

# Drinking alcohol is linked to reduced chances of pregnancy

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**Table II** Fecundability odds ratios comparing different dosage groups during menstrual cycle windows.

Alcohol intake level for the interval (drinks/week)	Pre-Ovulatory			Ovulatory			Luteal			Cycle		
	N women* (n cycles)	FOR**	95% CI	N women* (n cycles)	FOR**	95% CI	N women* (n cycles)	FOR**	95% CI	N women* (n cycles)	FOR**	95% CI
0	315 (1082)	1.00		344 (1443)	1.00		261 (903)	1.00		192 (628)	1.00	
1-2	264 (657)	1.04	(0.64, 1.68)	182 (284)	1.28	(0.73, 2.18)	285 (884)	0.79	(0.50, 1.24)	278 (1054)	0.78	(0.48, 1.29)
3-6	240 (585)	1.14	(0.69, 1.85)	253 (634)	0.94	(0.59, 1.49)	205 (524)	0.56	(0.31, 0.98)	203 (634)	0.78	(0.45, 1.37)
>6	166 (581)	0.54	(0.29, 0.97)	182 (543)	0.39	(0.19, 0.72)	162 (592)	0.51	(0.29, 0.89)	139 (589)	0.51	(0.27, 0.95)

\*Individual women may contribute to multiple drinking categories, if they averaged different number of drinks per cycle during different cycles of the study.

\*\*Associations adjusted for age, BMI category, physical activity, parity, trying to get pregnant, unprotected sex during the ovulatory window, and months at risk of pregnancy prior to study. FOR: fecundability odds ratio.

Table II from Human Reproduction paper showing odds ratios for becoming pregnant in a single cycle comparing different alcohol intakes during different stages of the menstrual cycle. Credit: Human Reproduction

A study of the associations between drinking alcohol and the chances of becoming pregnant suggests that women who want to conceive should avoid heavy drinking. In the second half of menstrual cycle even moderate drinking is linked to reduced chances of pregnancy.

The study, published today in *Human Reproduction*, one of the world's leading reproductive medicine journals, investigated alcohol intake and fecundability, which is defined as the probability of conceiving during a single menstrual [cycle](#). It is the first study to look at this according to the

difference phases of women's menstrual cycles.

Researchers led by Dr. Kira Taylor, associate professor of epidemiology and [population health](#) at the University of Louisville School of Public Health and Information Sciences (Kentucky), analyzed data from the Mount Sinai Study of Women Office Workers. Women aged 19-41 years were recruited between 1990 and 1994 and followed for a maximum of 19 menstrual cycles. The women completed daily diaries reporting how much alcohol they drank and what type, and they provided urine samples on the first and second day of each menstrual cycle in order to check for pregnancy.

Heavy drinking was defined as more than six [alcoholic drinks](#) a week, [moderate drinking](#) was three to six drinks a week, and binge drinking was defined as four or more drinks on a single day. Each drink consisted of a third of a liter of beer (355 milliliters), a medium glass of wine (148 milliliters), or just under a double shot of spirits (44 milliliters). The researchers collected information on factors that could affect the results, such as age, medical history, smoking, obesity, use of birth control methods and intention to become pregnant. Data on 413 women were available for the current study.

Dr. Taylor said: "We found that [heavy drinking](#) during any phase of the menstrual cycle was significantly associated with a reduced probability of conception compared to non-drinkers. This is important because some women who are trying to conceive might believe it is 'safe' to drink during certain parts of the menstrual cycle.

"During the luteal phase, which is the last two weeks of the menstrual cycle before bleeding would start and when the process of implantation occurs, not only heavy drinking but also moderate drinking was significantly associated with a reduced probability of conception.

"At the time of ovulation, usually around day 14 of the cycle, consuming a lot of alcohol—either heavy or binge drinking—was significantly associated with reduced chances of conception."

Compared to non-drinkers both moderate and heavy drinking during the luteal phase was linked to a reduction in the odds of conceiving by about 44%. Heavy drinking during the ovulatory part of the cycle was also associated with significant 61% reduced odds of becoming pregnant. However, the researchers stress these are all estimates and should be treated with caution.

"If we assume that a typical, healthy, non-drinking woman in the general population who is trying to conceive has approximately a 25% chance of conceiving during one menstrual cycle, then out of 100 women approximately 25 non-drinkers would conceive in a particular cycle, about 20 moderate drinkers would conceive and only about 11 heavy drinkers would conceive," said Dr. Taylor. "But the effect of moderate drinking during the luteal phase is more pronounced and only about 16 moderate drinkers would conceive.

"Our study only included a few hundred women and, while we believe the results strongly suggest that heavy and even moderate alcohol intake affects the ability to conceive, the exact percentages and numbers should be viewed as rough estimates."

Each extra day of binge drinking was associated with an approximate 19% reduction in the odds of conceiving during the luteal phase and a 41% reduction during the ovulatory phase. The researchers found no difference in their results between different types of drinks.

The study is not able to show that drinking alcohol causes the reduction in the chances of becoming pregnant, only that it is associated with it. Possible biological mechanisms that might explain the association could

be that alcohol intake affects the processes involved in ovulation so that no egg is released during the ovulatory part of the cycle, and that alcohol could affect the ability of a fertilized egg to implant in the womb.

Dr. Taylor said: "This is the first study to examine the effect of alcohol on fecundability during specific phases of the menstrual cycle, using daily data on alcohol and other important factors such as smoking and unprotected intercourse over a period of up to 19 [menstrual cycles](#)."

Limitations of the study included the fact that not all women were trying to conceive; [alcohol intake](#) has increased since the time of the study and the women in the study were leaner, on average, than women today; the study used self-reported data and [women](#) might under-report their alcohol consumption; and the influence of drinking by male partners was not assessed.

She concluded: "Finally, the results in this study should not be construed to mean that [drinking](#) alcohol prevents pregnancy. In other words, alcohol is not birth control. Even if a woman drinks [alcohol](#) heavily, if she has unprotected intercourse, she can become pregnant."

**More information:** Mohammad Yaser Anwar et al, The association between alcohol intake and fecundability during menstrual cycle phases, *Human Reproduction* (2021). [DOI: 10.1093/humrep/deab121](https://doi.org/10.1093/humrep/deab121)

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