



CHAPTER 1

INTRODUCTION

1.1 Background

Women whose pregnancies are complicated by diabetes can be separated into those who were known to have diabetes before pregnancy and those with gestational diabetes. "Gestational " diabetes is the disorder induced by pregnancy, perhaps due to exaggerated physiological changes in glucose metabolism. An alternative pathophysiological explanation is that gestational diabetes is not induced by pregnancy, but instead may be maturity-onset diabetes unmasked during pregnancy. For example, Harris (1988) found that the prevalence of undiagnosed glucose intolerance in non pregnant American women between the ages of 20 and 44 years was virtually identical to the prevalence of gestational diabetes. The effects of diabetes on pregnancy are maternal effects and fetal or newborn effects such as pregnancy induced hypertension, increased abnormal delivery rate, increased infant death rate, major anomalies, newborn morbidity etc. The most important newborn concern is excessive fetal growth(macrosomia infant : birth weight $\geq 4,000$ gms.), which may result in birth trauma. Unlike in women with overt diabetes, fetal anomalies are not increased. Similarly, where as pregnancies in women with overt diabetes are at greater risk of fetal death, the danger is not apparent in for those with after meals elevated plasma glucose only : that is , class A1 .In contrast, gestational diabetes with elevated fasting plasma glucose (class A2) , has been associated with unexplained stillbirth similar to overt diabetes. There are also some reports about infant adverse effects because of abnormal one value of glucose tolerance test or impaired glucose tolerance. In the ensuing years, up to the present, several refinements in management of diabetic woman and their fetuses and infants have result in a infant outcomes nearly equivalent to that observed in normal pregnancies. Cunningham FG et al (2001) found that

the woman with high plasma glucose levels, glucose in urine, and blood acidity caused by ketone substance presents no problem in diagnosis. The woman at the opposite end of the spectrum, with only minimal metabolic derangement, may be difficult to identify. The likelihood of impaired carbohydrate metabolism is increased appreciably in women who have a strong familial history of diabetes, have given birth to large infants, demonstrate glucose in urine persistently, or have unexplained fetal losses.

Despite more than 30 years of research there is a lack of consensus regarding the optimal approach to screening for gestational diabetes. One of the major issues include whether universal or selective screening should be used. Since 1980 there have been four international workshop-conference on gestational diabetes held in Chicago, and these have attempted to provide consensus statements on screening for diabetes. At the most recent workshop, in 1997. Cunningham FG et al (2001) , prior recommendations for universal screening were changed to selective screening at first visit and 24-28 weeks of pregnancy in high risk group(glucose intolerance found in early pregnancy) , and only 24-28 weeks of pregnancy in average risk group(glucose intolerance found in late pregnancy). At BMA Medical College and Vajira Hospital has adopted and adapted the guideline for screening gestational diabetes from the last workshop recommendation by adding extra screening at 32 weeks of pregnancy in both groups. This practical guideline for diagnosis gestational diabetes has been used since June 2003.

1.2 Rationale

The reason that the screening test should be done as an extra screening at 32 weeks of pregnancy because there are some reports suggest that the screening for gestational diabetes should include follow up with a third trimester glucose tolerance test (GTT) on all patients who have positive screening tests even in the presence of normal follow up second trimester GTT. Follow up GTT in the second trimester revealed

only partly of the gestational diabetic patients uncovered by the positive screening tests. On the other hand there are many reports that disagree with all of the above information reported that there was no significant difference in the incidence of antenatal complications between mothers with normal and impaired glucose tolerance test(IGTT) and pre pregnancy overweight and obesity is associated with adverse pregnancy outcome in glucose tolerant women. So the maternal impaired glucose tolerance test may not be the factor for adverse outcome of pregnancy.

1.3 Research Questions

Primary research question

Which diagnostic program of gestational diabetes is more cost-effective between BMA Medical College and Vajira Hospital Practical Guideline and American Diabetic Association Recommendation (1997).

Secondary research questions

1. What is the incremental ratio of additional cost and additional effectiveness between BMA Medical College and Vajira Hospital Practical Guideline and American Diabetic Association Recommendation.

2. How much is the cost difference between additional cost for diagnosis of additional gestational diabetes cases of BMA Medical College and Vajira Hospital Practical Guideline and the opportunity cost of the undiagnosed cases by American Diabetic Association Recommendation (macrosomia with hypoglycemia and kidney disease caused by gestational diabetes).

1.4 Research Objectives

General objective

To analyze the cost-effectiveness in diagnostic program of gestational diabetes compared between BMA Medical College and Vajira Hospital Practical Guideline in Diagnosis Gestational Diabetes and American Diabetic Association Recommendation.

Specific objectives

1. To analyze the incremental ratio of the additional cost and additional effectiveness between the diagnostic program of gestational diabetes from BMA Medical College and Vajira Hospital Practical Guideline and American Diabetic Association Recommendation.

2. To compare additional cost for diagnosis of additional gestational diabetes cases of BMA Medical College and Vajira Hospital Practical Guideline with the opportunity cost of the undiagnosed cases by American Diabetic Association Recommendation(macrosomia with hypoglycemia and kidney disease caused by gestational diabetes).

1.5 Scope of the study

Pregnant women who came to the Obstetrics-Gynecology (OB-GYN) department of BMA Medical College and Vajira Hospital for antenatal care from 1 June - 31 December 2003 . These women should meet the criteria as the risk patients for gestational diabetes as were shown in the "Research methodology" section. This study is done in the health provider's and the patient 's perspective.

1.6 Conceptual framework

C_B, C_A The cost for the program of diagnosis of gestational diabetes of BMA Medical College and Vajira Hospital Practical Guideline and American Diabetic Association Recommendation respectively.

E_B, E_A The number of correctly diagnosed gestational diabetes from two groups above.

