

A REVIEW ON EFFECT OF ALCOHOL DURING PREGNANCY

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ABSTRACT

Over the past few decades, pregnant women have consumed significantly more alcohol and illegal drugs than before. In order to maintain the ideal environment for foetal growth, adequate maternal nourishment is essential. However, if usage of alcohol or other substances disrupts this process, the consumption of nutrients, these compounds' potential teratogenic effects rise. There is a dearth of knowledge on the impact of alcohol and drug addiction on maternal nutritional status despite evidence of the significance of nutrition in pregnant addicts; hence, the aim of this review was to give a general summary of the nutritional health of pregnant women with addiction. Drinking alcohol and using drugs can prevent nutrients from being absorbed, lowering the quality and amount of the necessary nutrient and energy intake, and leading to malnutrition, especially of micronutrients (vitamins, minerals, and other trace elements).iron, copper, zinc, choline, iron, omega-3 fatty acids, and selenium). The supply of critical nutrients is not available for the foetus when the mother's nutritional state is harmed by alcohol misuse and drug use; this can cause foetal abnormalities such as intrauterine growth restriction (IUGR) or Disorder caused by foetal alcohol exposure (FASD). Finding a method to lessen infant physical and neurological impairment brought on by prenatal alcohol and drug misuse exposure paired with inadequate maternal nutrition is crucial. Interventions in prenatal nutrition and target therapy are necessary to potentially stop the emergence of such disorders. Although studies conducted in a single nation show that some pregnant women in Europe use alcohol, it is challenging to understand regional variations. There aren't many international research that employ the same methodology. The risk of Sudden Infant Death Syndrome rises during pregnancy when mothers are exposed to alcohol and tobacco (SIDS). There is little research on the physiological alterations brought on by these exposures. The first three months of a full-term infant's life were life for three days. We predicted that smoking or consuming alcohol by pregnant women would affect how the autonomic nerve system works. Babies whose mothers smoked during pregnancy had reduced quiet sleep heart rate variability. Only during active sleep did infants of alcoholic moms have reduced global heart rate variability. Infants who had not been exposed to the substance showed heart rate rises with head-up tilt and heart rate decreases with Smoking and alcohol exposure did not have any significant effects on the newborns' head-down tilt. These findings suggest that alcohol and tobacco use during pregnancy impair autonomic function. These markers might enable the early detection of infants who are most at risk for SIDS.

KEYWORD

pregnancy, alcohol use during pregnancy, drug addiction during pregnancy, maternal and foetal nutrition, foetal alcohol spectrum disorder (FASD), and intrauterine growth restriction (IUGR) Pregnancy\Alcohol Europe socio-demographic elements SIDS, pregnancy, a newborn, and booze .

INTRODUCTION

The European Union places a high premium on preventing alcohol use while pregnant. Cross-country studies must ensure a comparable data collection procedure in order to enable policy judgements. There is no similar European study on consuming while pregnant. Ireland and the United Kingdom were participants in a recent prospective multicenter trial (UK). The Nordic and Mediterranean nations were left out. According to the multicenter study, 82% of Irish women who were pregnant reported drinking. intake during pregnancy and 75% of British women who are expecting . National studies that have been published show that alcohol use during pregnancy varies by country. The percentages range from 6% in a Swedish cross-sectional survey of women registered at maternal health service centres to 52% among Russian women who are pregnant who attend women's public restrooms. clinics in the neighbouring area of Moscow, a low-income neighbourhood . However, the various measures of alcohol use may contribute to some of the heterogeneity

found in these studies^{4–12}. It is well recognised that high prenatal alcohol consumption has harmful health effects for the foetus at all stages of pregnancy, including foetal alcohol spectrum disease and foetal alcohol syndrome. poorer educational achievement and child behavioural issues. However, there is no conclusive scientific proof linking reduced prenatal alcohol intake to adverse child health outcomes. It has not yet been feasible to figure out the exact safe alcohol intake level. It is also challenging to compare the amount of alcohol consumption across different European countries based on previous surveys. Each time Swedish women drank alcohol, they reported having at least one drink. Among Russian women who were pregnant, the average weekly intake of alcohol was 0.84 drinks. 15.5% of British and 2.2% of Swiss pregnant women reported having at least one binge drinking episode. 3.2% of the women who were included in the study in France who gave birth acknowledged looking back on at least one binge drinking incident during pregnancy. Nearly ten percent of Ukrainian women who were expecting said they had three or more drinks all at once the month before. In a British study, 22.2% of the women who were pregnant disclosed a drinking behaviour that could endanger the foetus' health during the initial trimester. 2.4% of the ladies in this British study also admitted to binge drinking heavily every week or month. Any crosscountry variability in the prevalence of alcohol intake during pregnancy may be explained by sociodemographic characteristics. factors include older age and lower socioeconomic Status, ethnicity, previous children, smoking, and these factors have all been found to be significant. It has been discovered that older women drink more alcohol than younger women do in the Nordic nations, Ireland, France, and the United States. With one exception, a Spanish study found that pregnant women who were older were less likely to consume alcohol. Alcohol use during pregnancy is also predicted by an early age of drinking initiation. Additionally known predictors of alcohol intake during pregnancy include high income, smoking, having at least one prior kid, high and low levels of education, and high and low income. Pregnant women with immigration status have been shown to have lower alcohol consumption rates. Non-Caucasian ethnicity has been found to reduce alcohol intake among Irish women from Australia, Ireland, New Zealand, and the UK. when pregnant. Comparatively to French women who were born there, similar outcomes have also been seen among women who had immigrated to France. The purpose of this study was to estimate the percentage of pregnant women who drink alcohol and the amount drunk during that time, and to examine if smoking and sociodemographic differences between countries could account for those differences. When a baby dies suddenly and unexpectedly within the first year of life, the cause is often unknown despite thorough investigation. This condition is known as sudden infant death syndrome (SIDS). (Willinger, James, & Catz, 1991) Examinations include autopsies, death scene investigations, and reviews of previous symptoms.

Although efforts to encourage supine sleeping have resulted in a marked decline in the incidence of SIDS in some countries (de Jonge et al., 1993; Dwyer, Ponsonby, Blizzard, Newman, & Cochrane, 1995; Fleming & Blair, 1997; Mitchell, Brunt, & Everard, 1994), rates seem to have stabilised in the majority of them (Hauck & Tanabe, 2008), and this syndrome continues. Numerous epidemiological studies and postmortem pathology provide a significant amount of evidence for the existence of certain prenatal variables that increase the risk of newborn SIDS. Maternal In particular, smoking is a major risk factor. There are at least 60 case-control studies and other cohort studies from different parts of the world that show a direct link between maternal smoking and SIDS. Children of smokers typically have lower birth weights, are smaller in size, are more likely to have early births, and suffer wakefulness deficiencies. lower arousability, increased birth and four-month BP, and susceptibility to hypoxia. The ability of babies to respond to respiratory, temperature, and autonomic stressors has been the subject of numerous research (Fox & Matthews, 1989; Franco et al., 2003; Lagercrantz, Edwards, Henderson-Smart, Hertzberg, & Jeffery, 1990; Thach, Davies, & Koenig, 1988; Galland et al., 2000; Gootman, 1991; Baroreceptor reflexes are active in many species throughout the newborn period, which is particularly pertinent to the current investigation (Gootman, 1991). In multiple studies involving babies in the first few days after delivery, the heart rate (HR) response to changes in blood pressure following postural adjustment, a reflex mediated by the baroreceptors, has also been shown to occur. Reliable increases in heart rate and decreases in blood pressure were observed in infants after posture modification by carefully monitoring motor and respiratory activity. Finley, Hamilton, & MacKenzie, 1984; Myers, Gomez-Gribben, Smith, Tseng, & Fifer, 2006; Thoresen, Cowan, & Walloe, 1991; Andraszova & Kellerova, 1996; Chen, Tsai, & Lan, 1995; Fifer, Greene, Hurtado, & Myers, 1999; This homeostatic response is an indicator of how well brain mechanisms can process and react to a common stimuli. No research have looked into the potential impacts of prenatal alcohol consumption on newborns' cardiorespiratory reactions to tilting, however two studies have looked into the consequences on these reactions of maternal smoking. In one study, the effects of 70 head-up tilting on heart rate and blood pressure were assessed at 2-3 days and at 3 months of age. Smoking by mothers had no discernible impact on HR; however, head-up tilting in neonates reduced blood pressure. Babies whose mothers smoked, but remained unaffected in babies who weren't exposed. It's interesting to note that at 3 months old, tilting had no effect on the blood pressure of exposed newborns but increased it in unexposed children. In the second trial, children were examined at 1 and 3 months of age, and there were no variations in the HR responses to 60 head-up tilting movements between infants who had not been exposed to tobacco and those

whose mothers smoked. In the current study, we looked into the impact of maternal smoking on the physiological reactions of newborns to tilting. Within the first two days of life and have involved children whose moms admit drinking alcohol while pregnant. Native Americans from the Northern Plains were the subjects of the investigation. Alcohol intake during pregnancy is regarded as one of the main public health issues.

INTERNATIONAL RULES FOR DRINKING ALCOHOL DURING PREGNANCY

Alcohol is a psychotropic drug that can lead to dependence. According to WHO alcohol recommendations, the amount of alcohol drunk, the way that it is consumed, and, on rare occasions, the quality of the alcohol are all factors that can cause harm. Strong episodic drinking (HED) is defined as consuming 60 grammes or more of pure alcohol (more than six standard drinks in most nations) at least once a month. Alcohol abuse is characterised as a pattern of drinking that harms one's physical or emotional well-being. Alcohol dependence often includes a strong desire to drink, problems with self-control, and persistent symptoms. In using it despite negative effects, heightened tolerance, and occasionally a physiological withdrawal condition. The Pattern of Drinking Score (PDS) measures how often people drink and is based on the following drinking characteristics: the typical amount of alcohol consumed per occasion, festive drinking, the percentage of drinking occasions where people get drunk, the percentage of daily or frequent drinkers, almost daily; drinking during meals; and drinking in public. The severity of the distinctive Fetal Alcohol Spectrum Disorder (FASD) traits is strongly correlated with the frequency of alcohol misuse, consumption patterns, and exposure time during foetal development. The foetus is far more harmful from chronic, everyday heavy alcohol use or frequent, intermittent alcohol use than it is from acute, moderate alcohol use. Studies have shown that drinking more than six drinks per day on a regular basis poses a serious risk to the developing foetus. Ingesting large, repeated doses of Alcohol consumption during a single drinking session, or "binge drinking," also raises blood alcohol levels and may have teratogenic effects. The evaluation of the research on potential hazards of alcohol for the growing foetus forms the basis of the international guidelines for alcohol use during pregnancy. Although the risk of birth abnormalities is greatest with significant, frequent maternal alcohol consumption during the first trimester, alcohol exposure throughout pregnancy is nevertheless recommended by recent guidelines from Australia, Canada, Denmark, France, and the United States (including before pregnancy) can have negative effects on the prenatal brain's development. It is unclear how alcohol effects relate to dose and whether there is a threshold at which negative effects start to manifest. The timing of exposure and heavy drinking pose the highest risks, however not all "heavy" drinkers will have children who are impacted. The majority of the organs develop rapidly following fertilisation during the embryonic stage in the first few weeks of pregnancy, and they continue to expand until birth. Alcohol has stronger teratogenic effects during embryogenesis, and it can affect development, especially in the first trimester. However, a number of rules emphasise that no safe level has been identified and state that abstaining from alcohol is the most secure course of action. In accordance with WHO recommendations, pregnant women should abstain from narcotics and participate in detoxification programmes.

EFFECTS OF ALCOHOL EXPOSURE ON MATERNAL NUTRITIONAL STATUS

The relationship between nutrition and alcohol toxicity may increase or decrease the teratogenicity of alcohol. During the preconception period, drinking alcohol can negatively impact the quality and quantity of a sufficient nutrient supply as well as energy intake. The quality of diet is best among drinkers who consume smaller quantities more frequently than those who consume high quantities less frequently. Alcohol affects a drinker's nutritional status when consumed in excess, and many alcoholics don't eat a balanced diet. One to two glasses are consumed by light to moderate drinkers or fewer of an alcoholic beverage every day, regard those beverages to be a regular component of their diet, and obtain a specific amount of calories from alcohol in place of calories from other foods. Abusing alcohol excessively might make it harder for the body to absorb and use certain nutrients. As a result, many alcoholics, heavy drinkers in particular, may have malnutrition to varying degrees. When alcohol replaces other nutrients in the diet, it causes primary malnutrition, which manifests as lower intake of nutrients overall. When a drinker consumes enough nutrients, but alcohol prevents those nutrients from being absorbed from the intestine and made available to the body, secondary malnutrition results. Alcohol can prevent the body from absorbing some vitamins and aminoacids, especially vitamin B1 (thiamine), B2 (riboflavin), B6 (pyridoxine), vitamin A, vitamin C, and folic acid. The amount of alcohol consumed and the resulting drop in these deficits' severity are related taking vitamins. Many drinkers who consume more than 30% of their total calories as alcohol take in fewer carbohydrates, proteins, fats, vitamins, and minerals like calcium and iron than is suggested each day. Additionally, because they digest alcohol more slowly, malnourished alcoholics have higher blood alcohol levels, which makes this problem worse. In addition, it is well recognised that women who drink alcohol before or during pregnancy frequently have low nutritional status, especially heavy drinkers, and that this can jeopardise the proper development of the foetus. Risk factors for FAS were researched by May et al. among three separate samples of Plains Indian women and South African women before, during, and after pregnancy. The study used

large samples and discovered that older mother age at the time of pregnancy was the main risk factor for having children with FAS. Binge drinking, heavy intergenerational drinking in the mother's extended family, and a mother's lengthier drinking career were additional factors of maternal risk for FAS. The likelihood of FAS was significantly influenced by a woman's alcohol consumption in the months prior to conception. The relative risk for FAS was significantly influenced by lifelong nutrition, body mass index (BMI), and present nutrition: Small women are more likely to have a lower average drinking rate for producing babies than women with high BMIs than those in bigger women. Prenatal malnutrition and a genetic predisposition to alcohol toxicity cause a number of brain dysfunctions that are to blame for developmental problems and neurocognitive disorders. Alcohol has neurotoxic effects on the developing brain that are both immediately felt by the foetal brain tissues and indirectly felt by the mother's physiology and nutrition or placental physiology. Alcohol usage during pregnancy is commonly linked to poor nutrition, which may raise the risk of brain damage. Several micronutrients, like as choline, folate, vitamin B12, iron, and vitamin A, which may be particularly significant in FASD, are not typically consumed in the recommended amounts by pregnant women. Alcohol may make this micronutrient deficiency worse. a study of alcohol addicts who are not pregnant in all individuals, according to research from the United Kingdom, had low intakes of vitamin E and folate, and most also had low intakes of selenium, calcium, zinc, vitamins A, B1, B2, B6, C, and D. May et al. used a 24-hour dietary recall to compare the diets of mothers of children with FASD to moms of normal control children who attended the same school in two population case-control studies in rural parts of South Africa's Western Cape province. When compared to mothers of control children, moms of children with FASD had poor maternal nutritional status, as evidenced by low BMI and lower intakes of vitamins A, C, D, E, B2, calcium, omega-3 fatty acids, and choline. The intake of vitamin D, C, thiamin, pantothenic acid, B12, phosphorus, magnesium, selenium, sodium, potassium, eicosapentanoic acid (EPA), decosapentanoic acid (DPA), and docosahexaenoic acid (DHA) was recorded in the second study by May et al. However, the third study did not include these measurements.

Moms of children with FASD did not report reduced intake for any nutrient, and all mothers had inadequate intake of micronutrients. Instead, they demonstrated that mothers of children with FASD consumed higher levels of total protein, vitamin E, C, B6, magnesium, phosphorus, EPA, DHA, and DPA than mothers of controls, but these differences lacked biological significance because all mothers were found to be deficient due to excessive alcohol consumption, which negated the positive effects of increased nutrient intake. There was no commensurate improvement in diet quality among moms of children with FASD, despite an increase in total food consumption. The following are some restrictions on this data: While pregnant, the mother's nutritional consumption was not monitored; instead, a single 24-hour seven years after delivery, a questionnaire. Carter et al. investigated Cape Town's heavy drinking over time. Compared to nondrinking controls, coloured pregnant women, using arm skinfold anthropometry, recorded their dietary intakes of calories, protein, fat, and 25 important micronutrients over the course of three 24-hour recall interviews. They demonstrated how all women both groups gained unhealthy amounts of weight while pregnant. The skinfolds of the triceps and biceps were unrelated to alcohol consumption, nor were energy intake, carbohydrate intake, protein intake, or fat intake. For nutrients like fibre, calcium, copper, iodine, iron, zinc, choline, folate, vitamin C and D, as well as magnesium, selenium, and thiamin, more than 85% of the women interviewed (both those who drank alcohol and those who did not) reported inadequate intake. For magnesium, selenium, and thiamin, more than 50% reported inadequate intake. Higher intakes of phosphorus, choline, and vitamin B12 were only tangentially linked to drinking. Frequent drinking was linked to decreased vitamin C consumption, while infrequent drinking was linked to higher vitamin C intake D. These findings indicated that the teratogenic consequences of alcohol are unrelated to the poor nutrition of heavy drinkers' mothers, but the study's 24-hour recall interviews and population-specific scope limited its applicability. A prospective cohort study of pregnant Western Ukrainian women who drank moderately to heavily revealed that their blood choline levels were comparable to non-drinking pregnant women's.

A higher Bayley Scales of Infant Development score was linked to multivitamin intake. Child development at six months. The problematic population of Ukraine, which is made up of high-risk drinkers with higher social and emotional issues, was one restriction of this research. To our knowledge, the majority of the scant research on the detrimental impact of alcohol on mothers' nutritional status revealed low average intakes of micronutrients, notably vitamins, in both pregnant and non-pregnant women who drank heavily, pointing to the toxic effects of alcohol. Alcohol consumption is associated with decreased antioxidant levels and increased hazardous metabolite levels, such as acetaldehyde. For instance, alcohol competes with retinol in the metabolic pathway involving the enzyme alcohol dehydrogenase, which might affect neurological development in the baby if maternal vitamin A levels are low (ADH).

Low intestinal absorption of folate is a contributing factor in both acute and chronic alcoholism, as well as decreased hepatic uptake and increased urine excretion. Low levels of choline are part of the molecular aetiology of FASD, specifically neurodevelopmental FASD, as it is the main micronutrient connected to brain development and cognitive

function and is a component of the cell membrane (phospholipids, phosphatidylcholine). A recent study examined the plasma levels of zinc (Zn) and copper (Cu) among frequent drinkers during pregnancy in Ukraine and Russia, revealing that these moms' levels were lower than those of non-drinking mothers. Because it reduces intestinal absorption and increases urine excretion, alcohol lowers serum levels of zinc. Ethanol increases the amount of zinc-sequestering metallothionein in the mother's liver. This decrease in plasma zinc has adverse effects on brain development and function. Because of malabsorptive problems and enhanced free radical generation brought on by alcohol pathways, chronic alcoholics' selenium deposits and plasma concentrations are low in animal models. Pregnant drinkers also consume less meals high in n-3 fatty acids, which lowers their DHA levels and reduces the amount of DHA transferred through the placenta to the developing foetus. Iron (Fe) regulation and homeostasis have also been found to be affected by ethanol exposure, despite the fact that presented data did not discover a link between iron insufficiency and drinking habits during pregnancy. Only a small percentage of pregnant women who are very heavy drinkers (eight or more drinks per day) had anaemia but greater iron depletion.

AVOID ALCOHOL DURING PREGNANCY

Given that many women lose their taste for alcohol during the first trimester of pregnancy, it may not be as challenging as you may expect to entirely abstain from it while pregnant. When a woman becomes pregnant or becomes aware that she is pregnant, the majority of women do give up drinking.

SUMMARY

Alcohol consumption during pregnancy increases the chance of miscarriage, early birth, and low birthweight in the unborn child. Even after your baby is born, it may still have an impact. Drinking while expecting can lead to the dangerous illness known as foetal alcohol spectrum disorder in your unborn child (FASD). The best course of action is to abstain from alcohol when pregnant. The best course of action is to quit drinking while trying to get pregnant if you intend to get pregnant. Even moderate drinking can be harmful to a child's early development and health, especially during the first trimester of pregnancy. The danger of injury to you and your unborn child increases when you drink heavily and frequently while pregnant. It is impossible to predict how drinking alcohol would effect your unborn child if you do it while you are pregnant.

CONCLUSION

After learning they were pregnant, almost one in six European women admitted to drinking while they were pregnant. In contrast to Norway, Sweden, and Poland, which had the lowest percentage of female alcohol consumers, these countries were the UK, Russia, and Switzerland. Differences between countries social determinants of health or prenatal smoking could not entirely account for the difference. In order to raise healthcare practitioners' knowledge of the significance of maternal factors—such as education level and smoking prior to conception—on alcohol use during pregnancy, united European actions are required on a variety of societal levels. The nations with the greatest rates of alcohol intake during pregnancy may find these initiatives to be particularly pertinent. Few research, to our knowledge, have examined how alcohol and other substances of abuse affect the nutritional health of pregnant women. Despite attempts by public health organisations to prevent the use of alcohol and other substances of abuse during pregnancy, there is significant evidence that alcohol use during pregnancy has teratogenic effects. That is a significant portion of pregnant women still use drugs. Abuse-related alcohol and drug use results in maternal and foetal undernutrition, which has an impact on foetal development. In order to prevent negative effects on the development of the foetal neurostructural, it is essential to maintain optimum nutrition throughout pregnancy. Nutritional treatment is the focus of recent studies to reduce how negatively drinking and using drugs affects the mother's nutritional health and, in turn, how negatively it affects the development of the foetus. The significance of nutritional intervention and the types of nutrition supplements that could lessen the severity of the results of FASD, IUGR, or foetal dysmorphogenesis need to be determined by additional research. In light of the impact of alcohol and drug metabolism on foetal development nutrient deficiencies and their interactions with alcohol or drug usage, this study attempts to highlight evidence of prospective target nutrients for prenatal nutritional supplements. By identifying these nutrients, one can reduce the detrimental effects that alcohol and other substances of abuse have on a foetus and so avoid long-term damage. All primary care facilities could provide appropriate addiction screening for all women of reproductive age, preconception health promotion, and referral to substance abuse programmes for those women found to have an addicted disorder. The most crucial strategies for lowering addiction during pregnancy continue to be education and screening programmes for women who are of childbearing age.

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