

A cross-sectional survey on distribution of healthcare resources and service status of infertility in China

Xuesong DING

Chinese Academy of Medical Sciences and Peking Union Medical College

Yan DENG

Chinese Academy of Medical Sciences and Peking Union Medical College

Yanfang WANG

Chinese Academy of Medical Sciences and Peking Union Medical College

Ruilin Ma

Chinese Academy of Medical Sciences and Peking Union Medical College

Shiyang ZHU

Chinese Academy of Medical Sciences and Peking Union Medical College

Xiao MA

Chinese Academy of Medical Sciences and Peking Union Medical College

Wei XUE

Chinese Academy of Medical Sciences and Peking Union Medical College

Aijun Sun (✉ saj_pumch@sina.com)

Chinese Academy of Medical Sciences and Peking Union Medical College <https://orcid.org/0000-0002-0049-0906>

Research article

Keywords: healthcare resources, service status, infertility management, national-wide survey

Posted Date: July 16th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-36848/v1>

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Abstract

Background

There are growing demand of infertility health services in China, while the relevant facilities are unlikely to meet the demands currently. This study is aimed at assessing the capacity of obstetrics and gynecology departments and other related departments in coping with the management of infertility couples in health care system.

Methods:

A cross-sectional survey was conducted to assess the capacity of healthcare resources and service status of infertility in China. 689 staff working on infertility related field, including 70 reproductive endocrinologists, 468 gynecologists, 70 obstetricians, and 81 practitioners of other fertility related occupation, covering 3 different types of hospitals providing women's health care.

Results:

We found the capacity of hospitals in providing infertility healthcare varied based on the further analysis of different tiers. The clinic set exclusive for infertility service were only available in 57.3% of interviewed hospitals, and 22.2% of hospitals was not able to provide male infertility counseling. In terms of perform the complete procedure of IUI and IVF-ET, the significant difference has been identified that general hospitals has lowest capacity comparing with the other two types.

Conclusions:

The background of interviewees in infertility service varied widely, and the capacity of hospitals in fertility were insufficient in meeting the demands both qualitatively and quantitatively.

Background

Infertility, also known as subfertility, is defined as the same couple cannot establish a clinical pregnancy after 12-month regular and unprotected sexual intercourse, which can be subdivided into primary or secondary infertility based on whether patients conceived before. The number of couples who suffering infertility is between 48.5 and 72.4 million worldwide, including about 14 million couples in south Asia [1], and based on the figures unraveled by National Health Commission of the People's Republic of China (NHCPRC) in 2017, the prevalence of infertility in China was between 12% to 15%, 40 million patients in estimation. As one of the emerging and rapidly developing subjects, with unevenly distributed health care services, there were many blur concepts of infertility, which bring difficulties in the diagnosis and management of infertile couples. Additionally, Recent establishment of two-child policy has brought a big challenge for medical system to handing age-related secondary infertility in China. However, only few of survey on current condition of infertility health services has been conducted in China, reflecting an increasing need for infertility prevention and management and insufficiency of health-care services [2]

Currently, the limited focus from policy makers and insufficient staff and infrastructure in remote area may further affect the accessibility for infertile patients seeking for help. To profile current medical service for patients diagnosed with infertility, we conducted a national-wide survey on infertility related health service providers on the capacity of their infrastructures and their background knowledges of infertility.

Methods

A cross-sectional survey was conducted on fertility-related department of health facilities in China, and data were collected from December 2017 to February 2018. The survey was conducted in form of online questionnaire developed for this survey and distributed on the workshop held by Gynecological Endocrinology Committee of the Chinese Maternal and Child Health Association, where infertility-related staff for different type of hospital filled a list of multiple-choice questions anonymously focusing on the working environments and facilities when dealing with infertility (supplementary). From this survey, 3401 responses have been collected, including 1833 gynecologists; 456 obstetricians; 129 reproductive endocrinologists; 100 traditional Chinese medicine (TCM) practitioners; 23 urologists; and 335 doctor of other fertility related occupation. The inclusion criteria were (1) working in fertility care; (2) all the questions filled, and the response containing obviously unrealistic answers was excluded. The data from all participants were imported and analyzed using IBM SPSS Statistics Software Version 25.

Results

1. Demography of practitioners serving in fertility field

In this national-wide survey, we have received response from 4 different tiers of infertility related medical practitioners, holding various positions in different kinds of facilities, such as general medical center (64.3%), maternity and child care center (31.1%), and specialized reproductive hospitals (4.6%), and the majority of doctors were working at public hospitals. In 689 respondents, 130 of them were residents (18.9%), and 267 of them were attendings (38.8%), and 228 vice directors and 64 chief accounts for 33.1% and 9.3%, respectively.

Notably, more than half of them were specialized in gynecology (64.2%), whereas doctors majored in reproductive endocrinology were only account for 10.2% (70 people). Among over 600 respondents, only 28.9% of them were fully focused on the management of infertility, participating in the infertility outpatient clinic, or diagnostic laparoscopy and hysteroscopy, or oocyte collection and embryo transfer, or related lab work, and their experience of working in reproductive endocrinology ranged from less than 1 year to over 20 years.

Characteristic	Number	Percentage (%)
Specialty		
RE	70	10.2
GYN	468	64.3
OB	70	10.2
Others	81	11.8
Advance training experience		
Yes	174	25.3
No	515	74.7
Type of hospital		
specialized reproductive hospitals	32	4.6
general medical center	443	64.3

maternity and child-care center	214	31.1
Titles		
Residents	130	18.9
Attending	267	38.8
Vice director	228	33.1
Chief	64	9.3

Table 1. demographics of participants

2. Availability of consumables and infrastructures for infertility management

More than half of respondents (57.3%) described their hospitals had the outpatient clinic rooms exclusive using for infertility patients, and the clinic room available for infertility patients were ranged from 0 to 23, with an average of 2.44. Additionally, the amount of ranged from 0 to 58, with an average of 4.41. There was a significant higher number of general hospitals with no clinic room set exclusively for infertility than that of maternity and childcare center (81.6% vs. 16.7%, $p < 0.05$)

For male infertility, 22.2% of hospitals did not have practitioners and male patients would be referred to another clinic where doctors were qualified to counsel with, whereas only 36.6% of respondents claimed their hospitals had position of andrologist for male infertility counselling. the number of general hospitals, women and child hospitals and specialized fertility hospitals without the capacity of male infertility counseling accounted for 22.8%, 22.9%, and 9.4%, and no statistical difference was detected with Bonferroni correction (adjusted p- value). In contrast, the status of the infrastructures for female infertility was more optimistic, for instance, 94.3% of outpatient clinic units were able to use ultrasound to monitor ovulation process, through near half of them were performed in ultrasonic department.

In terms of assisted reproductive technologies (ART), hospitals with the capacity of performing intrauterine insemination (IUI) and in vitro fertilization- embryo transfer (IVF-ET) accounted for 22.1% and 17.3%, respectively. There was a significantly higher percentage of hospitals which were able to perform IUI and IVF-ET in specialized reproductive hospitals, and that percentage was lower in maternal and child-care hospitals and general hospitals (64.7% vs. 35.0% vs. 12.2%, $p < 0.01$; 61.8% vs. 29.6% vs. 7.7%,

$p < 0.01$). However, only 27% of respondents affirmed there was reproductive ethics committee. In the respondents whose hospitals were able to perform IVF-ET, 10.5% of them voted for no such an ethics committee was established, whereas 14.5% of them stated the condition was unclear ($p < 0.01$).

39.2% of interviewed doctors claimed they had their own general practice guideline for infertility diagnosis and management, and 27.6% of respondents said the guideline was being drafting, whereas 33.2% of them did not have a guideline or not knowing about it.

Apart for the objective status of infrastructure availability, certain questions in this survey was designed for collecting the subjective opinion of infertility practitioners. 44.4% of respondents thought their hospital management was very supportive for the development of management of infertility, and another 47.9% of respondents voted for being general supportive, whereas 6.5% of practitioners through they were been neglected and 1.2% practitioners through the hospitals were unsupportive for developing infertility management.

In addition, 15.8% of participants expressed satisfaction to the working environment of infertility outpatient clinic units; 56.6% of them thought that was generally acceptable, another 27.6% believed that improvements were needed. The major concerns included narrow space, chaotic order of seeing doctors, lack of privacy protection, and lack of direction sign. In response, expanding the clinic space and waiting area (37.7%), increase the indicators for navigation (23.6%), enhancing the privacy protection (24.2%) and reducing the amount of appointments per day (4.3%) were expected to be implemented to improve the experience for both doctors and patients.

3. Traditional Chinese Medicine on infertility

We investigated the quotations of TCM adjuvant taken in infertility management field, 46.2% of practitioners stated that they often prescribed TCM as an adjuvant during infertility management, whereas 45.3% of doctors preferred to use it occasionally, and 8.6% of them stated they rarely prescribed it for infertility. For applying TCM in infertility solely, Dingkundan, Ovulation stimulating decoction were the most popular choices accounting for 29% and 23.5% respectively, while 4.3% and 2.2% of them have prescribed Guilingji and Xiantianguiyi decoction for infertility. 13.8% of respondents said they have never prescribed TCM solely.

Discussion

Infertility has long been a common disease afflicting the couples who want to have their own child, which may also bring in mental burdens impacting their daily life negatively. Notably, the development and maturation of assisted reproductive techniques brings new hope for infertile couples, however, the capacity of healthcare facilities and the service they provided vary from one to another. In this questionnaire, we addressed the potential problem-causing questions in the aspect of fertility care procedure and infrastructure, and the use of TCM.

The first concern on infertility resources comes from the accessibility. In 689 respondents, only 4.6% of them worked in specialized reproductive hospitals with relatively higher focus on infertility management. The majority of respondents working in infertility field were studying gynecologist (64.3%), whereas 10.2% of them were majoring in reproductive endocrinology. Moreover, only 28.9% of participants worked fully focused on infertility diagnosis and management. Based on the data revealed by NHCPRC, the population of infertility patient has reached over 40 million, becoming the one of the three major disease like cancer and cardiovascular diseases in China. Through the infertility fields have been developed rapidly, the demand in infertility field still outweighs the healthcare system's capacity, and the unevenly distribution can exacerbate the condition of not being able to get help. [2] The lack of andrologist who specialized in male infertility has dragged on the development of this field, only 36.6% of respondents replied their hospitals were able to counsel male patients by specialized andrologists, meanwhile male and female from the infertile couple are supposed to be examined simultaneously. Additionally, assisted reproductive technique such as IUI and IVF-ET are the solution to subfertility on many circumstances, however only a few of hospital were able to perform IUI and IVF-ET, 22.1% and 17.3%, respectively.

Secondly, the quality of infertility care services was heterogeneous, and more standardized procedure were expected in healthcare system. As mentioned above, the heterogeneity of educational background and speciality were observed in infertility healthcare practitioners. For instance, only the top 2.3% of respondent got their doctor's degree, and only 25.3% of practitioners in this survey received advanced training in infertility diagnosis and management field. The lack of advanced trained practitioners and high intellectuals may impede the quality control of infertility services. Besides, the lack of proper surveillance of assisted reproductive procedure is jeopardizing the developed parts of infertility healthcare system. Less than half of interviewed doctors claimed they had their own general practice guideline for infertility diagnosis and management, while 33.2% of them did not have a guideline or not knowing about it. Meanwhile, in the hospitals that are capable for IVF-ET, 10.5% of practitioners voted for no such an ethics committee was established, and 14.5% of them stated the condition was unclear ($p < 0.01$).

As an alternative to the western medicine, costly emotionally and financially, TCM can offer less invasive and money saving way to manage infertility. TCM scopes for the imbalance within each individual based on his pulse, complexion, and emotional wellbeing. As the place where TCM originated, we found a broad application of TCM in infertility field in China, especially for adjuvant. 91.5% of practitioners prescribed TCM as an adjuvant in managing infertility, while 86.2% of them have prescribed TCM solely in infertility management. Due to the complex herbal components, variety of formulas have been applied and a systemic review suggest the pregnancy rates of infertility patients can be improved 2-fold within 4 months comparing with western medical management [3]. The broad applications of TCM on infertility with diverse regimens were reflexed in our survey. Therefore, larger scale clinical trials on TCM in infertility management are expected to further elucidate the potential mechanisms of how they benefit and unravel their value as the alternative holistic therapy.

Based on the current condition in infertility field reflexed by our survey and other literature report, a larger survey on etiology of infertility were expected to be conducted to gain detailed information on the demographic distribution of this disease, which may feed up the policy makers decision. Furthermore, the relevant guidelines on infertility diagnosis procedure and management should be made and enforced with intensification to ensure the quality of service.

Conclusion

Taken together, the background of interviewees in infertility service were heterogeneous, and the capacity of hospitals in fertility were insufficient in meeting the demands both qualitatively and quantitatively. More inputs and improvements were expected to optimize the current insufficient condition of infertility service, especially in facing to gradually increased prevalence of infertility rate in China.

List Of Abbreviations

NHCPRC

National Health Commission of the People's Republic of China

TMC

traditional Chinese medicine

ART

assisted reproductive technologies

IUI

intrauterine insemination

IVF-ET

in vitro fertilization- embryo transfer

Declarations

Ethics approval and consent to participate

The study was approved by the Ethics Committee of Peking Union Medical College Hospital, and the informed consent were exhibited at the beginning of the questionnaire.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors have no conflicts of interest to declare.

Funding

This study was supported by a grant from The National Natural Science

Foundation of China (No. 11471024), which providing financial supply to the distribution and collection of the questionnaire and labor costs.

Author Contributions

AJS contributed to the conceptualization and design of the study, the data collection and interpretation. XD wrote and editing the manuscript. YD and XD contributed to the protocol planning, data collection and analysis. WX, FY, RM, SZ, XM contributed to participants recruitment and data collection. All authors read and approved the final version of the paper.

Acknowledgements

The authors thank Chinese gynecologists and obstetrician for participating this survey, and they are grateful of the supporting of Gynecological Endocrinology Committee of the Chinese Maternal and Child Health Association.

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Supplementary Files

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- [Questionnaire.docx](#)