

Prevalence of Primary and Secondary Infertility

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Abstract

Objective: The purpose of this study is to decide the prevalence of primary and secondary infertility. **Material and Method:** In this systematic review facts extracted by Medline, PubMed, science direct and Obs gyne online library that were queried for studies posted between 2005 to 2021 by using specific MeSH terms. We extracted data from 15 cross sectional studies that was carried out in discipline exercise regions of tertiary care health facility. **Results:** This study shows data from population surveys reporting on occurrence of number one and secondary infertility. Fifteen research furnished estimates of primary and secondary infertility incidence in 6400 infertile couple. Out of 6400 infertile patients 3600 (fifty six.25%) offering with primary and 2800 (43.2%) supplying with secondary infertility. Age distribution with number one infertility confirmed that the majority of the participants belong to the most fertile age institution. Age distribution of women with secondary infertility confirmed that majority belongs to the age institution of 30–39 years. The primary results of the modern researches had been the primary infertility's high rate (fifty six.25%) and excessive charge of female factors among infertile couples. Although, it has been said in other researches that female variables (40%), male variables (40%) or a combination (20%) of each could be associated to the causes of infertility. Motive of the couple's infertility turned into determined on the basis of their examination results and medical history. As compared to the secondary infertility, number one infertility occurrence was higher within the people approaching a tertiary care middle of public zone. **Conclusion:** From this systematic evaluate we concluded that as compared to secondary infertility, the primary infertility's superiority is higher. The marriage age is increasing which impacts reasons with male variables and unexplained infertility greater generally observed with increasing age of marriage. Female component stays a principle reason for the infertility including some unexplained reasons and means. In the population coming to a public region tertiary care center, the number one infertility's prevalence is higher as compared to the prevalence of secondary infertility.

Keywords: Infertility, primary infertility, secondary infertility, psychological disorder.

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INTRODUCTION

The definition of infertility is incapability of conceiving a baby after a year of unprotected and normal sexual intercourse [1]. In 2006 to 2010, a survey was conducted in which greater than 1.5 million females in U.S., or 6 percent of wedded populace ranging from age groups of fifteen to forty four years were recorded to be infertile whereas 6.7 million ladies pronounced abnormal capacity to conceive or complete the time period of carrying a child. Infertility can also

arise from male elements, woman factors, or a aggregate of these [2, 3]. Due to the fact eight five% of couples conceive spontaneously inside 365 days if having sex consistently. It's critical to recognize folks that could have advantage by the evaluation of infertility. Usually, the couples who are unable to get pregnant after three hundred and sixty five days of having an unprotected vaginal intercourse are eligible to be presented with the evaluation. Counseling about options need to be offered to couples who are not bodily capable of getting pregnant. Females over the age of 35

or the spouses having acknowledged infertility chance elements can be evaluated at the six month of normal intercourse [4]. For several spouses, an inability of conceiving becomes a shocking tragedy that results in a severe physical, psychological, social as well as sexual difficulties. The causes of infertility can be a dysfunction of the reproductive system of both, female or male or with both of the spouses. Numerous elements could disrupt the fertility method during any phase. For instance, women infertility may be because of one or extra motives along with, polycystic ovary syndrome, hormonal problems, premature ovarian failure, genital infections, endometriosis, fallopian tube obstruction, congenital uterine anomalies, uterine synechiae, or different medical headaches (diabetes and thyroid problems) [5, 6]. Moreover, cervical elements can be a notion to have a small part to play, even though occurrence of them being the entire cause is very rare. Cervical mucus evaluation is undependable; consequently, research is not helpful with the control of infertility. The preliminary records ought to cover menstrual records, timing and frequency of intercourse, preceding use of contraception, preceding pregnancies and effects, pelvic infections, medication use, occupational exposures, substance abuse, alcohol intake, tobacco use, and former surgical operation on reproductive organs. Anatomic variances, systematic diseases, exposures to toxins, abnormalities of chromosomes, sperm antibodies, damage and infections are the eight reasons causing infertility in male. Extra threat elements may additionally encompass smoking, alcohol use, weight problems, and older age; but, the facts are hampered by way of a lack of pregnancy-related effects [7, 8].

According to world health corporation (WHO), the time period number one infertility is used whilst a female in no way got pregnant whereas the inability to get pregnant in a couple which at the least have had one a hit theory inside the past is called secondary infertility. The epidemiology of secondary infertility isn't always properly understood. In developing nations, infections are the leading motive of secondary infertility among women of those, sexually transmitted infections (STIs) in addition to infections strewed via iatrogenic elements unsafe termination of pregnancy and dangerous birthing practices were identified as reasons of secondary infertility in ladies. About one–1/3 of secondary infertility instances are related to male factors; some other third are associated with the women, whereas the last are concerned with issues in each the person and the female, or continue to be unexplained [9-12].

DISCUSSION

Haifa A *et al.*, (2015) carried out a take a look at on “prevalence of primary and secondary infertility from tertiary center in japanese Saudi Arabia.” All sufferers during January and December 2012, who visited the infertility clinics were associated to the

studies. Statistics have been accumulated by using the scientific charts for secondary or primary infertile, age, marriage length, radiological and laboratory investigations, husband's semen evaluations and a Quadramed filing device. The usage of version 14 of SPSS was analyzed by entering these records in the database. In the course of the take a look at duration, 2414 patients have been visible every branch of gynecology in clinics and in every obstetrics clinics. 457 sufferers were observed to be suffering from primary infertility and secondary infertility within the reproductive and infertility medicine clinics. Statistics gathered from these 457 sufferers had been evaluated. General occurrence of infertility became 18.93%. Average marriage length was 64.71 ± 50.84 (12–258) months whereas the mean age became 33.38 ± 5.39 (20–fifty two) years. Three hundred and eighty eight people did not have had any acknowledged sickness meanwhile 361 (78.99%) people suffered from number one infertility. The average level of FSH (follicle-stimulating hormone) became 5.91 ± 3.56 IU/L, implying that the prolactin levels changed to 18.4 ± 8.35 μ g/L and leutinizing hormone level became 4.61 ± 2.11 IU/L. It was revealed in semen statistics that 127 (27.7%) patients suffered from fewer than 15 million count whereas, 87 (68.5%) patients out of them have been azoospermic. The common progressive motility turned into $36.62 \pm 27.43\%$. Our observe represented that infertility prevalence changed into 18.93% where number one infertility has higher prevalence as compared to the secondary infertility. Infertility is seen as a growing problem and a source of pressure for Saudi Arabia, which demands proper guidance in the coming years before it becomes a serious concern for public health [13].

Al Subhi T *et al.*, (2013) carried out a look at on “prevalence of tubal obstruction within the hysterosalpingogram of girls with number one and secondary infertility.” In Hysterosalpingograms of females having the primary and secondary infertility, a study of unilateral and bilateral tubal blockage was done. Tubal obstruction frequencies in ladies suffering from number one infertility have been approximately nineteen percent whereas in sufferers of secondary infertility it was twenty-nine percent. Within both groups, the positivity for Chlamydia antigen fee changed to similar. In women suffering from secondary infertility, former pelvic surgical procedure ($p < 0.001$) and ectopic pregnancy ($p < 0.01$) were better. Regarding this research, a reason of the female infertility is tubal blockage. In number one infertility and in secondary infertility corporation, the bilateral tubal blockage became comparable whereas within secondary infertility group, a reason for the tubal blockage can be the former pelvic surgical treatment [14].

A study was performed by Benksim A *et al.*, (2018) on “difference among primary and Secondary

Infertility in Morocco: Frequencies and associated elements.” In the Marrakech-Safi area, six hundred and nineteen infertile ladies related to private and public fitness centers had been decided on via simple random sampling technique in this pass-sectional examine. This observe became carried out from 1st October, 2013 to 31st December, 2015. A questionnaire was used to collect information on socioeconomic position, demographic characteristics, couple's age, dietary habits, and other data linked to both female and male reproductive organs. In order to discover variables related to infertility, logistic regression was utilized. The statistical magnitude changed into harmony at 0.05. Primary infertility rates were 67.37% and the secondary infertility rates were 32.63%. A version including three significantly predictable components of the secondary infertility were diagnosed by the multivariate analysis: socioeconomic position (OR=3.eighty three: 1.011-14.70), female ages (OR=1.268: 1.038-1.54) and marriage length [odds ratio (OR)=12.263: 2.289-65.685]. Reasons for number one infertility and the secondary infertility had been no longer constantly a lady's problem, but both male and female contribute to the infertility in couple. It was shown in a multiple regression analysis that within the females having secondary infertility, the age of ladies, their socioeconomic status and the length of marriage are indicative factors which could lower the fertility threat [15].

Akhondi M *et al.*, (2019) conducted a study on “Practical Difficulties in Estimating The Prevalence of Primary Infertility in Iran.” It was a cross-sectional, community based study performed during 2010 to 2011 in Iran's rural and urban regions by the Avicenna Research Institute. The records of reproduction of 17,187 wedded ladies aged twenty to forty years were recorded by utilizing the cluster sampling. In all, proportionate to the province's populace, a random cluster of 1011 sample was chosen based on the submit office codes. By using the SPSS statistical software, the inferential and descriptive statistical analysis of statistics was performed. Number one infertility superiority according to the WHO's epidemiological, demographic and scientific definitions have been 12.8, 9.2 and 20.2%, sequentially. Additionally, 4.9% was the rate for secondary infertility. There was an estimate of fifty percent decline in the infertility fee during a two years length of exposure however, there was no enormous change in the infertility rate when the exposure duration was increased to five years. Research demonstrated that mostly the couples would conceive within years of having an unprotected intercourse hence, they do not need any treatment of infertility. Because of empirical problems during the estimation of number one infertility superiority, the time limit for pregnancy should be reassessed, and it seems that allowing additional time for the younger females to concieve appears affordable [16].

Rostami dovom *et al.*, (2014) carried out a examine on “prevalence of primary and secondary infertility amongst 18-forty nine years vintage iranian ladies: a population-primarily based have a look at in 4 decided on provinces.” This changed into a populace-based totally look at carried out within the group of presently wedded ladies, where n=888, aged eighteen to forty-nine years. Utilizing the quota stratified-cluster sampling, individuals had been chosen from the four provinces. Educated interviewers finished the custom designed questionnaire. The imply age for the ladies who took part in the research was 34.8±6.9 years old. Frequency of number one infertility was 21.1%, secondary infertility was 7.8% and for lifetime infertility was 6.4%. Menstrual problems became maximum significant motive for the primary infertility as well as secondary infertility. Primary infertility (post modification) (P<0.5) had a significant link to the he level of girls education and the age of marriage. The infertility superiority differs relying on the description. The sociodemographic variables could have an effect on superiority. Increasing infertility incidence challenges our ladies us of a. giving records related to the variables influencing infertility could assist ladies who delays their marriage age due to the decision making during the child bearing years [17].

Adetoro OO *et al.*, (2011) conducted a observe on “the prevalence of infertility in a rural Nigerian network. In this he concluded that in Nigerian rural area network, the systematic random sampling of populace decides the infertility prevalence. Generally, 30.3% was the typical frequency where 9.2% was for the primary infertility and for secondary infertility indices were 21.1%. Post 30 years of age, number one infertility becomes unusual therefore increased infertility prevalence rate is due to valid causes for infertility. Infections of genitals (puerperal and put up abortal) were most important influential elements for excessive infertility rate in rural areas. In developing countries, unrestricted abortion legal systems, increased socioeconomic status, and the elimination of detrimental socio-cultural beliefs and behaviours might lower infertility to a bare minimum [18].

Pal, Moumita *et al.*, (2016) carried out a observe on “A examine of incidence and socio-demographic profile of infertile couples in field practice place of a tertiary care centre, Amritsar, Punjab, India.” the prevailing cross sectional community primarily based look at become performed within the field practice place of SGRD, Amritsar. The profile of socio-demographic condition of the screened couples who were infertile become taken by way of filling up the pre-examined proforma. The facts was statistically analyzed via the use of SPSS (20.0 versions) IBM Chicago and valid conclusion drawn. the total variety of infertile couples have been 291 making the superiority of infertility 4.fifty seven% [N=6373] with number one and secondary infertility had been 1.95% and 2.sixty

two% respectively the superiority of infertility in the study populace changed into four.fifty seven% with a primary infertility turned into 1.95% and secondary changed into 2.62%. The various infertile ladies one hundred fifteen (39.5%) had been from city and 176 (60.five%) were from the agricultural area. Secondary infertility cases have been better in ladies from both city and rural region [19].

Ancho Mittal *et al.*, (2015) conducted a study on "An epidemiological study of infertility among urban population of Ambala, Haryana." M.M Institute of Medical Science and Research conducted this cross-sectional research from January 2013 to December 2013, in their urban area of field practice. By the help of WHO definition, infertile couples were recognized and their corresponding epidemiological situations like etiology, demographic properties and current infertility treatments, if any take, were identified through interview. Total 4456 couples were found eligible out of which primary infertility or secondary infertility was suffered by 534 couples. The rate of 6.1% primary infertility and a rate of 5.7% secondary infertility was identified in this study among these eligible couples. Out of these couples, 49 were having primary infertility due to male factors (17.95%), 86 were suffering due to female variables (31.5%), as 66 couples were related to both of the spouses (22.34%) whereas unexplained causes of infertility were observed in 77 (28.21%) couples. The most common causes for primary infertility in women were the ovulatory factors whereas pelvic inflammatory disease (PID) and tubal obstruction were main reason for secondary infertility. This was determined that this study offered extensive information on the frequency of infertility within our location, as well as particular etiological and demographical variables linked to the infertility [20].

Akhondi MM *et al.*, (2010) conducted a examine on "occurrence of number one Infertility in Iran" The reason of this have a look at is to recognized the motive of infertility in under developed areas. A survey was conducted on the Iranian women aged 24 years for 12 months in 2011, from which this observation used the data. Proportionate to the province's populace, a complete cluster sample of 1011 women was selected randomly in order to keep up with the office codes. For the premise of gathering statistics, fertility history were evaluated. As a result, a questionnaire was designed. Afterwards, obstetricians and trained nurses were recruited we recruited to ask the wedded females to fill this survey questionnaire. A situation in which a couple becomes unable to get pregnant post having un-covered sexual intercourse for 365 days is called the primary infertility. 17187 women in 1011 cluster were questioned in this observation. 20.1 years was the average marriage age for the females, whereas 25.4 was the age of marriage of husbands. The average first pregnancy age of the women became 21.1 years. In Iran 20.2% was the rate

of primary infertility superiority according to this research. As compared to the arena average, in Iran, the primary infertility superiority seemed higher. Resultantly, it is vital for the large amount of couples suffering from this issue to be aided [21].

Vahidi S *et al.*, (2005) carried out a look at on "incidence of number one Infertility in the Islamic Republic of Iran." Aim of this research is deciding Iran's cutting edge primary infertility and its lifetime prevalence. This research was conducted in Iran's 28 provinces during 2004-05. For survey purpose, 783 ladies aged 19 to 49 years were selected using the cluster sampling technique. Following 1 year of unprotected sexual intercourse, life-time primary infertility became characterized depending on one out of two contraception conditions today after wedding to find suffering of infertility. The term "present day number one infertility" precise a girl who, like the description of lifetime infertility, has been unable to conceive for as long as she can remember. A 95% self-believe period was derived by using a complex sampling structure and the SVY command inside the software program package of STATA 8.0. There was 3.4% (95% CI: 3.zero-three.eight) subjects with cutting edge primary infertility superiority and 24.9% (ninety five% CI: 23.5-26.2) with lifetime primary infertility in the records. As for age developments in lifetime number one infertility, the very best incidence costs have been evident with the populace having the youngest age of wedding. Within the wedding ages of twenty-one to twenty-six, least prevalence (17.2%) has been observed and with a better marriage age, the quotes increased. An estimate of one by fourth couples in Iran, at any time in their future lifetime, revel in primary infertility whereas this hassle is suffered by 3.4% of couples at any period of life. Variables such as marriage age and the couple's reproductive capability must be taken into account when interpreting occurrence rates and their consequences in regards of healthcare and carrier provision [22].

Raque-Bogdan *et al.*, (2015) performed a have a look at on "the relationship amongst Infertility, Self-Compassion, and nicely-Being for women with primary or Secondary Infertility." in this have a look at 200 sufferers included from which 119 primary and 53 secondary infertile. Several females are distressed by infertility, and there is a scarcity of studies that tackles categories of infertility (primary or secondary) and strengths-based conceptions, such as self compassion. The secondary infertility (experienced post completing a pregnancy) prevalence is proportionally more than that of the primary infertility (experienced without having even one complete pregnancy), however several researchers of infertility utilizes the females experiencing the primary infertility as a sample hence the stance of secondary infertility largely goes uncaptured. The health of the ladies suffering from secondary and number one infertility was investigated

in a recent research including 53 ladies with secondary infertility and 119 ladies with number-one infertility. Findings indicate that both groups had comparable levels of personal health, self-consciousness, and global fertility-related stress, although women with number-one infertility have higher levels of fertility-related social stress. For females suffering primary or secondary infertility, self-consciousness moderated the relationship among the desire for children and subjective well-being. Furthermore, for all groups of women, self-compassion regulated the relationship between societal concern and personal health, which is especially important given the stigmatized social image and societal seclusion of those facing infertility. The feelings of self-blaming and the society blaming for the infertility may be resisted by the self-consciousness which can regulate the emotions [23].

Hosseini *et al.*, (2012) conducted a look at on "prevalence of primary and secondary infertility in 4 decided on provinces in Iran." in this network-based study, 2400 girls elderly 18-forty nine years had been decided on by the use of sampling through randomized cluster sampling technique involving Iran's four provinces acting as a consultant of populace of couples living in that region. Researchers made a valid questionnaire which was used to collect the facts. Software SPSS model 17, analytical statistical techniques descriptive information concept and the spearman test and chi-rectangular test manners were used to analyzed the gathered records. P rate was much less than 0.05 become taken into consideration statistically giant. In this observe, seventy two subjects (3.2) of the populace changed into modern primary infertile also, 26.1% people (599 people) suffered number one infertility lifetime. Moreover, about 1.7% of topics in spite of having at the least one toddler had been secondary infertile. Estimation of occurrence of present day number one infertility within the provinces Hormozgan was 6.3%, 2.2% in Kermanshah, 2.3% in Isfahan and 3.4% in Golestan depending upon the description of the infertility of 12 months. In this research, over the last few years, the anticipated current prevalence of primary infertility had a drastic incline primary in the observed populace (except Isfahan). Whereas, remaining diverse infertility prevalence were significantly stimulated through age of marriage and the present age [24].

Ahmadi *et al.*, (2006) conducted a study on "prevalence of infertility in Tabriz in 2004." For infertility, basically 3600 couples have been analyzed. About 3183 couples out of these 3600 couples were wedded for above 12 months and they gave the answers of the questions correctly. Occurrence of infertility became three.27% (2.04% as primary and 1.23% as secondary infertility). Amongst couples whose wives had been of their reproductive age (15 to forty nine years), the general occurrence of infertility became 3.35% (2.05% as primary and 1.30% as secondary).

Imply age of women at marriage become considerably higher in couples with primary infertility ($20.87 \pm \text{five.4}$ versus $18.\text{seventy five} \pm \text{four.04}$; $P < .001$). Remedy in search of was seventy nine.6% and 67.6% amongst patients with primary and secondary infertility, respectively. In fashionable, 75% of the sufferers had cited scientific facilities. The superiority of number one infertility became almost the same as different Asian nations, but the prevalence of secondary infertility became decrease than other nations. A higher marriage age changed into observed with a tremendous decrease in fertility of the couple. Number one infertile patients had stated scientific middle slightly more regularly than secondary infertile sufferers [25].

Deshpande P. S *et al.*, (2019) performed a take a look at on "causes and prevalence of factors causing Infertility in a Public clinic." This go-sectional, observational examine become achieved in an infertility health facility in a scientific university and government health center. The look at comprised one hundred twenty couples who got here for infertility assessment and remedy. Reasons of couple's infertility become related to examination results and the premise of records. Every reason of the superiority was analyzed. Outcomes have been organized, and the character elements superiority become estimated. By the use of SPSS 16.0, intractable evaluation turned into performed using SPSS 16.0. The rate of primary infertility (57.5%) turned higher as compared to the secondary infertility rate (42.5%). primary infertility (fifty seven.5%) changed into greater typical than secondary infertility (forty two.5%). 6.6% was the contribution of ladies factors where, polycystic ovarian syndrome with an occurrence of 46% was the main reason. There was equal prevalence of infertility in obese or lean females suffering from polycystic ovarian syndrome. As far as infertility due to tubal element ($P = 0.001$) is concerned, it is associated with the tuberculosis and pelvic inflammatory diseases. With an increasing marriage ages, the reasons of infertility changed. Couples who have been married for less than 5 years, the principle infertility cause was PCOS however as the age increases, undescribed infertility and male factor are the commonly visible factors. The contribution of male factor is twenty percent where the poor semen analysis ($P = \text{zero.001}$) and the alcohol and tobacco consumption are the associated to it. The marriage age and the age of spouses may differ the reasons of infertility. Although the main cause of the infertility is the PCOS, however, another major reason of tubal element infertility is the infections whereas the male factors are worsens by the alcohol and tobacco intake. Still there are 1 and 1/3 where the reasons remain unknown [26].

Zhang *et al.*, (2014) performed a examine on "growing trend of prevalence of infertility in Beijing."

This go-sectional have a look at turned into performed in Beijing in 2012. A stratified cluster sampling technique became used to pick 448 couples of whom the female companions were born between 1955 and 1985. All topics had been interviewed head to head. Infertility turned into described as the failure to obtain a clinical being pregnant post 565 days of having un unprotected and normal sexual intercourse. Of the 448 couples, 342 (93.1%) spoke back the questions as it should be. the superiority of infertility turned into 4.2% (3.1% as number one and 1.1% as secondary infertility). A growth in the infertility occurrence depending on the woman's age associate turned into found: 1.three% infertility for married ladies born within the 1950s and 11.4% for married women born within the 1980s. The growth was observed in both city and suburban regions. in addition, a Logistic regression confirmed that for the lady accomplice, higher training stages, an older age at first marriage, destructive occupational conditions, intellectual labor and pre-being pregnant contraception after marriage had been all significantly related to a higher hazard of infertility. The superiority of infertility has multiplied notably among couples in Beijing, in all likelihood because of an interplay amongst a couple of elements [27].

METHOD

Search Strategy

In this systematic assessment data extracted by using Medline, PubMed, technological know-how direct and Obs gyne on-line library that have been queried for research posted between 2005 to 2021 by way of the usage of specific MeSH terms.

Study Selection

In this reviewed article we extracted facts from 15 cross sectional studies that became conducted in field practice areas of tertiary care sanatorium. The take a look at comprised 10,000 married couple between 15 and 50 years of age from which 6400 were infertile.

RESULTS

This observe suggests facts from population surveys reporting on incidence of primary and secondary infertility. Fifteen studies supplied estimates of primary and secondary infertility occurrence in 6400 infertile couple. Out of 6400 infertile patients 3600 (56.25%) imparting with number one and 2800 (43.2%) imparting with secondary infertility. Age distribution with number one infertility confirmed that most of the people of the members belong to the most fertile age group. Age distribution of girls with secondary infertility confirmed that majority belongs to the age group of 30–39 years. the primary findings of the modern-day have a look at had been the excessive fee of number one infertility (56.25%) and ladies variable's huge occurrence within the couples suffering from infertility, but, it has been reported by the researchers that female variable, male variable or a mix of both are

40%, 40% and 20% responsible respectively for infertility. The couple's reason of infertility is determined based upon their medical history and examination findings. Primary infertility is more common as compared secondary infertility among those who visit a public sector tertiary care institution.

CONCLUSION

From this systematic assessment we concluded that in comparison to the secondary infertility, the primary infertility prevalence higher. Unexplained infertility is greatly affected by the increased marriage age and also the male factor increases as the age of marriage increases. Infertility's main reason remain the female factor followed by the unexplained causes. As compared to the secondary infertility prevalence, thr primary infertility occurrence in the populace that visited the tertiary care institutes of public sector is higher.

RECOMMENDATION

The problem of infertility has emerge as universal now, and as a result, information about the reason is the first process of resolving this issue. Know-how of infertility and its causes must be spread amongst individuals in order that their misconceptions can be clarified and treatment if needed, be sought on time. Media inclusive of television and newspapers ought to be utilized to impart understanding. This would in addition assist in figuring out mainly the deficient regions of information [such as the role of male factor, pelvic inflammatory diseases (PIDs)] that need to be emphasised on in the course of outreaches and awareness campaigns. These findings might be a incredible asset inside the improvement of leaflets and brochures to accept out at number one and specialised healthcare (OBGYN) clinics, for the training of the journeying patient population.

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