

## Mini Review

# Coitus Interruptus: Are there spermatozoa in the pre-ejaculate?

Lampiao F.

Department of Basic Medical Sciences, Division of Physiology, College of Medicine, P/Bag 360, Chichiri, Blantyre 3, Malawi.

Corresponding author: flampiao@medcol.mw

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### ABSTRACT

**Background:** Coitus interruptus has been practiced since ancient times. Despite the development of other modern contraceptive methods, coitus interruptus is still practiced by people of all ages but commonly among adolescents. **Aim:** This mini review highlights recent research findings about coitus interruptus and the debate of whether spermatozoa exist in the pre-ejaculate. **Methods:** A literature search was performed using PubMed, and Google Scholar search engines. Literature reviewed included reviews, and original articles that evaluated the presence of spermatozoa in the pre-ejaculatory fluid. Articles reporting about coitus interruptus as a method of contraception were also reviewed. **Results:** Only three original articles which investigated the presence of spermatozoa in pre-ejaculatory fluid were found. Twelve articles reporting about coitus interruptus as a contraceptive method were also found and reviewed. **Conclusion:** The few literature reporting about the presence or absence of spermatozoa in the pre-ejaculatory fluid indicate the little interest researchers have on this subject even though there is enough evidence indicating that coitus interruptus is a widely practiced contraceptive method. It is therefore imperative to those who practice coitus interruptus to be aware about the background, strengths, and shortcomings of this method.

**Key words:** Coitus interruptus, contraception, spermatozoa, pre-ejaculate, cowper's gland

### INTRODUCTION

Coitus interruptus, also known as the withdrawal method, is the oldest form of male contraceptive method to be practiced.<sup>[1]</sup> It involves the male partner pulling out the penis before ejaculation.<sup>[1]</sup> Even though it is the oldest method of male contraception to be practiced, research has given it very little attention. The few studies that have been conducted suggest that it is widely practiced by men of all ages but more common among adolescents.<sup>[2]</sup> Some studies have

reported its prevalence rate to vary between 9% and 48%.<sup>[3-5]</sup> A study in America reported the prevalence rate of coitus interruptus to be as high as 60% among sexually active black adolescents living in low-income urban areas.<sup>[2]</sup>

During sexual arousal and the plateau phase, but before ejaculation, the penis discharge a fluid called the pre-ejaculatory fluid.<sup>[6]</sup> Pre-ejaculatory fluid is a clear, colourless, and viscous fluid that is secreted by the bulbourethral glands (Cowpers's glands), with the glands of Littre (mucus-secreting urethral glands) also

contributing.<sup>[7]</sup> There is great variation in the amount of pre-ejaculatory fluid that men produce. Some men do not produce the pre-ejaculatory fluid at all, while others can secrete as much as 5 mL.<sup>[6,7]</sup> Many studies have reported contradictory views about whether the pre-ejaculatory fluid that men secrete contains sperm or not and if this sperm is capable of fertilizing the egg.<sup>[6,8]</sup> This review highlights recent research findings about coitus interruptus and the evidence of whether spermatozoa is present or absent in the pre-ejaculatory fluid.

## LITERATURE REVIEW

### What is the function of the pre-ejaculatory fluid?

The pre-ejaculatory fluid secreted by the bulbourethral and other accessory glands plays a role of mechanically lubricating the urethra as well as facilitating the passage of sperm by creating an appropriate chemical environment in the urethra.<sup>[9]</sup> The pre-ejaculatory fluid is also important in necessitating semen coagulation.<sup>[10]</sup> The glycoproteins that are present in the pre-ejaculatory fluid serve as lubricant for the glans penis during sexual intercourse, and they have also been reported to possess immunodefensive properties.<sup>[9]</sup> Apart from the glycoproteins, the pre-

ejaculatory fluid also contains acid phosphatase.<sup>[9]</sup> Very acidic environment is detrimental to spermatozoa survival. The pre-ejaculate neutralizes acidity in the urethra caused by urine thus creating a more favourable environment for the passage of sperm.<sup>[9]</sup> The vagina is normally an acidic environment, so the deposition of the pre-ejaculatory fluid before the emission of semen many create a more friendly environment where spermatozoa can thrive.<sup>[7]</sup>

### Are there spermatozoa in the pre-ejaculatory fluid?

Some people practice withdrawal method as a form of birth control. During vaginal sex, this involved pulling the penis out of the vagina just before ejaculation.<sup>[5]</sup> There are numerous reports indicating that pregnancy occurred even though the couple was practicing the withdrawal method.<sup>[6]</sup> After ejaculation, whether by masturbation or sex with a partner, sperm may be left over in the urethra.<sup>[1]</sup> Urinating between ejaculations may flush the urethra of these leftover sperm and clears the way for the pre-ejaculatory fluid.<sup>[2]</sup> If sperm remains in the urethra from a previous ejaculation, they may be released with the pre-ejaculatory fluid and may possibly lead to fertilization of the egg even if the man were to pull out before ejaculating.<sup>[1]</sup>

**Table 1: Summary of findings of the presence or absence of spermatozoa in the pre-ejaculatory fluid**

	Findings	Conclusion	References
<b>Spermatozoa present in the pre-ejaculatory fluid</b>	11 of 27 subjects (41%) produced pre-ejaculate with spermatozoa and 10 of these cases had some motile spermatozoa 8 out of 23 pre-ejaculatory samples contained a few small clumps of spermatozoa	Some men repeatedly leak sperm in their pre-ejaculatory fluid while others do not  Little spermatozoa is present in the pre-ejaculatory fluid	Killick <i>et al.</i> <sup>[11]</sup>  Pudney <i>et al.</i> <sup>[12]</sup>
<b>Spermatozoa absent in the pre-ejaculatory fluid</b>	None of the pre-ejaculatory samples contained sperm, All patients had sperm in routine sperm analysis	Pre-ejaculatory fluid from Cowper's gland do not contain sperm and therefore cannot be responsible for pregnancies during coitus interruptus	Zukerman <i>et al.</i> <sup>[6]</sup>

Spermatozoa have been reported to be found in the pre-ejaculatory fluid with contradictions. Some researchers have observed the presence of spermatozoa in pre-ejaculatory fluid and have since advocated against the use of coitus interruptus as a safe means of contraception.<sup>[6]</sup> On the other hand, some researchers reported that sperm was not present in the expressed secretions, citing faulty methodology for fluid collection and ascribing reported cases of pregnancies to late withdrawal.<sup>[8]</sup> Unpublished results from our laboratory also indicate that there are no spermatozoa in the pre-ejaculatory fluid. In most of the studies which reported the presence of spermatozoa in the pre-ejaculatory fluid, there was no proper characterization of the spermatozoa. Glass slide smears of pre-ejaculatory fluid were obtained during foreplay from at least two different occasions. One study reported that 8 out of 23 pre-ejaculatory samples contained a few small clumps of spermatozoa.<sup>[11]</sup> Another study reported the presence of motile spermatozoa in the pre-ejaculatory fluid, however, the number of sperm in these pre-ejaculatory fluid were very low.<sup>[12]</sup> This study was therefore unable to explain how this findings might translate into the chances of pregnancy if these samples of pre-ejaculatory fluid were deposited in the vagina.<sup>[12]</sup> None of the studies that reported the presence of spermatozoa in the pre-ejaculatory fluid attempted to analyze the morphology of the spermatozoa found. Table 1 shows a summary of the findings of the presence or absence of spermatozoa in the pre-ejaculatory fluid.

The general view is that any sperm in the pre-ejaculatory fluid must be the result of a previous ejaculation and that men who practice withdrawal should pass urine prior to coitus in order to wash away any residual sperm.<sup>[8]</sup> This review shows the findings that spermatozoa is absent in the pre-ejaculatory fluid, and that the few studies that reported the presence of spermatozoa was possibly due to faulty methodology during fluid collection by the study participants.

### **Advantages and risks of coitus interruptus**

There are a number of reasons why couples prefer coitus interruptus over other forms of contraception. Coitus interruptus costs nothing, it cannot be forgotten when the couple goes away from home, and it requires no medical supervision.

The disadvantage of non-barrier contraceptive methods such as coitus interruptus and hormonal contraceptives is that they do not prevent the transmission of sexually transmitted infections (STIs). Studies have demonstrated the presence of HIV in most pre-ejaculate samples from infected men.<sup>[11,13]</sup> Withdrawal is known to be associated with higher rate of unintended pregnancy.<sup>[14]</sup> This is an important public health concern because unintended pregnancies are associated with adverse effects including delayed prenatal care, pre-maturity and low birth weight.<sup>[15]</sup> A study revealed that among withdrawal users, one out of four women reported that they terminated a pregnancy because it was unplanned.<sup>[16]</sup> Thus, it is likely that high rates of withdrawal use lead to unnecessary, even illegal and perhaps dangerous abortions, or to births that are mistimed or unwanted.<sup>[16]</sup>

### **CONCLUSION**

There is evidence in the literature indicating that coitus interruptus is a widely practiced contraceptive method. It is important to acknowledge the fact that it can prevent unwanted pregnancy. This review supports the reports that there are no spermatozoa in the pre-ejaculatory fluid and that the reported presence of spermatozoa was due to faulty methodology when collecting the pre-ejaculatory fluid. This review recommends to those who use coitus interruptus as a contraceptive method to urinate between ejaculations so that they may flush the urethra of the leftover spermatozoa to clear the way for the pre-ejaculatory fluid.

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**Conflict of Interest:** None declared



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