Archives of Sexual Behavior, Vol. 31, No. 3, June 2002, pp. 289–293 (© 2002)

Does Semen Have Antidepressant Properties?

Gordon G. Gallup, Jr., Ph.D.,[1,2] Rebecca L. Burch, B.S.,[1] and Steven M. Platek, B.A.[1]

Received December 4, 2000; revision received April 20, 2001; accepted July 3, 2001

In a sample of sexually active college females, condom use, as an indirect measure of the presence of semen in the reproductive tract, was related to scores on the Beck Depression Inventory. Not only were females who were having sex without condoms less depressed, but depressive symptoms and suicide attempts among females who used condoms were proportional to the consistency of condom use. For females who did not use condoms, depression scores went up as the amount of time since their last sexual encounter increased. These data are consistent with the possibility that semen may antagonize depressive symptoms and evidence which shows that the vagina absorbs a number of components of semen that can be detected in the bloodstream within a few hours of administration.

KEY WORDS: semen; depressive symptoms; vaginal absorption; condom use; sexual activity.

INTRODUCTION

When it comes to mental and emotional problems, one of the most consistent sex differences involves the prevalence of depression. Females are more prone to develop depressive disorders than males (Shanfield & Swain, 1984; Thomas & Striegel, 1994; Vance, Boyle, Najman, & Thearle, 1995). The incidence of clinical depression in females exceeds that shown by males by a factor of three to five times (Culbertson, 1997). In females, depression is often associated with different reproductive outcomes such as death of a child, miscarriage, and menopause (Suarez & Gallup, 1985).

In reviewing the literature on vaginal absorption of seminal products, Ney (1986) hypothesized that semen may have an effect on mood in women. Hormones in seminal plasma include testosterone, estrogen, follicle stimulating hormone and luteinizing hormone, prolactin, and a number of different prostaglandins. Many of the compounds present in human semen can be absorbed through the vagina (Benziger & Edleson, 1983). Both testosterone and estrogen are absorbed through vaginal epithelium (Rigg, Milanes, Villanueva, & Yen, 1977; Schiff, Tulchinsky, & Ryan, 1977; Wester, Noonan, & Maibach, 1980). Although little research has been conducted on the vaginal absorption of prolactin, the absorption and subsequent rise in estrogen levels triggers an increase in prolactin as well (Keller, Riedmann, Fischer, & Gerber, 1981; Yamazaki, 1984). Some prostaglandins have been shown to be absorbed rapidly from the vagina, namely E1, E2, and F2 α (Eliasson & Posse, 1965; Sandberg, Ingelman-Sundbery, Ryden, & Joelsson, 1968) and testosterone is absorbed more quickly through the vagina than through the skin (Wester et al., 1980).

To test Ney's hypothesis, we measured depressive symptoms in college females as a function of sexual activity and condom use. Consistency of condom use was used to index the presence of semen in the female reproductive tract.

METHODS

Participants were recruited as volunteers from upper division undergraduate courses at the State University of New York at Albany. The study was approved by the local institutional review board and subject participation was strictly optional. A sample of 293 college females agreed to fill out an anonymous, written questionnaire designed to measure various aspects of their sexual behavior, including frequency of sexual intercourse, number of days since their last sexual encounter, and types of contraceptives

[1]Department of Psychology, State University of New York at Albany, Albany, New York.

[2]To whom correspondence should be addressed at Department of Psychology, State University of New York at Albany, 1400 Washington Avenue Albany, New York 12222; e-mail: gallup@csc.albany.edu.

0004-0002/02/0600-0289/0 © 2002 Plenum Publishing Corporation

used. Among the sexually active females in the sample, the use of condoms was taken as an indirect measure of the presence of semen in the reproductive tract. Frequency of sexual intercourse was transposed into number of coital acts per year. Each respondent was also asked to complete the Beck Depression Inventory, which is a widely used measure of individual differences in depressive symptoms (Beck, 1961; Winter, Steer, Jones-Hicks, & Beck, 1999).

RESULTS

Most of the respondents answered most of the questions, but in a few instances items were left blank. The majority of females in the sample were sexually active (87%, $N = 256$). As depicted in Table I, depression scores on the Beck Depression Inventory (BDI) among the sexually active respondents were found to vary as a function of condom use ($F[4, 292] = 5.72$, $p < .001$). Post hoc comparisons based on Fisher's LSD showed that females who engaged in sexual intercourse but never used condoms exhibited significantly lower scores on the BDI than those who usually ($p < .001$) or always ($p < .05$) used condoms. Females who engaged in sexual intercourse but did not use condoms also evidenced significantly lower levels of depressive symptoms than those who abstained from sexual intercourse ($p < .001$). However, depression scores between females who used condoms and those who did not engage in sexual intercourse were not significantly different.

Significant correlations were found between BDI scores and the length of time (in days) since engaging in sexual intercourse. For females who did not use condoms, length of time since their last sexual encounter was correlated with depressive symptoms ($r = .229$, $p < .05$). The same was true for females who reported using condoms some of the time ($r = .318$, $p < .05$). However, for those who used condoms most or all of the time these correlations were near zero and not significant. Thus, for sexually active females who did not typically use condoms, depressive symptoms increased as the amount of time since their last sexual encounter increased.

Table I. Female Condom Use and Scores on the Beck Depression Inventory

		BDI scores	
Condom use	*N*	*M*	*SD*
Never	88	8.00	6.58
Sometimes	54	10.54	7.60
Usually	38	15.13	11.22
Always	76	11.33	8.45
No intercourse	37	13.59	11.42

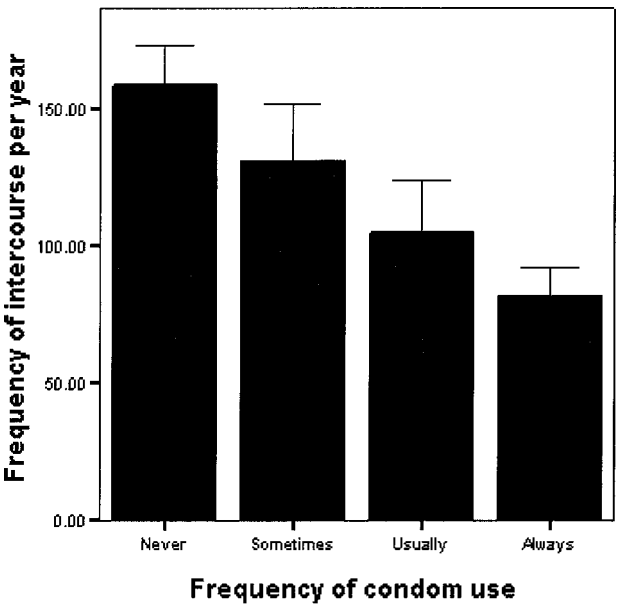

Fig. 1. Frequency of sexual intercourse as a function of the consistency of condom use.

Participants were also asked to respond to questions about how often they engaged in sexual intercourse. As shown in Fig. 1, there were differences in the incidence of intercourse among the different condom groups ($F[3, 252] = 5.47$, $p < .001$), with the frequency of sexual intercourse being inversely proportional to the consistency of condom use ($r = -.248$, $p < .001$). Fisher's LSD showed that females who did not use condoms had sex more often than those who used condoms most of the time ($p < .05$) and those who used condoms all of the time ($p < .001$).

To determine whether being in a relationship might affect depression scores, respondents were subdivided into two groups: those who were currently in a relationship with a member of the opposite sex ($N = 185$) and those who were not ($N = 98$). The BDI scores between females who were in a relationship ($M = 10.17$, $SD = 8.46$) and those that were not ($M = 12.11$, $SD = 9.55$) were not significantly different. Likewise, length of the relationship did not correlate with depressive symptoms. The only correlate of the relationship that approached significance was the frequency of sexual intercourse, which was inversely proportional to the length of the relationship ($r = -.134$, $p = .07$).

A multiple regression analysis of BDI scores, with condom use, days since intercourse, frequency of