

## Significance of nutrition in preventing miscarriage, an ignored but modifiable risk factor

Mahnour Khan, Samra Ali

*Madam*, Miscarriage or spontaneous abortion is defined as the pregnancy loss occurring before the 24th week of gestation. This term is used when an ultrasound has confirmed an intrauterine pregnancy.<sup>1</sup> It is the commonest adverse fate of pregnancy, with vaginal bleeding and abdominal pain as alarming symptoms. It is found that around 12-15% of confirmed pregnancies end up in a miscarriage. Although genetic factors (chromosomal abnormalities) top the list, maternal factors, especially nutritional status, can affect the developing embryo and result in early pregnancy foetal demise.<sup>2</sup> During pregnancy, maternal requirements for energy, macronutrients (carbohydrates, proteins and fats) and micronutrients increase to cope with the physiological changes occurring in the mother's body and to support adequate foetal development. Two Case control studies have been conducted and have found a preventive effect of milk consumption and dairy products on spontaneous abortion.<sup>3</sup> There is also an association between decreased animal fat and carotene intake and increased risk of hydatidiform mole, which can ultimately lead to a miscarriage.<sup>2</sup> Studies proved that not only macronutrients but deficiency of micronutrients also contribute to poor pregnancy outcomes. Some essential micronutrients include iron, magnesium, zinc, vitamin B12 and folic acid., Due to its antioxidant effects, Vitamin C is also required during this stage and contributes to a healthy pregnancy.<sup>1</sup> Besides deficiencies, even excess of some micronutrients, like caffeine, especially during the pre-pregnancy state contributed to the risk of early pregnancy loss.<sup>4</sup> Studies have been done to determine the mechanism behind the nutrition's effect on the outcome of pregnancy. In the pre pregnancy state, nutritional imbalances result in the alteration of germ cell morphology, which hinders the chances of fertilisation of the altered germ cell. In addition to this, nutritional status during the peri-implantation and placental developmental stage (embryonic stage) play a vital role in the establishment of pregnancy and foetal development so any deficiency during this stage increases

the risk of miscarriage. Folic acid deficiency during this stage is harmful. Although it mainly results in the development of congenital anomalies in infants, it is seen that by increasing homocysteine levels it can also lead to miscarriage, although the association is still unknown.<sup>1</sup> Not only undernutrition but overweight and obesity in mothers also lead to poor pregnancy outcomes. It is true that women with low BMI have increased susceptibility to pregnancy loss, but obesity or being overweight are also included in the reasons that can cause this fatal outcome for the foetus.<sup>5</sup> High BMI has been observed in altering endometrial receptivity making implantation of blastocyst difficult, as it is a hormonally controlled event. The shocking outcome of pregnancy, like miscarriages, congenital anomalies and intrauterine growth retardation, are seen commonly among obese women. It is to be acknowledged that the link between maternal nutrition and spontaneous abortion is strengthened by socioeconomic, lifestyle and ethnic factors.<sup>1</sup> For example, some women take a strict vegetarian diet due to their ethnicity or low socioeconomic status, so they are more prone to developing vitamin B12 deficiency. On the other hand, obese women with a moderate lifestyle and access to adequate food will be more likely to develop gestational diabetes, which also increases the risk of miscarriage. Since foetal growth and development solely depend upon maternal nutrition, there is a need to address the significance of maintaining healthy weight among child-bearing women of every socioeconomic status or ethnic background. Screening programmes are provided in maternity clinics throughout the gestation period. Charting of diet, including micro and macronutrients, which will keep the mother and foetus healthy, should be maintained.

**Disclaimer:** None.

**Conflict of interest:** None.

**Funding disclosure:** None.

**DOI:** <https://doi.org/10.47391/JPMA.7952>

**Submission completion date:** 05-10-2022

**Acceptance date:** 22-02-2023

5th Year MBBS Student, Dow Medical College, Karachi, Pakistan.

**Correspondence:** Samra Ali. e-mail: samkanwer\_27@yahoo.com

ORCID ID. 0009 0005 5218 1784

## References

1. Ahmadi R, Ziaei S, Parsay S. Association between Nutritional Status with Spontaneous Abortion. *Int J Fertil Steril*. 2017; 10:337-42. doi: 10.22074/ijfs.2016.4577.
  2. Larsen EC, Christiansen OB, Kolte AM, Macklon N. New insights into mechanisms behind miscarriage. *BMC Med*. 2013; 11:154. doi: 10.1186/1741-7015-11-154.
  3. Achón M, Úbeda N, García-González Á, Partearroyo T, Varela-Moreiras G. Effects of Milk and Dairy Product Consumption on Pregnancy and Lactation Outcomes: A Systematic Review. *Adv Nutr*. 2019; 10:S74-S87. doi: 10.1093/advances/nmz009.
  4. Gaskins AJ, Rich-Edwards JW, Williams PL, Toth TL, Missmer SA, Chavarro JE. Pre-pregnancy caffeine and caffeinated beverage intake and risk of spontaneous abortion. *Eur J Nutr*. 2018; 57:107-17. doi: 10.1007/s00394-016-1301-2.
  5. Eapen A, Hayes ET, McQueen DB, Beestrup M, Eyck PT, Boots C. Mean differences in maternal body mass index and recurrent pregnancy loss: a systematic review and meta-analysis of observational studies. *Fertil Steril*. 2021; 116:1341-8. doi: 10.1016/j.fertnstert.2021.06.019.
-