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WATER AND PREGNANCY

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ABSTRACT

The importance of water during pregnancy, its consumption and possible pregnancy outcomes as a consequence of suboptimal water quality is sometimes neglected. Consuming or coming in contact with contaminated water can have a wide range of adverse outcomes, including but not limited to hypertensive states /renal damage during pregnancy, preterm delivery, heavy metal poisoning and teratogenic effects. In this short review we have aimed to withdraw attention of the community on the importance of clean water supplementation during pregnancy.

Keywords: water, pregnancy, adverse outcomes, obstetrics, perinatology.

INTRODUCTION

This review aims to underline the overlooked and sometimes neglected importance of water during pregnancy and associated pregnancy outcomes.

Water can be consumed, used for cooking, personal hygiene, cleaning and for recreational purposes like swimming.

3 liters of clean water intake per day is encouraged for pregnant women (3.8 liters in lactation)(1) in order to meet daily needs, also to prevent complications such as urinary tract infections, constipation and of course to mainly to prevent dehydration. Dehydration is blamed for premature contractions of the pregnant uterus. To drink water as you are thirsty is another method for assuring adequate hydration.

In many cities, the water from the tap is both safe and drinkable. Although rare, seemingly clean water from the tap may contain contaminants that, at high levels, may cause problems for young children and pregnant women. Contaminated water intake by a pregnant woman could endanger her baby's health and pregnant women exposed to contaminated drinking water may be more likely to have babies delivered prematurely or with low birth weights (2). Unfortunately, prematurity is the leading cause of perinatal and infant morbidity and mortality, and is a great financial burden for both the families and the countries. It is important to understand that clean water access can prevent at least a fraction of this problem.

Consuming "plenty of water" is quite often advised in maternity books, and also by healthcare providers in order to have pregnant women well hydrated, however most of the time it is forgotten to stress out that this water must be clean to be consumed without harm.

Not only the water to be consumed, but also the water to be used for household purposes and body contact should be clean and free of chemical/infective agents for the general health of humans.

METHOD

An internet search in Google and PubMed using the keywords Clean Water in Pregnancy revealed more than 2 million topics in Google, most of which is not related to our subject, and revealed 74 articles in PubMed. Interestingly, the results were of quite wide range, with many different topics including but not limited to environmental water pollution by chemicals, heavy metals, infectious agents, swimming pool influence on pregnancy etc.

RESULTS

Lead, microorganisms, pesticides, arsenic, nitrites and nitrates, industrial chemicals, disinfection products and Bisphenol A may all contaminate water. While some of these affect the taste and appearance of the water, sometimes they may never give a clue.

For example, It is very hard to understand that a water source is contaminated with arsenic, since it is translucent, tasteless, and odorless even at high concentrations. Both intrauterine and in childhood, exposure has been reported to be associated with increases in consequent morbidity and mortality, later in life, especially in young adulthood, such as skin and cardiovascular lesions in a dose dependent fashion. Studies suggest increased abortion rates, both early and late, some detrimental effects on intellectual development in children and intrauterine growth retardations(3).

Ahmad et al also reported the Adverse pregnancy outcomes in terms of spontaneous abortion, stillbirth, and preterm birth rates being significantly higher in the arsenic exposed group than those in the nonexposed group(4).

An interesting outcome of a study by Moist et al reported a consistent trend toward higher rates of pregnancy related hypertension in women reporting symptomatic gastroenteritis compared to asymptomatic women, especially before 20 weeks of gestation. They speculated that exposure to Escherichia Coli may result in subclinical kidney injury manifesting as hypertension during pregnancy. They concluded that blood pressure should be monitored closely in women after exposure to contaminated water(5). This information, although not found to be statistically significant by the authors, could be important where mass movements of people are expected, such as refugee situations in war regions. There are usually many young women who flee conflict zones and many of those could be pregnant.

The obesogenic and diabetogenic effects of the environmental toxin bisphenol A during critical windows of development are well recognized. Maternal bisphenol A had been shown to induce sex- and tissue-specific effects on insulin signaling components in rats, which may contribute to increased risk of glucose intolerance in offspring. Authors suggest that maternal bisphenol A exposure should be limited during pregnancy and lactation(6).

In another interesting study, authors stated that dermal absorption or inhalation during showering, bathing, and swimming could be an important source of DBP exposure (7,8). Both pregnant and non-pregnant women took daily showers of considerable length and had frequent extended contact with

water through washing and cleaning activities. Pregnant women were more likely to take baths, and to take more baths than non-pregnant women, although they tended to spend less time in the tub. Approximately 25% of the study participants had contact with water through swimming. These findings also suggest the importance of clean water not only for drinking but also for everyday use.

It is shown that heating tap water to produce hot beverages reduce the concentrations of the volatile DBPs such as the trihalomethanes (9).

CONCLUSION

The importance of clean drinking and using water can not be stressed enough. Clean water sources are critically important for a healthy life, as much as clean air. Providing enough clean water sources in refugee situations, mass human displacements, in natural disasters is definitely a priority, but it is additionally important to supply clean water for pregnant women in order to prevent future adverse outcomes, most importantly being prematurity and intrauterine growth retardation, as well as infection and pregnancy related hypertension. These pregnancy associated problems need specialty care which is very hard to provide in crisis situations, and the cost of these problems and consequences can be extremely high, because the neonatal care is one of the most expensive aspects of medicine.

Possible ways to ensure clean water supplies for pregnant women could be providing additional filtering, boiling, or using bottled water in cases of outbreaks, natural disasters or mass human displacement situations. It is also important to control the disinfection byproducts of tap water.

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