



A study of Some Diseases Affecting the Reproductive System among Women in Anbar Province

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ABSTRACT

Background: The proper functioning of the female reproductive system is essential for perpetuating the human race, and any disruptions or ailments affecting this system can significantly impact childbearing.

Objectives: To determine the prevalence of diseases affecting the reproductive system among Anbar Province's female residents in Iraq.

Methodology: In a cross-sectional study in Anbar Province, 367 women with the most common reproductive system diseases and 20 women with the lowest prevalence diseases, whose ages ranged from (20 to 50) years old, were recruited. The study data were collected using a questionnaire covering different information from the study samples. The data underwent statistical analysis using Program (SPSS)-version 22. Various metrics such as number, percentage, and chi-square were employed to examine the impact of different factors in the study. A probability level of 0.05 was utilised for comparisons to determine statistical significance.

Results: The results show that women who are unable to read and write, who are mostly rural residents, have a higher percentage of reproductive system diseases than educated women, who are mostly urban residents. Furthermore, housewives were more affected by reproductive system disease compared with women who are employers. The results, also show that the highest percentage of urinary tract infections (UTI) and abortions were among women between 26-30 years old. While uterine cancer and amenorrhea were more prevalent among women between 41-50 years old.

Conclusion: Most of the participants in the study were under the age of 30 and resided in rural regions. Several diseases affect the reproductive system among women, where urinary tract infections have a higher prevalence among women compared with uterine cancer and infertility. Ovarian cysts can form at any age. Education and employment also play a prominent role in reducing these (UTIs).

Keywords: Fertility, Amenorrhea, Urinary tract infections, Abortion, Uterine cancer.

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INTRODUCTION

Female reproductive system is encompasses complex structures as the vagina, cervix, ovaries, fallopian tubes, and uterus, each functioning in harmony to enable reproduction, hormonal balance, and other physiological processes. However, female reproductive system is susceptible to a range of diseases and disorders ⁽¹⁾, which can significantly impact a woman's health, fertility, and quality of life ⁽²⁾.

Although female reproductive system diseases can arise at any stage of life, it is very common that, after the age of 40, the moment in which they go through menopause, they appear more frequently ⁽³⁾. Diseases that effect on the female reproductive system can be broadly categorized into infections, hormonal disorders, structural abnormalities, and malignancies. Common conditions include polycystic ovary syndrome (PCOS), endometriosis, uterine fibroids, menstrual disorder, amenorrhea, infertile and gynecologic cancers such as cervical, ovarian, and uterine cancer ⁽⁴⁾. Many of these conditions are influenced by genetic, hormonal, environmental, and lifestyle factors ⁽¹⁾.

There is a close association between gynecologic cancers and infection by bacteria and fungi, such as bacterial infections by Chlamydia trachomatis, which can cause infects reproductive problems, especially in the cervical regions, acute urethritis, damage to the peritoneum in females, and tubal blockage ⁽⁵⁾. An increased risk of infection with microorganisms through sexual contact is a possible factor in infertility ⁽⁶⁾ which leads to a lot of diseases such as bacterial vaginosis, endometritis, and pelvic inflammatory disease ⁽⁷⁾, ⁽⁸⁾. John et.al. ⁽⁹⁾ studied urinary tract infections during pregnancy and found that E. coli is one of the most important causes of it, as a result of Escherichia coli having filaments that can stick to the cells of the urinary tract ⁽¹⁰⁾, ⁽¹¹⁾. Urinary tract infection is one of the most common complications among women, especially during pregnancy ⁽¹²⁾, ⁽¹³⁾. The results of the study conducted by Al-Kareem et.al. ⁽¹⁰⁾ on the women of the city of

Hilla in Iraq showed that the self-efficacy of these women is a critical factor in raising the level and quality of childbearing. Infertility is a major burden for women in some societies that consider having children important to the continuation of marriage ⁽¹³⁾, ⁽¹⁴⁾.

Understanding female reproductive system diseases is crucial not only for improving clinical outcomes but also for empowering women with the knowledge to make informed decisions about their reproductive health.

AIMS OF THE STUDY

This study aimed to evaluate the prevalence of diseases affecting the reproductive system, their underlying mechanisms, clinical manifestations, and current therapeutic approaches among women in Anbar Province.

METHODOLOGY

Study design and participant recruitment:

We used a cross-sectional research design to assess some diseases affecting the reproductive system such as urinary tract infections, endometritis, uterine cancer, ovarian cysts, and menstrual disorder among women in Anbar Province, who attended Al-Ramadi Maternity and Children Teaching Hospital from September 2022 to March 2023. Four hundred women with the most common reproductive system diseases (urinary tract infections, endometritis, uterine cancer, and ovarian cysts) and 20 women with the lowest prevalence diseases affecting the reproductive system (uterine fibroids, pelvic inflammatory, and premenstrual syndrome) were subjected to this study. Their ages ranged between (20 to 50) years. They were from different geographical areas in Anbar city. All cases were diagnosed by a gynecologist involved in the hospital. The respondents were interviewed face-to-face after obtaining verbal consent. We used a modified questionnaire prepared by a consultant obstetrician

from Al-Ramadi city. The information covered by the questionnaire included age, residence, education, occupation, and type of diseases affecting the reproductive system Table (1). We provided a clear explanation of the study's objectives to the participants and assured them that their data would be kept confidential, solely for the purpose of this research. Moreover, all participants were given the freedom to withdraw from the study at any point if they chose to do so. Also, hospital records were used to gather the necessary information about the diseases that were studied. The diseases have been confirmed through laboratory tests and histological culture results, as well as medical reports of the patient's X-rays, ultrasounds, and some other medical reports according to the type of disease. The necessary permissions to carry out this study were acquired from the Training and Human Development Center in the Health Directorate of Anbar/ Al-Ramadi City.

The data underwent statistical analysis using Program (SPSS)-version 22. Various metrics such as number, percentage, and chi-square were employed to examine the impact of different factors in the study. To determine statistical significance, a probability level of 0.05 was utilized for comparisons.

RESULTS

- Demographic characteristics of the study samples:

This study included 367 women with reproductive system diseases who participated in the study. Table (1) shows that women who are unable to read and write have a higher percentage (32.69%) of reproductive system diseases than educated women. Regarding occupation, the housewives were more affected by reproductive system disease (77.38%) than the employer (22.61%), with a significant difference at $P \leq 0.05$. There were no significant differences at $P \leq 0.05$, however, the women in rural areas were more afflicted by reproductive system

disease (56.4%) than the women in urban areas, who were less impacted (43.6%), as shown in Table (1).

- Types of diseases that affect the reproductive system among women:

Table 2 shows several diseases that affect the reproductive system among women. Where UTI (28.3%) has a higher prevalence among women compared with other diseases at $P \leq 0.05$. There is no significant difference among uterine cancer, amenorrhea, infertility, and abortion.

- The dual disease condition that affects the reproductive system among women:

The results indicated many dual diseases condition that affects the reproductive system among women, which means that every woman has two reproductive system diseases at the same time. Table 3 shows that (Menstrual disorders and ovarian cysts) are more prevalent among women compared with other cases such as (Amenorrhea and Infertile).

- Distribution of women with reproductive system diseases according to age.

Tables (4 and 5) show that the highest percentage of urinary tract infections and abortions were among women between 26 and 30 years old. While uterine cancer and amenorrhea were more prevalent among women between 41-50 years old.

- The diseases that affect the reproductive system have the least prevalence among women.

Table 6 shows several diseases that affect the reproductive system at least prevalence among Anbar Province's females. Polycystic ovary syndrome has a higher prevalence (35)% among women compared with other diseases at $P \leq 0.05$, followed by pelvic inflammatory disease per cent (20)%. While uterine fibroids, premenstrual syndrome, and ovarian cancer were recorded in the same percentage (10) %.

DISCUSSION:

This study included 367 women with reproductive system diseases, the results show that women who are unable to read and write have a

higher percentage (32.69%) of reproductive system diseases than educated women. While, the housewives were more affected by reproductive system disease (77.38%) than the employer women (22.61%). These results coincided with the results obtained by Al-Kareem et al. ⁽¹⁰⁾ indicated that (31%) of infertile women were unable to read and write, approximately (44) % of women were housewives, and (60) % of them resided in an urban area. The study results agree with the results by Datta et al. ⁽¹⁵⁾ indicated that reproductive system diseases was most common among women with the lowest degree among those (not read and write) women; reproductive system diseases prevalence was higher among employer women compared with homemakers, but the above study disagrees with our study when researchers say that there is no relation between women reproductive system diseases and area ⁽¹⁵⁾. Our finding shows that employers and educated women are less likely to be infected with reproductive system diseases because they read more information about the reproductive disease and therefore become aware of fertility problems ^(15, 16). Rural women are more affected by reproductive system disease because many women in rural areas have poor personal hygiene, inadequate treatment, low-risk factor awareness, and poor sanitary conditions, all of which lead to increased disease ^(17, 18). While urban women reside in apartments that are not immediately connected to soil and water service facilities, especially for those residing in cities, they are well-established and clean, they are less affected by diseases than those in rural areas ⁽¹⁰⁾. Another reason that urban women are more willing to seek out alternative treatment methods for reproductive system disease is to alleviate the unpleasant effects of this condition on affected women. Additionally, the highest percentage of these women have enough each month family income; all these reasons make urban women less affected by reproductive diseases ^(17, 18).

The results in Table 2 agree with the recorded results by Salman et al. ⁽⁶⁾, when they refer to UTI with microbial, showed high frequency. The term "UTI" refers to the invasion, colonization, and proliferation of bacteria in the urinary tract; these bacteria may go from the bladder to the kidney and harm the parenchyma. UTI infection, in pregnant women is a significant contributor to morbidity and pregnancy problems ^(6, 10). Increased UTI in women due to the female urethra's different anatomical structure and susceptibility to contamination due to its proximity to the vulvula and perineal region ⁽¹⁹⁾. Moreover, gastrointestinal and perineal flora are two of the most frequent microorganisms linked to UTIs ⁽⁶⁾. Also, the rising rates of antibiotic prescriptions for female UTIs may contribute to the emergence of urinary bacteria that are resistant to antibiotics ⁽¹⁹⁾. Clinical signs such as acute pyelonephritis and asymptomatic bacteriuria are used to diagnose urinary tract infections ^(19, 20). Endometritis, ovarian cysts, and menstrual disorders are also common in women. An ovarian cyst is an abnormal growth in the ovary that may contain fluid with different compositions or be a solid, bean-shaped mass with an outer cystic shell ⁽²¹⁾. Several factors are thought to contribute to ovarian tumors, including overgrowth of the corpus luteum: The corpus luteum is considered a functional unit of the ovary, and if the corpus luteum is overgrown, it increases the risk of cysts ⁽²²⁾. When the corpus luteum develops too much, it will lead to menstrual disorders (longer menstrual days or more menstrual blood). In severe cases, it can also cause ruptured follicles. Folliculitis develops and becomes defective and incomplete, unable to absorb nutrients from the ovary, leading to an ovarian cyst. Ovarian hormone disorders: stimulate the ovaries to overgrow and form abnormal tumors ^(21, 23).

These results in Table 3 agree with other studies by Bonadio et al. ⁽²⁴⁾; Yu et al. ⁽²⁵⁾ found that infertile women were positive for chlamydia infection. The current study has revealed a strong link between

women's pregnancy complications and the prevalence of UTIs ⁽²⁵⁾. Several studies support this, one study indicated that pregnant women were more likely to develop UTIs (43%) than non-pregnant women ⁽²⁶⁾. UTI is one of the major factors in miscarriages and preterm births during pregnancy. The risk factors for symptomatic and asymptomatic bacteriuria during pregnancy are most frequently linked to low infant birth weight, preterm delivery, and abortions ⁽²⁷⁾. UTI risk factors in pregnancy include higher urine pH, ureteric and renal pelvis dilatation, glycosuria, and decreased ureteral muscle tone, which encourages bacterial growth ⁽²⁸⁾. By treating the infection early on, these and other UTI consequences can be minimized ⁽²⁹⁾. If the cyst releases sex hormones that cause the uterine lining to thicken more, it can interfere with the menstrual cycle ⁽³⁰⁾. Menstrual disorders such as heavy menstrual bleeding sometimes clotted menstrual blood with dark black colour, menorrhagia and prolonged menstrual days, are the most common manifestations of ovarian cysts ⁽³¹⁾. Ovarian cysts are the most common type of abdominal tumour in newborn females, occurring more frequently than 30% of the time and being triggered by hormones such as maternal estrogen, fetal gonadotropins, and placental hCG ^(30, 31).

The results in Tables (4,5) are similar to the results by Katole et al. ⁽³²⁾ when they referred to infertility at age (30-40) years which was reported in 42% of infertile women. This result disagrees with the study of Salman et al. ⁽⁶⁾ which refers to infertility being common in the age group (18-28 years old) followed by the age 29-38 years old. This study disagrees with a study done in Al-Muthanna province by Hawel and Alasadiy, that showed a higher percentage of UTI in the age group (20-25) years, but this study agrees with our results when they indicated that a lower proportion among individuals aged between 41 and 50 years. Also, these results differ from those in Egypt by Ibrahim et al. ⁽³⁴⁾ found no significant correlation between UTI and age. The most common age for ovarian cysts is women

between the ages of (30 and 40) years old ⁽³⁵⁾. However, ovarian cysts can form at any age, from girls at puberty to menopause ⁽³⁵⁾. Most studies estimated that (3-18) % of postmenopausal, asymptomatic women had ovarian cysts. According to early research, postmenopausal patients with these asymptomatic cysts have a (7) % chance of developing cancer ⁽³⁶⁾. Many factors, such as vaginal PH, progesterone and estrogen levels, miscarriage, repeated pregnancy, and decreased body defences after the menstrual cycle, can contribute to differences in proportions between age groups ⁽³⁰⁾. A rise in the pH level of the vagina, which will approach 6-8, as well as a decline in progesterone and estrogen levels, which do not promote infection, maybe the cause of the reduction in infection in elderly women ⁽³⁶⁾.

The results in Table 6 show that some diseases have the lowest prevalence among women, such as Polycystic Ovary Syndrome (PCOS), uterine fibroids, cervical cancer, and ovarian cancer. PCOS, a hormonal disorder affecting women during their reproductive years, is characterized by the presence of small cysts on the ovaries, irregular menstrual cycles, hormonal imbalances and excessive hair growth. If left untreated, PCOS can lead to fertility issues. Various factors such as environmental pollutants, diet, genetics, neuroendocrine alterations, and obesity contribute to its higher prevalence among females ⁽³⁷⁾. Uterine fibroids are benign growths that emerge within or on the uterus. Depending on their location and size, they may lead to pelvic discomfort, heavy or painful periods, and fertility problems. Cervical and ovarian cancers, though relatively uncommon, represent serious forms of cancer. Symptoms may include abdominal bloating, pelvic pain, and changes in bowel habits. Persistent infection with specific strains of the human papillomavirus (HPV) is often linked to their occurrence ⁽³⁸⁾.

The present study was the first to determine the incidence of reproductive system disease among

women in Anbar Province. These diseases have a greater frequency in this region and influence childbearing. According to the study's findings, urinary tract infections are more common in women than ovarian cancer, premenstrual syndrome, uterine fibroids, and uterine cancer, all of which can develop at any stage of age.

Limitations of this study were sample size, which could have limited how broadly the results could be applied to the whole Anbar Province population. Because this study relied on self-reported data, there is a chance that sensitive circumstances may have been underreported or that recall bias may have occurred. The study did not take into consideration all of the variables that affect reproductive health, including lifestyle, genetic, and environmental factors.

CONCLUSIONS:

The majority of the study samples were under 30 years old and resided in rural areas. Several diseases affect the reproductive system among women, but UTI has a higher prevalence among women compared with other diseases. Ovarian cysts can form at any age, from puberty to menopause. One of the main risk factors for morbidity and pregnancy problems in pregnant women is a UTI infection. Some diseases have the lowest prevalence among Anbar province's females, such as polycystic ovary syndrome, uterine fibroids, cervical cancer, and ovarian cancer.

Competing Interest:

There is no conflict of interest.

Authors' contributions:

All authors have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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TABLES:

Table (1): Demographic characteristics of the study sample associated with diseases affecting the reproductive system among women

Parameter	No.	%	P value
Level of education	Not read and write	32.69 ^a	0.0081
	Primary School	28.33 ^b	
	Secondary School	21.79 ^b	
	Diploma and more	17.16 ^c	
	Total	367	
Occupation	Housewife	77.38 ^a	0.021
	Employer	22.61 ^b	
	Total	367	
Residence	Rural	56.4	0.146 ^{NS}
	Urban	43.6	
	Total	367	

* NS: non-significant differences at $P \leq 0.05$.* (a, b, c): significant difference at $P \leq 0.05$.

Table (2): The types of diseases that affect the reproductive system among women

Pathological case	NO.	%
Urinary tract infections	104	28.3 ^a
Endometritis	71	19.34 ^b
Uterine cancer	12	3.26 ^c
Ovarian cysts	46	12.5 ^b
Menstrual problems	Menstrual disorder	14.44 ^b
	Amenorrhea	7.1 ^c
Pregnancy problems	Infertile	5.17 ^c
	Abortion	9.8 ^c
Total	367	100
P value		0.023

* (a, b, c): significant difference at $P \leq 0.05$.

Table (3): The dual disease condition that affects the reproductive system among women.

Pathological case	No.	%
Urinary tract infections + Abortion	28	7
Endometritis + Abortion	15	3.75
Uterine cancer + Urinary tract infections	18	4.5
Ovarian cysts + Infertile	11	2.75
Menstrual disorder + Ovarian cysts	46	11.5
Menstrual disorder + Infertile	12	3
Amenorrhea + Infertile	8	2
P value		0.062^{NS}

* NS: non-significant differences at $P \leq 0.05$.

Table (4): Distribution of diseases that affect the reproductive system among women according to age.

Pathological case	No.	age	No.	%	P value
Urinary tract infections	104	20-25	32	30.7 ^b	0.02
		26 -30	55	52.88 ^a	
		31- 40	13	12.5 ^c	
		41-50	4	3.8 ^c	
Endometritis	71	20-25	16	22.5	0.052 ^{NS}
		26 -30	21	29.57	
		31- 40	24	33.8	
		41-50	10	14	
uterine cancer	12	20-25	1	8.33 ^a	0.03
		26 -30	1	8.33 ^a	
		31- 40	4	33.33 ^b	
		41-50	6	50 ^c	
ovarian cysts	46	20-25	17	36.95 ^a	0.041
		26 -30	13	28.26 ^a	
		31- 40	8	17.4 ^b	
		41-50	8	17.4 ^b	

* (a, b, c): significant difference at $P \leq 0.05$. * NS: non-significant differences at $P \leq 0.05$.

Table (5): Distribution of problems that affect the reproductive system among women according to age.

Pathological case		No.	age	No.	%	P value
Menstrual problems	Menstrual disorder	53	20-25	17	32 ^a	0.043
			26 -30	15	28.3 ^a	
			31- 40	17	32 ^a	
			41-50	4	7.5 ^b	
	Amenorrhea	26	20-25	-	0	0.014
			26 -30	2	7.7 ^a	
			31- 40	4	15.3 ^b	
			41-50	20	76.9 ^c	
Pregnancy problems	Infertile	19	20-25	4	21 ^a	0.036
			26 -30	5	26.3 ^a	
			31- 40	8	42.1 ^b	
			41-50	2	10.5 ^c	
	Abortion	36	20-25	11	30.5 ^a	0.032
			26 -30	13	36.1 ^a	
			31-4	7	19.4 ^b	
			41-50	5	13.8 ^b	
26 -30	2	16.6 ^b				
31- 40	4	33.33 ^c				
41-50	5	41.6 ^c				

* (a, b, c): significant difference at $P \leq 0.05$.

Table (6): The types of diseases that affect the reproductive system have the lowest prevalence among women.

Pathological case	No.	%
Polycystic Ovary Syndrome (PCOS)	7	35 ^a
Uterine Fibroids	2	10 ^b
Pelvic Inflammatory Disease (PID)	4	20 ^b
Premenstrual Syndrome (PMS)	2	10 ^b
Ovarian Cancer	2	10 ^b
Cervical Cancer	3	15 ^b
Total	20	100%
P value	0.048	