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Risk of alcohol consumption during pregnancy on fetus

Abstract

Miscarriage, premature birth, stillbirth, low birth weight, and a range of lifelong disorders can caused by excessive alcohol consumption during pregnancy is called fetal alcohol spectrum disorders. Alcohol is the most hazardous teratogens which are substances that can detriment an advancing fetus. Every time a pregnant woman has a drink; her unborn child has only, too. Alcohol, like carbon monoxide from cigarettes, passes easily through the placenta from the mother's bloodstream into her baby's blood and puts her fetus at risk of having a fetal alcohol spectrum disorder. Drinking alcohol while pregnant can result in cognitive, social, and motor inadequacies and distinctive lifelong challenges. Usage of alcoholic beverages by pregnant women perhaps results in abortion, fetal mortality and prematurity. The intentions of this review is to teach the women about risk of alcohol consumption during pregnancy on their child and also on themselves and warn them to cease alcohol during pregnancy totally to safe their child from various defects and themselves from unexpected health challenges.

Keywords: alcohol, consumption, fetus, pregnancy, risk

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Abbreviations: ADHD, attention deficit hyperactivity disorder; ARBD, alcohol related birth defects; ARND, alcohol related neurodevelopmental disorders; CDC, centers for disease control and prevention; CHDs, congenital heart diseases; CNS, central nervous system; FAS, fetal alcohol syndrome; FASD, fetal alcohol spectrum disorders; IQ, intelligence quotient; NTD, neural tube defects; PAE, prenatal alcohol exposure; PFAS, partial fetal alcohol syndrome

Introduction

Background of alcohol drinking during pregnancy risk on fetus

Heavy alcohol usage is joined to cause miscarriage, premature birth, low birth weight, stillbirth and high blood pressure disorders that can be caused by consumption of heavy alcohol by pregnant women is called fetal alcohol spectrum disorders.[1] Pregnant women perhaps results in abortion, fetal mortality and prematurity if consuming alcoholic beverages excessively. FASD is occurred if pregnant women consumed alcohol during pregnancy perhaps hurt embryos and fetuses. Dependence of alcohol and other medication, physical dependence, mental health problems, behavioral disturbances and learning disabilities, which perhaps irreversible; difficulties during work, sexual behavior disturbances are happened in fetus who born from women who consumed high amount of alcohol during pregnancy.[2–4] The bioavailability of alcohol is high in women than men when compared together because women has low amount of alcohol dehydrogenase enzyme; which serves for excretion of alcohol than male because of that reason alcohol is highly absorbed in women. Women are more susceptible for alcohol related clinical complications when compared together with men due to women has less amount of body water, and a greater proportion of body fat, which results in greater blood levels of alcohol.[5,6] Consuming high amount of alcohol in short period of time span which is noted as "binge drinking", is cause the injury of human being wellness.[7] If pregnant mother may be consume high amount of alcohol during pregnancy the probability of newborn affected where depending on the dose of alcohol drunk because the maternal and fetal blood alcohol levels and metabolism, maternal health, gestational age among which the fetus is liable, and genetic vulnerability of the fetus, the alcohol stored the fetus and cause many challenges in fetus.[8–10] Alcohol perhaps influences the fetal central nervous system at any gestational age were influenced if pregnant women drunk high amount of alcohol especially during the first five weeks.[11,12] Decreased brain growth which is occurred due to alcohol consumption during pregnancy on fetus can be cause microcephaly and/or microencephaly.[13] Maternal alcohol consumption is correlated with a various damage outcomes to the fetus, as observed by the scale of impairments available in FAS.[14] Binge drinking is defined as consuming greater than or equal to five alcoholic drinks at alone sitting or more drinks in two to three hrs.15 Alcohol passes from women blood to the baby's blood through the placenta and it can be thought to influence the baby's damaging brain and the women also perhaps also have more vomiting and are great dehydrated. Alcohol usage during pregnancy is linked to diabetes and a greater likelihood of having a small baby; this is because alcohol can sluggish the baby's elaboration.[16–19]

Fetal alcohol spectrum disorders: FASD may be resulted from prenatal exposure to alcohol consumed by pregnant women during pregnancy involves FAS, PFAS, and alcohol correlated neurological anomalous and alcohol-correlated birth anomalous. FAS are the most severe form of FASD. According to the CDC, the average of women who drunken high amount of alcohol were elevated from seven point six percent in 2012 to ten point two percent in 2015, and the number of women reporting heavy alcohol consumption during pregnancy were elevated from 1.4% to 3.1%. More alcohol consumption during pregnancy can be common cause of teratogenecity on fetus who born from heavy drunker, and FASD is the most common cause of intelligent quotient disability in the fetus who born from pregnant women consume alcohol in high amount and also correlated with the advancement of behavioral disturbances and physical abnormality.[20–26] Prenatal alcohol exposure can be cause neurological and behavioural challenges which are the class of FASDs. In the world the prevalence of FASD in the children population have been estimated at 7.7% cases per thousand, with the greatest rates 19.8 in thousand observed in the European region.[27] FASDs are a class of situations that can happen in a

neonate who born from mother drank heavy alcohol during pregnancy; these consequences can involve physical challenges and disturbances with behavior and learning. FASD is an umbrella term explaining the scale of outcomes that can happen in a neonate who born from mother drank high amount of alcohol during pregnancy. There are three types of FSADs such as (1) Fetal alcohol syndrome: Depending on the amount of alcohol consumption during pregnancy there are three classifications of prenatal exposure to ethanol. Vulnerability to high amount of alcohol consumption (over forty eight to sixty grams of ethanol/day) perhaps cause FAS; liability to moderately heavy consumption between twenty four to forty eight grams of ethanol/day which perhaps resulted highly in «alcohol outcomes" and heavy alcohol consumption occasionally with uptakes of four to five drinks of ethanol (greater than ninety grams of ethanol/drink).[28] Heavy alcohol consumption was correlated with elevated risk of fetal death. Imminent ratio was 1.55 among women in the Danish National Birth Cohort who reported heavy alcohol consumption that is three or more times during pregnancy.[29–31] In individuals, resulting from maternal alcohol during pregnancy the intellectual and developmental scarcities may preventable. FAS are defined by specific disorder of the mind development, facial form problems, and CNS working dysfunction and it can be particularly distinguished as a mental health problems condition due to gestational alcohol abuse. Thus, it is an indispensable launching point for outreach to women who are at more risk of having other children with disabilities. Additionally, this designation helps government systems related to education, social service, and criminal justice in planning for service seeks. (2) Alcohol related neurological development disorders: children with alcohol related neurodevelopmental disorders perhaps not have full FAS; but they have learning and behavioral problems because they were endangered to alcohol in the womb. They perhaps have bother with mathematics, challenges with memory or attention, troubles with impulse control or judgment and poor school performance. (3) Alcohol related birth defects: birth defects related to PAE can involve abnormalities in the heart, kidneys, bones, hearing, or a combination of these. (3a) Deformities of the organ systems: Alcohol is not only influence the CNS but also affect organs that are developmentally related to CNS derivatives, involving those developmentally dependent on neural creation cells like the cranio-facial complex and the heart. (3b) Cardiac Anomalies: it is accepted that about 1/3rd of pediatric with alcohol embryopathy will also have congenital cardiac challenges.[32–34] Alcohol abuse and addiction during pregnancy can induce injury of heart muscle and heart deformity in the offspring. The deformity that have been demonsterated from PAE involves deformities of the atrioventricular valves (tricuspid and mitral) that permit blood to flow backward into the atria, ventricular septal deformities commonly known as 'hole in the heart' between the left and right ventricles. Congenital heart diseases responsible for relatively 1/3rd of all congenital anomalies and are the leading noninfectious cause of death in the 1styear of life.[35] (3c) Oro-Facial Clefts: women who consumed high amount of alcohol during the first wks of the pregnancy are further probably to have a baby with a cleft lip or cleft palate than other women. Folic-acid supplementation multivitamins are used to certain of the women who didn't modify the correlation between oral clefts and ethanol drunken.[36,37] (3d) Atopic Dermatitis: Heavy alcohol drunken during pregnancy was correlated with elevated risk of atopic dermatitis in early neonate that resolved during childhood. This outcome was chiefly accelerated when the two parents had allergic disease. The greatest risk was seen in great-risk infants of mothers who drunken four or more drinks per wk at thirty wks of gestation.[38] (3e) renal anomalies: Impaired renal acidification has been documented in infants with FAS. The great urinary zinc excretion could exhaust the zinc stores of the body leading to zinc deficiencies. Zinc deficiency in pregnant women is also correlated with fetal dysmotphogenesis. Heavy alcohol consumption during the 2nd month of pregnancy was correlated with bilateral renal agenesis.[39] Women who drink moderate amount of alcohol during their 1st trimester of pregnancy perhaps escalated their risk of giving birth to an infant with rarely kidney defects. (3f) Neural tube defects: Maternal heavy alcohol drinking early in pregnancy was resulted to be related to elevated risk of neural tube defects.[40,41] NTDs which happen when the neural tube fails to close during early gestation are certain of the most common birth deformities worldwide. Alcohol is a known teratogenic and has been revealed to initiate NTDs in animal surveys and also in human surveys. (3g) behavioral and developmental changes: Alcohol can be thought-out only of the risk factors for ADHD, independently of prenatal nicotine exposure or other familial risk factor. A positive association between alcohol and attention deficit hyperactivity disorder was observed in 26 prenatally alcohol endangered children.[42–45] Deformities in social behaviors in children with FAS are more severe than those seen in children with identical verbal intelligence quotient (IQ); but who were not endangered to alcohol. Additionally, social behavior deformities have been associated with PAE in adolescents and adults without the full FAS diagnosis and at lesser doses of alcohol than would be necessary to generate the full FAS.[46–48] (3h) Psychiatric Disorders: Adults endangered to heavy alcohol consumption while in utero were resulted to have elevated rate of somatoform disorders, substance dependence, paranoid, passive aggressive, anti social and other personality disorders.[49] Fetal vulnerability to alcohol perhaps generate brain injury, itself correlated with elevated liability for schizophrenia and because chronic exposure to alcohol perhaps lead to a symptomatic schizophrenic illness.

Conclusion

Alcohol is characterized as a common human teratogenic that, when ingested by a pregnant woman, can generate a wide array of fetal complications. The fetus's advancing brain seems most sensitive to PAE which alcohol related brain damage can be quite diffuse, scaling from microcellular, neurochemical aberrations to macroscopic anomalies. The neurological, cognitive, and behavior troubles that arise from PAE are protean in their severity and variety. Other prenatal determinants for example, genetic factors or teratogenic exposures that lead to specific conditions, such as ADHD or learning disabilities can more influence the developmental effect of a child prenatally endangered to alcohol. FAS are defined by specific aberrations in growth, facial form, and CNS working. Alcohol abuse and addiction during pregnancy can initiate damage of heart muscle and heart deformities in the offspring.

Data Sources

Sources searched include Google Scholar, Research Gate, PubMed, NCBI, NDSS, PMID, PMCID, and Cochrane database. Search terms included: risk of alcohol consumption during pregnancy on fetus

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Availability of data and materials

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Conflicts of interests

The author has no financial or proprietary interest in any of material discussed in this article.

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