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ORIGINAL RESEARCH

Relationship between Endometriosis and Family Inheritance

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ABSTRACT: The exact cause of the disease is unknown; however, it is a heritable condition affected by multiple genetic, epigenetic, and environmental factors, Amid to: find out if their Relationship between endometriosis and family inheritance: Material & Material: Samples were collected during the awareness campaign about endometriosis, through personal interviews, and questionnaires were distributed from most Libyan cities, from Tobruk to Tripoli, both north and south. . The questionnaire included sociodemographic data such as, age, , marital status, educational level and place of residence, Result : frequency percent, Mean, S.D, P-Value and X2 of those suffering from endometriosis and those who have a close relative who had endometriosis, the table illustrated that who suffer from endometriosis 61 (3.3%), Mean, C.D(1.82, 0.461), and who have a close relative who had endometriosis 196 (10.7%), Mean, C.D(1.85, 0.586), P-Value < 0.00, X2 (146.869), the percentage of those who suffer from

endometriosis 61(3.3%), not suffer from endometriosis 1390 (75.5%), and those who don't know about endometriosis 389 (21.1%), the percentage of those who have relative suffer from endometriosis 196 (10.7%), not suffer from endometriosis 1164 (63.3%), and those who don't know about endometriosis 480 (26.1%). The relationship between those suffering from endometriosis and their relatives, who had the disease was 61 (3.3%), of the 61 (3.3%), 15% had relatives with the disease, 28 % had no affected relatives, and 18 %, they do not know whether had relatives infected or not, The relationship between those suffering from endometriosis and their relatives, who had the disease was 61 (3.3%), of the 61 (3.3%), 15% had relatives with the disease, 28 % had no affected relatives, and 18 %, they do not know whether had relatives infected or not. Conclusion: The results showed that there is a relationship between endometriosis and family genetic history and knowledge.

KEYWORDS: Family Inheritance, Endometriosis, Genetic, Eastern, South, North Part of Libya.

INTRODUCTION

Endometriosis, a disease found in women of reproductive age, is defined as the growth of endometrial tissue outside of the uterine cavity.(Krishnamoorthy & Decherney, 2017.). The exact cause of the disease is unknown; however, it is a heritable condition affected by multiple genetic, epigenetic, and environmental factors.(Zubrzycka et al., 2020). Endometriosis results from a complex trait, influenced by genetic and environmental factors; however, few details are known regarding the way that candidate genes function (Matalliotakis et al., 2017). The pathogenesis of endometriosis combines both genetic and environmental influences. Genetic association studies, and exhibit several limitations.

While in some individuals carrying a mutation, the disease may not manifest, in other cases the very same putative causal mutation may be absent (Vassilopoulou et al., 2019). The risk factors associated with the development of endometriosis include family history, menstrual and reproductive cycle, low body mass index (BMI), diet, alcohol uses, smoking, environmental factors, immune system, genetic factors and intrinsic abnormalities in the endometrium. (Ashish et al., 2020). Clinically, both diseases are also associated with a strong hereditary component where female relatives of affected patients demonstrate a high incidence of the same condition.(Andersson, 2019.) Maternally inherited risk factors in women with endometriosis causing high reactive oxygen species production and oxidative stress, which facilitate pain generation in women with endometriosis.(Asally et al., 2020). HOX genes, are developmental genes, code for proteins and work as critical key regulatory factors during embryogenesis, while epigenetic events regulate gene transcriptions, without changing the underlying DNA sequences, and that includes DNA methyltransferases (DNMTs).(Ashish et al., 2022). The role of hereditary (genetic) factors in the development of endometriosis and fibroids is still at the level of description of associative connections. Obviously, the hereditary predisposition to the development of this disease is multifactorial in nature and is still poorly understood.(G. A.Ikhtiyarova, 2020), Network analysis of genes in the Endometriosis Knowledgebase helped predict 13 new candidate genes for endometriosis. These genes were found to be enriched in biological processes associated with endometriosis.(Joseph & Mahale, 2019), 50% of IL-PMS2 EC patients had MLH1-PHM. These MLH1-PHM cases did not have MMR

germline mutation and were thus determined to be sporadic EC.

MLH1 promoter methylation analysis for IL-PMS2 EC should be performed to exclude sporadic cases before further PMS2 genetic testing.(Kato et al., 2016), The endometrial tissue undergoes a lot of pathological changes during disease and this may be due to the significantly altered expression of the aromatase gene leading to higher oestrogen levels, causing this disease and its proliferation. Aromatase (CYP19A1) gene polymorphism was found significantly associated, and other factors may be affecting aromatase directly or indirectly in the steroidogenic pathway. (Matalliotakis M et al., 2022).

Whilst external factors such as geography, environment, health-care access and socio-economic status may contribute greatly towards the disparities observed in type II endometrial and prostate cancers in black populations compared to Caucasians, the contribution of African ancestry to the contribution of genetics to (Marima et al., 2022). Endometriosis can coexist with various chronic autoimmune diseases and other conditions, including non-gynecological malignancies, which possibly share a common genetic cause (Matalliotaki et al., 2018). Polymorphism rs652095 could be related to a genetic alteration that causes endometriosis and inflammatory cytokines. TCDD dioxin and exogenous xenobiotic agent were found to cause progesterone resistance and high levels of estradiol.(Prugar, 2021.), The association of endometriosis with cancer, which appears as a result of genetic mutations, contributed to the search for pathogenetic mutations occurring in cells during the development of the disease.(Smolarz et al., 2021). The similarities observed in specific molecular and cellular pathways of endometriosis and CVD may be partially explained by a shared genetic background. The present review presents and discusses the shared genetic factors (Vassilopoulou et al., 2019). This disorder occurs more often in women, and reproductive and hormonal factors have been shown to be related to increased risk. Endometriosis is a chronic, complex, oestrogen-dependent and progressive gynecological disorder characterized by the growth of endometrial tissue outside the uterine cavity.(Zervou et al., 2022).

MATERIALS AND METHODS

Sample Collection

Samples were collected during the awareness campaign about endometriosis, through personal interviews, and questionnaires were distributed about the extent of women's knowledge of endometriosis from most Libyan cities, from east to west and south. Tripoli, its suburbs, Benghazi, its suburbs, Derna, its suburbs, Sabha, its suburbs, Misrata, its suburbs, Sirte, its suburbs, Tobruk and its suburbs, The questionnaire included sociodemographic data such as, age, , marital status, educational level and place of residence.

Sample Size

During the one-year study period [January 1, 2021 to December 31, 2022], 1840 women were answer the questions of questionnaire.

Statistical Analysis

The distribution of categorical variables was compared with the frequency and percent test, and quantitative variables with correlation (R) test. Statistical significance was set at $p < 0.05$. The statistical analyses were performed with the Statistical Package for the Social Sciences software, release 26.0 for Windows.

RESULTS

Table: (1**)** frequency percent, Mean, S.D, P-Value and X2 of those suffering from endometriosis and those who have a close relative who had endometriosis, the Table illustrated that who suffer from endometriosis 61 (3.3%), Mean, C.D(1.82, 0.461), and who have a close relative who had endometriosis 196 (10.7%), Mean, C.D(1.85, 0.586),) P-Value < 0.00, X2 (146.869).

Table: (1) Frequency Percent, Mean, S.D, P-Value and X2 of those Suffering from Endometriosis and those who have a Close Relative who had Endometriosis. The table illustrated that who suffers from endometriosis.

X^2	P-Value	S.D	Mean	N (%)	Answers	Question
146.869	0.000	0.461	1.82	389 (21.1)	I Don`t Know	Do you suffer from endometriosis, a migratory disease?
				1390 (75.5)	No	
				61 (3.3)	Yes	
		0.586	1.85	**480 (26.1)**	I Don`t Know	Do you have a close relative who had endometriosis?
				1164 (63.3)	No	
				196 (10.7)	Yes	

Figure: (1) illustrated the percentage of those who suffer from endometriosis 61(3.3%), not suffer from endometriosis 1390 (75.5%), and those who don't know about endometriosis 389 (21.1%)

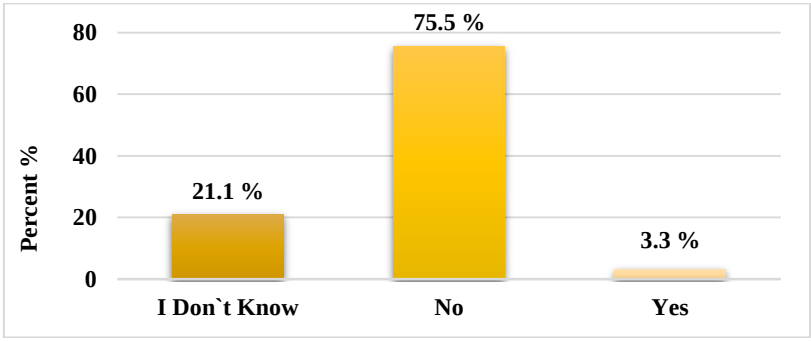

Figure: (1). Percentage of who Suffering from Endometriosis.

Figure 2 illustrated the percentage of those who have relative suffer from endometriosis 196 (10.7%), not suffer from endometriosis 1164 (63.3%), and those who don't know about endometriosis 480 (26.1%)

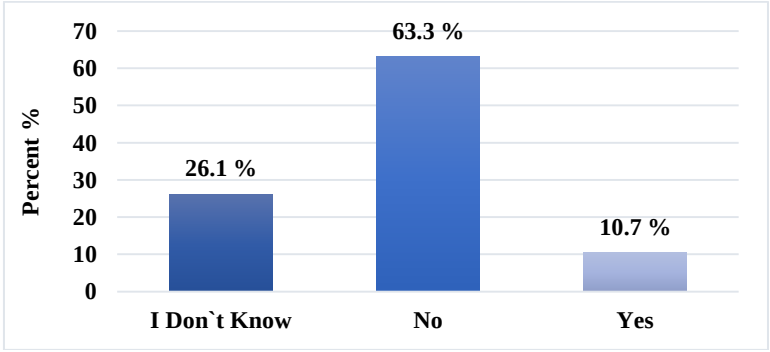

Figure: (2). Percentage of those who Have a Close Relative Suffering from Endometriosis.

Table :(2). The relationship between those suffering from endometriosis and their relatives, who had the disease was 61 (3.3%), of the 61 (3.3%), 15% had relatives with the disease, 28 % had no affected relatives, and 18 %, they do not know whether had relatives infected or not

Table :(2). Relationship between those suffering from Endometriosis and their Relatives, who had the disease.

Total	Do you have a close relative who had endometriosis?				
	Yes	No	I Don`t Know		
389	27_b	173_b	189_a	I Don`t Know	Do you suffer from endometriosis, a migratory disease?
1390	154_b	963_b	273_a	No	
61	**15_a**	28_b	**$18_{a,b}$**	Yes	
1840	196	1164	480	Total	
Each subscript letter denotes a subset of Do you have a close relative who had endometriosis? Categories whose column proportions do not differ significantly from each other at the .05 level.					

Figure : (3). shows that The relationship between those suffering from endometriosis and their relatives, who had the disease was 61 (3.3%), of the 61 (3.3%), 15% had relatives with the disease, 28 % had no affected relatives, and 18 %, they do not know whether had relatives infected or not

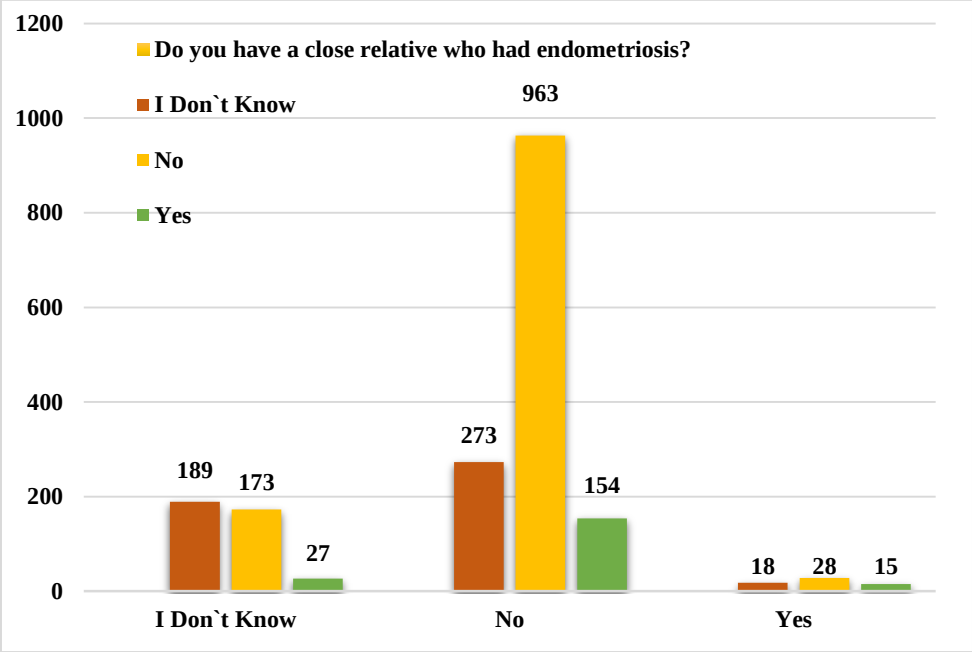

Figure: (3). Relationship between those who Have a Close Relative which Suffering from Endometriosis and those who Have Endometriosis.

DISCUSSION

From the answer of 1840 cases of endometriosis disease, the study illustrated that the frequency percent, Mean, S.D, P-Value and X2 of those suffering from endometriosis and those who have a close relative who had endometriosis, the table illustrated that who suffer from endometriosis 61 (3.3%), Mean, C.D(1.82, 0.461), and who have a close relative who had endometriosis 196 (10.7%), Mean, C.D(1.85, 0.586), P-Value < 0.00, X2 (146.869). illustrated the percentage of those who suffer from endometriosis 61(3.3%), not suffer from endometriosis 1390 (75.5%), and those who don't know about endometriosis 389 (21.1%), the percentage of those who have relative suffer from endometriosis 196 (10.7%), not suffer from endometriosis 1164 (63.3%), and those who don't know about endometriosis 480 (26.1%), and The relationship between those suffering from endometriosis and their relatives, who had the disease was 61 (3.3%), of the 61 (3.3%), 15% had relatives with the disease, 28 % had no affected relatives, and 18 %, they do not know whether had relatives infected or not.

also that The relationship between those suffering from endometriosis and their relatives, who had the disease was 61 (3.3%), of the 61 (3.3%), 15% had relatives with the disease, 28 % had no affected relatives, and 18 %, they do not know whether had relatives infected or no.

all of previous study agree with this study, (Krishnamoorthy & Decherney, 2017.) , (Zubrzycka et al., 2020), (G. A.Ikhtiyarova, 2020), (Smolarz et al., 2021), (Matalliotakis et al., 2017), (Joseph & Mahale, 2019),(Vazgiourakis et al., 2023), and disagree with that In the Sardinian population, the results obtained do not show a significant association between the investigated variants of the genes and a greater risk of developing endometriosis, although several other studies in the literature have shown the opposite.(Angioni et al., 2020).

CONCLUSION

The results showed that there is a relationship between endometriosis and family genetic history, and the knowledge

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ETHICS

The questionnaire and the interviews were taken with the consent of the respondents without changing or forcing anyone... in agreement with the researchers

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الملخص

السبب الدقيق للمرض غير معروف؛ ومع ذلك، فهو حالة وراثية تتأثر بعوامل وراثية، وعوامل فوق جينية، وعوامل بيئية متعددة. في سياق البحث: معرفة ما إذا كانت العلاقة بين الانتباذ البطاني الرحمي والوراثة العائلية: المواد والأساليب: جُمعت العينات خلال حملة التوعية بالانتباذ البطاني الرحمي، من خلال مقابلات شخصية، ووُزعت استبيانات في معظم المدن الليبية، من طبرق إلى طرابلس، شمالاً وجنوباً. تضمن الاستبيان بيانات اجتماعية ديموغرافية مثل العمر، والحالة الاجتماعية، والمستوى التعليمي، ومكان الإقامة. النتائج: النسبة المئوية، والمتوسط، والانحراف المعياري، وقيمة P، وقيمة مربع كاي (X^2) للأشخاص المصابين ببطانة الرحم المهاجرة، والذين لديهم قريب مصاب بها. يوضح الجدول أن عدد المصابين ببطانة الرحم المهاجرة هو 61 (3.3%)، بمتوسط، وفرق معياري (1.82، 0.461)، بينما عدد الذين لديهم قريب مصاب بها هو 196 (10.7%)، بمتوسط، وفرق معياري (1.85، 0.586)، وقيمة P < 0.00، وقيمة مربع كاي (146.869). النسبة المئوية للأشخاص المصابين ببطانة الرحم المهاجرة هي 61 (3.3%)، بينما النسبة المئوية للأشخاص غير المصابين بها هي 1390 (75.5%)، والنسبة المئوية للأشخاص الذين لا يعرفون شيئًا عن بطانة الرحم المهاجرة هي 389 (21.1%). 196 (10.7%) مصابون ببطانة الرحم المهاجرة، و1164 (63.3%) لا يعانون من بطانة الرحم المهاجرة، و480 (26.1%) لا يعرفون شيئاً عن بطانة الرحم المهاجرة. بلغت نسبة النساء المصابات بداء بطانة الرحم المهاجرة واللاتي لديهن أقارب مصابون بالمرض 61 حالة (3.3%)، ومن بين هؤلاء، كان لدى 15% أقارب مصابون، بينما لم يكن لدى 28% أقارب مصابون، ولم يكن لدى 18% منهن أي معلومات حول ما إذا كان لديهن أقارب مصابون أم لا. أظهرت النتائج وجود علاقة بين داء بطانة الرحم المهاجرة والتاريخ الوراثي للعائلة والمعرفة به.

الكلمات المفتاحية: الوراثة العائلية، داء بطانة الرحم المهاجرة، الوراثة، شرق ليبيا، جنوبها، شمالها.