



ORIGINAL ARTICLE

Investigating the Challenges of Infertility Treatment Development in Centers of Iran University of Medical Sciences and Health Services

Fatemeh Najafi Pourmoghadam^{1*}, Nader Tavakoli², Hossein Farzaneh¹, Mehdi Karamlo¹, Roghieh Noee Dehshal¹, Rohedin Souri¹, Shokofeh Heidari¹

¹ Department of Curative Affairs, Iran University of Medical Sciences and Health Services, Tehran, Iran

² Trauma and Injury Research Center, Iran University of Medical Sciences and Health Services, Tehran, Iran

ABSTRACT

Background: The desire for the survival of the generation, although it is a non-physical need, cannot be achieved without physical health. With the reduction of the country's population growth to less than one percent, the concern about the future of the country's population has become more serious. This study was conducted with the aim of investigating the challenges in the field of infertility treatment in centers affiliated to Iran University of Medical Sciences and Health Services.

Methods: The current research was conducted with a qualitative, practical and semi-structured survey method to identify the challenges of infertility treatment in Iran University of Medical Sciences and Health Services. The statistical population includes all experts and practitioners in the field of infertility treatment of Iran University of Medical Sciences and Health Services, and information was collected by targeted sampling until data saturation. Interviews have been conducted with 20 experts in the field of infertility treatment at the University of Iran. After formal and content validity by experts, coding of information was done according to Strauss' opinion and the results were presented.

Results: 4 general categories including political, social and Economic and financial situation ,structural and internal organizational status (bureaucratic, administrative, and Regulatory measures), participation (bureaucratic procedure, Effective interaction between government departments, Adoption of strategy, operational plan according to functionality and facilities (Deficiency of facilities, drugs and equipment) were identified as infertility treatment challenges in Medical Sciences and Health Services.

Conclusion: For the development of infertility treatment at the level of Medical Sciences and Health Services, It is necessary to evaluate the effective factors and the barriers ahead, using the experiences and information received, to find appropriate solutions to solve the problems and facilitate the provision of specialized infertility treatment.

Keywords: Treatment , Infertility, Development, Challenges, Obstacles

Introduction

According to the United Nations, the share of Iran's elderly population of over 65 years of age from the country's total population in 2030 reached more than 10%; so, 10 years is an opportunity to deal with aging of the population (1). On the other hand, infertility is a global reproductive health problem with a high prevalence in at least 15% of

couples in reproductive age around the world (2). The high cost of infertility treatment in the treatment cycle in government and private centers, the high number of clients, the low number of government infertility treatment centers in the country, and the problems of insurance coverage for expensive infertility treatment are infertility

Corresponding Author: Fatemeh Najafi
Pourmoghadam
Email: najafipoor.f@iums.ac.ir
Tel: +98 9125018036

Department of Curative Affairs, Iran University of
Medical Sciences and Health Services, Tehran, Iran

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treatment issues in Iran. To achieve the result, it is necessary to repeat the treatments several times. This issue has caused many infertile couples, despite their desire to have children, to abandon infertility treatments half-finished due to financial and economic constraints (1). The desire of the rest of the generation without physical health is unattainable, because if a man and a woman are not healthy, they will lose the opportunity to reproduce (3). Difficulties in deciding and accepting treatment, actions and reactions of family and surrounding people, concern about cultural and social non-acceptance and religious concerns, concerns caused by the possibility of physical, mental and behavioral defects and the impact of normal fertility and economic challenges are some of the problems in infertility treatment. Infertility can affect the entire life of an infertile couple (4). The consequences of infertility include more than 8 main categories, which are in the following order: marginalization, the commodification of the second wife, the role of the victim, the turbulent transition of Separation, husband's changes, attraction of love, infertility: the problem of hospitalization and loneliness from the categories of victims. Each of these injuries are classified in 5 cognitive, emotional, behavioral, biological, and environmental dimensions (5). Despite the presentation of different treatment methods, reports indicate that in the last 25 years, effective randomized and prospective methods have not been performed (6), and according to the study by Niagi et al (7) The heavy costs of ART (All Reproductive Treatment) in Low and middle income countries (LMICs) vary across and within regions, with lack of ART Financing policies and standards. Therefore, governments in LMICs must prioritize ART Developing and improving financing mechanisms to promote equity in access to infertility treatment (7).

In line with the implementation of general population and family policies and supporting the youth of the population, paragraphs 45, 46, and 70 of the general policies of the 6th development program and article 45 of the law regulating part of

the government's financial regulations approved on 2015/2/23 on the implementation of the country's cultural survey map and the population and family excellences document and articles 72, 94, 102, 103, 104 and 123 of the program Special attention has been paid to this important . The sixth five-year economic, social and cultural development program of the Islamic Republic of Iran was implemented with the approval of the Supreme Council of the Cultural Revolution. On 2021, the joint commission of the youth plan of the population and support of the family in the Islamic Council was approved according to issue number 85 of the constitution, and after the approval of the council with its trial implementation for seven years on 2021/11/1, it was approved by the council. The Guardian research shows the importance of paying attention to the issue of infertility treatment for the realization of the general policies of the youth population in the country (8). Considering the importance of infertility treatment, the present study was conducted with the aim of investigating the challenges and obstacles of infertility treatment in the educational and treatment centers of Iran University of Medical Sciences.

Materials and methods

The present study was qualitative and practical. Based on the opinions of experts, the researcher sought to investigate the challenges of infertility treatment in the educational and therapeutic centers active in the field of infertility treatment of Iran University of Medical Sciences.

- Qualitative research process

In order to achieve the goal of the present research, in order to investigate the problems of infertility treatment in educational and therapeutic centers active in infertility treatment, the method of qualitative content analysis was used.

The current research community included experts and activists in the treatment of infertility with a history of activity and experience in this field. The number of interviews had not been determined in

advance, but the process of interviewing experts continued until identifying and expressing as clearly as possible the hidden aspects and components of the phenomenon of infertility treatment and reaching theoretical saturation. Saturation means a state where the researcher mentally comes to the conclusion that new data and information do not provide more knowledge than the collection of categories (9). Therefore, the number and type of interviews determined the size of the statistical sample. The interview process was such that after each interview, the data was coded and analyzed strictly, along with the identification of the dimensions raised by the experts, and these dimensions were followed up in the next interview. The interview continued until the findings were replicated and no further information was obtained from new interviews regarding the development of categories.

Interviews were conducted in person and by prior appointment. Before starting the interview, a summary of the research design and study objectives were explained to the participants. Also, verbal permission was obtained at the beginning of the interview to record qualitative data, and notes were taken during the interview to complete the data. In the present study, interviews were conducted individually and the average duration of each interview was 30 minutes.

- Qualitative data analysis method

To analyze the data obtained from semi-structured interviews, a systematic coding method that

includes 5 main steps: 1. Review and study the data in detail, 2. Organization of the data, 3. Classification of the data, 4. Coding and 5. The announcement of the results was used.

- Open data coding

Open coding was done based on the opinion of Strauss (10) that a part of the analysis is specific to the naming and classification of the phenomenon through a detailed examination of the data related to the object and specifying the identified concepts that features and dimensions are discovered in the data and these points form the code and in the open coding stage, the number of codes is reduced as the final product.

Ethical considerations

The present research has been carried out in compliance with the principles of scientific trustworthiness by the financial and spiritual support of the respected officials of Iran University of Medical Sciences and Health Services. The study's ethical code is IR.IUMS.REC.1402.752.

Results

The study participants consisted of 8 men (40%) and 12 women (60%), with average age of (Mean SD) 50 years. The educational degree of most of them was specialty in infertility treatment (40%) and in terms of work experience, most of the participants had 11-20 years of experience (55%) (Table 1).

The summary of the results of the open source interviews is presented in Table 2.

Table 1. Demographic information of the research participants

Variable	Group	Number	Percentage of frequency
Sex	Man	8	40%
	Woman	12	60%
Education degree	Bachelor's degree	7	35%
	Master's degree	3	15%
	Ph.D.	2	10%
	Specialist in infertility treatment	8	40%
	1-10	3	15%
Work experience of the participants	11-20	11	55%
	21-30	4	20%
	31-40	2	10%

Table 2. The relevant code obtained from open-coded interviews about the challenges of infertility treatment in Iran University of Medical Sciences

Raw	codes (concepts)	Number of people
1	Defects in patients' file documentation	15
2	Violations in collecting excess tariffs for providing services to patients undergoing infertility treatment	17
3	Clients with another person's identity	15
4	The presence of mediators in providing infertility treatment services	18
5	Insufficient motivation and reluctance of employees and doctors to work in the field of infertility treatment	18
6	Cultural problems and insufficient social support for infertility treatment applicants	11
7	Problems of failure of infertility treatment and patient complaints	17
8	Problems of advertising and training of infertility treatment for public information	13
9	Long treatment and follow-up time for infertility treatment	19
10	Problems related to follow-up after treatment, follow-up of patients undergoing infertility treatment	14
11	Legal problems of how to provide services and legal follow-up regarding sperm, egg, and surrogate donation	19
12	Problems of financing infertility treatment	19
13	Problems of providing drugs for infertility treatment	18
14	The ineffectiveness of some infertility treatment drugs	17
15	Proficiency in fields active in treating infertility, such as embryologists, laboratories, etc.	17
16	Inadequacy of instructions regarding donation and infertility processes	19
17	Absence of a registry system for donation	20
18	No contract between private centers and insurance companies	20
19	Non-coverage of insurance organizations regarding foreign drugs	19
20	Overcrowding of infertility treatment centers	14
21	Violation regarding donation and infertility treatment services	19
22	Sanction problems	15
23	Ambiguities of donation rights	18
24	The quality of how to store embryos, eggs, and sperm	18
25	Quality of embryology team performance	19
26	Lack of infertility treatment centers at the university level	16
27	High age of infertility treatment applicants	18
28	Couples' fear of jeopardizing their job and social status	11
29	Couples worry about the lack of success in infertility treatment	17
30	Differences in the performance of infertility treatment centers	15

The results of core coding of infertility treatment problems in Iran University of Medical Sciences are shown in Table 3.

-The political, social, and economic category has been the main dimension of infertility treatment problems in Iran University of Medical Sciences. In the main category of social challenges (cultural problems and insufficient social support for infertility treatment applicants, long-term treatment and follow-up of infertility treatment), the psychological burden of treatment Infertility for

couples, spending a long time for infertility treatment, couple's old age, couple's fear of jeopardizing their job and social status due to the long duration of infertility treatment, worry about answering to the people around them about the result of infertility treatment, and in the category of economic focus (the high cost of infertility treatment, expensive drugs and equipment for infertility treatment, currency fluctuations and changes in the cost of drugs, treatment and equipment) and the central political category of

concepts (problems of restrictions on the import of medical items and equipment due to sanctions and the instability of political conditions in the region) as conditions. It is political, economic and social in Iran University of Medical Sciences and Health Services.

- The structure of the main dimension of problems in the field of infertility treatment in Iran University of Medical Sciences as the main category or phenomenon of selection and the core categories of the challenges of bureaucratic processes (deficiencies in the documentation of infertility treatment applicants, referrals of people with other identity documents, problems related to follow-up after follow-up treatment of patients undergoing infertility treatment, legal problems in the way of providing services and legal follow-up regarding sperm, egg and surrogate donation), regulatory (violations in collecting excess tariffs for providing services to patients undergoing infertility treatment, presence of mediators, inadequacy of instructions, donation and infertility processes, lack of a registry system for donation, violations regarding donation and infertility processes, legal ambiguities of donation, differences in the performance of infertility treatment centers, infertility treatment failure and patient complaints) as structural conditions in the University of Medical Sciences and Iran's healthcare services have been considered.

- The category of participation, the main dimension of the problems in the field of infertility treatment in Iran University of Medical Sciences as the main category or phenomenon and the lack of effective

communication between government departments (lack of contracts between private centers and insurance companies, follow-up problems of the treatment process of infertility treatment applicants, lack of the coverage by insurance organizations regarding foreign drugs) and appropriate and practical strategies and operations (insufficient motivation and reluctance of employees and doctors to work in the field of infertility treatment, problems of advertising and training of infertility treatment for public information) as conditions of participation that lead to management of developing infertility treatment in Iran University of Medical Sciences and Health Services were taken into account.

- The category of medical and therapeutic equipment and facilities, the main aspect of the challenges in the field of infertility treatment in Iran University of Medical Sciences as the main category or phenomenon of selection and the central categories of equipment and drug shortages (problems in the supply of drugs for infertility treatment, mastery of fields active in infertility treatment according to embryologists, laboratories, etc., overcrowding of infertility treatment centers, lack of infertility treatment centers at the university level, the quality of how to store embryos, eggs, and sperm, the insufficient effectiveness of some infertility treatment drugs, the failure of infertility treatment methods and drug shortages, equipment, laboratory kits in the field of infertility treatment) were considered in the treatment of infertility in Iran University of Medical Sciences and Health Services.

Table 3. The results of core coding of problems in the field of infertility treatment in Iran University of Medical Sciences

Classification of open coding results	Core category (components)	Main category (dimensions)
Cultural problems and insufficient social support for infertility treatment applicants Long treatment and follow-up time for infertility treatment Fertility treatment for couples Spending a long time on infertility treatment Old age of the couple Couples fear jeopardizing their job and social status due to the length of infertility treatment, and are concerned about answering the people around them regarding the result of infertility treatment.	Social challenges	Political, social, and economic
High cost of infertility treatment High cost of drugs and infertility treatment equipment Currency fluctuations and changes in the cost of medicine, treatment, and equipment	Economic challenges	
The problem of restricting the import of pharmaceutical items and equipment due to sanctions The instability of political conditions in the region	Political challenges	
Deficiencies in the documentation of infertility treatment applicants Referral of people with other identity documents Problems related to follow-up after treatment Follow-up of patients undergoing infertility treatment Legal problems of how to provide services and legal follow-up regarding sperm, egg, and surrogate donation	The problem of bureaucratic processes	Structural
Violations in collecting excess tariffs for providing services to patients undergoing infertility treatment Presence of mediators Inadequacy of donation guidelines and infertility processes Absence of a registry system for donation Violation regarding donation and infertility processes Donation's legal ambiguities Differences in the performance of infertility treatment centers Problems of failure of infertility treatment and patient complaints	Regulatory problems	
No contract between private centers and insurance companies Follow-up problems in the treatment process of infertility treatment applicants Non-coverage of insurance organizations regarding foreign drugs	Effective interdepartmental communication problems	
Insufficient motivation and reluctance of employees and doctors to work in the field of infertility treatment Problems of advertising and training of infertility treatment for public information	Appropriate and practical strategic and operational problem	Participation

Problems of providing drugs for infertility treatment Proficiency in fields active in treating infertility, such as embryologists, laboratories, etc. Overcrowding of infertility treatment centers Lack of infertility treatment centers at the university level The quality of how to store embryos, eggs, and sperm Insufficient effectiveness of some infertility treatment drugs Failure of infertility treatments Drug and equipment shortages and laboratory kits in the field of infertility treatment	Lack of facilities, medicine, and equipment	Medical treatment equipment and facilities
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In summarizing the received information, the dimensions of investigating the development challenges of infertility treatment in centers

affiliated with Iran University of Medical Sciences (IUMS) are summarized in Figure 1.

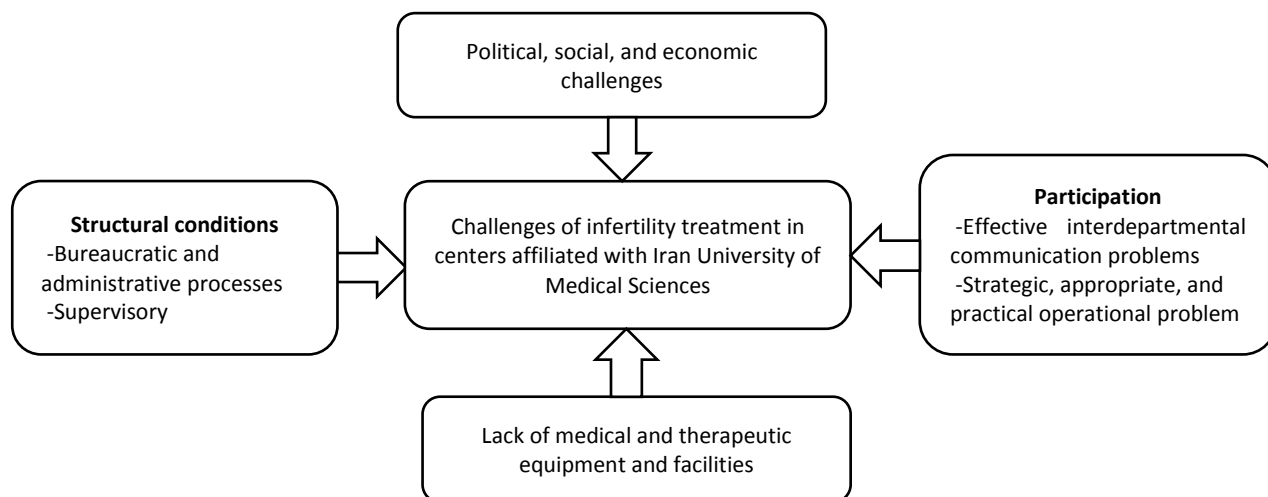


Figure 1. Dimensions of infertility treatment challenges in Iran University of Medical Sciences

Discussion

The results of this research are based on the importance of paying attention to the dimensions of political, social and economic, structural and intra-organizational conditions, participation, and facilities and equipment. It is necessary to take fundamental measures to develop activities in the field of infertility treatment services in Iran University of Medical Sciences.

In the political, economic and social dimensions, the central category of social challenges (cultural problems and insufficient social support for infertility treatment applicants, long-term treatment and follow-up of infertility treatment, psychological burden of infertility treatment on couples, long-term consumption of infertility

treatment, old age of couples , the fear of jeopardizing one's job and social position due to the prolongation of infertility treatment, the concern of answering to the people around about the result of infertility treatment) and the economic-oriented category (high cost of infertility treatment, expensive drugs and equipment for infertility treatment, currency fluctuations and change the price of medicine, treatment and equipment) and in the political category, the problems of restrictions on the import of pharmaceutical items and equipment due to sanctions and the instability of the political conditions of the region have been identified as political, economic and social conditions in the Iran University of Medical Sciences and Health

Services. Based on the results of the study by Aboui et al (11), categories such as high cost of treatment, cost of commuting, lack of facilities, stress and financial concerns, strategies for attracting financial resources, disparity of income and expenditure, liberation from treatment, acceptance of body injury, and the negative effect of aging and the costs of parenting have been identified. (11) The research of Sharifian showed that factors such as family, friends, relatives, and the level of awareness of the science of infertility treatment, information sources and how to access information were effective factors in the treatment of infertility (12). Occupation, age at marriage, religiosity and family orientation, place of residence, socioeconomic conditions and education level were among the most important factors affecting the rate of childbearing in Iran (13). The occupational level of marriage affects fertility (14, 15). Financial security, social support for women for having children by using the insurance system, and creating favorable job conditions during pregnancy and afterwards, can create the necessary motivation for having children (16) It is obvious that social pressure to have children leads to mental and physical suffering (17), and infertile patients often feel that they are not like other families (18).

According to this present study, among the problems in the structural dimension (bureaucratic and administrative, supervisory and communication methods), the concepts of lack of proper communication between government departments (lack of contract between private centers and insurance companies, follow-up problems) and the treatment process of infertility treatment applicants lack of commitment of insurance organizations regarding foreign drugs) and appropriate and practical strategies and operations (insufficient motivation and reluctance of employees and doctors to work in the field of infertility treatment, problems of advertising and training of infertility treatment for public information) as challenges of participation in the development of infertility treatment in Iran

University of Medical Sciences and Health Services were described. During these two decades, these actions were proposed to reduce the sufferings and problems of infertile women: social and family support especially for the wife, creating awareness about infertility, treatment dimensions, and processes, increasing public awareness and correcting misconceptions, providing education and free counselors to infertile women and couples, learning effective coping strategies, and increasing morale and promoting hope. The officials of the Ministry of Health and other related fields must take measures while creating necessary facilities and incentive mechanisms for diagnostic and therapeutic centers active in this field (19). The provision of infertility treatment is a complex issue that is compounded by a lack of political will to prioritize infertility, particularly in the context of other health problems such as high rates of maternal morbidity and mortality, unmet needs in contraception, vaccine preventable diseases, and emerging infectious diseases, which are deemed more important. However, infertility is itself a widely prevalent cause of significant health burden for millions of people (20), which was in agreement with the present research.

Considering that one of the main challenges in the development of infertility treatment in the present study was participation, the lack of effective communication between government departments (lack of contract between private centers and insurance companies, follow-up problems of the treatment process of infertility treatment applicants, lack of commitment of the organization insurers regarding foreign drugs) and appropriate and practical strategies and operations (insufficient motivation and reluctance of employees and doctors to work in the field of infertility treatment, problems of advertising and training of infertility treatment for public information) as the conditions of participation that led to the formation of developing the management of infertility treatment in Iran University of Medical Sciences and Health Services. It is believed that a wide range of government inaction causes preventable infertility

(21). According to the majority of the studies, the highest costs were related to laboratory costs, procedural costs, equipment, and drugs (22). Social, participatory, and psychological interventions for couples undergoing infertility treatments can effectively reduce mental health problems and improve clinical pregnancy rates (23). These were in line with the present research.

Considering that the main challenges of infertility treatment in the current research were equipment and drug shortages (problems in providing infertility treatment drugs, mastery of fields active in infertility treatment such as embryologists, laboratories, etc., overcrowding of infertility treatment centers, lack of infertility treatment centers in university level, the quality of how to store embryos, eggs and sperm, the insufficient effectiveness of some infertility treatment drugs, the failure of infertility treatment methods and drug and equipment shortages, laboratory kits in the field of infertility treatment), according to the study by Niagi et al (7), huge costs of ART in LMICs varied across and within regions, with lack of ART policies and funding mechanisms. Therefore, governments in LMICs must prioritize ART regulation and develop financing mechanisms to improve equity in access to infertility treatment (7). However, due to limited resources in developing countries, huge costs of infertility treatment, costs that are not covered by support organizations such as insurance companies, side effects of drugs and long-term treatment, affect the process of infertility treatment (24).

Conclusion

Due to the importance of factors such as socio-economic, political, and structural challenges, participation, facilities, equipment, and medicine, they have been among the most important factors affecting infertility treatment. Therefore, it is necessary for the development of infertility treatment at macro-level of the country, and accordingly, in Iran University of Medical Sciences. It is important to know the obstacles in political, economic and social, structural,

participation and equipment, medical and therapeutic dimensions by benefiting from the experiences gained, find appropriate solutions to accelerate the improvement of processes and conditions quantitatively and qualitatively. Strategic decisions and appropriate policies should be adopted through improving processes and infrastructures to remove obstacles, create a suitable platform and share efforts at the intra-departmental and inter-departmental levels, and accelerate the improvement of infertility treatment and create benefits. Therefore the followings are suggested:

1. To clarify the cost of credits related to infertility treatment insurance (the subject of Article (22) of the Family and Youth Protection Law), a row under the ranks of basic insurance organizations under the title of insurance coverage program for infertility treatment services was created, and credits related to the coverage plan for infertility treatment services, were listed under Iran Health Insurance Organization, which should be distributed among the three organizations mentioned in proportion to the insured population covered by the aforementioned law (infertile couples). The basic insurance organizations are obliged to submit a report on how the credits subject to this ruling were spent every three months to the Islamic Council and the National Population Headquarters.
2. In line with the observance of paragraph "9" of the general policies of the legislative system based on the principle of transparency and lack of ambiguity in legislation and legislation, it is necessary to allocate funds related to equipping and setting up infertility treatment centers and create cancer centers under the 550,000-103 line each of which should to be specified.
3. According to the country's needs and legal deadline for the implementation of Article (22) of the Family and Youth Protection Law (at most within two years after the entry into force of the Family and Youth Protection Law (approved 2021) for equipping or setting up at least one specialized level two infertility treatment center in universities

of medical sciences and at least one level three infertility treatment center for each province, both governmental and non-governmental, in the form of a system of leveling services according to the demographic pattern), it is necessary to have enough credits to create and equip treatment centers for infertility services considered in the budget bill of 1402, which shows the importance of financial support and insurance (19).

The proposed solutions based on the present study are described as follows:

- Quantitative and qualitative improvement of information and documentation of files and identity documents about foreign patients at international level
- Removal of mediators to prevent tariff violations and charges received from infertility treatment applicants
- Creating incentive mechanisms such as tax exemptions, and speeding up the issuance and renewal of licenses to encourage doctors and related staff in centers active in the field of infertility treatment.
- Creating a suitable structure and process for supplying the required medical equipment according to the conditions of oppressive international sanctions in the country
- Developing the use of technology to improve the information content of active medical centers regarding the provision of capacities and facilities in the field of infertility treatment.
- Holding periodical training courses for employees related to the field of infertility treatment to develop technical skills, legal standards, how to provide care and treatment services, communication principles, and behavior management skills in dealing with infertility treatment applicants.
- Supervision of the training process and continuous improvement of the quality of the implementation of training courses by professors in the field of infertility treatment

- Investigating the methods of empowerment and the experiences of successful countries in the field of infertility treatment to improve the current situation in the field of Iranian universities and at the country's macro level.

- Expanding research and establishing international scientific

- research communication, strengthening scientific exchanges, and increasing international research and educational cooperation with universities in countries active in the field of infertility treatment.

- Promotion of interdepartmental and organizational cooperation at the level of active centers, universities, and the Ministry of Health related to infertility treatment.

- Allocation of facilities, equipment and manpower, compilation of eulogies for the support of couples undergoing infertility treatment

- Holding specialized and sub-specialized training courses for specialists and sub-specialists, embryologists, and midwives active in the field of infertility treatment.

- Promulgating and implementing strict laws to follow up and prevent violations in the field of infertility treatment

- Motivating doctors and people in the infertility treatment team

- Creating the right structure and conditions for concluding contracts between insurance organizations and private centers

- Creating a registry system for donation

- Increasing infertility treatment centers to develop infertility treatment services and facilitate the access of infertile couples

One of the limitations of the present study was that due to coordination problems for interview sessions because some of the respondents were busy with their work and relatively willing to spend time to participate in the interviews, the authors tried to attract their participation in the interviews by explaining the importance of using

the ideas and constructive opinions of the respondents in order to improve the existing situation in order to improve the treatment of infertility.

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Conflict of interests

The authors declared no conflict of interests.

Authors' contributions

F.NM, N.T, H.F, M.K, R.ND, R.S, SH.H, designed research; F.NM, conducted research; F.NM, R.S analyzed data; F.NM, N.T, H.F, M.K, R.ND, R.S, SH.H had primary responsibility for final content. All the authors read and approved the final manuscript.

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