Original Article

Capacity Assessment of District Health System in India on Services for Prevention and Management of Infertility

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Abstract

Background: Infertility is a neglected service component in the public health-care system in India. **Objectives:** This study aims to assess the availability and practices on prevention and management services for infertility in the district health system. **Methodology:** A cross-sectional survey of selected health facilities and the staff from 12 district hospitals (DHs), 24 community health centers (CHCs), 48 primary health centers (PHCs), and 48 subcenters was conducted using qualitative and quantitative methods. Interviewed staff included 26 gynecologists; 91 medical officers; 91 auxiliary nurse midwife; 67 laboratory technicians; and 84 accredited social health activist workers. **Results:** The findings indicate that adequate staff was in place at more than 70% of health facilities, but none of the staff had received any in-service training on infertility management. Most of the DHs had basic infrastructural and diagnostic facilities. However, the majority of the CHCs and PHCs had inadequate physical and diagnostic facilities related to infertility management. Semen examination service was not available at 94% of PHCs and 79% of CHCs. Advanced laboratory services were available in <42% at DHs and 8% at CHCs. Diagnostic laparoscopy and hysteroscopy were available in 25% and 8% of DHs, respectively. Ovulation induction with clomiphene was practiced at 83% and with gonadotropins at 33% of DHs.**Conclusion:** The district health infrastructure in India has a potential to provide basic services for infertility. With some policy decisions, resource inputs and capacity strengthening, it is possible to provide advanced services for infertility in the district health system.

Keywords: District health system, infertility, management practices, prevention

Introduction

Infertility is now becoming a growing public health concern in the world including India. The global estimates of infertility among couples are between 60 and 80 million, of which 15–20 million couples are likely to be infertile in India alone.[1] Globally, the estimates for primary and secondary infertility are approximately 2% and 11% and in India, 3% and 8%, respectively.[2] The lifetime, primary, and secondary infertility in India are estimated to be 8.2%, 6.3%, and 1.9%, respectively.[3] In India, infertility prevention and management services have largely been inadequately addressed in the government policies and programs. In the National Population Policy (2000), information about infertility appears in the context of providing information, counseling, and regular supply of medication only.[4] Consequently, there is limited focus on infertility services in the ongoing Reproductive, Maternal, Neonatal, and Child and Adolescent Health Programme (RMNCH + A). There are hardly any studies in India except a study by Widge and Cleland, wherein they found that the role of the public health sector for infertility management was weak.[5]

Access this article online

Quick Response Code:

Website: www.ijcm.org.in

DOI: 10.4103/ijcm.IJCM_306_16

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How to cite this article: Chauhan S, Unisa S, Joshi B, Kulkarni R, Singh A, Subramanian T, *et al*. Capacity assessment of district health system in India on services for prevention and management of infertility. Indian J Community Med 2018;43:19-23.

Received: 30-08-16, **Accepted:** 04-01-18

The National Institute for Research in Reproductive Health (ICMR-NIRRH) along with collaborative partners in India are in the process of developing guidelines for the prevention and management of infertility in the public health-care system. To fill the gap in information on infertility related available services and management practices at different levels of public health system, this study was conducted to assess the availability and practices of prevention and management services for infertility in the district health-care system. In addition, focus group discussions were also carried out to understand the perceptions of the community on various aspects of infertility. This paper pertains to health facility level findings on infertility prevention and management.

Methodology

A descriptive, cross-sectional survey of representative sample of health facilities from six zones (North, South, East, West, Northeast, and Central) in India was conducted from November 2012 to February 2013. Considering the feasibility and country representation, two districts from each zone, namely, Muzaffarnagar, Panipat, Nalgonda, Kannur, North Goa, Thane, Raigarh, Sehore, Maldah, Sonepur, Bishnupur, and Cachar were selected on the basis of highest prevalence of self-reported lifetime infertility as per the DLHS-3. The sample consisted of one district hospital (DH) from each of the 12 states and two community health centers (CHC) under the DH, one farthest and one nearest. In case one of the CHC was first referral unit, it was selected and the other was selected which was midway from the DH. Similarly, two primary health centers (PHC), the farthest and the nearest were selected under each CHC. Under each PHC, the farthest subcenter was selected for the survey.

Qualitative and quantitative research methodologies were used to assess the management practices on infertility at the selected health facilities. The study tools were facility checklist; record review for certain services in the last 6 months; and semi-structured interview schedule for service providers. The tools included the essentials as laid down by the Indian Public Health Standards at each level of the facility.[7]

The Institutional ethical approval and permission was obtained from respective state governments. The participant information sheet was explained to all the participants and informed consent was taken. Privacy and confidentiality was maintained during and after the survey. Data entry and analysis were done in SPSS Software Version 19 (SPSS South Asia Pvt. Ltd, Banglore, Karnataka).

Results

The results are based on data collected from 26 gynecologists, 91 medical officers (MOs), 91 auxiliary nurse midwives (ANMs), 67 laboratory technicians (LTs), and 84 accredited social health activist (ASHAs) workers at 12 DHs, 24 CHCs, 48 PHCs, and 48 subcenters.

Facility-based magnitude of infertility

Infertility was reported to be a problem in the study area by 88% of the gynecologists and 67% of the MOs. Gynecologists and MOs reported that about 4.7% of 750 patients and 5.6% of 250 patients visited the outpatient department for infertility in 1 month. The ANMs and ASHAs indicated that about 2%–3% of the patients were seen with the history of inability to conceive.

Availability of facilities for management and prevention of infertility

The posts of gynecologists and MOs in the DHs and CHCs were filled up to 92% of the sanctioned posts. However, surgeon's posts were filled only at 50% of CHCs and radiologists were filled at 50% of DHs. The majority of LTs posts at DHs (84%) and CHCs (83%) were filled. The staff position at PHCs was good as 81% of MOs, 88% of ANMs, 89% of LTs, and 86% of pharmacists posts were filled up. The majority of the ANMs (97%) and ASHAs (93%) posts were also filled up.

Most of the DHs and CHCs surveyed had basic infrastructural facilities; however, the infrastructure at many of the PHCs was inadequate as seen in Table 1. Availability of most of infertility management-related essential equipment, reagents, and consumables was inadequate at the DHs and CHCs [Table 2]. Drugs such as clomiphene citrate, gonadotropins, and bromocriptine used for the treatment of infertility were not available at any of the DHs. Misoprostol was available at 58% of DHs, 29% CHCs, and 25% PHCs, while mifepristone was available at only 2 DHs and 1 PHC that too only for active management of the third stage of labor. Color-coded STI kits were available at 75% of DHs, 42% of CHCs, and only 33% of PHCs. Drugs for the treatment of TB were available at 92% of DHs, 83% of CHCs, and 75% of PHCs. Communication material on infertility was not available at any of the facilities.

Training status and knowledge among doctors for infertility management and prevention

Most of the MOs did not report having undergone in-service training on infertility management. About 50% of gynecologists reported that they were trained for laparoscopy, while 30% were trained for transvaginal ultrasonography, folliculometry, and ovulation induction. Two-thirds of the MOs did not received training for intrauterine contraceptive device (IUCD) insertion and to conduct safe deliveries and 27% for tuberculosis management. For the management of infertility, majority of the gynecologists were aware of *in vitro* fertilisation and hormonal treatment, but few were aware about intrauterine insemination (19%), Serum anti-Mullerian hormone (14%), laparoscopy, and ovarian drilling (0.09%). Forty-five percent of MOs were not aware of diagnostic methods (folliculometry, diagnostic hysteroscopy, and laparoscopy) for infertility. Although 25% of MOs were aware of IVF, only 2% of them were aware of IUI. Case studies were presented to gynecologists and MOs to assess their knowledge and practice on the infertility management. It was found that only 22% of

Table 1: Availability of infrastructure relevant to prevention and management of infertility

	Infrastructure	DH (*n*=12), *n* (%)	CHC (*n*=24), *n* (%)	PHC (*n*=48), *n* (%)	SC (*n*=48), *n* (%)
Separate room for	Gynecological/pelvic examination	12 (100)	18 (75)	30 (63)	28 (58)
	Labor room	12 (100)	22 (92)	34 (71)	
	Laboratory	10 (83)	23 (96)	27 (56)	
	Ultrasonography and HSG	9 (75)	4 (17)		
Operation theatre for	Minor surgeries (IUCD insertion/MTP/ endometrial biopsy)	10 (83)	18 (75)	25 (52)	
	Major surgeries (related to infertility) such as hydrocele repair, diagnostic laparoscopies	10 (83)			
Toilets	Working toilets/latrines for females and males	12 (100)	22 (92)	35 (73)	24 (50)

DH: District hospital, CHC: Community Health Center, PHC: Primary Health Center, SC: Subcenter, HSG: Hysterosalpingography, MTP: Medical Termination of Pregnancy, IUCD: Intra-uterian Copper T device

Table 2: Availability of equipment, consumables, and reagents for infertility services

	Equipment/consumables/reagents	DH (*n*=12), *n* (%)	CHC (*n*=24), *n* (%)	PHC (*n*=48), *n* (%)
For examination of females	Gynecology table with screen	10 (83)	12 (50)	28 (58)
	Vulsellum/tenaculum	10 (84)	19 (79)	39 (82)
	Anterior vaginal wall retractor	10 (84)	20 (83)	37 (77)
	Specula	12 (100)	23 (96)	43 (90)
	Rubin and Colwin's cannula	3 (25)	2 (8)	
Semen examination	Sterile semen collection containers	7 (59)	4 (17)	6 (12)
	Neubaeur's chamber	9 (75)	8 (34)	5 (11)
	Microscope with light source	9 (75)	19 (80)	29 (61)
Ultrasonography	Transabdominal ultrasonography machine	12 (100)	3 (13)	
	Transvaginal ultrasonography probe	4 (34)	2 (8)	
X-ray facilities	X-ray machine	10 (84)	13 (54)	
	HSG plates	4 (34)	1 (4)	
	HSG dye	4 (34)	9 (38)	
Surgical instruments	Laparoscope	7 (59)	4 (17)	
	Hysteroscope	8 (67)	0	
	Methylene blue dye	7 (59)	1 (4)	
Pregnancy test kit	Rapid pregnancy detection test (Nischay kit)	9 (75)	17 (71)	36 (75)

DH: District hospital, CHC: Community Health Center, PHC: Primary Health Center, HSG: Hysterosalpingography

the MOs could give correct answer on the need for examination of the male partner. Both gynecologists and MOs had no idea on exploring adoption as an option for infertile couples when most of the other measures failed or could not afford expensive treatment. About 38% of gynecologists and 30% of MOs responded that measures such as clean deliveries, safe abortions, early and complete treatment of reproductive tract infections/sexually transmitted infections (RTI/STI) and TB, and safe IUCD insertion could prevent infertility.

Most of the MOs (70%) reported taking history of infertile couple; however, many important aspects were missed in the history. Nearly half of the MOs (51%) did not take history regarding consummation of marriage and frequency of sexual intercourse (48%). Fifty-one percent of MOs did not ask the history of abortion or MTP and 48% on RTI/STI. Forty percent of the MOs counseled their patients, but only 21% of them reported to investigate for diagnosing the cause of infertility. Only 10% of them claimed to provide the treatment for infertility while the majority (73%) of them referred the patients to specialists in both public (60%) and private sector (12%).

Availability of services for diagnosis and treatment of infertility

Basic services such as physical examination, genital examination, and semen examination were available at 100%, 92%, and 75% of DHs, respectively. These services except for semen examination were also available at 73% to 88% of CHCs and PHCs. Semen examination was available at 21% of CHCs and 6% of PHCs. However, semen examination was done for postvasectomy follow-up and not as infertility investigation. Most of the advanced services such as hysterosalpingography, transvaginal sonography, folliculometry, etc., for the diagnosis of infertility were available at 25%–42% of the DHs only and few of the CHCs. Most infertility treatment services such as ovulation induction with timed intercourse; gonadotropins; and clomiphene citrate were available at DHs, while they were available at <25% of CHCs. Operative laparoscopy and hysteroscopy were available at 25% and 8% of DHs, respectively. Minor surgeries for males were available at 75% of DHs and 33% of CHCs [Table 3].

Services relevant for prevention of infertility

Services for safe delivery were available at all the DHs, 88%

Table 3: Services related to diagnosis and management of infertility

	DH (*n*=12), *n* (%)	CHC (*n*=24), *n* (%)
Services related to diagnosis of infertility		
Transvaginal sonography	4 (34)	1 (4)
Transabdominal sonography	7 (59)	3 (13)
HSG	3 (25)	0
Folliculometry	5 (42)	0
Endometrial biopsy	3 (25)	1 (4)
Histopathology of tissues	4 (33)	1 (4)
Diagnostic laparoscopy	3 (25)	2 (9)
Diagnostic hysteroscopy	1 (9)	0
Services related to management of infertility		
Ovulation induction with timed intercourse	10 (84)	6 (25)
Ovulation induction with clomiphene citrate	4 (34)	3 (13)
Ovulation induction with gonadotropins	7 (59)	4 (17)
Operative hysteroscopy	1 (8)	0
Operative laparoscopy	3 (25)	1 (4)
Minor surgeries in male (hydrocele/hernia repair)	9 (75)	8 (34)

DH: District hospital, CHC: Community Health Center, HSG: Hysterosalpingography

of CHCs, and 71% of PHCs. While 75% of DHs, 42% of CHCs, and 8% of PHCs provided services for first trimester abortions by medical method, only 50% and 29% of DHs and CHCs, respectively, provided services for the second trimester abortions. Manual vacuum aspiration service for abortion was provided at 58% of DHs and 25% of CHCs. Dilatation and curettage for 1st trimester abortions was provided by 92% of DHs, 54% of CHCs, and 15% of PHCs. The majority of the facilities did not perform wet mount examination and only one-fourth of the DHs did Gram-staining. Nearly half of the PHCs surveyed did not provide treatment for RTI/STI but only counseling. Tuberculosis treatment was offered by all the DHs and CHCs and 81% of PHCs. However, 65% of the PHCs did not have basic diagnostic facility such as sputum microscopy for diagnosing acid–fast bacilli.

Constraints for provision of infertility services

Common constraints faced by the providers related to infertility services were lack of workforce and infrastructure; nonavailability of equipment for diagnostic procedures, nonavailability of drugs and supplies, and lack of specialized training in infertility. The reluctance of male partner to report and undergo clinical examination and investigations was also considered a major challenge.

Discussion

In our study, the existence and demand for infertility services of considerable magnitude has been reported by service providers. In the country, the demand for infertility services is estimated to be around 10 million and will be rising in the future.[3,6] Therefore, the public sectors need to be geared up for meeting the unmet need of infertile couples.

The results of this study indicate that basic services for infertility investigative process were available at majority of the DHs. These services except for semen examination were also available at 73%–88% of CHCs and PHCs. However, infrastructure and expertise to diagnose and advanced management infertility with specialized skills were inadequate in most of the health facilities. The assessment of service providers indicated that skills of MOs and paramedical Staff were limited owing to the lack of any in-service training to diagnose and manage infertility. Still, it is quite encouraging to find that some of the DHs were well equipped to carry out the diagnosis and treatment of infertility. The findings also indicate that most of the services for the prevention of infertility were available in the selected districts. However, there is a need for strengthening of RTI/STI and safe abortion services at CHCs and PHCs.

Overall, the availability of inadequate resources and skills for infertility management in the study areas reflects the absence of infertility as a mandate in the package of services under National Health Mission. Therefore, immediate attention of government is required to incorporate infertility services in the national RMNCH + A program and strengthen infertility management services, particularly in the high prevalent districts. It is good to note that recently, a couple of questions related to infertility as a rising concern and ignored public health problem has been raised in the parliament and the government has acknowledged its existence and has made a commitment to address infertility through public health sector.[8,9]

Literature reports from India are extremely sparse on the above perspective. Our findings substantiate the results of a similar study undertaken by Widge and Cleland, which revealed that infertility services were hardly available in public sector thus leaving no alternative to the couples than to approach private services.[5] However, this study was based on the postal survey without the scope of physical verification of services.

Limitations

The main limitation of our study was that it was mainly a questionnaire based and actual case management was not observed. To overcome this, we used hypothetical situations in the form of case studies presented to doctors. Second, assessment of the infrastructure and physical monitoring was limited to the presence of the infrastructure; but whether the machine was functional and the quality of its performance was not assessed.

Conclusions and Recommendations

The study concludes that the district health infrastructure in India has a potential to provide basic services for infertility. With some policy decisions, resource inputs and capacity strengthening, it is possible to provide basic as well as advanced services for infertility in the district health system. The study recommends availability of infertility management relevant adequate infrastructure and trained workforce. Communication material for staff as well as the community is needed for imparting correct knowledge on prevention and treatment, and

to reduce stigma and discrimination. Strengthening of National Health Programs such as RNTCP, RTI/STI, and maternal health programs regarding early diagnosis, treatment, and prevention of complications will go a long way in preventing infertility. Adoption as an option to manage infertility, particularly in our country where a number of orphan children are large, should be promoted. Finally, more advocacies are required at the community, policy, program, and political levels to promote the meaning of family planning as not only to limit the children but also planning for the family by addressing childlessness.

Financial support and sponsorship

This study was conducted with financial support from the United Nations Population Fund, Country Office, India.

Conflicts of interest

There are no conflicts of interest.

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