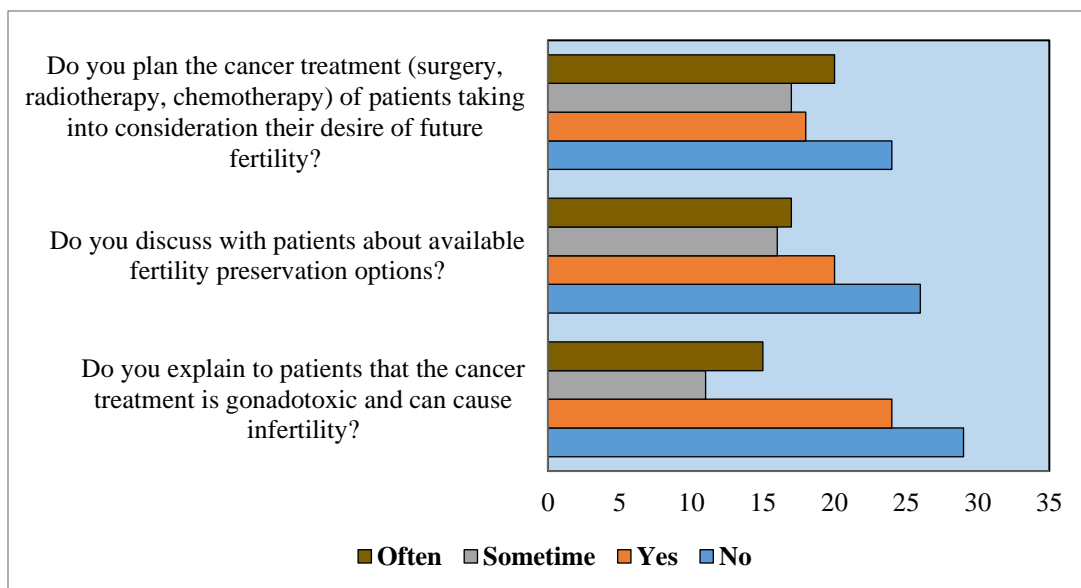


Figure-2 Practices among Oncologists on Fertility Preservation

Discussion

Reproductive dysfunction may have a particularly negative impact on the quality of life of the survivor. According to surveys of cancer survivors, the vast majority want to have children, mainly if they were childless at the time of their cancer diagnosis. As cancer treatment has improved, so has the number of cancer survivors who may benefit from fertility preservation strategies offered by emerging and advanced assisted conception technology¹³.

The results of our study revealed that oncologists needed better knowledge regarding fertility preservation methods. Despite believing its crucial role, most needed to guide patients about the FP consultation clinics correctly. Oncologists, who specialize in cancer treatment, often play a crucial role in the care of patients who may be at risk of losing their fertility as a result of cancer treatment¹⁴. However, a lack of knowledge about fertility preservation among oncologists can lead to missed opportunities for patients to preserve their fertility before starting cancer treatment. There are several reasons why oncologists may need more knowledge about fertility preservation. One reason is that oncology is a complex field, and there is much information that oncologists need to know to treat cancer patients properly. As a result, oncologists may need more time or resources to stay up to date on the latest developments in fertility preservation¹⁵. Another reason is that fertility preservation is not always considered part of the standard of care for cancer patients and may not be discussed with patients as part of the treatment plan¹⁶.

Additionally, many oncologists may need more training or experience to provide patients with accurate and comprehensive information about fertility preservation. It is vital for oncologists to be aware of the potential impact of cancer treatment on fertility and to refer patients to a fertility specialist or reproductive endocrinologist to discuss fertility preservation options before starting cancer treatment¹⁷. The practice of oncologists regarding fertility preservation can vary depending on the oncologist and the specific cancer treatment being considered. In general, oncologists should be aware of the potential impact of cancer treatment on fertility and discuss fertility preservation options with patients before starting treatment. However, in some cases, oncologists may not adequately discuss fertility preservation with patients or may not refer them

to a fertility specialist for further evaluation due to various reasons, such as a lack of knowledge or training about fertility preservation, a lack of access to fertility specialists, or a focus on treating cancer as the primary priority.

On the other hand, some oncologists have specialized training and experience in fertility preservation and make it a priority to discuss fertility preservation options with their patients and refer them to a specialist when needed. They have a multidisciplinary approach and work closely with a fertility specialist to ensure their patients have the best chance of preserving their fertility¹⁸⁻¹⁹. It is essential for cancer patients to have open communication with their oncologist about their fertility preservation options and to seek out a specialist if they feel that their oncologist is not adequately addressing their fertility preservation concerns.

Conclusion

The results revealed that oncologists had a compromised knowledge regarding fertility preservation for cancer patients. Despite weak knowledge, most oncologists believe that more elaborative measures should be taken to overcome this issue.

Authors Contribution

Hassan B: Conception, design and data acquisition.

Asim N: Drafting and data acquisition.

Zafar F: Critical revision and data analysis.

Saleem Z: Critical revision.

Declaration of Interest

None.

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