

Investigation of the main (10) causes of infertility in women (Epidemiological study in Baghdad)

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Abstract : The research demonstrated to epidemiological field study about the causes of infertility in women, where infertility affects the female's life physically and psychologically and this study aims to uncover the causes of infertility, infertility can be divided into two types, temporary and permanent infertility, and our study showed that infertility might be an epidemic that's spread through the whole province of Baghdad and we found that out through our visits to doctors in all Baghdad's areas for two consecutive months and we collected 9860 samples and we made two tables explaining the causes of infertility and we found out that the main cause was hormonal disturbances with 21.64%, Cystic ovaries took the second place as the second most common cause with 18.5% and the least common cause was tubal obstruction with 2.25% and we conclude that infertility is a dangerous epidemic that we all should be more aware and careful.

Key words : infertility, women infertility, epidemiology, Baghdad, cystic ovary.

Introduction : Infertility is defined as the failure of a couple to achieve pregnancy in a limited period of time. Infertility may be also defined as the inability of to carry a baby to the stage of delivery alive, infertility can happen to men and women or both of them (Olooto *et al.*, 2012). Infertility is also a disease of the reproductive system according to the world health organization (WHO), it's is caused by a lot of medical disorders such as hormonal turbulence, an injury to the fallopian tube, ovulation interference and many other disorders, the failure of achieving pregnancy affects the female's life physically and psychologically (Radhi *et al.*, 2019). It's is also considered as a global health issue affecting approximately 8-10% of the couples worldwide (Roopa *et al.*, 2009). The studies that are associated with infertility always focus on different factors such as ovulatory factor (present in about 20% of couples), semen migration factor (10% of cases), utero-tubal peritoneal factor (present in ~30% of couples), and male factor (30% of couples). Around 40% of all infertile couples exhibit a combination of factors (Burgo-Olmedo *et al.*, 2000).

The aim of the infertility study is to reveal the causes of temporary and permanent infertility for women went to Gynecological clinics of Baghdad governorate.

Types of infertility: there are two types of infertility as reported by authors (sterility and infertility). Royfman *et al.*, (2020) defined sterility as the inability to produce a

biological child . Sterility as a term is rarely discussed in biomedical and clinical literature and is often used synonymously with infertility and it is a condition of involuntary childlessness. While Olooto *et al.*, (2012) defined the infertility as the loss of capacity to fulfill pregnancy after a reasonable time of sexual intercourse with no contraceptive measures taken.

Causes of females infertility: The main causes of infertility demonstrated in this part of study , Khaskheli *et al.* (2013) ; Dağ *et al.*, (2015) who write that overweight will lead to an ovulation problem and it also causes irregularities in the menstruation, it also reduces the chances of carrying a pregnancy , it also affects the responsiveness of the body to the infertility treatments and will lead to maternal and perinatal complications and losing weight (reducing obesity) especially in the abdominal area is associated with enhancing reproductive techniques that's why reducing weight should be the primary goal before using ovulation-induction drugs or assisted reproductive techniques, there are a lot of weight reduction techniques such as diet , exercise and surgical intervention . Sudha and Redy, (2013) ; Mohant *et al.*, (2014) ; Weiss and Clapauch, (2014) reported that polycystic ovaries syndrome (PCOS) is also one of the main causes of infertility in women, it's usually a hereditary problem and it makes up to 90% of cases of ovulation problems, there are also hormonal abnormalities that affect the ovulation process including hyperthyroidism and hyper prolactonemia.

(Qiao, 2018) reported that is One of other common causes of infertility is Endometriosis which affects 6 to 10% of the world female population. Sometimes an adhesion happens between the fallopian tubes which in return causes a blockage that prevents the eggs from entering the tube and that leads to infertility (Knox and McClure, 2012). Even so uterine fibroids which are benign tumors that occur in the uterus and it's one of the most common causes of hysterectomy, it affects about 25% of women and causes a lot of morbidity including prolonged or profuse menstrual bleeding, pelvic pressure or pain and in rare cases childbearing, surgeries is the only way to treat uterine fibroids and these surgeries are hysterectomy and abdominal myomectomy (Abrao *et al.* 2013)

As reported by Stewart, (2001) the woman's ability to get pregnant can be affected by age (decrease in quantity and/or quality of the eggs), problems with the reproductive tract) pelvic adhesions, benign uterine fibroids, and complications from surgery or infection), sexually transmitted diseases , medical conditions such as sickle cell disease, HIV/AIDS, and kidney disease, smoking, drinking alcohol, or using recreational drugs .

Materials and Methods :

- 1- Experimental Design:** The current study was designed to reveal the most important causes of infertility in women contained in the gynaecologist clinics which distributed throughout the governorate of Baghdad (Karkh and Rusafa) . We designed the study on the privet clinics because of the large number of visitors and the large number of infertile cases among women which including permanent sterility and temporary infertility.
- 2- Samples:** The samples are women in varying ages starting from (18-45year) which visit the privet gynaecological throughout the governorate of Baghdad (Karkh-Rusafa) (table:1) .

3- Data collection and Analysis : all data has been collected from (25 gynaecological clinic) distributed in Baghdad randomly for 120 day contentiously , these data reported and save for analysis using statistical analysis to identify the main causes which distributed endemically between those women. The study started in February (2021) and lased for 3 months

Table(1): represent the approximate numbers visitors of gynecological Clinic in Baghdad only according to survey that we made along the study period .

Doctor class	No. of doctor	No of visitors for each doctor	Total No of visitors / day	Total No of visitors / month	Total No of visitors / year
A*	103	30-25	2575- 3090	7725092700-	9270001112400-
B**	148	15-10	2220-1420	-44400 66600-	-532800799200
C***	142	10-5	- 710 1420	- 2130042600	-255600511200
Total No of visitors/ year					- 1900800 2237400
The approximate No of visitors / year					- *2,000,000 2,500,000

*Doctor Class (A): is the doctor which receive (25-30patient/day)

**Doctor Class (B): is the doctor which receive (10-15patien/day)

***Doctor Class (C): is the doctor which receive (5-10patien/day)

Table(2):Total number of collected cases in months (Feb and March)

Month	Number of collected cases
Feb	2871
March	6989
Total	9860

Results and discussions :

According to the table (3) the results that collected from the field in February showed that 8.1% of the total cases suffered from Toxoplasmosis and 18% of samples collected also suffered from cystic ovaries which represented the highest percentage of all the percentages collected this month and on the other hand

Hormonal Disturbances came in the second place with 17.8% of the total number of samples collected that month which is also considered a relatively high percentage in comparison with inactive ovaries which only had a percentage of 8% of the total number of cases, the results also showed that tubal obstruction was the second least common cause of infertility in women with only 4.3% on the other hand Endometriosis is also considered of the less common causes of infertility with only 6.4% of the total number of cases however delayed ovulation is considered relatively common with 13.1% and when we want to talk about causes that are in between the most common and less common causes there is sexually transmitted diseases with 10.1% and vaginitis with 12.3% and the least common cause of infertility on that month was brucellosis with only 2% of the total numbers of cases collected in February.

Table(3): Refer to the number of infertility cases collected randomly from 25 gynecological clinic of Baghdad province in February :

	Case name	Number per month	%
1-	Toxoplasmosis	233	8.1%
2-	Cystic ovary	517	18.0%
3-	Hormonal disturbance	513	17.8%
4-	Inactive ovary	231	8.0%
5-	Tubal abstraction	125	4.3%
6-	Endometritis (uterine inflammation)	185	6.4%
7-	Delay ovulation (Menstrual disturbance)	377	13.1%
8-	Sexually transmitted diseases	292	10.1%
9-	Vaginitis	354	12.3%
10-	Brucellosis	44	1.5%
Total of cases :		2871	100%

According to the results showed in the table (4) which collected in March showed that 5.7% of the total number of cases suffered from Toxoplasmosis while 18.74% of total number of cases suffered from cystic ovaries which is considered the second highest cause according to the table while the highest percentage of this month belongs to hormonal disturbances with 23.2% , the results also showed that inactive ovaries represented only 5.25% of the total number of cases collected this month which considered slightly higher than tubal obstruction which made up only 1.67% of the total number of cases on the other hand endometrioses only had a percentage of 7.5% which is considered relatively small in comparison with delayed ovulation which has a percentage of 14.86% which was ranked as a relatively common cause, another relatively common cause was sexually transmitted diseases with 11.7% of the total number of cases, vaginitis this month was lower than the last month it represented only 7.75% of the total number of cases collected, the second least common cause this month was brucellosis with only 3.56%.

Table(4) :refer to the number of infertility cases collected randomly from 25 gynecological clinic of Baghdad province in march :

	Case name	Number per month	%
1-	Toxoplasmosis	399	5.7%
2-	Cystic ovary	1310	18.74% *
3-	Hormonal disturbance	1621	23.2% *
4-	Inactive ovary	367	5.25%
5-	Tubal abstraction	117	1.67%
6-	Endometritis (Uterine inflammation)	525	7.5%
7-	Delay ovulation (Menstrual disturbance)	1039	14.86%
8-	Sexually transmitted diseases	820	11.7%
9-	Vaginitis	542	7.75%
10-	Brucellosis	249	3.56%
Total of cases :		6989	100%

The result in table(4) refer to the percentage of all cases collected in February and March , we found that hormonal disturbances was the most common cause of infertility among women, 2134 women in percentage of 23% of , second most common cause was cystic ovaries with 19% while the third most common cause was Delayed ovulation with 14% of the total number of cases in women and we found out that Sexually Transmitted Diseases made up 11% of the total number of cases on the other hand the results showed that the less common causes were Vaginitis with 9% and Endometriosis with 7% and we had percentages which were equal to each other which were Toxoplasmosis and Delayed ovulation with 6% of the total number of cases however Brucellosis made up only 3% which is considered the second least common cause , the least common cause according to this table was Tubal Obstruction with only 2%.

Table (5): the table below shows the number of samples collected in February and March

	Case name	Number per months	Percent
1-	Toxoplasmosis	632	6.4%
2-	Cystic ovary	1827	18.5%
3-	Hormonal disturbance	2134	21.64%
4-	Inactive ovary	598	6.06%
5-	Tubal abstraction	242	2.25%
6-	Endometritis (Uterine inflammation)	710	7.2%
7-	Delay ovulation (Menstrual disturbance)	1416	14.3%
8-	Sexually transmitted diseases	1112	11.2%
9-	Vaginitis	896	9.8%
10-	Brucellosis	293	2.9%
Total of cases :		9860	100%

Table(5) contains a study of the all cases collected in the previous two months, and we found out that hormonal disturbances was the most common cause of infertility among women, 2134 women had hormonal disturbances which makes up 21.64% of the total percentage the second most common cause was cystic ovaries with 18.5% while the third most common cause was delayed ovulation with 14.3% of the total number of cases in women and we found out that sexually transmitted diseases made up 11.2% of the total number of cases on the other hand the results showed that the less common causes in vaginitis with percent of 9.8% , endometriosis represented 7.2% , toxoplasmosis represented 6.4% , delayed ovulation 14.3% of the total number of cases however brucellosis made up only 2.9% which is considered the second least common cause .

Discussion :

Depending to the results which we took from the fifth table the results showed that 21.64% of women suffered from hormonal disturbances which can be caused by taking medications that affects hormones such as birth control pills, stress and nervousness, cystic ovaries makes up about 18.5% of the total number of cases can be caused by hormonal problems or functional abscesses however delayed ovulation 14.3% can be caused by some antipsychotic medications which is not compatible with (Roupa *et al.*, 2009) it has been stated that the rate of delayed ovulation is 22% , in the other hand vaginitis made up 9.8% of the total number of cases and this percentage might not be exactly common and that's because the increase in the scientific and health awareness in the society , most of the doctors nowadays prescribe internal and external vaginal lotions and these lotions have an immense benefit in reducing vaginal inflammations in all its kinds but this percentage is not compatible with (Bhargava *et al.*, 2016) when he found results which had a percentage of 51.7% and that's because he chose infected samples while our study focused on collecting random samples in the form of an epidemiological study, now we move on to another cause which is endometriosis which made up 7.2% of the total number of cases and it's a relatively low percentage in comparison with more common causes and endometriosis is caused by sexually transmitted diseases like Gonorrhea and Chlamydia and this cause doesn't impose any danger of an epidemic and that's due to the increase of awareness in our society , but this percentage is not compatible with (Brugo-Olmedo *et al.*, 2007) results , which showed that the percentage of people suffering from Endometriosis is 48% and that's because he was comparing between people with infertility cases and people with reproductive problems and finally we move to tubal obstruction which has a percentage of 2.25% and it's caused by uterine inflammation and inflammations that are postpartum and it also can be caused by inflammations in the abdomen like the inflammation of the appendix and this percentage is not compatible with (Tulandi *et al.*, 1981) results that showed a percentage of 33% for women that are in the age between 36-40 and 22% in the women that are above the age of 40.

Conclusion: Our epidemiological study concluded that the most common causes of infertility are hormonal disturbance and cystic ovaries with percentages of 21.6% and 18.5% and these percentages are high therefore the government should pay attention and spread awareness on how to take precautions , safety measures and ways to

prevent it from spreading more , also our study concluded that the least common causes of infertility are tubal obstruction and brucellosis with percentages of 2.45% and 2.97% , these percentages are not relatively high but awareness about them should be spread too.

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