Research Exercise Summary

THE IMPORTANCE OF PRECONCEPTION NUTRITION ON MATERNAL AND FETAL HEALTH

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INTRODUCTION

Maternal nutrition before conception (preconception nutrition) is increasingly being investigated to ascertain if nutrition affects the health of infant and whether it has lifelong effects into adulthood (Mahan et al, 2012.). The Nutrient status of women depends largely on their own nutrient stores and dietary intakes which determines the availability and supply of nutrients to the developing fetus. It is rather unfortunate that often, many pregnancies are discovered after critical developmental processes such as organogenesis have already commenced and completed. As a result, the first antenatal visit becomes rather too late to address perinatal risk factors (Johnson et al, 2006.). Suboptimal maternal nutritional status is shown to be associated with increased risk of type 2 diabetes, pre-eclampsia, pregnancy loss etc. Thus, optimal preconception nutrition and care is increasingly being recognized as a critical window to identify, treat and manage risk factors before or at early period of conception so as to reduce risks of adverse health outcome for the woman, fetus and infant (Posner et al, 2006).

OBJECTIVE

The aim of this review is to summarize the existing body of research on the impact of preconception nutrition in fetomaternal outcome and identify gaps in the knowledge base, and suggest future researches or programs to investigate possible benefits of preconception nutrition in the developing countries such as Nigeria.

METHODOLOGY

• Studies used for this review exercise included: studies on preconception nutrition and pregnancy outcomes.
• Research studies were identified using electronic data bases such as, PubMed and Web of Science with studies restricted to English language from 2000 till date including, epidemiologic studies in humans, systematic reviews and studies in animal models.

FINDINGS

Effect of maternal nutrition status on the placenta

Epidemiologic researches showed that the life time nutrition of mother is critical in the optimal developmental processes of the placenta. Maternal undernutrition was shown to be linked with compromised placenta size, shape and efficiency whereas;
greater placenta efficiency was associated with women with higher fat mass (Barker et al, 2012).

Preconceptional and periconceptional antioxidants/micronutrients status in the prevention of adverse fetomaternal outcome

Animal and Epidemiologic studies reveals that dietary intake and supplementation of antioxidants such as vitamin C may play a beneficial role in the prevention of miscarriage and pre-eclampsia (Ferre N et al, 2006). It was also shown that adequate multivitamin use in periconceptional period was associated with reduction in the risk of pre-eclampsia (Bodnar et al, 2006). Furthermore, suboptimal preconception vitamin B status was linked to spontaneous abortion/miscarriage and decreases probability of conception (Ronenberg et al, 2007.). Neural Tube Defects (NTD), an important cause of morbidity and mortality in infants is shown to be prevented/reduced by optimal maternal folate status or folic acid food fortification during preconception and periconceptional period (Persad et al, 2002). Though antioxidant prevents the damaging effects of reactive oxygen species (ROS), reports from control trials have failed to find beneficial effect of vitamin C supplementation in preventing pre-eclampsia (Agarwal et al, 2012).

Preconception maternal body mass index (BMI) maternal and fetal health/outcome

A strong association has been shown between preconception overweight, obesity and increased risks of several adverse fetomaternal outcomes, especially pre-eclampsia and gestational diabetes (Liu et al, 2011). However, preconception undernutrition as also been shown to increase the risk of adverse pregnancy outcomes such as, low birth weight (LBW), preterm birth and small-for-gestational age (SGA) (Ronenberg et al, 2003). There is also evidence linking these adverse fetal outcomes with major diseases of adulthood such as hypertension, type 2 Diabetes and coronary heart diseases (Barker et al, 2012).

CONCLUSION

The research findings underscore the importance of encouraging early healthy food habits and adequate consumption of multivitamin supplements in women of child bearing age as it takes a long term effort to improve dietary habits. Also, to reduce the risks of various adverse maternal outcomes associated with excessive BMI, preconception period remains the critical window for appropriate weight loss regimen and to obtain an optimal BMI status prior to conception as weight loss during pregnancy is not recommended. Conflicting results identified from various studies suggests the need for more randomized control trials to prove the efficacy of antioxidant supplementation in pregnancy disorders or the intake of whole foods high in antioxidants. It is also recommended that food fortification and supplementation of folic acid be included in the Nigerian health policy system as it is currently not a routine recommendation in the policy of Nigerian health system for preconception periods.

REFERENCES


Name of Student/Signature .................................................. Name of Mentor/Signature ..................................................