



Obstetrics & Gynaecology

A PROSPECTIVE OBSERVATIONAL STUDY ON EFFECT ON SEMEN PARAMETERS AFTER COUNSELLING IN THE DEPARTMENT OF OBSTETRICS & GYNAECOLOGY, SMS MEDICAL COLLEGE & HOSPITAL, JAIPUR

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ABSTRACT This observational study evaluated the impact of lifestyle-related factors on male fertility and the effectiveness of counseling in improving semen parameters among 200 males attending a specialty clinic. Modern lifestyle habits, including obesity, sedentary behavior, excessive mobile phone usage, smoking, alcohol consumption, and junk food intake, have been linked to declining sperm quality, as evidenced by reduced sperm concentration, motility, vitality, and morphology. Participants were assessed for these habits and counseled to adopt healthier lifestyle choices. The findings revealed that these factors significantly contributed to male infertility by affecting semen quality and reproductive health. Counseling resulted in measurable improvements in all semen parameters, including sperm concentration, motility, and morphology, while also enhancing endocrine control of reproductive functions. Notably, 31% of the participants' spouses conceived after lifestyle modification, underscoring the potential of targeted counseling in addressing male infertility. This study highlights the critical role of lifestyle interventions in improving male reproductive health and supports their inclusion in infertility treatment protocols.

KEYWORDS : infertility, obesity, mobile phone, cigarette smoking, counseling, sperm parameters

INTRODUCTION

Minimum requirements for semen analysis and semen parameter standards were established in 1951 by the American Fertility Association (Abarbanel et al., 1951), [1] in 1966 by Freund (), [2] and in 1971 by Eliasson (Eliasson, 1971). [3] This was followed by publications from the World Health Organization (WHO) in 1980, 1987, 1992 and 1999. However, the so-called normal values provided by the WHO manuals for the basic semen parameters, viz. volume, qualitative and quantitative motility and morphology, were mostly obtained through studies performed on so-called fertile populations (WHO, 1987 WHO, 1992). [4] This may result in a situation that if the semen parameters (variables) are not within the normal range as given in these publications, the male may be regarded as subfertile or not capable of fertilizing his spouse. This can lead to unnecessary treatment procedures (Comhaire et al., 1992; [5] Ombelet et al., 1995 [6,9]) or to social problems and stress among couples, for example in cases where spontaneous pregnancies occur after a male has been pronounced as subfertile according to WHO guidelines for normality.

According to The International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO), infertility is characterized by the inability in achieving a pregnancy after twelve months of timed, unprotected sexual intercourse. More than 186 million people worldwide suffer from infertility. Between 8 to 12% of couples of childbearing age are affected by infertility. Research has shown males are responsible for 20–30% of infertility cases but contribute to 50% of cases overall [6]. Nowadays, environmental, occupational and lifestyle factors negatively impact both male and female fertility as well as the success of assisted reproductive technology (ART) [8].

As male fertility can be influenced by a variety of factors, one possible explanation for the declining trend would be that there are environmental and/or occupational factors along with lifestyle practices that contribute to the deterioration of semen quality [6,7].

The present article was focused on male patients who came to infertility clinic. In this study semen parameters were assessed before and after counseling regarding lifestyle changes and its effect on pregnancy outcome.

MATERIAL AND METHODS**Ethical Clearance-**

Institutional review board and ethical committee clearance was taken.

Study Type: Observation study

Study Design: Prospective follow up

Place Of Study: Department of Obstetrics and Gynecology, SMS Medical College and Hospital, Jaipur.

Duration Of Study:-

November 2022 onwards for a period of one and half year or till desired sample size is reached and 2 month for data compilation and statistical analysis

Study Universe :

Couples attending infertility clinics in the Department of Obstetrics & Gynecology, SMS Medical College & Hospital, Jaipur

Study Population was selected according to inclusion and exclusion criteria amongst the couples attending infertility clinics in the Department of Obstetrics & Gynecology, SMS Medical College & Hospital, Jaipur

SAMPLE SIZE

As per seed article, sample size of 200 is required at 95% confidence, 80% power to verify 69% properties of male to improve semen quality after lifestyle modification.

P values < 0.05 was taken as statistically significant.

Inclusion Criteria:

Age of male partner below 35 years. (Age range- 21-35 years)

Exclusion Criteria:

Couple with obstruction of reproductive tract, testicular failure (varicocele, chemotherapy), hormonal disorders (pituitary) and testicular cancer.

METHODOLOGY

Written informed consent was taken after admission. Patients were selected by following inclusion and exclusion criteria. Evaluation of the semen parameters in HSA and their correlation with lifestyle factors and environmental factors. Pregnancy outcomes was assessed in couples which have been counselled for lifestyle and environmental factors.

Normal Semen parameters reference ranges defined by WHO, 2021 edition. [7]

Statistical Analysis

Independent Student -t-test was used to analyse continuous variables and presented as tabulated means and standard deviations. Categorical variables were presented as frequencies and percentages and analysed using Pearson's chi-squared test, with Yates' or Fisher's continuity correction when necessary. P value < 0.05 will be taken as statistically significant.

OBSERVATIONS AND RESULTS

In our study maximum males belonged to 31–35 year age group (57%), followed by 26–30 years (33%) and least no of males i.e 20 belonged to

21-25 years. 59% males belonged to urban area, remaining i.e. 41% belonged to rural area. There was preponderance of Hindu males with approx 77%. Remaining 23% were Muslims.

More than 42% males were from middle class, 39% were from lower middle class and 12% were from lower middle class. 5 males were from upper class and 9 were in lower class.

Table 1- Study Parameters

AGE GROUP (YEARS)	NUMBER	PERCENTAGE (%)
21-25	20	10
26-30	66	33
31-35	114	57
RESIDENCE	NUMBER	PERCENTAGE (%)
URBAN	118	59
RURAL	82	41
RELIGION	NUMBER	PERCENTAGE (%)
HINDU	154	77
MUSLIM	46	23
SOCIOECONOMIC STATUS	NUMBER	PERCENTAGE (%)
I	5	2.5
II	24	12
III	84	42
IV	78	39
V	9	4.5
PHYSICAL ACTIVITY	NUMBER (200)	PERCENTAGE (%)
SEDENTARY	92	46
MODERATE	78	39
ACTIVE	30	15
JUNK FOOD CONSUMPTION	NUMBER	PERCENTAGE (%)
ONCE A MONTH	88	44
ONCE A WEEK	89	44.5
THRICE A WEEK	23	11.5
PERSONAL HISTORY	NUMBER	PERCENTAGE (%)
TOBACCO	49	24.5
SMOKERS	44	22
ALCOHOLICS	46	23
CONSUMING RECREATIONAL DRUGS	12	6
HOURS ON PHONE	NUMBER	PERCENTAGE (%)
<2 HRS/DAY	78	39
2-5 HRS/DAY	100	50
>5 HRS/DAY	22	11
SITTING HOURS	NUMBER	PERCENTAGE (%)
<2 HRS/DAY	4	2
2-5 HRS/DAY	112	56
>5 HRS/DAY	84	42

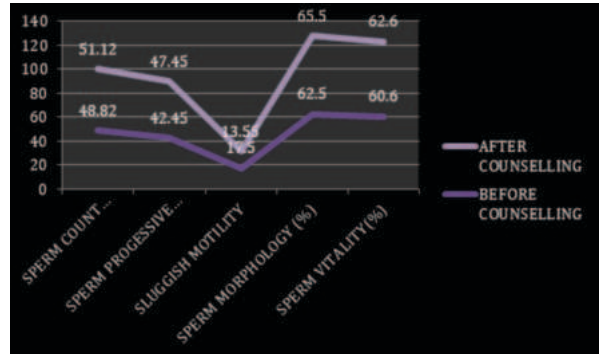
As per above table 46% males were physically inactive i.e. having sedentary life style, followed by 39% males who had moderate life style. maximum males i.e. 44.5% were consuming junk foods once a week, followed by 44% males who were consuming junk foods once a month. 23 males were those who were consuming junk foods thrice a week. Only 15% males were performing active.

In our study 24.5% males were consuming tobacco, 23% males were alcoholics, 22% were smokers and 6% were taking recreational drugs. In our study several question were asked to assess effect of life style factors on infertility in males. It stated that 50% were using phone for 2-5hrs/day and 56% were sitting for 2-5 hrs. 42% males had sitting hrs >5/day.

Table 5- Semen Parameters

SEMEN PARAMETERS	Mean values (N=200)
Volume (ml)	1.48
Total sperm number (*10 ⁶ /ejaculation)	47

Total motility (%)	59
Progressive motility (%)	45
Sluggish motility (%)	14
Immotile sperm (%)	41
Vitality (%)	56
Normal sperm Morphology (%)	61
Pus cells in semen (%)	10.5



Graph 1- Graphical representation of semen parameters before and after counselling

As seen from the graph, p is significant at the 0.05 level. The patients are counseled about lifestyle change and other factors which can influence sperm parameters. Follow up was done on 6 month. It was found that there was significant improvement in all parameters.

These results highlight the significant impact of lifestyle counseling on improving fertility outcomes. The majority of participants (69%) achieved conception, indicating the effectiveness of targeted lifestyle modifications in addressing infertility.

DISCUSSION

This study assessed the impact of modifiable lifestyle and environmental factors on semen parameters in 200 males attending a specialty infertility clinic at SMS Medical College & Hospital, Jaipur. Semen analysis showed mean semen volume at 1.48 ml, total sperm count of 47 million/ejaculate, and average motility at 59%, with progressive motility at 45%. Normal sperm morphology was 61%, and pus cells were observed in 21 participants.

Paternal aging was linked to genetic and epigenetic changes in sperm, contributing to health risks for offspring. Most participants were aged 31–35 years (57%). Urban residents comprised 59% of participants, while rural residents accounted for 41%. Lifestyle factors, including sedentary habits and poor diet, were prevalent. Approximately 46% of participants were physically inactive, and 44.5% consumed junk food weekly. Tobacco use (24.5%), alcohol intake (23%), and smoking (22%) were significant contributors to poor semen quality.

Prolonged phone use and sitting hours were associated with reduced sperm motility and viability. Counseling on lifestyle changes led to significant improvements in semen parameters, with sperm count, motility, and morphology showing positive changes after six months. Pregnancy outcomes improved, with 69% of spouses conceiving post-intervention.

LIMITATIONS OF THE STUDY

The study was conducted at a single institution and relied on participants who sought treatment, potentially introducing bias. Behavioral data were self-reported, and the sample size was relatively small.

CONCLUSION

Lifestyle-related factors are a considerable contributor to male infertility in the world today. Studies have shown that sperm quality is essentially determined by obesity, junk food consumption, sedentary life style, nicotine addiction, heavy exposure to electromagnetic radiation-emitting devices and alcohol consumption. Lifestyle factors decrease the count, motility and morphology of semen, increase DNA damage and may also have an effect on endocrine control of reproductive function. After counselling there was significant improvement in all parameters. 31% spouses conceived after counselling for life style modification. Semen parameters of semen was also improved.

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