Assessment the Perception of Infertile couples regarding the effect of Lifestyle factors on Fertility (comparative approach)

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Abstract

In recent times, the modifiable lifestyle factors have been shown to affect the chance of conception in both infertile and general population. There is strong evidence that weight, smoking, alcohol consumption, caffeine intake, nutritional habits, physical activity, Stress, exposure to animals, pollution and Recreational drugs had an adverse impact on reproductive health. **Aim:** assess the perception of infertile couples regarding the effect of lifestyle factors on fertility; compare the lifestyle factors between fertile and infertile couples. **Methods**: A descriptive cross-sectional design was used to conduct this study. It was conducted at infertility outpatient clinic women's health Hospitals, Assiut University, Egypt. **Sample:** included 117 infertile couples. Structured interview questionnaire was used and included two parts: Socio-demographic data and questions to assess perception of infertile couples regarding lifestyle. Simple Lifestyle Indicator Questionnaire. **Results:** A highly statistically difference was found between infertile husbands and wives regarding perceived the smoking habits. No significant difference was found among infertile couples regarding drinking alcohol, over or underweight, stress, exposure to animals and environmental pollution, dietary habits, and influence of caffeine, exercises and taking recreational drugs. **Conclusion:** perceptions of the impact of lifestyle factors on fertility vary by sex, socioeconomic factors and treatment. Lifestyle factors significantly affected couples fertility, as BMI, exercises, nutritional status and stress with a statistical difference between groups. **Recommendation:** In-services educational program for infertile couples for maintaining lifestyle habits to improve their chance of spontaneous conception.

Keywords: Couple's Perception, Fertility & Lifestyle.

Introduction

Infertility is an important public health issue and a vital event in marital life that affects all aspects of couple's lives **(Najafi et al., 2015 & Chehreh et al., 2019).** Evidence suggests that modifying life style factors can improve fertility outcomes **(Ghan, 2019).** It is a disease characterized by the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse or due to an impairment of a person's capacity to reproduce either as an individual or with his/her partner **(Zegers-Hochschild et al., 2017 & Li et al., 2019).** It is classified into Primary infertility that is defined as inability to conceive after 1 year of unprotected sexual intercourse with no previous conception. Secondary infertility is the condition where a couple has conceived previously but became unable to be fertile **(World Health Organization, 2018).**

Reproduction is a key biologic extremely important event in every human's life as well as for all the living beings and are strongly associated with the ultimate goals of completeness, happiness and family integration and any threat to reproductive health evokes significant response not only from the scientific community but also from all walks of life including from public media as our future is depend upon the sound reproductive health of the parents **(Kumar et al., 2018 & Krishna et al., 2019).**

The prevalence of infertility has increased significantly in recent years which affect approximately 10-15% of fertile couple's age which corresponds to 60 - 80 million couples of reproductive age worldwide. **(Kazemijaliseh et al., 2015, Zivaridelavar et al., 2016, Joelsson et al., 2019& Harzif et al., 2019).** The global prevalence of infertility is reported to be 10%-15% **(Curtis, 2017).** The rates of male infertility in North America, Australia, and Europe were reported to be 4%-6%, 8%, and 7.5%, respectively **(Agarwal et al., 2015).**

A meta-analysis of the causes of infertility among the patients who referred to several infertility clinics of Iran showed that 78.4% of the couples suffered from primary and 21.6% from secondary fertility problems. Totally, 34% of them had male factor, 43.5% had female factor and 17% had both male and female factors and 8.1% had no specified cause for their infertility **(Parsanezhad et al., 2016)**.

Lifestyle factors can be enhancing overall wellbeing. Reproductive health can be affected positively or negatively by multiple factors, i.e. age of paternity, nutrients, physical exercise, obesity, caffeine, scrotal temperature, clothing, hot water and mobile telephones **(Gameiro et al., 2016)** these factors impacted the quality of life of sperm parameters and DeoxyriboNucleic Acid damage (DNA) induced by reactive oxygen species **(Cho et al., 2017)**. Also, the altered balance between antioxidant system **(Yousefniapasha et al., 2015)** and oxidative stress may determine poor fertilization/ embryonic development, pregnancy loss, birth defects and childhood cancer **(Agarwal et al., 2014)**.

Tobacco smoking markedly affects the reproductive health of both men and women. Smoking impairs every step of the natural reproductive process such as folliculogenesis, steroidogenesis, embryonic development and transport as well as implantation. In females, smoking is associated with a rapid decline of ovarian reserves, delayed conception and heightened risk of spontaneous miscarriage, as well as a lower success rate from Assisted Reproductive Technology (ART), while in males the percentage of normal semen morphology and motility is significantly reduced **(Firns et al., 2015, Joelsson, 2018 &Silvestris et al., 2019)**.

Regarding nutritional factors they are known to be critical determinants of normal reproductive function in both sexes, a combination of reduced physical exercise; changes in dietary composition and increased energy intake have contributed to a growing worldwide epidemic obesity and diabetes **(World Health Organization, 2018 & Ilacqua et al., 2015, Maresch et al., 2018)** with serious impacts on several aspects of health, including reproductive system health leads to alterations of the ovarian function, permanently affect oocyte maturation in female and decreased sperm quality in male **(Rato et al., 2014 & Silvestris et al., 2019)**.

Stress is a prominent part of any society and infertility itself is stressful, due to social pressures, testing, diagnosis, treatments, failures, unfulfilled desires and even economic costs which associated with it **(Ilacqua et al., 2018)**. Semen parameters may be potentially linked to stress, whose presence may reduce luteinizing hormone (LH) and testosterone

pulsing, thus reducing in turn spermatogenesis and sperm quality **(Corona et al., 2016)**.

Assessing couples perceptions about the impact of lifestyle behaviors on reproduction may provide opportunities to identify deficiencies in their knowledge and modify them through directed counseling. Improved education about lifestyle choices, to which many patients invest substantial resources, could relieve anxiety and expense spent on unrelated factors, while contributing to the adoption of healthy behaviors that might improve outcomes **(Krishna et al., 2019)**.

The nurse plays a crucial role to prevent couple's infertility by maintaining a healthy lifestyle through monitoring and counseling for eating a well-balanced healthy nutritious diet, with plenty of fresh fruits, vegetables, and maintaining a normal weight. More over the nurse must advice the infertile couples about physical activity to reduce the incidence of cardiovascular disease and type 2 diabetes and prevent many of the serious health problems **(Kaur, 2014 & Ramadan & Said, 2018)**.

Significant of the study

Fertility has declined globally to the lowest recorded levels in recent years. The lowest levels are in Europe, at 1.6 children per woman compared with the global rate of 2.5 children per woman **(Department of Economic Social Affairs, 2015)**. The prevalence of infertility ranges from 3.5 % to 16.7% in the developed countries, from 6.9 % to 9.3% in the developing countries, with an estimated overall median frequency of 9%. **(Gabbar et al., 2017 & Al-Mahmood1 & Al-Ajeely, 2020)**.

In more than 70% of couples, a problem with fertility cannot be identified, lifestyle-related fertility disorders were estimated to be responsible for 5% of all cases of subfertility **(Hamadneh et al., 2017)** so identifying modifiable factors that influence human fertility, such as exercise, obesity, nutrition, smoking, caffeine, alcohol consumption, recreational drugs and environmental pollutants are consider of major clinical and public health relevance to enhance fertility, such lifestyle factors, once identified, can be modified. **(Gaskins & Chavarro, 2017, Schaefer & Nock, 2019)**.

Although infertility affects human fertility health status and there is a great deal of concern about identifying its risk factors, there are no comprehensive epidemiological studies about infertility risk factors, determining these factors associated with infertility can offer better clues in the process of infertility treatment. **(Meng et al., 2015)** So researchers of this study were interested to study such approach of couple's perceptions about life style.

Aims of study
1. Assess the perception of infertile couples regarding the effect of lifestyle factors on the chance of conceiving and a healthy pregnancy.
2. Compare the lifestyle factors between fertile and infertile couples.

Research Questions
1. To what extent does infertile couples had perception regarding the effect of lifestyle factors on fertility?
2. Do lifestyle factors affect couples fertility?

Subjects & Method
Research design: A descriptive cross-sectional design was used to conduct this study.

Settings of the study: The study was conducted at infertility outpatient clinic at fifth floor at Assiut Women's Health Hospitals, Assiut University. This setting is one of the most important settings serves all cases from urban and rural areas at Assiut City. Which is a university affiliated hospital providing free health care to outpatient gynecologic clients as well as obstetrics clients. Total annual women who had primary infertility visit outpatient infertility clinics are 400 (official record, 2018). Care is provided by obstetrician, as well as professional and diploma nurses who are responsible for giving nursing care.

Sample: A total of 117 infertile couples were recruited by convenience sampling. On the basis of the statistical calculation, sample size was determined as 80 fertile husbands and 37 infertile husbands, 37 fertile wives and 80 infertile wives to be enrolled in this study. Sample size was calculated by using Epi-info Statistical Package, version 3.3, at 95% level of confidence, and also with expected prevalence of infertility of 20%. Accordingly, sample size was estimated to be 90+10% of couples to guard against no despondence rate. The calculated total size chosen for the study was 117 infertile couples. The following sample size equation used to demonstrate the included sample size

Ss = $\dfrac{Z2*(P)*(1-P)}{C2}$

Ss = Z2 (p) × (1-p) e2
Z = Z value (e. g. 1.96 for 95% confidence level)
P = Percentage picking a choice expressed as a decimal
C = Confidence interval, expressed as decimal (e. g., .04= ±4)

They selected according to the following **inclusion criteria** of couples who were >18 years of age, had been previously diagnosed as being infertile and undergoing infertility treatment for the last 2 years and those who were childless for 2 years and started taking treatment.

The study conducted within six months from the period of the beginning of August, 2019 till the end January 2020.

Tools of data collection

Tool one: Structured interview questionnaire
It was designed by the researcher based upon relevant international studies in the field of infertility treatment. It contained two parts. The first part contained socio-demographics data such as name, age, age at marriage, education, occupation, residence, economic status, duration of marriage. The second part included data relevant to infertility history which involved type of infertility, duration of infertility/years, their diagnosed cause of infertility, received infertility treatment, and underwent previous gynecological operations. The variables for Lifestyle included a total of 10 factors namely, Smoking habits, stress (anxiety/depression), animal exposure, exercise, dietary factors, environmental factors,

Tool two: assessment the perception of the infertile couples regarding the effect of lifestyle factor consisted of ten items related to smoking habits. Alcohol consumption, over (under) weight, stress, exposure to animals and environmental pollution, nutritional habits, caffeine, physical activity and recreational drugs. This part included questions regarding how couples perceived impact of various lifestyle behaviors on the chance of conception, such as 'How do you think stress affects the success of the chance of becoming pregnant and having a baby?'

Each factor in this section was rated using a 10‑point likert scale, on how participants perceived their behavior might influence the chance of conception (1=not influential, 2=2‑4=slightly influential, 3=5‑7=moderately influential, 4=8‑10=highly influential).

Tool three: Simple Lifestyle Indicator Questionnaire (SLIQ)
The SLIQ indicates the scoring procedure. It is of five components: diet including three questions includes eating habits during the past year. Indicate how often you eat the following foods. Lettuce or green leafy salad, with or without other vegetables, Fruit, including fresh, canned, or frozen, but not including juices, High-fiber cereals, such as Raisin Bran or Fruit and Fiber, cooked oatmeal, or whole-grain breads, such as whole wheat, rye, or pumpernickel. Exercise includes three questions regarding how many times per week you take part in the following activities for at least 30 minutes or more at a time. Light exercise, such as the following: light gardening and light housework (eg, dusting, sweeping, vacuuming), leisurely walking (e.g walking your dog), bowling, fishing, carpentry, playing a musical instrument, volunteer work. Physical activity, such as

the following: brisk walking, bicycling, skating, swimming, curling, gardening (eg, raking, weeding, digging), dancing, Tai Chi. Vigorous exercise, such as the following: running, bicycling, cross-country skiing, lap swimming, aerobics, heavy yard work, weight training, soccer, basketball, or other league sports alcohol intake includes three questions how many drinks of the following types of alcohol you consume in an average week. Wine drinks (3-5 oz), Beer drinks (10-12 oz or 1 bottle), Spirits drinks (1-1½ oz). Tobacco smoking includes three questions, yes or no and if no did you ever smoke. Stress includes circle around the number you feel best corresponds to the level of stress in your everyday life from 6 equal not at all stressful to 1 equal very stressful .

Scoring system:
For each component, a raw score and a category score could be estimated. To achieve similar weighting for each of the components, the overall score is based on the five category scores. Each component has a category score of 0, 1, or 2 and the overall range of SLIQ scores is 0-10. The category scores are summed to determine the overall score on a scale of zero to ten, which is also classified into overall categories of unhealthy (score 0-4), intermediate (score 5-7) and healthy (score 8-10).

Administrative phase
The study protocol was approved by the college of Nursing, Assiut University, Egypt. At the same time, permission to carry out the study from the director of the infertility private clinics and outpatients at Women's Health Hospital Assiut University after explanation the purpose of the study was obtained. A verbal consent was obtained from couples to participate in the study.

Validity and Reliability
The tools were reviewed to ascertain their content validity by three experts in nursing science as gynecological and obstetrics, family and community health who reviewed the tool of clarity, relevance and comprehensiveness, understanding and applicability according to the opinion of the experts the modification was done (some questions in the sheet were not clear and complex, the researchers was delete some questions in the sheet because there were not understand from the participants). The reliability of tool III was measured by Cronbach's Alpha and it was reliable at 0.90.

Pilot study
A pilot study was done on ten percent (10%) about **(12 couples)** of study subjects who fulfilled the inclusion criteria to assess the tools for their applicability, clarity, and necessary modifications were done accordingly and included in the study.

Field of work
Data collection was started from the period of the beginning of August, 2019 till the end January 2020. The study conducted within six months. Researchers interviewed each couples in the infertility private clinics and outpatients at Women's Health Hospital, Assiut University and collected the data recorded in the questionnaire. This occurred after explanation the nature of the study and took written consent to be included in the study. The average time taken for completing each interview ranged from 20 to 30 minutes at suitable time to them (either morning or afternoon) depending on the study subjects response. Every week about 2-3 questionnaires were completed (two days/ week). There are dropping out from the sample study about 25 participants refusing to engage in the study.

Ethical consideration
The researchers explained the purpose and the nature of the study for each study participants. Couples had the right to agree or disagree in the participation of the study. They were informed that the information obtained was confidential and used only for the purpose of the study. Verbal consent was obtained from every participant included in the study. The privacy of them was maintained. There is no danger to participate in this study.

Data Analysis
The obtained data were reviewed, set for computer entry, coded, analyzed and tabulated. Descriptive statistics presented as (frequencies, mean, standard deviation and percentage). The test of significance (chi-square test) has done using computer program SPSS version 20. The probability of less than 0.05 was considered significant for all statistical tests.

Results

Table (1): Distribution of the infertile couples according to their socio-demographic characteristics.

	Husbands(n=117)		wives(n=117)		P. value
	No	%	No	%	
Age					
20-24 years	2	1.7	2	1.7	0.404
25-29 years	10	8.5	7	6.0	
30-34 years	**91**	**77.8**	**85**	**72.6**	
35-39 years	14	12.0	23	19.7	
Age at marriage					
18-23 years	10	8.5	7	6.0	**0.003****
24-29 years	**63**	**53.8**	38	32.5	
30-35 years	44	37.6	**71**	**60.7**	
>35 years	0	0.0	1	0.9	
Education					
Read and write	8	6.8	8	6.8	0.084
Primary education	6	5.1	1	0.9	
Secondary school	20	17.1	32	27.4	
University	**83**	**70.9**	**76**	**65.0**	
Occupation					
Working	**117**	**100.0**	55	47.0	**<0.001****
Not working	0	0.0	**62**	**53.0**	
type Of occupation					
Government	46	39.3	44	37.6	**<0.001****
Private	25	21.4	5	4.3	
Coolie	32	27.4	6	5.1	
Unemployed, House wife	0	0.0	62	53.0	
Government private	14	12.0	0	0.0	

Table (2): Distribution of the infertile couples according to their infertility history.

	No	%
Duration of marriage		
one year	13	5.6
2 year	13	5.6
More than 2 years	91	38.9
Previous attempts of ART		
Yes	29	12.4
No	88	37.6
Causes responsible of Infertility		
Husbands	37	31.6
Wives	80	68.4

Table (3): Distribution of the infertile couples according to Perception of lifestyle factors

|	Husbands		Wives		P. value
	No (117)	%	No (117)	%	
1-Smoking habits					
Slightly influential	24	20.5	51	43.6	**0.001****
Moderately influential	27	23.1	19	16.2	
Highly influential	66	56.4	47	40.2	
2-Alcohol consumption					
Slightly influential	8	6.8	18	15.4	**0.115**
Moderately influential	26	22.2	24	20.5	
Highly influential	83	70.9	75	64.1	
3-Over or under weigh-					
Slightly influential	54	46.2	66	56.4	0.282
Moderately influential	43	36.8	36	30.8	
Highly influential	20	17.1	15	12.8	
4-Stress					
Slightly influential	20	17.1	22	18.8	0.894
Moderately influential	58	49.6	59	50.4	
Highly influential	39	33.3	36	30.8	
5-Animal exposure					
Slightly influential	83	70.9	89	76.1	0.088
Moderately influential	31	26.5	20	17.1	
Highly influential	3	2.6	8	6.8	
6-Exposure to environmental pollution					
Slightly influential	66	56.4	80	68.4	0.051
Moderately influential	44	37.6	27	23.1	
Highly influential	7	6.0	10	8.5	
7-Dietary habits					
Slightly influential	37	31.6	48	41.0	0.295
Moderately influential	65	55.6	54	46.2	
Highly influential	15	12.8	15	12.8	
8-Influence of caffeine					
Slightly influential	19	16.2	39	33.3	**0.007****
Moderately influential	60	51.3	43	36.8	
Highly influential	38	32.5	35	29.9	
9-Physical activity					
Slightly influential	74	63.2	74	63.2	1.000
Moderately influential	18	15.4	18	15.4	
Highly influential	25	21.4	25	21.4	
10-Recreational drugs					
Slightly influential	40	34.2	60	51.3	**0.030***
Moderately influential	55	47.0	40	34.2	
Highly influential	22	18.8	17	14.5	
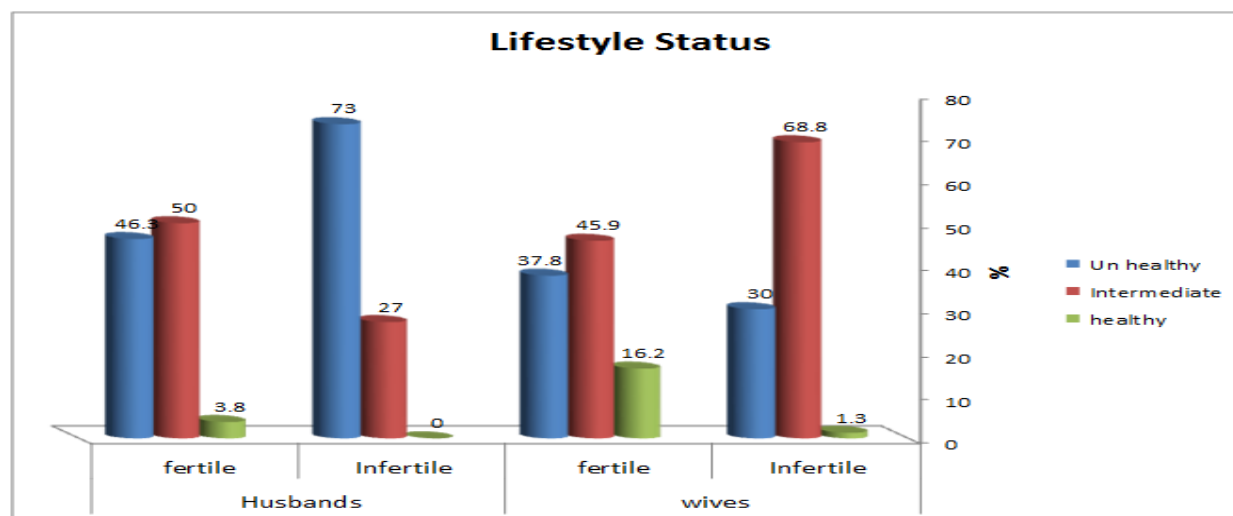
Figure (1): Distribution of the studied couples according their lifestyle status.

Table (4): Distribution of Studied Husbands according to their life Style dimensions

	Fertile group (n=80)		Infertile group (n=37)		P.value
	No	%	No	%	
BMI					
Normal weight	54	46.2	3	2.6	**<0.001****
Overweight	9	7.7	14	12.0	
Obese	17	14.5	20	17.1	
Nutrition					
Normal	9	11.3	2	5.4	**0.024***
Fairly good	60	75.0	22	59.5	
Mal- nutrition	11	13.8	13	35.1	
Physical activity					
Light Exercise	25	31.3	21	56.8	**0.031***
Moderate exercise	50	62.5	15	40.5	
High exercise	5	6.3	1	2.7	
Smoking					
No Smoking	30	37.5	9	24.3	0.115
Yes	50	62.5	28	75.7	
Alcohol					
No drinking	24	30.0	8	21.6	0.237
Mild drinking	56	70.0	29	78.4	
Stress					
Not at all stressful	12	15.0	0	0.0	**0.042***
Moderate	16	20.0	10	27.0	
very Stressful	52	65.0	27	73.0	
SLIQ Score					
Healthy	3	3.8	0	0.0	**0.020***
Intermediate	40	50.0	10	27.0	
Un healthy	37	46.3	27	73.0	

Table (5): Distribution of Studied wives according to their Lifestyle dimensions.

	fertile		Infertile		P.value
	No	%	No	%	
BMIL					
Normal weight	14	37.8	12	15.0	
Overweight	22	59.5	64	80.0	**0.021***
Obese	1	2.7	4	5.0	
Nutrition					
Normal Nutrition	1	2.7	1	1.3	
Fairly good	33	89.2	64	80.0	0.296
Mal nutrition	3	8.1	15	18.8	
Physical activity					
Light Exercise	15	40.5	76	95.0	
Moderate exercise	10	27.0	4	5.0	**<0.001****
High exercise	12	32.4	0	0.0	
Smoking					
Yes	2	5.4	2	2.5	
No Smoking	35	94.6	78	97.5	0.421
Alcohool					
No drinkjing	37	100.0	80	100.0	-
Stress					
very Stressful	34	91.9	71	88.8	
Moderate	3	8.1	9	11.3	0.602
SLIQ Score					
Un healthy	14	37.8	24	30.0	
Intermediate	17	45.9	55	68.8	**0.002****
Healthy	6	16.2	1	1.3	

Table (6): Distribution of the studied wives according to their socio demographic characteristics in relation to their lifestyle status

	Fertile wives						P. value	Infertile wives						P.value
	Un healthy		Intermediate		Healthy			Un healthy		Intermediate		Healthy		
	No	%	No	%	No	%		No	%	No	%	No	%	
Age														
20-24 years	0	0.0	0	0.0	0	0.0		0	0.0	2	3.6	0	0.0	
25-29 years	0	0.0	0	0.0	0	0.0	**0.000****	1	4.2	5	9.1	1	100.0	**0.000****
30-34 years	5	35.7	16	94.1	6	100.0		12	50.0	46	83.6	0	0.0	
35-39 years	9	64.3	1	5.9	0	0.0		11	45.8	2	3.6	0	0.0	
Age at marriage														
18-23 years	0	0.0	0	0.0	0	0.0		2	8.3	4	7.3	1	100.0	
24-29 years	2	14.3	6	35.3	2	33.3	0.394	5	20.8	23	41.8	0	0.0	**0.024***
30-35 years	12	85.7	11	64.7	4	66.7		17	70.8	27	49.1	0	0.0	
>35 years	0	0.0	0	0.0	0	0.0		0	0.0	1	1.8	0	0.0	
Education														
Read and write	1	7.1	0	0.0	0	0.0		4	16.7	3	5.5	0	0.0	
Primary education	0	0.0	0	0.0	0	0.0	0.669	1	4.2	0	0.0	0	0.0	0.208
Secondary school	4	28.6	6	35.3	3	50.0		5	20.8	13	23.6	1	100.0	
University	9	64.3	11	64.7	3	50.0		14	58.3	39	70.9	0	0.0	
Occupation														
Working	8	57.1	6	35.3	2	33.3	0.411	9	37.5	30	54.5	0	0.0	0.234
Not working	6	42.9	11	64.7	4	66.7		15	62.5	25	45.5	1	100.0	
Residence														
Urban	9	64.3	7	41.2	2	33.3	0.314	13	54.2	30	54.5	0	0.0	0.555
Rural	5	35.7	10	58.8	4	66.7		11	45.8	25	45.5	1	100.0	
Duration marriage														
one year	1	7.1	1	5.9	0	0.0		2	8.3	9	16.4	0	0.0	
2 year	1	7.1	0	0.0	0	0.0	0.706	2	8.3	10	18.2	0	0.0	0.554
More than 2 years	12	85.7	16	94.1	6	100.0		20	83.3	36	65.5	1	100.0	

Table (7): Distribution of the studied husbands according to their socio demographic characteristics in relation to their lifestyle status

	Fertile husbands						P. value	Infertile husbands				P. value
	Un healthy		Intermediate		Healthy			Un healthy		Intermediate		
	No	%	No	%	No	%		No	%	No	%	
Age												
20-24 years	1	2.7	1	2.5	0	0.0	0.532	0	0.0	0.0	0	0.704
25-29 years	7	18.9	2	5.0	1	33.3		0	0.0	0.0	0	
30-34 years	26	70.3	32	80.0	2	66.7		23	85.2	8	80.0	
35-39 years	3	8.1	5	12.5	0	0.0		4	14.8	2	20.0	
Age at marriage												
18-23 years	6	16.2	3	7.5	0	0.0	0.565	1	3.7	0	0.0	0.456
24-29 years	19	51.4	23	57.5	1	33.3		13	48.1	7	70.0	
30-35 years	12	32.4	14	35.0	2	66.7		13	48.1	3	30.0	
Education												
Read and write	5	13.5	1	2.5	0	0.0	0.288	2	7.4	0	0.0	0.669
Primary education	2	5.4	3	7.5	0	0.0		1	3.7	0	0.0	
Secondary school	8	21.6	4	10.0	0	0.0		5	18.5	3	30.0	
University	22	59.5	32	80.0	3	100.0		19	70.4	7	70.0	
Operations												
No	37	100.0	40	100.0	3	100.0	-	27	###	10	100.0	-
Occupation												
Working	37	100.0	40	100.0	3	100.0	-	27	###	10	100.0	-
Residence												
Urban	18	48.6	24	60.0	1	33.3	0.468	14	51.9	4	40.0	0.522
Rural	19	51.4	16	40.0	2	66.7		13	48.1	6	60.0	
Duration of marriage												
one year	3	8.1	7	17.5	1	33.3	0.319	2	7.4	0	0.0	0.546
2 year	4	10.8	7	17.5	1	33.3		1	3.7	0	0.0	
More than 2 years	30	81.1	26	65.0	1	33.3		24	88.9	10	100.0	

Table (1): Reveals that the age of both couples 77.8% and 72.6% of husbands and wives to be in the age group of 30-34 years respectively with no statistically significant difference, P=0.404. About 53.8% married at the age group of 24-29 years and two third of wives 60.7% married at the age group of 30-35 years with statistical significant difference, P=0.003. It also revealed that 70.9% and 65% of husbands and wives had university education respectively with no statistically significance difference, P=0.084. It also presented that there is statistically significant difference among infertile couples in terms of their age at marriage, occupation, type of occupation.

Table (2): Presents 38.9% of the infertile couples were married from more than two years. Female infertility was responsible for 45.7% of causes of infertility. 12.4% of infertile wives had attempted previous assisted reproductive technique treatment trial.

Table (3): Shows the perception of the infertile couples about lifestyle influence on fertility. About 56.4 % of infertile husbands could perceive the smoking habits are highly influential on ability of fertility while 43.4 % of the infertile wives could perceive the smoking habits are slightly influential with statistically significant difference, P= 0.001**.

Both infertile couples 70.9% of husbands and 64.1% of wives opined that alcohol consumption at any level would be highly influential to hinder chance of pregnancy .No significant difference was found among infertile couples regarding drinking alcohol, over or underweight, stress, animal's exposure, exposure to environmental pollution, dietary habits, and influence of caffeine, exercises and taking recreational drugs. Concerning influence of caffeine this table highlights that 51.3% of husbands and 36.8% of wives considered caffeine consumption moderately influential to the chance of getting pregnant with statistically significant difference, P=0.007**.

Regarding the lifestyle status.

Fig (1): Represents a highly statistically significant difference between couples. Unhealthy lifestyle status was seen in more than three third of infertile husbands seventy three percent versus one third of fertile husbands with forty six percent respectively. Intermediate lifestyle status was seen in more than two third of infertile wives versus less than half of fertile wives (P=0.002**).

According to the score of lifestyle questionnaire among studied husbands

Table (4): Reveals that a statistically significant difference between both groups regarding BMI, exercise, nutrition and stress. Regarding exercise this table shows a higher percentage of moderate and high exercise among the fertile husbands with (more than third) than the infertile husbands with (one third) of infertile husbands had performed moderate exercise. Moreover, More than two third of husbands was currently smoker.

According to the score of lifestyle questionnaire among studied wives

Table (5): Shows that a statistically significant difference between both groups regarding BMI and exercise. Regarding exercise this table illustrated majority of infertile wives had performed light exercise versus one fourth of fertile wives. No significant difference was found among groups according to their nutritional status, smoking, alcohol and level of stress.

Table (6): Reveals the relationship between the fertile and infertile wives in relation to their healthy, intermediate healthy and unhealthy lifestyle status. Regarding the age groups, healthy lifestyle status shows a highly statistically significant difference (P=0.03) between the fertile and the infertile age groups in wives. It also shows that a highly statistically significant difference was present between healthy, intermediate healthy and unhealthy lifestyle status in wives in relation to age at marriage.

Table (7): Clears the relationship between the fertile and infertile husbands in relation to their healthy, intermediate healthy and unhealthy lifestyle status. It shows that no statistically significant difference was present between groups in relation to age, age at marriage, education, occupation, residence and duration of marriage.

Discussion

Human are exposed to lifestyle factors which are incredibly crucial for maintaining optimal health throughout life. Some of them have unfavorable effects on reproductive health of infertile men and women; however, further assessing both partners' lifestyle-related factors, especially nutrition, physical activity will be needed to fully understand the independent contribution of male and female factors to enhance reproduction **Piché et al., (2018)**

On the basis of the findings of the present study, most of the studied infertile couples had unhealthy Life-style status than fertile couples. However, the study results showed a highly statistical significant difference between the two groups in husbands in terms

of BMI, exercise, nutrition and stress while BMI and exercise in wives. These results of the present study similar to **Youness (2018)** in A descriptive comparative study design , A convenience sample of 200 women was recruited from Women's Health Hospital, Assiut University, who concluded that Lifestyle factors significantly affected female fertility, as physical activity and BMI had a statistical significant difference between the groups. These results contradict the results of **Harzif et al., (2019)** in a cross sectional study in jakarta and Sumba representing urban and rural population in Indonesia. This study aimed to reveal the knowledge, myth, and attitude towards infertility and its risk factors who found that both groups were also unaware of social and lifestyle factors of infertility. Roughly half participants were misled in the danger of smoking, obesity, and psychological stress. On the same line **Piché et al., (2018)** in this prospective pilot study was conducted in a fertility clinic between May 2015 and February 2016 which aimed to determining the independent contribution of male and female lifestyle-related factors to assisted reproductive technology (ART) success. This study also examined whether couples seeking fertility treatments present lifestyle-related factors that may interfere with their reproductive health. They concluded that many women and men seeking fertility treatments present unfavorable lifestyle-related factors that may explain, at least partially, their difficulties in conceiving. These results similar to findings of **Homan et al., (2012)** who studied the fertility assessment and advised targeting lifestyle choices and behavior. They examined various dimensions of lifestyle. They found that all couples had unhealthy lifestyle.

Such inconsistency between the results of the studies can be owing to the evaluation of different dimensions of lifestyle, the administration of different questionnaires, different sample size and unlike cultural contexts.

The present study presented that physical activity and BMI showed a highly statistical significant difference between the two studied groups, meaning that moderate and low level of physical activity were significantly more among the infertile couples. The present study findings are supported by the results of **Moridi et al., (2019)** who investigated the etiology and risk factors associated with infertility in the southern region of Iran in cross-sectional study was conducted in infertility centers of Hormozgan University of Medical Science (HUMS), and they found

that the odds of infertility in obese and overweight women were higher compared to normal and lean weight women. On the same line the results of **Eniola et al., (2017)** who reported that ovulation disorders lead to infertility due to weight gain (BMI greater than 27). **Broughton & Moley, (2017) in our study** about Obesity and female infertility who revealed that the probability of obesity and overweight in infertile women was 4.8 and 3.8 times higher compared to fertile women, respectively. Similarity to **Cong et al., (2016)** in a cross-sectional study to investigate and analyze prevalence and risk factors of infertility at a representative rural site of Northern China. They conducted a face-to-face questionnaire survey from July 2014 to October 2014 involving 5,131 .They showed a significant relationship between BMI >30 and female infertility factor. In other hand **Piché et al., (2018)** mentioned that in men obesity may also affect fertility by altering sperm parameters. These authors are agree with the present study

Regarding the nutritional status, the present study showed that there is statistically significant difference between the fertile and infertile couples, as most of the infertile groups were at risk of malnutrition. These results were similar to the results of **Silvestris et al., (2019)** who illustrated that reproductive activity is definitely influenced by foods and type of nutrition. An unbalanced caloric and protein intake due to incorrect food consumption, responsible for severe under- or over-weight, leads to alterations of the ovarian function with subsequent increase in the infertility. However, these results are different from the results of **Younes, (2018)** illustrated that there is no statistical significant difference between the fertile and the infertile groups, as most of the fertile and infertile groups have normal nutritional status. The observed differences between the results of various researches might be caused by the use of different questionnaire. Therefore, further studies are required to be implemented upon a large sample size to assess the correlation between nutritional status and fertility in infertile couples.

The present study revealed a significant relationship between male infertility factor and smoking (P> 0.001). More than two third the infertile husbands and two percent of infertile wife were smokers ,with no statistically significant difference between fertile and infertile couples .On the contrary, the current study findings about cigratte smoking did not match the results of previous studies in that point. **Eniola et al., (2018)** discussed of Female Infertility, important etiological factors and management. They indicated that 60% of smokers were infertile. On the same line **Moridi et al., (2019)** in their study

revealed a significant relationship between male infertility factor and addiction and smoking (P = 0.019, P = 0.007).Similarity **Yang et al., (2018)** in a cross-sectional study in South-West China to assess the effect of male smoking on couples' fertility, they concluded that male smoking may have an adverse impact on couples' infertility.

Alcohol consumption of infertile husbands at the present study was more common in infertile husbands than fertile husbands. These results agree with **Hamadneh et al., (2017)** in A cross-sectional descriptive study was conducted among sub-fertile couples attending the fertility center at Jordan University of Science and Technology, to explore the prevalence rates of lifestyle practices linked to fertility disorders who explored that none of the male or female participants in this study drank alcohol more than twice per week. The variation between two studies explained by the fact that most Middle Eastern countries strictly control the consumption of alcohol or bans it altogether.

Conclusion

Perceptions of the impact of lifestyle factors on fertility success vary by sex, socioeconomic factors and treatment. The infertile couples significantly had low level of physical activity, more BMI, moderate nutritional status, high stress level than the fertile group. However, no significant difference was observed between groups regarding smoking, alcohol consumption. So lifestyle factors such BMI, nutrition significantly affected couples fertility.

Recommendation

Based on the study findings the following recommendations are derived:

1. In-services educational program for infertile couples for maintaining   lifestyle habits to improve their chance of spontaneous conception.
2. Couples should be properly trained and have enough awareness about health lifestyle, regular check-ups to avoid infertility problems.
3. Effective strategies and support for making healthy changes are routinely offered.

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