Gestational development and preterm birth health and social care essay

Gestational age and baby's weight after delivery are the best indicators to assess pregnancy outcome and a measure of mothers' health during pregnancy and the fetus's growth and development (Rafati, Borna, Akhavirad & Fallah, 2005). Preterm birth has one of the most common adverse pregnancy outcomes. Preterm birth is defined as " birth before 37 completed weeks" (Steer, 2005, p. 1). Preterm birth is a worldwide health issue with a marked difference in prevalence between developed and developing countries (Goldenberg, Culhane, Iams & Romero, 2008; Steer). The global prevalence of preterm birth is 9. 6%. Preterm birth is very high in Africa and Asia where 85% of global preterm birth occurs. Preterm birth is a major contributor to infant mortality and morbidity. The infant mortality rate, around the world, has not declined over the years (Mathew & Mac Dorman, 2007). Health statistics indicate that the infant mortality rate per 1000 live births is 181 in Angola, followed by 99. 7 in Pakistan. Whereas, the infant mortality rate reported per 1000 live births in United States of America is 6. 89, and lower still in Sweden where the rate is 2. 91 and Singapore where the rate is 2. 31 (Fikree, Azam & Berendes, 2002; Mathew et al. 2007). 50 % of pediatric neurodevelopment problems are as a result of preterm birth (Goldenberg et al.). Infants who are born preterm are at higher risk of short complications such as infections, hypothermia, hypotension, hypoglycemia and long term complications such as cerebral palsy, blindness, deafness and lower IQ. Preterm birth is a source of anxiety and financial burden on the parents (Green, Damus, Simpson, Iams, Reece, Hobel, et al., 2005; Latengresse, 2009; Rafati et al. 2005; Weiss, Weiss & Probe, 2010). There are many maternal factors which contribute to preterm birth and these have been extensively highlighted in literature such as low socioeconomic status,

maternal age, and low level of education, anemia, inadequate prenatal care, psychosocial stress, obstetric complications, smoking, and maternal histories of preterm delivery (Allen, 2001; Astolfi & Zonta, 1999; Hsieh, Chen, Shau, Hsieh, Hsu, & Hung, 2005; Ismail, Zaidi & Maqbool, 2003; Mavalankar, Gray & Trivedi, 1992). The relationship of many of these factors to preterm birth is clear. However, the association between psychosocial stress and preterm delivery although examined for more than 25 years, is less clear (Dunkel–Schetter, 1998; Latendresee, 2009. Researchers have indicated that psychological factors have an effect on the pregnancy outcome, including birth weight and gestational age at delivery (Copper, Goldenberg, Das, Elder, Swain, Norman, et al., 1996; Erickson, Thorsen, Chrousos, Gridoriadis, Khongasaly, McGregor et al., 2001; Ruiz, Fullerton, Brown & Schoolfield, 2001, 2003; Hobel, Dunkel- Schetter, Roesh, Castro & Arora, 1999). Several studies examining the relationship between maternal stress, depression, and preterm birth indicate a positive relationship (Copper et al.; Erickson et al.; Diego, Field, Hernandez-Reif, Schanberg, Kuhn, & Gonzalez-Quintero, 2009; Field, Diego, Dieter, Hernadez- Reif, Schanberg, Kuhn, 2004; Field, Hernandez-Reif, Diego, Figueiredo, Schanberg, & Kuhn, 2006; Jesse, Seaver &Wallace, 2003; Hobel et al.). Whereas, other studies report no statistically significant relationship between stress and preterm birth (Jesse, Swanson, Newton, & Morrow, 2009; Dole, Savtiz, Picciotto, Riz, McMachon & Buekens, 2003; Wadhwa, Sandman, Porto, Dunkel- Schetter & Garite, 1993) which creates challenges in understanding the relationship between stress, depression and preterm birth. The inconsistent finding may be due to differences in defining and measuring stress, timing of stress measurement, sample characteristics, and study designs (Gennaro & Hennesey, 2003). A

more objective measure of stress, such as cortisol level, will better facilitate our understanding of the relationship between stress, depression and preterm birth. Stress and depression are overlapping concepts and present similar somatic symptoms like decreased appetite, fatigue, disturbance in sleep, nausea, headaches, loss of appetite and pain all over the body (Kelly, Russo & Katon, 2001). Such symptoms overlap with the normal symptoms of pregnancy and make it challenging for the health care practitioner to identify stress and depression in pregnancy (Kelly, Russo & Katon). Stress and depression follow a similar biochemical pattern, stimulating the hypothalamus-pituitary-adrenal axis (HPA) and the sympathetic nervous system which secretes corticotrophin-releasing-hormone (CRH) from hypothalamus. In response, the pituitary gland secretes adrenocorticotrophic hormone (ACTH), which in turn, stimulates the secretion of cortisol hormone from adrenal cortex. The HPA axis follows a negative feedback mechanism where increase cortisol hormone suppresses the production of CRH and ACTH, thus decreasing the cortisol level. Therefore, cortisol is a biological marker of stress and may be a useful measure of the stress experienced by pregnant women and verify the relationship between stress, depression and preterm birth. Cortisol is usually referred to as the " stress hormone" as it gets activated in response to stress, depression and anxiety. Stress also produces significant changes in maternal immune response. Stress increases cytokine production, which increases susceptibility to infection and increases the risk of preterm birth (Austin, Leader & Reilly, 2005; Rich-Edwards & Grizzard, 2005; Gennaro & Hennessy, 2003; Giurgescu, 2009; Latendresse, 2009; Ruiz & Avant, 2005). There is a high prevalence of antenatal depression (18 % -39. 4%) among women in Pakistan (Kazi, Fatmi, Hatcher,

Kadir, Niaz, & Wasserman, 2006; Karamaliani, Asad, Bann, Moss, Mcclure, Pasha et al., 2009). Women who experience antenatal depression are more likely to be poor, which impacts their ability to access antenatal care and treatment for depression (Karamaliani, Bann, Pirani, Akthar, Bender, Goldenberg et al., 2007). Pakistan is a developing country with a total population of 166 million (Taqui, Itrat, Qidwai & Qadri, 2007). It is estimated that 35% of the population has income below the poverty line (Economy Statistics, 2001). Pakistan is a male dominant society where women's rights, health needs and educational opportunities are not given priority (Sen, Ostlin, George, 2007). The adult male literacy rate is 43%, whereas adult female literacy rate is 28% (Anjum, 2005). Therefore, health for women is never given importance; as well many women cannot afford antenatal care. Birth of a boy is celebrated while birth of a baby girl is mourned (Niaz, 2004). Majority of the people live in joint family system which means more than two or three generations share a house together (Mason, 1992) and these interactions may be unique and lead to increase stress and depression. Therefore, the type of stressors and their relationships may be unique for women in Pakistan and may account for the higher rate of preterm birth seen in Pakistan. Studies undertaken in South Asia have examined the contribution of maternal factors like maternal education, age, parity, birth interval and antenatal visit on preterm birth (Ismail et al., 2003; Mavalankar et al., 1992). However, none of these studies have considered psychological factors; furthermore, none have examined the relationship between maternal stress, depression and preterm birth. No study has been conducted in Pakistan to identify the relationship between maternal stress, depression and preterm birth. Problem Statement and SignificanceMy interest in this

topic area arises from my experiences and interaction with pregnant women coming to Aga Khan University Hospital (AKUH). When a pregnant woman comes to the antenatal clinic, she receives a physical assessment together with measurement of height, weight and blood pressure monitoring by a nurse or technician. Later, she is referred to the physician for a detailed assessment which includes checking of fetal heart sounds, vaginal examination and laboratory investigations. Assessments whether by the nurse or physician, address only the physical aspect of care and not the psychological, social and cultural needs of the pregnant women. However, during my conversation with pregnant women, I discovered that women's social condition such as poverty, unemployment, lack of education, inflation, psychological factors like abuse by husband, mother in law and cultural problems related to giving birth to a girl child are common concerns of Pakistani pregnant women which causes significant stress. To the best of my knowledge, this study will be the first of its kind to examine the relationship between psychological factors, cortisol level and preterm birth in pregnant women based in Karachi, Pakistan. In addition, the findings of this study will highlight the importance of psychosocial factors as major contributors among pregnant women. The findings will help the medical and nursing clinicians integrate assessment of psychosocial factors as standard of care provided to pregnant women. Early identification of stress and depression will permit the medical and nursing clinicians to implement measures to reduce psychological factors thereby decrease the incidence of preterm birth (Latendresse, 2009) and as a result decrease infant mortality which is an important fourth millennium development goal. Finally, the findings of the study will also contribute new knowledge in the literature with regard to the

use of cortisol as a more objective measure of stress and depression.

Purpose of StudyThe purpose of the study is to determine the relationship between maternal stress, depression, cortisol levels and preterm birth. Study HypothesesThe hypotheses of the study are: a) There is a positive relationship between maternal stress during pregnancy and cortisol level. b) There is a positive relationship between cortisol level and preterm birth. c) There is a positive relationship between maternal stress during pregnancy and preterm birth. d) There is a positive relationship between maternal depression and stress during pregnancy. Study Questionsa) Is there a relationship between maternal stress during pregnancy and cortisol level? b) Is there a relationship between cortisol level and preterm birth? c) Is there a relationship between maternal stress during pregnancy and preterm birth? d) Is there a relationship between maternal depression and stress during pregnancy? SummaryPreterm birth is one of the most common adverse pregnancy outcomes and is associated with infant mortality. Preterm infants are at higher risk of poor growth and neurodevelopmental outcomes. Maternal risk factors such as stress and depression have been associated with preterm birth. There is a high prevalence of preterm birth and infant mortality in Pakistan. Therfore; the purpose of the study is to determine the relationship between maternal stress, depression, cortisol level and preterm birth. Stress and depression follow similar biochemical pattern, stimulating the hypothalamus-pituitary-adrenal axis (HPA) which stimulates the secretion of cortisol hormone by the adrenal cortex that can result in premature birth. Cortisol levels may be an accurate measure to identify stress and depression in pregnant women. Preterm birth may be minimized through early

identification of stress and depression in pregnant women and

implementation of appropriate interventions to reduce maternal stress.