



Effect of Abstinence Time on Semen Parameters among Male Patients Referring to Urology Clinic

**Farshad Sheybaee Moghaddam¹, Hojjat Hosseini^{2*}, Sassan Mohammadi³,
Mozhdeh Amirahmadi⁴, Mehrshad Salar Hosseini⁵**

¹Department of Urology, School of Medicine, Ali Ibne Abitaleb Hospital, Zahedan University of Medical Sciences, Iran.

²Department of Urology, Faculty of Medicine, Shahi Beheshti University of Medical Sciences and Health Services, Tehran, Iran.

³Faculty of Medicine, Shahid Beheshti University of Medical Sciences and Health Services, Tehran, Iran.

⁴Department of Medical, Mashhad Branch, Islamic Azad University, Mashhad, Iran.

⁵Department of Medical, Zahrdan Branch, Islamic Azad University, Zahedan, Iran.

Authors' contributions

This work was carried out in collaboration among all authors. Author HH and FSM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SM and MA managed the analyses of the study. Author MSH managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2019/v31i330300

Editor(s):

(1) Dr. Syed A. A. Rizvi, Department of Pharmaceutical Sciences, Nova Southeastern University, USA.

Reviewers:

(1) Vesna Otasevic, University of Belgrade, Serbia.

(2) Anura Dissanayake, University of Kelaniya, Sri Lanka.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/52417>

Original Research Article

Received 01 September 2019

Accepted 03 November 2019

Published 07 November 2019

ABSTRACT

Introduction: Premature ejaculation (PE) is one of the most common disorders in sexual intercourses among men and may occur for any man in any period of his life. PE results in some mental disorders such as anxiety, depression and marital disaffection and can have psychological impacts. The present study is aimed to investigate the effect of the abstinence time on the semen analysis parameters among men.

Methods: The present cross-sectional study was conducted on a statistical population including 100 male patients referring to the urology clinic in Ali-Ibn-Abitaleb Hospital. Once included in the study, these individuals are divided into three groups with short-term abstinence (less than 2 days),

*Corresponding author: E-mail: hojjathosseini@gmail.com;

mid-term abstinence (2-9 days), and long-term abstinence (more than 9 days). The patients, depending on the group to which they belonged, were asked to deliver their semen at the specified time to the laboratory in less than an hour. The obtained data were statistically analyzed in SPSS-22 software.

Findings: The results of Pearson correlation and Spearman tests indicated a direct positive relationship between the abstinence time and the total number of sperms in the seminal fluid, concentration of the sperms in the seminal fluid, volume of the seminal fluid, sperm DNA fragmentation, reactive oxygen species in the seminal fluid, and pH of the seminal fluid. accordingly, the longer the abstinence time, the more the occurrence of these disorders. Also, the correlation test results showed that the abstinence time had an inverse relationship with motility and morphology of the sperms in the seminal fluid; accordingly, with elongation of the abstinence time, the motility (mobility) and morphology of the sperms in the seminal fluid were reduced.

Conclusion: The researchers in the present work concluded the presence of a relationship between the abstinence time and the quality of the sperm parameters. Results of the present study showed that the abstinence time is significantly associated with the total sperm count, sperm concentration seminal fluid volume and pH.

Keywords: Premature Ejaculation (PE); morphology; sperm.

1. INTRODUCTION

Reproduction of humans, like other mammals, involves the formation of male and female gametes followed by fusion of their nuclei and formation of the zygote. In humans, the gametes are produced by sex glands known as gonads. The male gamete is called sperm (or spermatozoon) and the female gamete is called ovum. Having a child is one of the major concerns of any couple and failure to do so it can result in worries in both the couple and their family members [1-3]. So far, no standard time of abstinence has been defined for ejaculation since it may differ from one couple to another depending on their satisfaction and desire on t sexual intercourse. However, it has been proposed that either one or both partners are not fully satisfied in 50% or more of the sexual intercourses. In this situation, the male partner may be suspected of having PE but requiring further investigations. The main symptom of premature ejaculation is uncontrollable ejaculation that occurs either before sexual relationship or a little after that with a little arousal and in an unwanted manner [1]. This problem can cause sexual dissatisfaction for either party of the relationship and also increase the anxiety resulted from such disorder [1,2]. PE is one of the most common sexual disorders among men and may occur for any man in any period of his life [1,3]. Approximately, one-third of the men are suffering from PE [1-3]. PE is a complicated situation that may cause by mental disorders such as anxiety, depression, sexual disaffection and, have psychological impacts. Therefore, early diagnosis and treatment of the

disorder are of great importance [4]. Infertility or inability to have the natural process of reproduction is one of the bitter and tormenting experiences in life. , The importance of which can be increased by the mental and social circumstances so that it may be changed into a crisis for the individual [5]. However, studies suggest that infertility is an unfavourable experience especially for women; because the maternal role has been accepted as a fundamental role for women. Most of the infertile women state that they cannot imagine a life without a child; while men express different emotions. On the other hand, most of the treatment methods are used for women. However, the men's role in infertility was denied for a long time and only women were considered as the cause of infertility [6]. The experience of infertility is associated with physical, economic, psychological, and social stress. The infertility patterns in developing countries are completely different from those in developed countries, and the occurrence of preventable infertilities is very prevalent in developing countries. In 50% of couples malefactor, is solely or in association with the female factor, is responsible for infertility. There are several diagnosable reasons for the male factor-caused infertility including varicocele, cryptorchidism, infections, obstructive lesions, cystic fibrosis, trauma, tumours, and oxidative stress, all of which cause spermatogenesis failure through cytokine and, thereby, result in infertility [7]. Semen analysis is the first step in the diagnosis of male infertility [8], which leads to the classification of the patients into different groups including normospermia, oligospermia, asthenospermia, teratozoospermia,

leukocytospermia, azoospermia, or a combination of them. The patients with varicocele have significant oligospermia, and varicocele surgery can improve the semen volume as well as sperm density, motility, and vitality [8,9]. Didymitis causes decreased testicular volume and oligospermia [10]. Being exposed to heat, noise, and physical exercise causes testicular damage and finally terato and oligoasthenospermia [11]. Patients with an STI background have an obvious leukocytospermia, and sufficient primary treatment of STI can prevent delayed complications [12]. Azoospermia can be caused by ejaculatory duct obstruction (EDO), hypospermatogenesis, lack of spermatogenesis, maturation arrest, Sertoli cell-only syndrome, or Leydig cell hyperplasia. As indicated by the studies, the quality of the seminal fluid and infertility have been reduced over the past decade [12,13]. Deterioration of semen samples depends on environmental and occupational pollution, changes in living conditions, exposure to poisons, and nutritional habits [13-15]. Lifestyle, excessive use of alcohol, and smoking may lead to the decrease of seminal plasma antioxidants level which puts the sperm at extra risk of oxidative damage [16]. In recent years, oxidative stress and the role of oxygen radicals in pathophysiology of human sperm function and male infertility has become known. From the production of spermatozoa in testis until it gets into the female reproductive system, it is continuously and constantly in contact with environmental oxidase; also, oxidative stress has been known as one of the most important causes of male infertility [17]. The factors contributing to male fertility include sperm count, sperm motility, and sperm morphology. Performing the assisted reproductive techniques require a desired sperm volume and quality. The first step in the examination and evaluation of male fertility is to estimate the sperm parameters via seminal fluid analysis [17]. The WHO guidelines recommend 2 to 7-days abstinence before collecting the semen specimens; nevertheless, no clearly explained base has been provided for this recommendation and there is only poor supportive evidence for the recommended 2 to 7-day abstinence. It has been observed, particularly among the infertile men, that the increased abstinence time leads to the increase in some of the seminal fluid parameters such as semen volume, total sperm count, and sperm concentration [18]. In a retrospective study, the information of 15623 patients who had been visited in a fertility clinic between 2013 and 2002 was investigated. The results indicated

that, in normozoospermic men, the prolonged abstinence time was associated with the increase in ejaculation volume, sperm concentration, total sperm volume, and total motile sperm count. On the other hand, in the oligozoospermic men, the increased abstinence time has no significant relationship with the improvement of the seminal fluid parameters [19]. In a research conducted in the USA, researchers found that the short abstinence time had no harmful effect on the seminal fluid parameters based on the thresholds determined by the WHO in 2010 [20]. In a study conducted in 2013, semen samples were collected from the men whose wives were under assisted reproductive treatment between 1996 and 2007. Four semen parameters were compared including volume density, motility, and the sperm appearance based on the Tigerbergs (Kruger) criteria. Two other defined parameters were also measured which included: total motile count (TMC) and total normal morphology count (TNMC). 4133 paired sperm samples collected over the past 24 hours were included in the study and analyzed by the above-mentioned approach. According to the results, in the samples of the second day, sperm volume and density were significantly decreased compared with the samples of the first day. No significant change was observed between the samples of the first and the second days in terms of the sperm motility percentage and sperm morphology. Compared with the samples of the first day, TMC and TNMC were also significantly decreased in the samples of the second day (21).

On this basis, the present study was aimed to investigate the effects of the abstinence time on the seminal fluid parameters among the male patients referring to the urology and infertility clinics in Ali-Ibn-Abitaleb Hospital in Zahedan city in 2018-2019.

2. MATERIALS AND METHODS

Once the project was approved by the Research Center of the College of Medicine, a total of 100 male patients were included in the study and their information was recorded in the pre-designed checklist. These individuals were then divided into three groups, including short-term abstinence time (less than 2 days), mid-term abstinence time (2-9 days), and long-term abstinence time (more than 9 days). The subjects were asked to deliver their seminal fluid at the specified time to the laboratory in less than an hour. The inclusion criteria in this work

included being at the age of fertility (20-45 years) and the lack of psychotropic drug use. The patients with a history of cryptorchidism and fever in the past 3 months, history of mumps, and history of sexually transmitted diseases (STD) were excluded from the research. Analysis of the collected data was performed using the Pearson correlation test, Spearman correlation test, and regression in SPSS software ($P_{\text{value}} < 0.05$).

3. RESULTS

In this section, the research findings are presented in two parts, namely descriptive and inferential, which include the demographic characteristics of the sample group, the mean and standard deviation of the research variables, and statistical inference from the investigation of the research hypotheses.

Table (1) shows the frequency distribution and percentage of the respondents in terms of their age, Occupation and educational level. As can be seen, most of the participants aged 28-38 years old, were clerks or self-employed and had bachelor's degrees or lower (Table-1).

Table 1. Frequency distribution and percentage of respondents in terms of age, job, and educational level

Variable	Frequency (percentage)
Age	
17-27	22(22)
28-38	61(61)
39-49	14(14)
Above 50	3(3)
Occupation	
Clerk	34(34)
Self-employed	47(47)
University student	19(19)
Educational level	
High school diploma	41(41)
Basic degree	43(43)
Postgraduate	16(16)

The Spearman and Pearson correlation coefficients were used to investigate the relationship between the abstinence time and sperm morphology in the seminal fluid (Table-2).

The results of the Spearman and Pearson correlation tests indicated a significant relationship between the abstinence time and the

sperm morphology in the seminal fluid ($r = -.113$, $P < 0.05$).

The relationship between the abstinence time and sperm concentration in the seminal fluid was investigated using the Spearman and Pearson correlation coefficients (Table-3).

The results of the Spearman and Pearson tests indicated that the abstinence time was significantly related to the sperm concentration in the seminal fluid.

The Spearman and Pearson correlation coefficients were used to investigate the relationship between the abstinence time and sperm volume in the seminal fluid (Table-4).

The results of the Spearman and Pearson tests indicated a significant relationship between the abstinence time and the sperm volume in the seminal fluid ($r = 0.260$, $P < 0.01$).

To investigate the relationship between the abstinence time and sperm pH in the seminal fluid, the Pearson and Spearman correlation coefficients were used (Table-5).

According to the results of the Spearman and Pearson correlation tests, the abstinence time was significantly related to the sperm pH in the seminal fluid ($r = 0.219$, $P < 0.01$).

4. DISCUSSION

The present work was conducted to investigate the effects of the abstinence time on the semen parameters among the male patients referring to the urology clinic. The study was applied descriptive-correlational research in which the study population included all the male patients referring to the urology clinic of Ali-Ibn-Abi Taleb Hospital in Zahedan in 2018. The study population included 100 cases of these patients who were selected via the convenient sampling method.

In this study, the frequency of distribution and percentage of the participants in terms of their job, educational level, and age were as follows. In terms of job, 34 (34%) subjects were clerks, 47 (47%) were self-employed, and 19 (19%) were university students. In terms of educational level, 41 (41%) subjects had high school diplomas, 43 (43%) had bachelor's degrees, and 16 (16%) had master's degrees. And in terms of

Table 2. Effect of the abstinence time on the sperm morphology in seminal fluid

Variable	Abstinence time						Relationship	Type of relationship
	Correlation							
Sperm morphology	Pearson			Spearman			Yes	Inverse
	Correlation(r)	P	Count	Correlation (r)	P	Count		
	-0.113	<0.02**	100	-0.548	<0.000**	100		

**significant at 0.01 level

Table 3. Effect of the abstinence time on the sperm concentration in seminal fluid

Variable	Abstinence time						Relationship	Type of relationship
	Correlation							
Sperm concentration	Pearson			Spearman			Yes	Direct
	Correlation (r)	P	Count	Correlation (r)	P	Count		
	0.213	<0.03**	100	0.156	<0.122	100		

**significant at 0.05 level

Table 4. Effect of the abstinence time on the sperm volume in seminal fluid

Variable	Abstinence time						Relationship	Type of relationship
	Correlation							
Sperm volume	Pearson			Spearman			Yes	Direct
	Correlation (r)	P	Count	Correlation (r)	P	Count		
	0.260	<0.009**	100	0.271	<0.006**	100		

**significant at 0.01 level

Table 5. Effect of the abstinence time on the sperm pH in seminal fluid

variable	Abstinence time						Relationship	Type of relationship
	Correlation							
Sperm pH	Pearson			Spearman			Yes	Direct
	Correlation (r)	P	Count	Correlation (r)	P	Count		
	0.219	<0.02**	100	0.192	<0.055**	100		

**significant at 0.01 level

age, 22 (22%) subjects were 17-27 years old, 61 (61%) were 28-38 years old, 14 (14%) were 39-49 years old, and 3 (3%) were above 50 years old. Results of the present study showed that the abstinence time is significantly associated with the total sperm count, sperm concentration seminal fluid volume, and pH. It should be noted that this relationship was positive and direct so that the elongation of the abstinence time increases total sperm count, sperm concentration, seminal fluid volume, and pH. Similarly, Pound et al. [20] showed that increasing the abstinence time would increase total sperm count, sperm concentration, seminal fluid volume, and pH [20]. In another study conducted by Lehavi et al. [21] found that delaying the ejaculation even for 24 hours would change the semen parameters such as concentration, total sperm count, volume, and pH in the seminal fluid, [21]. Moreover, in a study conducted by Agarwal et al. [19] aiming to determine the best EA for maximizing the semen quality in order to improve both diagnostic and therapeutic approaches, it was shown that an abstinence time of 9 days and higher led to the increase in the semen concentration and pH among the normozoospermic subjects [19].

Other findings in this study indicated that the abstinence time was significantly related to sperm motility and morphology. The relationship was inverse so that increase in the abstinence time, led to lower the motility and morphology of the sperm. In another study by Keihani et al. [18] found that the long-term abstinence period negatively affects the semen parameters in cryopreserved samples for Assisted Reproductive Technology (ART). Considering the motility and morphology in oligospermic patients there had been inverse and adverse effects on the slow progressive motility and morphology of the sperms [18]. Gosalvez et al. (2011) conducted a prospective study to investigate the effects of re-ejaculation on Sperm DNA Fragmentation (SDF) and findings showed that the cryopreservation of the sperm in the laboratory reduced the motility of sperm meanwhile, increasing the number of sperm with abnormal morphology [22]. In another study by Sharma et al. [23] found out that increasing the abstinence time from two (2) to nine (9) days or even more would result in the slow progressive motility of the sperm [23].

4. CONCLUSION

In the present work, it was attempted to determine the relationship between the

abstinence time and the quality of the sperm parameters. Results of the present study showed that the abstinence time is significantly associated with the total sperm count, sperm concentration seminal fluid volume, and pH.

CONSENT

As per international standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard, ethical approval has been collected and preserved by the author.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. McMahon CG. Premature ejaculation. *Indian J Urol.* 2007;23(2):97-108.
2. Rezakhaniha B., Safarinejad MR. Frequency of Sexual Disorders and Related Factors in Male Patients Referred to Urology Clinic of 501 Army Hospital during 2004-2005. *Annals of military and health sciences research.* 2006;4(4):1041-5.
3. Sirousbakht S, B. R. Comparison of the effect of fluoxetine and citalopram in the treatment of premature ejaculation. *Annals of military and health sciences research.* 2007;5(4):1453-6.
4. Rowland DL, Patrick DL, Rothman M, Gagnon DD. The psychological burden of premature ejaculation. *J Urol.* 2007; 177(3):1065-70.
5. Ramezani M, Ashtiyani S, Shamsi M, Taheri S. The opinion and views of Rhaze's, Avicenna's and Jorjani's views on fertility and infertility. *Complement Med J.* 2013;3:504-15. [In Persian]
6. Rohani Z, Naroienjad M. Evaluation of the prevalence of fallopian tube abnormality in primary and secondary infertility based on hysterosalpingography findings. *The Razi Journal of Medical Sciences.* 2007;13: 105-11. [In Persian]
7. Agarwal A, Makker K, Sharma R. Clinical relevance of oxidative stress in male factor infertility: an update. *American journal of Reproductive Immunology (New York, NY :* 1989). Epub 2007/12/25. 2008;59(1):2-11.

8. Buffone MG, Brugo-Olmedo S, Calamera JC, Verstraeten SV, Urrutia F, Grippo L, et al. Decreased protein tyrosine phosphorylation and membrane fluidity in spermatozoa from infertile men with varicocele. *Molecular reproduction and development*. Epub 2006/08/10. 2006; 73(12):1591-9.
9. Okeke L, Ikuerowo O, Chiekwe I, Etukakpan B, Shittu O, Olapade-Olaopa O. Is varicolectomy indicated in subfertile men with clinical varicoceles who have asthenospermia or teratospermia and normal sperm density? *International journal of urology: Official journal of the Japanese Urological Association*. Epub 2007/08/08. 2007;14(8):729-32.
10. Schuppe HC, Meinhardt A, Allam JP, Bergmann M, Weidner W, Haidl G. Chronic orchitis: a neglected cause of male infertility? *Andrologia*. Epub 2008/03/14. 2008;40(2):84-91.
11. Agnew J, McDiarmid MA, Lees PS, Duffy R. Reproductive hazards of fire fighting. I. Non-chemical hazards. *Americajournal of industrial medicine*. Epub 1991/01/01. 1991;19(4):433-45.
12. Ochsendorf FR. Sexually transmitted infections: impact on male fertility. *Andrologia*. Epub 2008/03/14. 2008;40(2): 72-5.
13. Chavarro JE, Rich-Edwards JW, Rosner BA, Willett WC. Caffeinated and alcoholic beverage intake in relation to ovulatory disorder infertility. *Epidemiology (Cambridge, Mass)*. Epub 2009/03/13. 2009;20(3):374-81.
14. Tielemans E, Burdorf A, te Velde ER, Weber RF, van Kooij RJ, Veulemans H, et al. Occupationally related exposures and reduced semen quality: a case-control study. *Fertility and sterility*. Epub 1999/04/15. 1999;71(4):690-6.
15. Lopez Teijon M, Garcia F, Serra O, Moragas M, Rabanal A, Olivares R, et al. Semen quality in a population of volunteers from the province of Barcelona. *Reproductive biomedicine online*. Epub 2007/10/03. 2007;15(4):434-44.
16. Braga DP, Figueira Rde C, Rodrigues D, Madaschi C, Pasqualotto FF, Iaconelli A, Jr., et al. Prognostic value of meiotic spindle imaging on fertilization rate and embryo development in *in vitro*-matured human oocytes. *Fertility and sterility*. Epub 2007/10/24. 2008;90(2):429-33.
17. Lanzafame FM, La Vignera S, Vicari E, Calogero AE. Oxidative stress and medical antioxidant treatment in male infertility. *Reproductive biomedicine online*. 2009; 19(5):638-59.
18. Keihani S, Craig JR, Zhang C, Presson AP, Myers JB, Brant WO, Aston KI, Emery BR, Jenkins TG, Carrell DT, Hotaling JM. Impacts of Abstinence Time on Semen Parameters in a Large Population-based Cohort of Subfertile Men. *Urology*. 2017; 108:90-5.
19. Agarwal A, Gupta S, Du Plessis S, Sharma R, Esteves SC, Cirenza C, Eliwa J, Al-Najjar W, Kumaresan D, Haroun N, Philby S. Abstinence time and its impact on basic and advanced semen parameters. *Urology*. 2016;94:102-10.
20. Pound N, Javedb HM, Rubertob C, Shaikhb M, Del Valleb PA. Duration of sexual arousal predicts semen parameters for masturbatory ejaculates. *Physiology & Behavior*. 2002;76:685– 9.
21. Lehavi O, Botchan A, Paz G, Yogev L, Kleiman SE, Yavetz H, Hauser R. Twenty-four hours abstinence and the quality of sperm parameters. *Andrologia*. 2014;46(6):692-7.
22. Gosálvez J, González-Martínez M, López-Fernández C, Fernández JL, Sánchez-Martín P. Shorter abstinence decreases sperm deoxyribonucleic acid fragmentation in ejaculate. *Fertil Steril*. 2011;96:1083-6.
23. Sharma RK, Sabanegh E, Mahfouz R, Gupta S, Thiyagarajan A, Agarwal A. TUNEL as a test for sperm DNA damage in the evaluation of male infertility. *Urology*. 2010;76:1380-1386.

© 2019 Moghaddam et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
 The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/52417>