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**Effect of residential environment as an environmental factor on human subfertility in  
Babylon city**

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**Abstract**

The reproductive function has been demonstrated to be touchy to changes in the physical, psychosocial and substance conditions. The potential reproductive hazards of exposure to environmental contaminants, there had evidence for adverse reproductive effects of the physical and psychosocial environments. The aim of this study to determine the links between regional differences as an environmental factor effect on reproductive fertility in Babylon province. The present study involved 121 sub-fertile couples shows that about 43.8 % was lived in a rural area while 56.2% was lived in an urban area. Most of them with primary infertility 64(64%). About the distribution of sub-fertile patients in Babylon province in urban areas, 14.71% of the patient from 60 street followed by Al-askari region (10%). While the distribution of sub-fertile patients in Babylon province in rural areas, 37.74% of the patient from Al-hamza followed by Al-wardia 18(87%). Overall, the present study showed that the prevalence of subfertility was higher among urban inhabitants contrasted with rural one. Field-based examinations ought to be urged to know the weight of barrenness and its outcomes especially in region with a high rate of subfertility.

**Keywords:** Subfertility, Environmental factors and demographic characteristics, Exposure to environmental contaminants

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**Introduction**

Subfertility will be recognized concerning illustration an issue crosswise over the greater part societies also social orders. It varies from nation will country. Infertility, as stated by the World Health Organization (WHO), may be the absence of conception despite cohabitation and exposure to the

risk of pregnancy (in that nonattendance for two years or more [1]. A developing constitution scientific exploratory is empowering subfertility patients and professionals to pay more awareness to environmental chemicals and their effects on conceptive wellbeing. Some research demonstrates that introduction on persistency natural pollutants and endocrine-disrupting chemicals (EDCs) in the environment can also influence male and female fertility [2]. Constant organic is right now utilized or was once utilized within streamlined methods and remain in the surroundings considerably more drawn out over different chemicals. Animal investigations recommended that introduction on specific constant natural pollutants influences fertility. Some chemicals only influenced time to get pregnancy, found in high concentration in the male partner, whereas other chemicals only affected productiveness in the female partner [3].

The financial and costs of childbearing increase with the monetarization of society. The extension of the level education and the new parkways to socioeconomic versatility opened by the improvement from claiming mechanical and administration employment [4].

In urban culture, social change is especially quick due to more serious social collaboration when contrasted with a scattered rural populace. The interconnectedness of the building up areas' urban social orders with nations that are further developed in the productivity progress rush the beginning of conduct changes. Individualization and social enhancement in urban populaces further quicken the movement of development dissemination inside urban areas [5].

Laboratory studies confirm that many synthetic chemicals cause subfertility, occasionally at very low doses. These materials can be found in untamed life and individuals at levels like those causing antagonistic impacts in lab creatures. Various fields examine interface ecological foreign substances to an entire scope of regenerative irregularities in natural life, also, to diminished conceptive rates/populace size. This information originates from numerous species, including fowls, fish, mollusks and well-evolved creatures [6].

In general, we lack a regional assessment of the progression in the fertility gradient by type of residence. Though cross-sectional evaluations have not discovered designed normality in any creating locale, we attempt to help in understanding local contrasts and conceptualizing future ripeness advancements.

The objective of this study is to determine and compare the prevalence of infertility in rural and urban ground practice areas.

## Materials and Methods

This cross-sectional investigation was intended for the sub-fertile couples in Babylon privet clinic, from January 2020 to August 2020. Sub fertile couples ( $n=121$ ) who visited fertility clinic were considered as cases. Female aged from 20-40 years with BMI from 20-29.9 kg/m<sup>2</sup>. While husband aged from 20-50 years. All couples who didn't give verbal assent for investment in study were excluded from the study. Information for every patient included: age, weight record (BMI), address, occupation, smoking history and duration of sub-fertility.

### Statistical Analysis

SPSS 22 programming was used. ANOVA test was cultivated for amount information. The Chi test or Fisher-exact tests were utilized for the unmitigated information. A p value < 0.05 was considered statistically significant.

### The Results

The present study which involved 121 sub-fertile couples shows that about 43.8 % was lived in rural area while 56.2% was lived in urban area. Mean female age involved in this study was (29.88 ± 5.7 years) most of them ranged between 20-40 years. While mean age of husband was 35.55±7.8 years ,most of them ranged between 20-50 years. According to the type of subfertility, most of them with primary infertility (63.64%). Most of the female are housewife (83.47%) while most of male are free worker (58.68%). The duration of subfertility in the study group was 4.73±3.8 years, most of them had duration of subfertility less than 5 years (67.77%).and about half of them, the cause of subfertility was female cause as shown in **table 1**.

**Table 1**

Sociodemographic variables of sub-fertile couple in the studied group.

Variables	Groups	Total	
		Number	%
Female Age (Years)	< 20	7	5.79%
	20-29	45	37.19%
	30-39	57	47.11%
	40-49	12	9.92%
Type of infertility	Primary	77	63.64%
	Secondary	44	36.36%
Occupation of wife	Homemaker	101	83.47%
	Employed	20	16.53%
Duration of infertility (years)	<5	82	67.77%
	5-9	28	23.14%
	10-20	11	9.09%
Cause	Male	43	35.54%
	Female	65	53.72%
	Both	11	9.09%
	Unexplained	2	1.65%
Male age Years	< 20	3	2.48%
	20-29	32	26.45%
	30-39	50	41.32%
	40-49	28	23.14%
	>50	8	6.61%
Male Job	Employer	20	16.53%
	Free worker	71	58.68%
	Driver	11	9.09%
	Policeman	7	5.79%
	Carpenter	4	3.31%
	A builder	8	6.61%

Age distribution with subfertility showed that the majority of the participants belong to the most fertile age group. There was no significant difference between patients in urban and rural area ( $P>0.05$ ) as shown in **Table 2**.

The prevalence of primary infertility (66.04% in rural and 61.76% in urban slum) was on the higher side compared to secondary infertility (33.96% in rural and 38.24% in urban slum).

There was no significant difference between patients in urban and rural area ( $P>0.05$ ) as shown in **Table 2**.

About the duration of subfertility in the study group, most of them had duration of subfertility less than 5 years. There was no significant difference between patients in urban and rural area ( $P>0.05$ ) as shown in table 2.

The most common cause in both groups is female cause followed by male cause. There was no significant difference between patients in urban and rural area ( $P>0.05$ ) as shown in table 2.

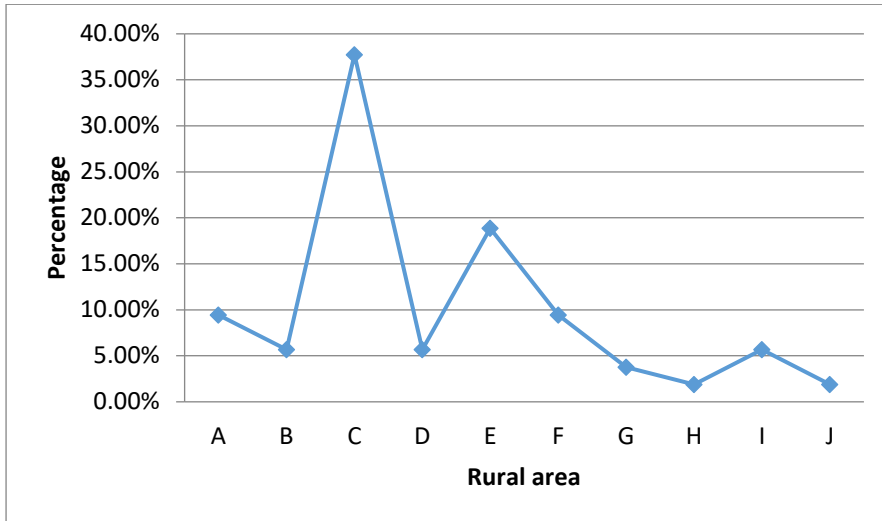
The most common male job in both groups are free worker followed by employer. There was no significant difference between patients in urban and rural area ( $P>0.05$ ) as shown in table 2.

**Table 2.**

Association of sociodemographic variables of women with subfertility with area of residence

Variables	Groups	Urban		Rural		P value
		(n=68)	%	(n=53)	%	
Female Age Years	< 20	3	4.41%	4	7.55%	0.95
	20-29	26	38.24%	19	35.85%	
	30-39	31	45.59%	26	49.06%	
	40-49	8	11.76%	4	7.55%	
Type of infertility	Primary	42	61.76%	35	66.04%	0.62
	Secondary	26	38.24%	18	33.96%	
Occupation of wife	Homemaker	54	79.41%	47	88.68%	0.17
	Employed	14	20.59%	6	11.32%	
Duration of infertility (years)	<5	48	70.59%	34	64.15%	0.64
	5-9	13	19.12%	15	28.30%	
	10-20	7	10.29%	4	7.55%	
Cause	Male	26	38.24%	17	32.08%	0.91
	Female	35	51.47%	30	56.60%	
	Both	6	8.82%	5	9.43%	
	Unexplained	1	1.47%	1	1.89%	
Male age Years	< 20	1	1.47%	2	3.77%	0.98
	20-29	20	29.41%	12	22.64%	
	30-39	27	39.71%	23	43.40%	
	40-49	16	23.53%	12	22.64%	
	>50	4	5.88%	4	7.55%	
Male Job	Employer	12	17.65%	8	15.09%	0.25
	Free worker	34	50.00%	37	69.81%	
	Driver	6	8.82%	5	9.43%	
	Policeman	5	7.35%	2	3.77%	
	Carpenter	3	4.41%	1	1.89%	
	A builder	8	11.76%	0	0.00%	

The distribution of sub-fertile patients in Babylon city in both rural and urban areas are shown in Figures 1 and 2. Figure 1 shows the distribution of subfertile patients in Babylon province in rural areas. About 37.74% of the patient from Al-hamza followed by Al-wardia (18.87%).

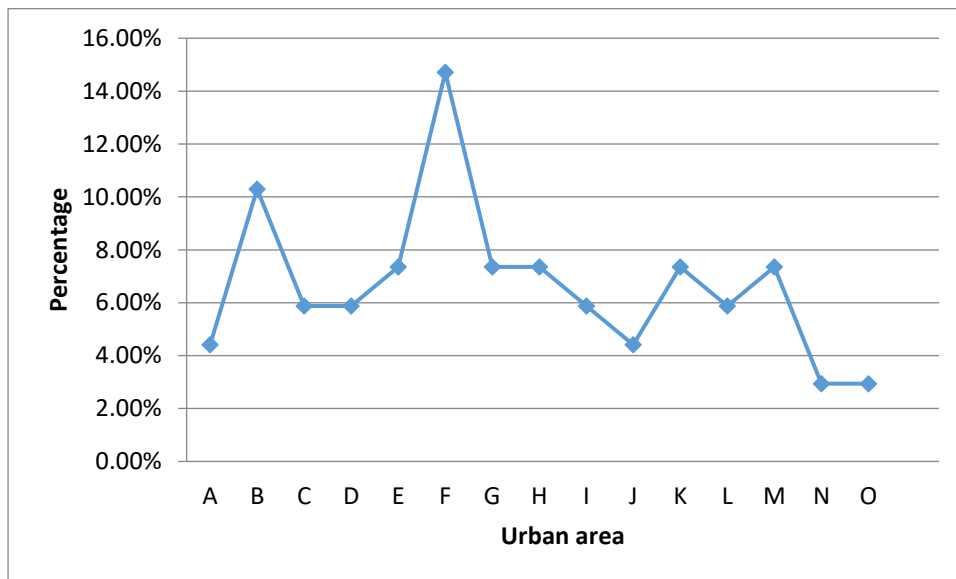


**Figure 1.**

The distribution of sub-fertile patients in Babylon city in rural areas.

**Figure 2** shows the distribution of sub-fertile patients in Babylon province in urban areas.

About 14.71% of the patient from 60 street followed by Al askari (10%).



**Figure 2.**

the distribution of sub-fertile patients in Babylon city in urban areas.

## Discussion

A cross-sectional investigation was led to know the general rate of subfertility in field practice region. This shows that there is an expansion in the level of subfertility in the urban area, which concurs with results acquired in India [7].

Marginally higher rate in the urban area might be because of the way that our investigation was led in a financially in reverse urban zone where going through treatment is an immense weight on the monetary state of the family contrasted with rural inhabitants. This likewise shows the prevalence of subfertility differs as cultural, social, and financial foundation.

According to the type of subfertility, most of them with primary infertility (63.64%), which agree with results obtained by Mittal et al. [8]. This can be credited to the way that first kid matters a ton and less significance is allowed to the subsequent youngster; henceforth, they don't look for treatment additionally which, thus, prompts a high predominance of secondary infertility.

It was found that the majority of the participants belonged to the age group of 20–39 years in both rural and urban areas. Similar results were observed by Adamson et al., in Mysore, where majority of the couples belonged to 20–29 years' age group [9]. This may be because of the way that as the age progresses the extent of individuals looking for treatment for having youngsters will likewise increment.

In the present study, majority of the female participants were homemakers in both rural and urban areas. Shamila and Sasikala [10] had disagree with our results. Hence contradicting the fact that working women are 20% more likely to be sub-fertile compared to nonworking women [11] but our study was conducted in socioeconomically backward urban and in a rural area, we were unable to locate any noteworthy relationship comparable to the kind of occupation.

In our study showed that majority of the sub-fertile couples had a duration of 1–5 years of infertility which agreed with results conducted by Obuna et al. on Southeast Nigerians [12]. This may be due to the fact that, the term of wedded life expands, a few couples may look for treatment for subfertility or some may conceive suddenly, which may be a similar explanation behind the span of barrenness. In our study, About 14.71% of the patient from 60 street followed by Al askari (10%) while in rural areas, about 37.74% of the patient from Al hamza followed by Al wardia (18.87%).

This could be because of elements, for example, change in the age, considering living freely, and self-choice. This itself may prompt worry to deal with various undertakings and which is one reason influencing subfertility.

A few couples look for shifted conventional strategies and strict works on, including visits to sanctuaries, going without visiting a spot where a lady has conveyed a youngster, watching tantric rituals, wearing charms, taking an interest in ceremonies, and visiting celestial prophets as detailed by Desai [13].

Other sorts of exploration have clarified that even low degrees of defilement can meddle with hormones and the cycles they control. Hormone signals are one of the most significant ways that qualities get turned on and off [14]. At the point when a quality is turned off anomalous, or turned on at an inappropriate time, a wide scope of negative impacts can result. So, the revelations that



substance pollutants modify the declaration of qualities basic to proliferation in creatures are troubling - on the grounds that creatures and people share numerous genes [15].

Synthetic compounds penetrate air, water, soil, food, homes, schools, and work environments. This implies it is additionally significant for people and barrenness gatherings to consider supporting bigger level public arrangement upgrades that could diminish hurtful presentations all the more for the most part, for example, improved exploration plans and subsidizing and improved illness following and poisonous delivery announcing; and extended reviews of human harmful substance [16].

This affirms the significance of the widespread cycle of quick basic and ideational change in social orders for the change of reproductive behaviors.

### **Conclusion and Recommendation**

The prevalence of subfertility was higher among urban inhabitants contrasted with rural one. Field-based examinations ought to be urged to know the weight of barrenness and its outcomes. The arrangement of wellbeing training as a necessary piece of barrenness the executives into regenerative medical services programs is required. Increment in female education and directing encourages them to conquer the disgrace.

### **Ethical Approval**

The study was approved by the Ethical Committee. It was conducted in accordance with the ethical standards of the Helsinki Declaration of 1975, as revised in 2008.

### **Conflicts of Interest**

The authors declare that he has no competing interests.

### **Funding**

None

### **Study registration**

Not required.

### **References**

1. World Health Organization. Division of Family Health Infertility: A Tabulation of Available Data on Prevalence of Primary and Secondary Infertility. Geneva: World Health Organization; 1991. Program on maternal and child health and family planning.
2. Buck Louis GM. Persistent environmental pollutants and couple fecundity: An overview, *Reproduction* 2014;147(4):R97–R104.
3. Buck Louis GM, Barr DB, Kannan K, Chen Z, Kim S, Sundaram R. Paternal exposures to environmental chemicals and time-to-pregnancy: Overview of results from the LIFE Study. *Andrology*, 2016; 4(4):639–647.
4. Martine G, Alves JE, Cavenaghi S. Urbanization and fertility decline: Cashing in on structural change,

- London, International Institute for Environment and Development, 2013.
5. Caldwell J.C., The Globalization of Fertility Behavior. *Population and Development Review*, 27 Supplement: Global Fertility Transition, 2001, 93–115.
  6. Sharma R, Biedenharn KR, Fedor JM, Agarwal A. Lifestyle factors and reproductive health: Taking control of your fertility. *Reproductive Biology and Endocrinology* 2013;11:66.
  7. International Institute for Population Sciences. District Level Household and Facility Survey (DLHS-3), 2007-08. India, Karnataka, Mumbai: International Institute for Population Sciences, 2010.
  8. Mittal A, Yadav S, Yadav Singh S, Bharadwaj A, Kaur R. An epidemiological study of infertility among urban population of Ambala, Haryana. *Int. J. Interdiscip Multidiscip Stud* 2015;2:124–30.
  9. Adamson P.C., Krupp K., Freeman A.H., Klausner J.D., Reingold A.L., Madhivanan P., Prevalence and correlates of primary infertility among young women in Mysore, India, *Indian J. Med. Res.*, 2011;134:440–6.
  10. Shamila S, Sasikala S. Primary report on the risk factors affecting female infertility in South Indian districts of Tamil Nadu and Kerala, *Indian J. Community Med* 2011;36:59–61.
  11. Ganguly S., Unisa S., Trends of infertility and childlessness in India: Findings from NFHS data. *Facts Views Vis Obgyn* 2010; 2:131–8.
  12. Obuna JA, Ndukwe EO, Ugboma HA, Ejikeme BN, Ugboma EW, Clinical presentation of infertility in an outpatient clinic of a resource poor setting, South-East Nigeria, *Int. J. Trop Dis. Health* 2012;2: 123–131.
  13. Desai S. The social construction of infertility, *Soc Sci Med* 1994;39:75–85.
  14. Myers JP. From Silent Spring to Scientific Revolution. *San Francisco Medicine* 75: 24-28 9 Myers, JP, LJ Guillette, Jr, P Palanza, S Parmigiani, SH Swan and FS vom Saal. 2003. The emerging science of endocrine disruption. In A. Zichichi (ed), *The Science and Culture Series: International Seminar on nuclear war and planetary emergencies*, 28th session, 2002.
  15. Myers JP, Gene expression and environmental exposures: new opportunities for disease prevention, *San Francisco Medicine* 2004;77:29-31.
  16. Cohn BA, Cirillo PM, Wolff MS, et al. DDT and DDE exposure in mothers and time to pregnancy in daughters, *The Lancet* 2003; 361:2205–06.