Original Research

Availability of subfertility management services in Colombo District, Sri Lanka

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Abstract

Introduction: Affordable and accessible quality services reduce treatment defaults and improve patient satisfaction in subfertility management. Assessment of the available services is a necessity to advocate for the relevant authorities to improve services.

Objectives: To assess the availability of subfertility management services at healthcare institutions in Colombo District, Sri Lanka

Methods: This survey was performed in 2019 in 18 medical officer of health (MOH) units that provide field level healthcare; seven secondary and tertiary level government hospitals; and 32 registered private clinics/hospitals in Colombo District. Two separate checklists were developed for field-level and clinic/hospital-based services assessment. The interviews were performed to administer the checklist for clinical and administrative staff at different units of service provision. The availability of the services was presented as numbers and percentages.

Results: Field-level availability of facilities; only 44.5% of MOHs had conducted awareness programmes on subfertility for the public during the past year and only 27.7% of MOHs had referred sub-fertile couples to secondary or tertiary hospitals for further management during the preceding month. Seminal fluid analysis (SFA) was available in 71.5% of the government sector and 84.3% of the private sector hospitals; abdominal and transvaginal ultrasound scans (USS) in 100% of government sector hospitals; and 93.7% of abdominal and 84.3% of transvaginal USS available in the private sector. Intra-uterine insemination (IUI) was available in 71.5% of the government sector hospitals but in only 40.6% of the private sector hospitals. Assisted reproductive technologies (ART) such as in vitro fertilization (IVF) was available in 12.5% of the private sector hospitals while none of the government sector hospitals provided this facility.

Conclusions & Recommendations: The provision of field level facilities for subfertility was not satisfactory and less integrated. Notably, the ART services were available in the private sector hospitals predominantly. Rational public health policies need to be developed regarding the provision of field level and advanced care.

Keywords: *subfertility, subfertility services, subfertility treatments, subfertility investigations*

Introduction

Subfertility is an important medical and social problem due to its high prevalence and impact on the psychological wellbeing of couples. Its prevalence in Sri Lanka is nearly 15.0% among married couples aged 15-49 years (1-2). Subfertility is a condition that needs attention in prevention, early detection and appropriate treatment. Therefore, contributions in both preventive and curative sectors are equally important (3).

The 21st World Health Assembly in 1968 suggested that subfertility management should be integrated with primary healthcare services (4-5). The Alma Ata Declaration of 1978 also identified this need. In 2004, the World Health Assembly proposed five core statements, including the provision of family planning and infertility services (6). Prevention and treatment of subfertility are included as a core factor in the integrated definition of sexual and reproductive health and rights (7). Infertility is linked to the achievement of Sustainable Development Goals (SDG) in 2030 (7). Therefore, the provision of subfertility care is highlighted in several world health conferences.

The provision of subfertility care services in many low- and middle-income countries is not a priority for the government as their main goal is to provide basic needs for the increasing population (4). Therefore, in resource-poor countries, each government's contribution to improving subfertility treatment facilities has been relatively low (4, 8), leading to poor organization, inadequate referral systems and lack of preventive strategies and laboratory facilities as key issues in providing subfertility management (4). Although the new technology of IVF had been introduced 30 years ago, only a small proportion of people benefit from this procedure.

In Sri Lanka, the focal point for the management of subfertility services is the Family Planning Unit of the Family Health Bureau. The National Policy on Maternal and Child Health addressed the provision of subfertility services. It mentioned strengthening, rationalizing, and streamlining the services for sub-fertile couples (9). Subfertility management is incorporated into the family planning package of the Family Health Bureau which is delivered through the preventive and curative health sectors (10). Prevention through health education, identification and referrals of sub-fertile couples are the responsibilities of the MOH units, which provide field health care within a defined geographical catchment area (10-11). Awareness of subfertility through proper education among the general population reduces social stigmatization (8). Primary healthcare services must liaise with secondary and tertiary care services to provide advanced care for those who need it (12). Advance management of subfertility is done by the curative sector, mainly by secondary and tertiary care hospitals in Sri Lanka (10-11). The National Family Planning Programme Review 2016, Sri Lanka emphasized the need for service breakdown at each level of care in subfertility management, which is not well organized up to now (11).

The sustainability of ART in a resource-poor setting will depend on the availability, affordability and effectiveness of subfertility management facilities (13-14). In Sri Lanka, the first IVF baby was born in 1999 (15) and thereafter, it gradually became more available in the private sector as there is no regulating authority to monitor ART facilities. The National Bioethics Council in collaboration with the Sri Lanka Medical Council and Ministry of Health had set about drafting this legislation named 'Human Reproduction and Genetic Act' (HURGA) (15).

In the literature search, there was no proper assessment of the services available for subfertility management in Sri Lanka during the past 15 years. The Service Availability and Readiness Assessment (SARA) Survey 2017 conducted by the Ministry of Health, Sri Lanka assessed only the availability of SFA and IUI facilities, which is mainly the service of

the curative sector (16). Therefore, the objective of this study was to assess the availability of services for subfertility management at the field level and government and private sector hospitals/clinics in Colombo District.

Methods

A descriptive survey was designed in government and private sector health care institutes which provide subfertility care in the district of Colombo, Sri Lanka. The study was conducted from March to June 2019 in all 18 MOH units that function under the Colombo Regional Director of Health Services, all seven secondary and tertiary care government hospitals, and the 32 private hospitals, maternity homes and medical centres which have been registered in Private Health Regulatory Council in Ministry of Health. Due to the feasibility and most of the specific investigations and treatments being conducted in secondary and tertiary care hospitals, the present study assessed the service availability in all secondary and tertiary care hospitals with an obstetrician and gynaecologist.

The principal investigator drafted two model checklists separately for the MOH- and hospital/clinic-level facility availability assessment after reviewing similar checklists developed in other countries and Sri Lanka (1). The following health professionals contributed to the development of the checklist for MOH units: obstetrician and gynaecologist, consultant community physician, MOHs and the field-level healthcare workers attached to an MOH unit such as the public health nursing sister (PHNS) and supervisory public health midwife (SPHM). The checklist included the following sub-headings: preventive measures for subfertility, history taking/examination and referrals to government hospitals, health education and counselling sessions for sub-fertile couples. The following health professionals contributed to the development of the checklist for hospitals and clinics: two obstetricians and gynaecologists and two consultant community physicians. The checklist included the following sub-headings: available investigations, available treatment procedures, ART facilities, and counselling for sub-fertile couples. The judgemental validity of the two checklists was assessed by a multidisciplinary panel of experts in the field of community medicine and obstetrics and gynaecology.

Data collection was done by the principal investigator with trained assistance. The information obtained from the healthcare staff was confirmed with available patient registers, patient records, investigation sending books to Medical Research Institute (MRI) in government hospitals, drug registration books and investigation register books in the laboratory.

Data analysis

Facilities available in the MOH units, government/private sector hospitals and clinics were presented as descriptive statistics with numbers and percentages.

Results

A description of the staff interviewed in the service availability assessment in the MOH units and the government and private sector hospitals/clinics is presented in Table 1. Within the 18 MOH units, 44.5% (n=8) had conducted at least one awareness program or lecture on subfertility for the public while 77.7% (n=14) had done so for other healthcare staff by a doctor during the last one-year period. History taking and examination of at least one sub-fertile couple by a doctor had been carried out in field clinics only in 27.7% (n=5) of the MOH units during the preceding month. Referrals of sub-fertile couples to secondary or tertiary care centres had been documented only in 27.7% (n=5). Only three (16.6%) MOH units stated that they performed counselling sessions for sub-fertile couples with psycho-social problems.

Table 1: Description of the staff interviewed in the medical officer of health units and government and private sector hospitals/clinics

Type of institution	Staff interviewed
Medical officer of health units	Medical officer of health - key informant
	Assisted medical officer of health
	Public health nursing sister
	Supervisory public health midwife
	Public health midwives
Government sector secondary/tertiary care hospitals	Director of the hospital - key informant
	Consultant obstetrician and gynaecologist
	Doctors who worked in hospitals/clinics (senior registrar/ registrar/ medical officer)
	Nursing sister
	Lab technicians
	Chief pharmacist
	Nursing officers in the relevant units of the hospitals and clinics.
Private sector hospitals/ maternity homes	Director of the hospital/ chief in charge of the clinic - key informant
	Consultant obstetrician and gynaecologist
	Doctors who worked in hospitals/wards
	Lab technicians
	Chief pharmacist
	Nursing officers in gynaecology units
Private sector clinics	Chief in charge of the clinic - key informant
	Consultant obstetrician and gynaecologist
	Doctors who worked in clinics
	Lab technicians (only in some clinics with IUI facilities)
	Chief pharmacist
	Nursing officers in clinics

Within the clinical settings, seminal fluid analysis was available in 71.5% (5 out of 7) of government sector secondary and tertiary care hospitals and in 84.3% (27 out of 32) of private sector registered hospitals and clinics. However, USS (abdomen and transvaginal), most of the hormone tests (prolactin, FSH, LH), and utero-tubo-peritoneal investigations (laparoscopy, laparoscopy with dye test, and hysterosalpingogram) were available in all the government sector hospitals (Table 2). The IUI facility was available in 71.5% (5 out of 7) of government sector secondary and tertiary care hospitals and 40.6% (13 out of 32) of registered private sector clinics and hospitals. Aspirate sperm to check viability was available in 15.6% (5 out of 32) of private sector clinics and hospitals, while none of the government sector hospitals had this facility (Table 3). The IVF facility was available in 12.5% (4 out of 32) of private sector registered clinics and hospitals while none of the government sector hospitals provided this facility. The sperm bank facility was available in 14.2 % (one out of seven) of government sector hospitals and 12.5% (4 out of 32) of registered private sector clinics and hospitals (Table 4). Most of the associated investigations were available in all government sector secondary and tertiary care hospitals and private sector hospitals/clinics (Table 5).

Table 2: Availability of investigations at secondary and tertiary care hospitals in the government sector and registered hospitals/clinics in the private sector (N=39)

Characteristics	Government (n=7)		Private (n=32)		Total	
	No.	(%)	No.	(%)	No.	(%)
Specific investigations						
seminal fluid analysis	5	(71.5)	27	(84.3)	31	(79.4)
genetic testing	0	(0.0)	5	(15.6)	5	(12.8)
Ovulation and endocrine profile-related investigations						
Ultrasound scan abdomen	7	(100.0)	30	(93.7)	37	(94.9)
Ultrasound scan transvaginal	7	(100.0)	27	(84.3)	34	(87.1)
Prolactin*	7	(100.0)	15	(46.8)	22	(56.4)
Follicular stimulating hormone (FSH)*	7	(100.0)	15	(46.8)	22	(56.4)
Luteinizing hormone (LH)*	7	(100.0)	15	(46.8)	22	(56.4)
Progesterone*	4	(57.1)	14	(43.7)	18	(46.1)
Anti-mullerian hormone	0	(0.0)	9	(28.1)	9	(23.0)
Thyroid stimulating hormone*	7	(100.0)	30	(93.7)	37	(94.9)
Utero-tubo peritoneal investigations						
Laparoscopy	7	(100.0)	16	(50.0)	23	(58.9)
Laparoscopy dye test	7	(100.0)	16	(50.0)	23	(58.9)
Hysterosalpingogram	7	(100.0)	16	(50.0)	23	(58.9)

* Blood samples are sent to the Medical Research Institute, Colombo for analysis and a report is issued at the same hospital

Table 3: Availability of treatment facilities for subfertility management at government sector secondary and tertiary care hospitals and registered private sector hospitals/ clinics in Colombo District (N=39)

Characteristics	Government (n=7)		Private (n=32)		Total	
	No.	(%)	No.	(%)	No.	(%)
Clomiphene citrate	5	(71.5)	26	(81.2)	31	(79.5)
Aromatic inhibitors	3	(42.8)	19	(59.3)	22	(56.4)
Gonadotropin injection	1	(14.3)	12	(37.5)	13	(33.3)
HCG injection	3	(42.8)	19	(59.3)	22	(56.4)
Progesterone injection/pessary	4	(57.2)	15	(46.8)	19	(48.7)
Intra Uterine Insemination	5	(71.5)	13	(40.6)	18	(46.1)
Facilities for tubal ovarian surgeries	7	(100.0)	13	(40.6)	18	(46.1)
Aspirate sperm to check the viability	0	(0.0)	5	(15.6)	5	(12.8)

Discussion

Our study found that the availability of services for subfertility at the MOH units for prevention, early diagnosis and referral for further management was not satisfactory and most of the services assessed were scored below 50%. Although secondary and tertiary level government sector hospitals provided most of the investigations for subfertility management, the ART facilities were mainly provided by private sector hospitals and clinics.

We found that most of the services assessed in MOHs scored below 50%. This low score could be due to the field staff not identifying the sub-fertile couples and not having proper service provision for subfertility at the field level. Although 'Strengthen, rationalize, and streamline services for sub-fertile

couples is one of the main strategies in Policy Goal 7 of the Maternal and Child Health Policy in Sri Lanka, the due attention is not given. This evidence is supported by the information fed to the Reproductive Health Management Information System (RHMIS) from the MOHs which indicated the subfertility prevalence of Colombo District as 3.1% in 2016 (10). This rate is far below the identified prevalence of 15% in 2006 (1) and 14.5% in 2019 (2) by two cross-sectional studies done in the same district.

Table 4: Availability of Assisted Reproductive Technology procedures for subfertility management in the government sector secondary and tertiary care hospitals and registered private sector hospitals/clinics in Colombo District (N=32)

Characteristics	Government (n=7)		Private (n=32)		Total	
	No.	(%)	No.	(%)	No.	(%)
IVF[1]	0	(0.0)	4	(12.5)	4	(10.3)
ICSI[2]	0	(0.0)	4	(12.5)	4	(10.3)
GIFT[3]	0	(0.0)	0	(0.0)	0	(0.0)
Egg sharing	0	(0.0)	3	(9.4)	3	(7.7)
Egg donation	0	(0.0)	2	(6.3)	2	(5.1)
Surrogacy	0	(0.0)	1	(3.2)	1	(2.7)
Sperm freezing facility	1	(14.3)	4	(12.5)	5	(12.8)
Donor sperm	1	(14.3)	4	(12.5)	5	(12.8)

[1]In-vitro fertilization; [2]Intra-cellular sperm injection; [3]GIFT- Gametes intra fallopian transfer

Table 5: Availability of associated investigation facilities for subfertility management in the government sector secondary and tertiary care hospitals and registered private sector clinics for subfertility management in Colombo District (N=39)

Characteristics	Government (n=7)		Private (n=32)		Total	
	No.	(%)	No.	(%).	No.	(%)
Haemoglobin level	7	(100.0)	32	(100.0)	39	(100.0)
Full blood count (FBC)	7	(100.0)	32	(100.0)	39	(100.0)
Erythrocyte sediment ratio (ESR)	7	(100.0)	32	(100.0)	39	(100.0)
Test of hepatic functions	7	(100.0)	32	(100.0)	39	(100.0)
Test of renal functions	7	(100.0)	32	(100.0)	39	(100.0)
Fasting blood sugar (FBS)	7	(100.0)	32	(100.0)	39	(100.0)
Insulin assay	4	(57.1)	21	(65.6)	25	(64.1)
Thyroid function test	7	(100.0)	30	(93.7)	37	(94.8)
Chlamydia trachomatis antibodies	0	(0.0)	5	(15.6)	5	(12.8)
Antibodies against HIV	7	(100.0)	28	(87.5)	35	(89.7)
Anti-sperm antibodies	1	(14.2)	2	(6.3)	3	(7.7)
Urine full report (UFR)	7	(100.0)	32	(100.0)	39	(100.0)
Visual field assessment	4	(57.1)	10	(31.3)	14	(35.9)

Identifying the sub-fertile couples is important to give the services offered by the MOH units. Lack of due attention due to the increased workload of PHMs would be a reason for this issue. Educating the field health staff about the importance of identifying the sub-fertile couples and strengthening the monitoring and evaluation would be an effective strategy.

A satisfactory follow-up system has not been established and evidence for giving care and referral

to the secondary and tertiary care hospitals was low. Due to the absence of a proper documentary system in the field care of subfertility, it was unable to get the number of sub-fertile who were presented to the MOH for care, nor the number referred for treatment. However, with expert opinion, this information on referrals was obtained by searching for any documentary evidence of referrals during the preceding month. Nearly three-fourths of MOHs had not at least one documentary evidence of caregiving and referrals in the preceding month. The lack of referrals could be due to lower identification of sub-fertile couples in the field (10) and there is no well-established referral system (12). A referral system similar to that of antenatal care is a need to be developed with the discussion of the curative health sector staff.

Subfertility is an area that needs information sharing and good communication on primordial prevention to reduce the risk factors such as obesity, infections in the reproductive system, and advanced age in female partners (17). According to our findings, more than three-fourths of MOHs (77.4%) had conducted at least one educational session for other healthcare staff to improve their knowledge on subfertility. It was far below this percentage for awareness programs conducted on subfertility for the public. It is important to educate the population on the general functions of reproductive organs, the reproductive cycle, sexuality, appropriate preventive behaviours, and available medical techniques to treat subfertility (8). Education could also reduce the social stigmatization of subfertility (8). The National Family Planning Program Review, 2016 in Sri Lanka identified this lack of communication and information sharing in subfertility management and also emphasized the need for refreshing the knowledge of public as well as healthcare workers on subfertility periodically (11). A comprehensive service provision package with patient-centred care should be incorporated into the MCH Policy in Sri Lanka, with specific indicators developed to assess the progress of subfertility services at all healthcare levels (18). There should be regular training of trainers to improve their knowledge on subfertility, its management and how to improve the communication skills and counselling of sub-fertile couples. Patient-centred care at the primary level is needed to reduce treatment defaults and improve patient satisfaction (19). A hospital-based study done at a subfertility clinic in Colombo District revealed that 44.1% of women are psychologically distressed (20).

Subfertility management services, in Sri Lanka, are provided by the government hospitals served by an obstetrician and gynaecologists. Therefore, this study only assessed the subfertility management services provided by the secondary and tertiary care hospitals in the government sector. According to the present study seminal fluid analysis, was available in the private sector (84.3%) more than in the government sector (71.5%). IUI facility was available in (71.5%) of the government sector secondary and tertiary care hospitals compared to the private sector (40.6%). The SARA, which was done in 2017 (16) reported that SFA and IUI facilities were offered in 48% and 61% of government tertiary care hospitals respectively, 25% and 21% in secondary care hospitals, and 48% and 36% of private sector hospitals in the whole country. It was observed that the availability of subfertility facilities (SFA and IUI) in the Colombo district as per our study was better than the SARA which was done in the whole country. It should be noted that most tertiary care teaching hospitals, specialized hospitals for subfertility care in the government sector, and registered private hospitals with better facilities are all situated in the Colombo district.

When considering ART facilities, none of the government sector hospitals had IVF and intracytoplasmic sperm injection (ICSI) facilities. However, in private sector hospitals, 12.5% had IVF, ICSI and sperm bank facilities, 9.4% had egg sharing and 6.3% had egg donation facilities. The availability of ART facilities is comparatively very low in

government sector hospitals than in private sector hospitals in Sri Lanka, which necessitates seeking treatment at private hospitals on payment. The National Family Planning Programme Review in 2016 also emphasized the importance of insurance coverage for subfertility treatment in all insurance packages (11). The review also suggested defining the service delivery level and the services available at each level in collaboration with the Sri Lanka College of Obstetricians and Gynaecologists (11). However, still, there is no well-documented evidence for facilities available at each level.

Prevention and appropriate treatment of subfertility has been included in reproductive health rights since ICPD conference in 1994 and included as a core factor in the integrated definition of sexual and reproductive health and rights (7). Subfertility is linked to the achievement of SDG 3.7, 3.8 and 5.6 in 2030 (7), which reflects that provision of preventive and treatment facilities are mandatory by the existing government of each country.

In this study, the services available in the primary care government sector hospitals/clinics were not assessed, which is a limitation of this study. The services provided by the MOH units were not properly documented, and therefore would be a reason for the low percentage of services provided by the MOH units.

Public Health Implications

- Subfertility is a significant medical and social problem in its high prevalence and impact on psychological wellbeing. Attention for this issue is low in both the preventive and curative sectors. The study revealed that the provision of field-level facilities by the MOH units is not satisfactory and has less integration with the secondary and tertiary government hospitals.
- Almost all ART facilities were available in the private sector. Therefore, attention should be focused on providing patient-centred care at field level with providing ART facilities to some extend in the government sector. Rational public health policies need to be developed regarding the provision of field-level and advanced care.

Conclusions & Recommendations

Most of the subfertility services assessed at the field level were scored below 50%. Most of the assisted reproductive technology facilities were available in the private sector hospitals. Therefore, the subfertility management services to be available at each level should be defined and a proper monitoring and evaluation system with indicators to monitor the availability of the services is needed to improve the subfertility management services. Effective and rational public health policies should be developed by the relevant authorities such as the Family Health Bureau for the prevention of subfertility and to increase the availability of services and patient-centred care.

Author Declarations

Competing interests: The authors declare that they have no competing interests.

Ethics approval and consent to participate: Ethics clearance was granted by the Ethics Review Committee of the Faculty of Medicine, University of Kelaniya, Sri Lanka. Informed written consent was obtained from each participant before data collection. (Ref No: P/282/12/2017). Permission for the study was obtained from the health authorities and the ethics clearance was granted by the Ethics Review Committee of the Faculty of Medicine, University of Kelaniya, Sri Lanka. Informed consent was obtained from each participant prior to data collection. (Ref No: P/282/12/2017).

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Author contributions: GG was the principal investigator and was involved in designing the study, developing of the study instrument, supervising data collection, and conducting statistical analysis. SG and MW were the supervisors and provided the technical guidance and did the overall supervision. GG drafted the manuscript and SG and MW did the proofreading and modified the article.

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