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Predictors of Postpartum Depression among Women in Karachi, Pakistan

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by

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Each person whose signature appears below certifies that this dissertation in his/her opinion is adequate, in scope and quality, as a dissertation for the degree Doctor of Philosophy.

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CONTENT

Approval Page iii

Acknowledgements iv

List of Figures x

List of Tables xi

List of Abbreviations xii

Abstract xiii

Chapter

1. Introduction to the Study 1

The Problem 1
Purpose and Aims of the Study 4
Definitions of Major Constructs 5

Post-Partum Period 5
Postpartum Depression 5
Social Support 6
Stressors 7

Significance of the Study 7

For Practice 7
For Policy 7
For Theory 8
For Future Research 8

Overview of Remaining Chapters 9

2. Review of Literature 10

Introduction 10
Global Predictors of PPD 11

Psychological Predictors of PPD 11

Life Events 12
Mental Stress 14

Social Support 15
Attitudes 17

Psychiatric Illness Predictors of PPD 18

Depression 18
Anxiety 19
Mental Health History 20

Demographic Predictors of PPD 21

Demographic Characteristics 21

Other Predictors of PPD 23

Violence 23
Rituals 24
Surrounding Environment 25
Self-Efficacy and Life Style 26

Biologic Predictors of PPD 27

Maternal Physical Health 27
Infant Health Predictors of PPD 28
Birth Related Complications Predictors of PPD 28

Predictors of PPD in South Asia 29
Predictors of PPD in Pakistan 31
Summary 33

3. Methodology 35

Research Design 35
Assumptions Pertinent to this Study 35

Transactional Model of Stress and Coping 36
Conceptual Model of the Study 38

Hypothesis and Questions 40

Research Questions 40

Method 41

Sample 41
Protection of Human Subjects 42

Procedure 43
Measurements of Concepts 44

Edinburgh Postnatal Depression Scale (EPDS) 46
Multidimensional Scale of Perceived Social Support (MSPSS) 48
Cohen's Perceived Stress Scale (PSS) 49
The Duke University Religion Index (DUREL) 50
Abuse Assessment Screen (AAS) 51
Traditional Postpartum Beliefs 52
Demographics 53

Analysis Plan 53

Data Preparation and Management Plan 53

Descriptive Analysis Plan 54
Inferential Analysis Plan 54

4. Results 56

Introduction 56
Description of the Sample 56
Reliability of the Scales 60
Comparison of Women With and Without PPD 61
Traditional Postpartum Beliefs 63

Traditional Postpartum Beliefs Specific to Pakistani Women 68

Correlations with Postpartum Depression 69
Predictors of Postpartum Depression 71

5. Discussion 73

Introduction 73
Summary of Study 73
Summary of Major Findings 74
Strengths of the Study 79
Limitations of the Study 79
Implications of the Study 80
Conclusions 82

References 83

Appendices

A. Questionnaire (Urdu & English) 94

B. Informed Consent Form (English) 102

C. Informed Consent Form (Urdu).....104

D. Institutional Review Board (IRB) Approval 106

E. Letter of Approval from Health Ministry 107

F. Letter of Permission from HOD Ob/Gyn Liaquat National Hospital.....108

FIGURES

Figures Page

1. Postpartum Depression Predictor Model 39

TABLES

Tables Page

1. Interval demographic variables for all participants and comparing women with and without postpartum depression 57

2. Categorical demographic variables for all participants, and comparison of women with and without postpartum depression.....59

3. Reliability for each scale.....60

4. Scores for all women on each scale and comparing women with and without postpartum depression 62

5. The first seven traditional postpartum beliefs and practices.....65

6. The traditional postpartum beliefs and practices 8 - 13.....66

7. The last 14 traditional postpartum beliefs and practices.....67

8. Correlations between the interval variables and the Edinburgh Postnatal Depression Scores.....70

9. Predictors of Postpartum Depression.....72

ABBREVIATIONS

ASS	Abuse Assessment Scale
EPDS	Edinburgh Postnatal Depression Scale
MSPSS	Multidimensional Scale of Perceived Social Support
PPD	Postpartum Depression
PSS	Perceived Stress Scale
DSM	Diagnostic and Statistical Manual of Mental Disorders
ICD	International Statistical Classification of Diseases and Related Health Problems
NGOs	Non-governmental organizations
OPD	Outpatient Departments

ABSTRACT OF THE DISSERTATION

Predictors of Postpartum Depression among Women in Karachi, Pakistan

by

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Dr. Lisa R. Roberts, Chairperson

Pakistan has the highest prevalence of postpartum depression (PPD) among Asian countries. The purpose of this quantitative, cross-sectional study was to determine the predictors of PPD among women in Karachi, Pakistan. The Transactional Model of Stress and Coping was used as a framework. A purposive convenience sample of 234 postpartum women was taken from out-patient departments of a tertiary care hospital in Karachi, Pakistan. A survey in English and Urdu containing the Edinburgh Postnatal Depression Scale (EPDS), DUREL Religion Index Subscale three, Cohen's 10-item Perceived Stress Scale (PSS), Multidimensional Scale of Perceived Social Support (MSPSS), Abuse Assessment Screen, Traditional postpartum cultural beliefs, and other demographic variables associated with PPD in the literature was completed by self-report or structured interview. Postpartum women < 16-years-old or having mental disorders other than PPD were excluded.

Data was analyzed using SPSS version 24. The sample consisted of 95.7% Muslims, 98.7% married, 52.2% had education of intermediate or below, with a mean age of 27.78 ± 4.43 years, ranging from 19-42 years, and 163 screened positive for PPD using the EPDS. Independent sample *t*-test, and Pearson's chi square were significantly different among women with PPD compared to women without PPD on habits

detrimental to health (p = .005), MSPSS friends' subscale (p = .03), MSPSS total (p = .01), abuse (p = .003), special person (p = .031), PSS (p = .00), and a belief 'consumption of hot foods' (p = .004). Multiple linear regression revealed, MSPSS total (p = .05), abuse (p = .03), and PSS (p = .00) as significant predictors of PPD, and explained 31% of the variance. Scale reliability was acceptable to excellent, with one Cronbach's alpha of .65 and the rest ranging from .73 to .92. This study contributes to nursing science by describing predictors of PPD in Pakistan, aiding identification of women at risk for PPD and early detection. Future research is necessary for the development and integration of a holistic approach that includes screening and treatment of PPD in postpartum care to improve maternal mental health and wellbeing.

CHAPTER ONE

INTRODUCTION TO THE STUDY

The Problem

Childbirth and postpartum is a major transition in a woman's life. In various cultures both the mother and the infant are considered vulnerable during this period. Special diet, rest and assistance for the mother are practiced (Dennis et al., 2007). The concept of a specific postpartum period is also found in the Bible,

> "…A woman who becomes pregnant and gives birth to a son will be ceremonially unclean for seven days, just as she is unclean during her monthly period. On the eighth day, the boy is to be circumcised. Then the woman must wait thirty-three days to be purified from her bleeding. She must not touch anything sacred or go to the sanctuary until the days of her purification are over" (Leviticus 12:1-4, New International Version).

In accordance to this the postpartum period is defined as forty days and forty nights in Judaism, Christianity, and Islam. This is consistent with the medical definition of six weeks of involution of the uterus after childbirth.

Eberhard-Gran et al. (2010), have described the post-partum practices of many different cultures. Muslims consider the woman unclean during this time and therefore household work is done by others. In Mexico and Latin America, the postpartum period is taken as a mandatory rest period for the mother. In China, postpartum women should comply with the rules to restore balance by taking hot drinks, eating hot foods and not going out of the house to protect themselves from wind and cold. In Japan, the women move to their childhood home during the postpartum period to be cared for by their family. In India and Pakistan, the women return back to their husband's family after resting at their parents' home for forty days or for a couple of months. These customs

were aggressively followed before the 1950s but now the modern medical institutional systems have largely replaced family, community, and religious experts in providing care for the mother during this period, and Pakistan is not an exception. The hospitalization has reduced from 14 days in the 1950s to 24 hours currently after a normal vaginal delivery. The most common "ritual" left is the postnatal checkup at six weeks where medical professionals put emphasis on contraceptive advice (Eberhard-Gran, Garthus-Niegel, Garthus-Niegel, & Eskild, 2010).

In Pakistan, a woman is expected to rear children, perform domestic work, be submissive, and obey her husband and family. It is common for Pakistani husbands and in-laws to restrict the woman's reproductive autonomy and decision-making process. Educated women who have professional careers are in better positions but such privileged women form a small minority of all women living in Pakistan (Ali, Krantz, & Mogren, 2012). Pakistan is among the few countries in South Asia that have poor reproductive health indicators and the maternal mortality figures remain high although there have been some improvements, according to the health survey from 2006 – 2007, the maternal mortality ratio in rural areas of Pakistan is 319 per 100,000 live births and 27.2% of maternal deaths were caused by postpartum hemorrhage being one of the leading cause of maternal death (Mir, Wajid, & Gull, 2012). Various studies have been conducted on the consequences of lack of care during the postpartum period. For example, a child whose mother is seriously depressed can have delayed development (Brand & Brennan, 2009). However, there are relatively few studies that address the full range of postpartum health problems that affect the mother and the child. Pregnancy and postpartum period is considered in many cultures as a period of joy and excitement

however the medical community has a better understanding of the postpartum period and suggest that this period puts the women at high risk for the development or reoccurrence of a psychiatric disorder (Brand & Brennan, 2009). The studies that address the full range of postpartum care are mostly from high-income and developed countries. In the United States, it is estimated that more than 500,000 pregnancies in a year involve women diagnosed with psychiatric disorders that had emerged during pregnancy; these mental illnesses can have long lasting negative consequences (Brand & Brennan, 2009). In low-income and middle-income countries, the postpartum period remains under-researched.

Studies from Pakistan, Bangladesh, and India indicate a heavy burden of vaginal bleeding, vaginal discharge, lower abdominal pain, fever, perineum pain and excessive weakness during the postpartum phase. Despite the limited research, findings in this area reveal the high burden of ill health the mother experiences during the postpartum period (Kabakian-Khasholian, Shayboub, & Ataya, 2014). The World Health Organization defines maternal health as a state of well-being in which a mother has the potential to work effectively and cope with normal stresses and contribute towards the community (Gulamani, Shaikh, & Chagani, 2013b). Therefore, if a mother's health is compromised not only does the family suffer but the society as well is affected. Changes experienced during the postpartum period, may cause emotional and mental health disturbance, which if not addressed, may progress to a condition called postpartum depression (PPD).

PPD is a mental and behavioral disorder associated with puerperium starting within six weeks of delivery (Jones & Coast, 2013). It is a global public health concern because of its distressing effects on the mother, child and family. The prevalence of PPD varies across different cultures and countries (Wu et al., 2007). Different sources seem to

provide different figures of PPD. It has been reported to affect women worldwide as follows; 10-27% in Western societies, 15.8% in Arab countries, 16% in Zimbabwe, 34.7% in South Africa, 11.2% in China, 7% in Japan, and 18% in Pakistan (Mina, Balhara, Verma, & Mathur, 2012). Historically, PPD was estimated to be absent in non-western countries because of the presence of social support (Jones & Coast, 2013). However recent estimates suggest a much higher prevalence of PPD in South Asia; 36% in Pakistan compared to 13% in North America and western European countries (Jones & Coast, 2013). In Pakistan only 0.4 percent of health care expenditures are devoted to mental health and of those receiving mental health care 69% are female patients diagnosed with neurotic, stress-related and mood disorders. These statistics do not include PPD. The Pakistani cultural norm of under reporting symptoms and lack of reliable screening tools leads to under diagnoses of PPD. However, according to some estimates, PPD is a major concern in Pakistan with prevalence ranging from 28.8 % (Rahman, Iqbal, & Harrington, 2003) to 36% (Husain et al., 2006) to 94% (Rahman & Creed, 2007) despite measuring PPD over the same time period of three months postpartum. A longitudinal study conducted in Rawalpindi, Pakistan reported that 62% of depressed women were found to be depressed at 12 months of postpartum (Rahman & Creed, 2007). Among Asian countries Pakistan ranks the highest with a prevalence of 63.3 % (Gulamani et al., 2013b; Klainin & Arthur, 2009).

Purpose and Aims of the Study

The purpose of this quantitative, cross-sectional study is to determine the predictors of postpartum depression among women in Karachi, Pakistan. The aims are, firstly to describe social support and stressors present among the postpartum women in

Karachi, Pakistan. The stress variables are demographic stressors, intrinsic religiosity, abuse, perceived stress and traditional postpartum cultural beliefs. Secondly, the aims are to examine and compare the differences in social support and stressors among women with postpartum depression and women without postpartum depression, in Karachi, Pakistan. Thirdly, to identify the variables that are associated with postpartum depression and fourthly, to identify the significant stressors that predict postpartum depression among women in Karachi, Pakistan.

Definitions of Major Constructs

Post-Partum Period

The postpartum period is the fourth stage of labor and has three distinct but continuous phases. The first phase known as the initial and acute phase consists of the first 6-12 hours of postpartum. It is a time of rapid change with the potential for immediate crises such as postpartum hemorrhage. The second phase is the sub-acute postpartum period which starts from 2-6 weeks postpartum. During this time, the body undergoes major changes in terms of hemodynamics, genitourinary recovery, metabolism, and emotional status. The third phase is the delayed postpartum that can last up to six months. The changes during this phase are very gradual and the restoration of muscle tone and connective tissues take place to return to the pre-pregnant state. The woman's body is not fully restored to pre-pregnant physiology until about six months post-delivery (Romano, Cacciatore, Giordano, & La Rosa, 2010).

Post-Partum Depression

Postpartum depression is considered a debilitating mental disorder. Definitions of postpartum depression are given by two existing diagnostic systems; the Diagnostic and

Statistical Manual of Mental Disorders (DSM IV – TR) and the International Statistical Classification of Diseases and Related Health Problems (ICD – 10). These definitions are inconsistent as one says it's a major depressive disorder whereas the other says it's a minor mental disorder. The DSM IV-TR recognizes PPD as a major depressive disorder with postpartum onset and indicates that depressive symptoms begin within four weeks postpartum. However, according to the ICD-10 PPD is a mild mental and behavioral disorder commencing within 6 weeks of delivery. Clinical manifestations of PPD may include depressed mood, markedly diminished pleasure in almost all activities, insomnia or hypersomnia, significant weight loss or weight gain, psychomotor agitation or retardation, loss of energy, feelings of worthlessness and excessive guilt, reduced self-esteem and self-confidence, difficulty in concentration, and suicidal ideation (Klainin & Arthur, 2009).

Social Support

Albrecht and Adelman (1987) defined social support as a verbal and nonverbal communication between recipients and providers that reduces uncertainty about the situation, the self, the other or the relationship and functions to enhance a perception of personal control in one's life experience. The National Cancer Institute defines social support as a network of family, friends, neighbors, and community members that is available in times of need to give psychological, physical, and financial help. In addition, Gottlieb (2000) defined social support more broadly and suggested that it is the process of interactions in relationships which improves coping, esteem, belonging, and competence through actual and perceived exchanges of physical or psychosocial resources (Mattson & Hall, 2011).

Stressors

Werner (1993) defined stressors as an external or internal event, condition, situation, and /or cue that has the potential to bring about, or activate significant physical or psychosocial reactions (Werner & Frost, 2000). Ongoing stressors, therefore, can have detrimental effects on both physical and mental health.

Significance of the Study

For Practice

The findings of this study were of considerable value to the maternal and child health care workers. A better understanding was developed for specific culturally related rituals practiced by the postpartum women in Karachi, Pakistan and their effects on women during the postpartum phase. Differentiation between the Pakistani specific stressors and Western specific stressors are reported. Application of these findings will be helpful in developing early interventions and exploring the current treatment approaches to prevent PPD and also highlight the need for health care workers to promptly refer women suffering from PPD to mental health care services. The assessment of social support allowed the maternal and child health care professionals to appreciate the role it plays in Pakistani society and decide accordingly about the social workers involvement in planning and implementing interventions to prevent or treat PPD. The community health care workers, social workers and Non-governmental organizations (NGOs) can play a significant role by utilizing this knowledge to better assist women in the community.

For Policy

As the city of Karachi is known to be mini Pakistan and the population is representative of the entire country, the study provides a basis for health care policy

makers to develop policies related to timely identification of PPD. Policies could be introduced at the hospital level. Protocols involving assessment of PPD could be developed for use as early as during the antenatal period. Protocols could be developed for the assessment of PPD during the postnatal period both when mothers come for follow-up in the outpatient departments and for follow-up by the health care professionals via other methods for example, just a telephone call asking about how they are doing. These policies would help in reducing the PPD prevalence rate through early detection and will reduce the maternal morbidity and mortality rate due to mental health problems. Findings of the study are of considerable value to contemporary nurse administrators, informing strategies to meet the needs of clients visiting the maternal health facility units. Community health nurses can play a vital role in promoting women's health by regular screening for PPD.

For Theory

The findings of the study provide a preliminary guide to develop a situation specific theory for women who develop PPD in Karachi, Pakistan in the future. In addition, the findings give guidance about the specific stressors and the specific mediators and coping resources that lead women to develop PPD or prevent PPD.

For Future Research

This study has implications for future research. Qualitative studies exploring the awareness of PPD or the meaning of PPD among the general population and health care providers in Karachi, Pakistan can be done. Comparative studies among the population from different Asian countries would provide information about similarities and differences among them. Similarly, comparative studies with women from South East

Asia would help in identifying the extent of similarities and differences in this population. Knowledge gained about the holistic perspective of PPD could help in formulating a specific instrument that assesses predictors of PPD in Karachi-Pakistan.

Overview of Remaining Chapters

Chapter 2 provides a literature review regarding the predictors of PPD at the global level and at the South Asia level. It gives information about the psychological, psychiatric, biological, as well as demographic and other predictors at the global level. Then it compares the information about predictors found at the global level and at the South Asia level and highlights the lack of studies at the South Asia level. The gap in the literature at the Pakistan level is also specified.

Chapter 3 is about the methodology of this research, using a quantitative, cross-sectional study design. The Transactional Model of Stress and Coping was used as a framework. The sample was recruited in Karachi, Pakistan from one of the tertiary care hospitals in Karachi. PPD was measured with the Edinburgh Postnatal Depression Scale. The social support was measured with the Multidimensional Scale of Perceived Social Support. The perceived level of stress was measured by Cohen's 10-item Perceived Stress Scale. Abuse was assessed by using the Abuse Assessment Screen. Intrinsic religiosity was measured by the DUREL Religion Index Subscale three and a self-developed questionnaire measuring the demographics and traditional postpartum cultural belief variables that may predict postpartum depression was used for this study.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

Postpartum depression (PPD) is a mental and behavioral disorder associated with puerperium starting from six weeks of delivery (Jones & Coast, 2013). It is a global public health concern because of its distressing effects on the mother, child and family. The World Health Organization defines maternal health as a state of well-being in which a mother has the potential to work effectively and cope with normal stresses and contribute towards the community (Gulamani et al., 2013b). Therefore, if a mother's health is compromised not only does the family suffer but society as well is affected. The prevalence of PPD varies across different countries and cultures (Wu, Chen, & Xu, 2012). It has been reported to affect women worldwide 10-27% in Western societies, 15.8% Arab countries, 16% in Zimbabwe, 34.7% in South Africa, 11.2% in China, 7% in Japan, and 18% in Pakistan (Mina et al., 2012).

Historically PPD was estimated to be absent in non-western countries because of the presence of social support. However, recent estimates suggest a much higher prevalence of PPD in South Asia than in North America (where it is 13%) and western European countries. In Pakistan only 0.4 percent of health care expenditures are devoted to mental health, and of those receiving mental health care, 69% are female patients diagnosed with neurotic and stress-related mood disorders. Among these patients PPD women diagnosed with PPD are not found. One of the reasons that women with PPD are not found in mental health care facilities is underreporting because of the cultural norm. However, PPD is a major concern in Pakistan, with a prevalence range ranging from

28.8% to 94% (Husain et al., 2006; Rahman & Creed, 2007; Rahman et al., 2003) in Pakistan and 63.3% among Asian countries being the highest among Asian countries (Gulamani et al., 2013b; Klainin & Arthur, 2009). Therefore, the purpose of this literature review is to explore the various predictors of PPD.

The literature review was conducted using the data bases PubMed, CINAHL Plus, Health Source: Nursing / Academic Edition and Web of Science from 2000 to 2015. Search terms used were, Predictor of Postpartum Depression, Predictors of Postpartum Depression among Asian Population, and Predictors of Postpartum depression among Pakistani population. After removing duplicates and reading the articles a total of 107 articles were selected from 2000 to 2015. Studies done globally, in Asia, in South Asia and in Pakistan from the year 2011 to 2015 were included. Due to setting the parameters of the literature review to five years a total of 73 articles were read to find out about the predictors of PPD. The types of articles included were peer reviewed, systematic reviews, and meta-analysis.

Global Predictors of PPD

Predictors of PPD may be specific to the women's cultural context. Some predictors that are a major factor for PPD in Western countries may not be responsible for PPD in the Asian countries and vice versa. Globally, predictors of PPD, as found in the literature, include psychological, psychiatric, demographic, other predictors and as well as biological predictors.

Psychological Predictors of PPD

Psychological issues are the main predictors of PPD globally. These issues not only impact the normal functioning of the new mother's mind but also affect the newborn

baby's care, as the mother is the primary caregiver of her new born baby. Therefore, it is important to identify what psychological predictors put the mothers at risk of PPD. Psychological predictors found in the literature have been categorized under the headings of stressful life events, mental stress, perceived lack of social support, and attitudes. These psychological predictors are further explored below.

Life Events

Studies highlight certain life events that predict PPD. These life event predictors are further delineated as stressful in general and specifically, unwanted pregnancy. Stressful events that occur during the prenatal, antenatal, and postnatal phase adversely affect psychological health, and may eventually lead to PPD.

Such events can impact a woman's mental state during pregnancy, especially as her body is also undergoing hormonally influenced biological changes (which help to maintain the pregnancy, support fetal development, and promote labor, and lactation). These biological changes also help prepare the female body to meet the needs of mother and baby during delivery. As soon as the baby and placenta are delivered, the biological changes that protected the mother and fetus become obsolete and the mother's body undergoes dramatic biological changes during the postnatal days. The time to achieve homeostasis (biological balance) depends on how long a woman breast-feeds. It may take many months to regain the biological balance of the nonpregnant state. These biological adjustments impact maternal health including psychological health (Yim, Tanner Stapleton, Guardino, Hahn-Holbrook, & Dunkel Schetter, 2015). Research including mothers from Australia, Canada, United Kingdom, Brazil, France, and Armenia report that mothers who witness violent crime, or experience the threat of being in danger of

being killed are at risk for PPD. Likewise, facing serious illness or injury of a close relative or the death of a family member or close friend increases the risk of PPD. Other events that are generally stressful, such as, the process of shifting home to another place, the experience of childhood adversities, and exposure to devastating natural disasters put victims at risk for postpartum depression. Additionally, experiencing an unexpectedly difficult delivery increases the risk of PPD (Clout & Brown, 2015; Demirchyan, Petrosyan, & Armenian, 2014; Dennis, Heaman, & Vigod, 2012; van der Waerden, Galera, Saurel-Cubizolles, Sutter-Dallay, & Melchior, 2015; Verreault et al., 2014; Yim et al., 2015).

The literature also highlights an association between the impact of the stressful event, time, and PPD. Time may reduce the impact of the event. Demirchyan et al. (2014), conducted a nested case-control study and recruited a sample of Armenian women from a post-earthquake psychological investigation of a large-scale cohort study followed between 1990 and 2012. The study included 146 Armenian women who had survived the 1988 earthquake and had delivered at least one baby after the earthquake. In 2012 the researchers included a section for history of PPD in their instrument which included the Edinburgh Postnatal Depression Scale (EPDS) as perceived at the most depressed state post-delivery of babies. The results showed that twenty mothers had been depressed for at least a month after one or more deliveries. The difference in the meantime of exposure to earthquake between the mothers with PPD and without PPD was not statistically significant. In addition, it was reported that the rate of PPD in this population was similar to the general population suggesting that exposure to earthquake

is not related to PPD and the psychological impact diminishes over a passage of time (Demirchyan et al., 2014).

In addition to stressful life events the literature highlights the impact of unwanted pregnancy on the psychological health of mothers that leads them to suffer PPD. Mothers from Iran, Saudi Arabia, Korea, Jordan and the USA reported a significant relationship between unwanted pregnancy and PPD (Abdollahi, Zarghami, Azhar, Sazlina, & Lye, 2014b; Alasoom & Koura, 2014; Mazaheri et al., 2014; Rubin et al., 2011; Yehia, Callister, & Hamdan-Mansour, 2013; Youn & Jeong, 2013). The strength of these studies lies in the fact that mothers were followed up at multiple time points, ranging from 32 – 42 weeks of pregnancy, up to three to eight weeks postpartum (Abdollahi et al., 2014b; Alasoom & Koura, 2014; Youn & Jeong, 2013).

Mental Stress

Mental stress is caused by various uncontrollable situations present in an individual's surrounding. In the case of a mother who just delivered a baby and at the same time is surrounded with situations that cannot be avoided, she may experience mental stress and be prone to developing PPD. The literature indicates that in postpartum women, mental stress predictors arise from factors such as chronic strain, dissatisfaction in married life, urgent desire to conceive, parenting stress, fear of labor outcome, post-delivery mood swings (maternity blues or baby blues), childcare stress and other psychological stressors (Bener, Burgut, Ghuloum, & Sheikh, 2012; Imsiragic, Begic, Vukovic, Simicevic, & Javorina, 2014; Katon, Russo, & Gavin, 2014; Lee & Park, 2015; Luoma, Korhonen, Salmelin, Helminen, & Tamminen, 2015; Yim et al., 2015; Youn & Jeong, 2013). The antenatal predictors such as the urgent desire to conceive in certain

cultural groups due to expectations from parents and fear of labor outcome are connected to anxiety. Constant stress during the pregnancy state increases the production of cortisol which can have an even greater effect during the puerperal period as the brain is influenced by hormonal changes (Imsiragic et al., 2014).

Social Support

The review of literature also revealed lack of social support during the postpartum phase as a strong psychological predictor of PPD. Studies of postpartum women in Korea, Canada, USA and immigrant women in Taiwan and Canada report perceived low social support as a predictor of PPD (Dennis et al., 2012; Ganann, Sword, Thabane, Newbold, & Black, 2015; Lee & Hung, 2015; Valentine, Rodriguez, Lapeyrouse, & Zhang, 2011; Verreault et al., 2014; Youn & Jeong, 2013). Types of support studied include family support, relational support, husband/partner support, support from mother, and other social support.

Lack of family support, in general, has been reported as a predictor of PPD. Family support includes support from the woman's family, her mother, mother–in-law, and general family. A systematic literature review reported that out of thirteen studies of family support ten reported a significant negative association of family support with PPD, thus more family support lead to lesser chances of developing PPD (Yim et al., 2015). Studies in Korea, Jordan and Qatar reported poor family support as one of the main predictors of PPD (Bener et al., 2012; Lee & Park, 2015; Yehia et al., 2013). Also studies in Taiwan, Istanbul, and Oman found low family support or conflict with a family member to be a predictor of PPD for women with fullterm and preterm births (Al Hinai & Al Hinai, 2014; Chang et al., 2014; Gungor, Oskay, & Beji, 2011). Similarly, a cross-

sectional study done among immigrant Vietnamese women in Taiwan showed that higher scores of family support was associated with a lower level of PPD (Lee & Hung, 2015).

The relational aspects of support such as communication, relationship depth, low control and constraints by partner have a strong link to PPD (Yim et al., 2015). A study done to test relationship theory reported that impaired bonding and loneliness have a direct effect on PPD (Kruse, Williams, & Seng, 2014). A poor marital relationship and dissatisfaction in married life are also strong predictors of PPD among Arabic women of Oman (Bener et al., 2012). Conversely, Australian mothers who are less reluctant to seek or ask for help were more satisfied and had lower levels of PPD (Saligheh, Rooney, McNamara, & Kane, 2014).

A systematic review including research studies from 2000 to 2013 reported lack of support from the partner/husband as one of the strongest predictor of PPD (Yim et al., 2015). In congruence, research studies done in Germany, Egypt, and Dammam – Saudi Arabia report having a non-supportive husband as the strongest predictor of PPD (Alasoom & Koura, 2014; Martini et al., 2015; Mohammed, Mosalem, Mahfouz, & Abd ElHameed, 2014). Similarly, a longitudinal prospective study done in Italy reported that less expectations of support from partner/husband during the pregnancy predicts PPD during the postnatal period. They found that 55.7% mothers who had scored low on the support expectations index scale in the third trimester of pregnancy and had scored low on the Expectancy confirmation scale at three-months post partum had PPD (Gremigni, Mariani, Marracino, Tranquilli, & Turi, 2011). However, a comparative study done on Egyptian women with PPD versus normal controls, reported only a moderate statistical

difference between the groups with regard to attitude of spouse (Saleh el, El-Bahei, Del El-Hadidy, & Zayed, 2013).

In a systematic literature review that included 199 individual studies from the year 2000 to 2013 reported poor or no support from a woman's mother as a predictor of PPD (Yim et al., 2015). Similarly, a study in Finland reported that a poor relationship with one's own mother was a predictor of PPD (Luoma et al., 2015). A cross-sectional study done with Japanese women who had posttraumatic stress disorder showed that social support had a direct effect on postpartum symptoms (Sugimoto, 2013). A study done with German mothers with very low birth weight of their baby at one month postpartum reported, very low social support as a relevant risk factor for PPD (Helle et al., 2015). Additionally, inferences drawn from research studies conducted among postpartum women in France, Finland, and Germany indicate that decreased support increases loneliness, decreases job interest and decreases the sense of belonging. (Kruse et al., 2014; Luoma et al., 2015; van der Waerden et al., 2015).

Attitudes

Several attitude-related factors predict PPD. Review of the literature indicates that research studies done with populations of postpartum women from Canada, Germany, Finland, Egypt, Canada (Ontario), Non- Hispanic Caucasian women in the US, Iran (Isfahan), Armenia, Jordan (Arabic Muslims) and Japan report similar attitude-related factors that are responsible for PPD. These attitude-related factors reflect how women think and treat themselves and think about and treat their new born babies. The factors related to women having PPD are poor self-perceived mental health, low self-esteem, diminished life satisfaction, poor perception of physical health, not perceiving oneself as

reliable and a generally negative perception of self. Additionally, the women's attitudes related to behaviors such as health promotion behavior and substance abuse, are also reported as a risk factor of PPD. The factors related to the baby are negative expectations of baby, negative attitude of parents towards the baby, satisfaction with baby's gender, and maternal perception of the recent birth experience (Bell et al., 2015; Demirchyan et al., 2014; Dennis et al., 2012; Ganann et al., 2015; Holbrook & Kaltenbach, 2012; Luoma et al., 2015; Martini et al., 2015; Mazaheri et al., 2014; Saleh el et al., 2013; Sugimoto, 2013; Yehia et al., 2013).

Psychiatric Illness Predictors of PPD

The review of the literature revealed several psychiatric illness predictors of PPD. Unlike psychological predictors of PPD, which tend to be situational, psychiatric predictors of PPD are chronic. Psychiatric illnesses predicting PPD include depression, anxiety, personality disorder, and other mental health history.

Depression

Research studies done with a population of postpartum mothers in Australia, Finland, Korea, France, Canada, Hungary, USA, and Malaysia indicate that those mothers who have depression during pregnancy also have depression after child birth, that is, PPD (Gaillard, Le Strat, Mandelbrot, Keita, & Dubertret, 2014; Lee & Park, 2015; Liu & Tronick, 2013; Luoma et al., 2015; Nagy, Molnar, Pal, & Orvos, 2011; Parker et al., 2015; Weobong et al., 2015; Youn & Jeong, 2013). A systematic review consisting of 16 studies reported that antenatal depression, recurrent and concurrent depression alone maybe stronger specific predictors of maternal depression (Sanger, Iles, Andrew, & Ramchandani, 2015). Researchers studying PPD in the US and Egypt report that women

with a history of depression during pregnancy and a history of taking antidepressants during pregnancy were often diagnosed with PPD (Katon et al., 2014; Mohammed et al., 2014). Depression may be compounded by other factors such as substance abuse and immigration, which are also predictors of PPD (Ganann et al., 2015; Holbrook & Kaltenbach, 2012). Furthermore, researchers studying women from Saudi Arabia and the US found self-reports of a family history of depression to be one of the strongest predictors for postpartum depression (Alasoom & Koura, 2014; Cline & Decker, 2012; Kimmel et al., 2015).

Anxiety

Anxiety is an important predictor of PPD. It affects the mother when she has high anxiety during pregnancy, co-morbid anxieties, trait anxiety, and generalized anxiety disorder. Research done among postpartum women in Finland with an aim to explore long term trajectories of maternal depressive symptoms and to determine the antenatal predictors of PPD reported that high antenatal anxiety sub-score on the EPDS was a predictor of PPD (Luoma et al., 2015). In addition a study conducted in France with the aim of determining maternal depression trajectories from pregnancy until a child's fifth birthday reported that the predictor that was associated with increased likelihood of depressive symptoms at any moment during follow-up was anxiety during pregnancy (Luoma et al., 2015; van der Waerden et al., 2015). Another study done with a non-Caucasian ethnic group of mothers in Canada showed that a history of emotional problems with co-morbid high levels of anxiety during pregnancy and after childbirth also predicted PPD (Verreault et al., 2014). In addition, research conducted on women in Iran showed that trait anxiety during pregnancy and after childbirth predicted PPD both

45 days after delivery and during the postpartum period (Alipour, Lamyian, & Hajizadeh, 2012). Further, a longitudinal study revealed that social phobia and generalized anxiety disorder during pregnancy are also predictors of PPD (Coelho, Murray, Royal-Lawson, & Cooper, 2011).

Mental Health History

Personality disorders in women can be predictors of PPD. A cross-sectional study conducted in Taiwan found PPD to be associated with a personality characterized by neuroticism (Chang et al., 2014). On the other hand, a research study conducted in Croatia reported less symptoms of PPD in mothers who were characterized as having a personality trait of openness using the Big Five Inventory questionnaire (Imsiragic et al., 2014).

Having a history of other mental health problems may also predict PPD. These predictors include mental health problems before pregnancy such as lifetime psychiatric disorders, somatic disorder, and post-traumatic stress. In France and Turkey women with mental health problems before pregnancy, that continued to be present in the first trimester of pregancy, were found to have PPD after childbirth which lasted until the child's fifth birthday (Kirkan et al., 2015; van der Waerden et al., 2015).

Studies conducted in Germany and Saudi Arabia report that a lifetime history of psychiatric illness puts a mother at risk of PPD (Alasoom & Koura, 2014; Helle et al., 2015). Likewise, research done in Turkey reports the presence of somatic disorders during the first trimester of pregnancy as a risk factor for PPD (Kirkan et al., 2015). Additionally, a cross-sectional study done with Japanese women reported that women

who suffer from post-traumatic stress disorder following childbrith also suffer from PPD thus indicating post-traumatic stress disorder as a predictor of PPD (Sugimoto, 2013).

Demographic Predictors of PPD

This review of the literature revealed several socioeconomic and demographic predictors of PPD. These consisted of demographic characteristics of financial status, employment status, marital status, and age of the mother.

Demographic Characteristics

Demographic characteristics related predictors of PPD include socioeconomic status, financial status, employment status, marital status, and age of mother. Subjective low socioeconomic status is the most consistent and significant predictor of PPD as reported by research among non-Hispanic, White and African American women in the U.S.A. (Dolbier, Rush, Sahadeo, Shaffer, & Thorp, 2013). Poor living standards are usually associated with poor socioeconomic status, however, even when poor living standards exist for other reasons, such as post disaster or post earthquake decade, has been reported as an independent predictor of PPD (Demirchyan et al., 2014).

Financial status is specifically reported to be a predictor of PPD. Research studies conducted among immigrant women in Canada, immigrant Vietnamese women in Taiwan, women in Qatar and results from regional and national cross-sectional Canadian surveys reported low household income to be an independent predictor of PPD (Bener et al., 2012; Dennis et al., 2012; Ganann et al., 2015; Lee & Hung, 2015). Additionally, studies done with women from Egypt, Iran, and Pakistani women living in the UK showed an association of financial diffulties after delivery with PPD (Husain et al., 2012; Mazaheri et al., 2014; Mohammed et al., 2014).

Employment status is also an important predictor of PPD. A cross-sectional study with Iranian (Isfahanian) mothers and a prospective cohort study conducted in Sabah-Malaysia reported maternal occupational history to be an important predictor of PPD (Mazaheri et al., 2014; Yusuff, Tang, Binns, & Lee, 2015). A prospective cohort study done with mothers in Seattle, Washington showed that the prevalence of PPD was high among unemployed women (Katon et al., 2014). In addition, another prospective cross-sectional study done with Arabic women in Qatar reported that among the women who were depressed the majority were housewives while others had a professional occupation, manual occupation, were business woman and worked in the army and police (Bener et al., 2012). In both studies it is indicated that being a house wife either by choice or because of being unemployed puts the mothers at risk of PPD. On the contrary, a study done in northern Taiwan reported that women who had low income and were part time employed are at higher risk of PPD as compared to those who are full time employed. (Ho, Chang, & Wan, 2013). This suggests that employment of women helps her to fulfill her daily necessities and her inability to fulfill her needs even after being part-time employed puts her at risk of PPD during the postpartum period.

Educational status of the mother or her partner is also an important predictor of PPD. A study done in Chicago, USA among mothers living with HIV, reported an association between mothers not being a high school graduate with PPD (Rubin et al., 2011). Additionally, a cross-sectional study in Egypt and a prospective study in Mazandaran, Iran showed that the occurrence of PPD is high among mothers whose husbands are less educated (Abdollahi et al., 2014b; Mohammed et al., 2014). Similarly,

a case control study done with Turkish women specified that partners' educational level lower or equal to eighth grade was a significant predictor of PPD (Gungor et al., 2011).

The literature also shows marital status to be an important predictor of PPD. Studies done with Egyptian and Hungarian women indicate that unsatisfied or disturbed marital relationship status is a predictor of PPD (Nagy et al., 2011; Saleh el et al., 2013). Another study showed that not living with one's partner, the father of their child, is one of the strongest predictor of PPD (Staehelin, Kurth, Schindler, Schmid, & Zemp Stutz, 2013).

Age of the mother is also a predictor of PPD. Studies concerning women from Switzerland and India (rural Jharkhand, Orissa and eastern India) report that older age is associated with elevated levels of PPD (Prost et al., 2012; Staehelin et al., 2013). Similarly, a study done with Arabic women in Qatar specified that women above the age of 35-years-old are at higher risk for PPD compared to younger women (Bener et al., 2012). However, a cross-sectional study done with Australian women and a prospective cohort study done with women in Seattle Washigton, USA, showed that women of younger age with mean age of 28.5 (6.3%) had significant symptoms of PPD as compared to older women with a mean age of 31.7 (5.9%) who did not have PPD (Katon et al., 2014). These studies indicate that women on each end of the reproductive age continuum are at higher risk of PPD**.**

Other Predictors of PPD

Violence

Exposure to violence may not only be limited to home but can also be obvious in the form of aggressive behavior at the workplace which directly or indirectly affect the

socioeconomic status of an individual. Factors such as poverty and financial instability may lead to aggressive behaviors (Yates, Dodds, Sroufe, & Egeland, 2003). A follow-up study done with a population of women from eastern Turkey and a prospective observational study done with Latinas reported that exposure to domestic violence during pregnancy and recent intimate partner violence is associated with PPD (Kirkan et al., 2015; Valentine et al., 2011). Further, two research studies done among non-Caucasian ethnic women in Canada and women belonging to a middle-class community in France report an association of sexual and physical abuse with PPD (Gaillard et al., 2014; Verreault et al., 2014).

Rituals

Rituals are a set of activities performed by different communities. Different rituals are practiced by different cultures during the postpartum phase. The celebration of a woman's transition or progression from birth to childrearing is influenced by her socioeconomic and demographic status (Raven, Chen, Tolhurst, & Garner, 2007). Traditional postpartum rituals present in a culture could also be a risk factor of PPD. For instance, in Taiwan, there are rituals during the postpartum period that consist of restrictive behaviors such as not going outside, washing one's hair, bathing or showering, touching cold water, exposing oneself to drafts, carrying heavy objects, and squatting (Ho, Li, Liao, Su, & Su, 2015). M. Ho, et al. (2015), conducted a study to find out the correlation between these restricted behaviors and mental status of postpartum women and reported that restriction of bathing and showering predicted low depression level whereas touching cold water and squatting were behaviors related to high depression (Ho et al., 2015). In addition, female gender of the newborn is also reported as a predictor of

PPD by studies done with German and Egyptian women (Helle et al., 2015; Saleh el et al., 2013).

Surrounding Environment

Environment plays an important role in the socioeconomic status and health of an individual. Environment means the physical properties, immediate surroundings, crowding and exposure to settings such as work environment and neighborhood (Evans & Kantrowitz, 2002). According to Evans and Kantrowitz (2002), "…socioeconomic status (SES) is associated with environmental quality and, in turn, that environmental quality affects health" (p.303). The environment of the mother is associated with mental health during the postpartum period. A research study done in Boston, USA, reported that the distance to the hospital was a predictor of PPD among mothers whose babies were admitted to the neonatal intensive care unit (Alkozei, McMahon, & Lahav, 2014). Another study done with Egyptian women reported that residence of a woman in a rural area is one of the biopsychosocial predictor of PPD. In this study, it was reported that of women who were in the PPD group, 36.7% were urban residents, and 63.3% were rural area residents. Whereas, among women who did not have PPD 41.7% were urban residents and 58.3% were rural residents and was significantly different among the group with postpartum depression and the control group consisting of healthy postpartum women (Saleh el et al., 2013). Work-related stressors after childbirth influence the mental health of the woman. A workplace where a woman has less automony to schedule her work timings, little or no support from her colleagues, and has lower control over her work is considered a difficult working environment for a working mother (Dagher et al., 2009). A study conducted with mothers from Oman reported that difficulties at work was

significantly associated with high scores of PPD on the EPDS at two and eight weeks post partum (Al Hinai & Al Hinai, 2014).

Self-Efficacy and Life Style

Self-efficacy is an indiviudual's belief of his or her power to plan and take actions to reach to a particualr goal (Han, Chu, Song, & Li, 2014). The socioeconomical status in the form of environmental factors has a direct and indirect influence on self-efficacy (Han et al., 2014). The predictors of PPD include parenting self-efficacy, unplanned birth, and a history of risky lifestyle choices. Researchers have reported a link between parenting self-efficacy (determined by maternal psychopathology, maternal background factors, childhood parenting experiences and maternal and paternal insecure attachment style) with PPD (Cak et al., 2015; Kohlhoff & Barnett, 2013). A lower sense of parenting competence is a strong predictor of PPD (Kruse et al., 2014; Rubin et al., 2011). Unplanned birth is also a risk factor for PPD. A research study conducted with new mothers in Taiwan highlighted unplanned birth as a risk factor of PPD (Ho et al., 2013). This may be due to feeling unprepared, and therefore having poorer parental self-efficacy.

High risk lifestyle choices have also been found to be predictive of PPD. Multiple sex partners during preconception was associated with increased PPD among a sample of HIV positive mothers in the U.S.A. (Rubin et al., 2011). A study done in Hungary reported the use of alcohol and a family history of alcohol problems were significant risk factors for PPD (Nagy et al., 2011).

Biologic Predictors of PPD

My review of the literature revealed several biologic predictors of postpartum depression. Namely maternal physical health, infant health, and birth related complications. Within each of these categories, a variety of disease processes and genetic abnormalities are represented, in addition to medical mishaps.

Maternal Physical Health

Physical health of the mother during the postpartum period has been associated with PPD. A systematic literature review from 2000 to 2013 revealed that the strongest biological predictors of PPD are hypothalamic pituitary adrenal dysregulation, inflammatory processes, and genetic vulnerabilities (Yim et al., 2015). Morbidities such as vaginal bleeding, kidney infection, nausea, preterm labor, being on bedrest, injury sustained in a car accident, hypertension, and blood transfusion are also reported to be associated with PPD (Sundaram, Harman, & Cook, 2014). In addition, studies have indicated an association of genitourinary infection, sexually transimitted disease, premenstrual syndrome, anemia, and high levels of T3 and cortisol with PPD (Cunningham et al., 2015; Gungor et al., 2011; Mazaheri et al., 2014; Saleh el et al., 2013).

Other factors affecting health have also been associated with PPD. Pre-pregnancy medical illnesses such as diabetes and neurological conditions, and health risk behaviors such as smoking, are also risk factors for PPD (Katon et al., 2014). Poor maternal sleep has also been reported as a risk factor for PPD (Clout & Brown, 2015; Park, Meltzer-Brody, & Stickgold, 2013). A study done with women in Oman reported that sickness of

a family member is related to high scores on the EPDS at two weeks postpartum (Al Hinai & Al Hinai, 2014).

Conversely, while all the above mentioned physical conditions have been associated with increased likelihood of PPD, a study done to examine racial/ethnic disparities reported that gestational diabetes in African-American mothers decreased the likelihood of PPD (Liu & Tronick, 2013).

The parity of the mother has also been shown to have a significanat effect on PPD (Sugimoto, 2013). In fact high parity has been reported as a protective factor for PPD (Staehelin et al., 2013). However, problems with breast-feeding have been reported to increase the odds of PPD (Imsiragic et al., 2014; Staehelin et al., 2013).

Infant Health Predictors of PPD

A systematic review of 31 studies showed that newborn ill health, stillbirth, or neonatal deaths are predictors of PPD (Weobong et al., 2015). Studies of Australian mothers, Egyptian mothers and mothers who survived earthquakes reported that an unhealthy baby or delivery of a dead baby contributed towards PPD (Clout & Brown, 2015; Demirchyan et al., 2014; Saleh el et al., 2013). Infant crying problems, very low birth weight babies, and babies with severe congestive heart failure are also reported as risk factors for PPD (Helle et al., 2015; Solberg et al., 2011; Staehelin et al., 2013).

Birth Related Complications Predictors of PPD

Peripartum/postpartum related complications were found to be a determinate of PPD in a systematic review of 31 studies (Weobong et al., 2015). Similarly, research studies done with non-Hispanic Caucasian women in the U.S.A., and Egyptian women,

reported that immediate complications after delivery have significant association with PPD (Bell et al., 2015; Mohammed et al., 2014).

Type of delivery has been reported as a strong predictor of PPD on multiple heirarchal regression among Arabic Muslim Jordanian women ($p = < 0.001$) and women in Egypt reporting a statistically signficant difference among women with PPD and healthy postpartum women ($p = < 0.001$) (Saleh el et al., 2013; Yehia et al., 2013). Specifically, studies done with Australian mothers, mothers in rural Jharkahnd and Orissa in eastern India, and Arabic women in Qatar, reported that the prevalence of PPD is higher in mothers who had a Caesarian section delivery (Bener et al., 2012; Clout & Brown, 2015; Prost et al., 2012).

On the other hand some research studies have shown no associaton between mode of delivery and PPD. For example studies of women in the U.S.A. and Iran revealed no association of PPD with type of birth at 2 months, 4 months, and at 8 months of the postpartum period (Bell et al., 2015; Sadat et al., 2014).

Predictors of PPD in South Asia

The review of the literature revealed few research studies conducted in South Asia compared to those in other continents and regions of Asia. South Asia is comprised of eight countries namely, Afghanistan, Bangladesh, Bhutan, India, Nepal, Maldives, Pakistan and Sri Lanka. The literature review revealed research conducted only in three countries of South Asia namely India, Bangladesh, and Pakistan.

Looking at the postpartum predictors noted in studies conducted at the global level, there are some predictors that South Asian women have in common with women across the globe. These common predictors include unwanted pregnancy, stillbirth or

neonatal death, small infant size (Prost et al., 2012), having a fussy and difficult child, a poor relationship with one's husband, and intimate partner violence (Kabir, Nasreen, & Edhborg, 2014), low level of education (up to primary level) (Gupta, Kishore, Mala, Ramji, & Aggarwal, 2013; Humayun, Haider, Imran, Iqbal, & Humayun, 2013; Patel, Rodrigues, & DeSouza, 2002; Zahidie & Jamali, 2013), previous psychiatric history, psychiatric history in first degree family members, poor relationship and support from one's husband (Gupta et al., 2013; Patel et al., 2002), type of family setup and no social support (Husain et al., 2006; Kazmi, 2013), stressful life events, occupation of pregnant women, fear of childbirth, history of harassment, miscarriage, abortion, number of caesarean section, number of episiotomies, number of planned pregnancies, and age less than 18 years at marriage (Humayun et al., 2013; Zahidie & Jamali, 2013).

The literature review revealed predictors specific to the postpartum women in South Asia that were not found common with the predictors at global level. PPD demographic predictors, psychological predictors and other predictors in studies that assessed south Asian women are low asset ownership (Prost et al., 2012), belonging to the lower socioeconomic class, overcrowding, having more than two children, more than one girl child, pressure and expectations to deliver a male child, poor relationship and support from in-laws, experiencing hunger (Gupta et al., 2013; Patel et al., 2002), marriage related issues such as low frequency of intercourse (less than or equal to two times per week), marital rape, preterm birth reproductive rights, decision making for marriage by parents (Humayun et al., 2013; Zahidie & Jamali, 2013), working status such as working women in Islamabad, Pakistan (Fatima, Khalid, Ahmed, & Malik, 2013), and

housewives and primigravida in Karachi, Pakistan (Rukh, Kafeel, Naveed, & Sarwar, 2013).

The literature on PPD predictors for women in the South Asian region is limited compared to the literature found at the global level. The information found about some PPD predictors at the global level was not assessed in women at the South Asia level. This information includes information on psychological predictors of attitude, socioeconomic and demographic predictors of rituals and environment, and the biological predictors of maternal health.

Predictors of PPD in Pakistan

The predictors of PPD found in my literature review for Pakistani women were stressful life events, educational status, occupation of pregnant women, having four or more children, having more daughters and fewer sons or no son at all, overcrowding of household, fear of childbirth, marriage related issues such as relationship with husband, lower frequency of intercourse (i.e. less than or equal to two times per week), marital rape, history of harassment, miscarriage, abortion, number of caesarean sections, number of episiotomies, number of unplanned pregnancies, age less than 18 years at marriage and decision making for marriage by parents (Humayun et al., 2013; Zahidie & Jamali, 2013).

The number of children and the number of daughters is associated with a higher score on an anxiety scale and the number of daughters also shows a negative association with the social support scales (Waqas et al., 2015). A sample of postpartum women in a hospital setting in Islamabad revealed PPD to be higher among working women than non-working women (Fatima et al., 2013). Similar findings were reported by another study conducted among a sample of women from Lahore during the prenatal period

(Waqas et al., 2015). On the other hand, a study done with a sample of postpartum women in Karachi reported higher occurance of PPD among women who were housewives (Rukh et al., 2013). Further a comparison done with postpartum women in Karachi suggested that the incidence of PPD is more common in primigravida (68%) as compared to the multigravida (Rukh et al., 2013). Additionally, Pakistani women who were older mothers, age greater than 35 years old, who experienced general domestic violence, battering, and abuse from their husbands, were found to be at risk for PPD. However, previous miscarriage was not found to be related to antenatal depression in a cross-sectional study conducted in a Lahore urban tertiary care unit (Humayun et al., 2013).

Social support and type of family structure influences the occurrence of PPD. A study done with a sample of women from Hazara Division, Pakistan reported that the higher the social support, the less likely the women were to develop PPD and vice versa. Family structure also plays a significant role in terms of social support. Those living in extended family have more support and thus are less likely to develop PPD as compared to those living in nuclear families (Kazmi, 2013). Another study done in Rawalpindi – Pakistan reported that high depression scores were reported among postpartum women who had no social support, higher stressful life events, and psychological distress during the antenatal period (Husain et al., 2006).

Mental health history illness was found to be a predictor of PPD among Pakistani women, which is similar to the findings of literature for predictors of PPD globally. The cross-sectional study conducted in an urban tertiary-care unit in Lahore, Pakistan, also

reported that women having a personal history of psychiatric illness and family history of psychiatric illness had increased rates of PPD (Humayun et al., 2013).

Summary

This literature review included research studies from across the globe that identified predictors of PPD. For better understanding, the predictors of PPD were described at the global level, South Asia level, and at the Pakistan level. The global level consisted of research studies from all the continents except for the region of South Asia. The South Asia level consisted of studies mainly from three countries i.e. India, Pakistan and Bangladesh. For better understanding the predictors were categorized as psychological predictors, psychiatric predictors, socioeconomic and demographic predictors, and biological predictors. The predictors found under these categories were subcategorized. The categories under the psychological predictors are life events, mental stress, social support, and attitudes. Likewise, the categories under the psychiatric predictors were subcategorized as depression, anxiety, personality disorder, and mental health history. The socioeconomic and demographic predictors were subcategorized as demographic characteristics, employment status, educational status, marital status, and the other predictors were categorized as age, violence, rituals, surrounding environment, and self-efficacy and lifestyle. Further the biological predictors were categorized as maternal physical health, infant health, and birth related. There were several predictors that were common among the South Asian and women at the global level. However, there are also some predictors present at the South Asia level that were specific to the South Asian women. This suggests that different cultures have different predictors of PPD. Therefore, there is a need to explore predictors that are specific to each culture so that

women can be identified for PPD before their condition becomes worse. The weakness of this literature search is that only research studies published in English are included. So, there is a possibility that a research article published in any other language besides English may have good information on the topic. The strength of the literature review lies in the fact that all kinds of research studies conducted at any place in the world are included. The selected research studies are selected from an extensive number of literatures.

CHAPTER THREE

METHODOLOGY

Research Design

A quantitative, cross-sectional approach was used for this study (Polit & Beck, 2012). This research design allowed determination of a point-in-time prevalence of PPD in this sample and classification of the postpartum women in the sample as those with PPD and those without PPD. Both a descriptive and analytical approach of cross-sectional study was used. The descriptive cross-sectional approach helped in describing the prevalence of PPD among women in Karachi, Pakistan. Whereas, the analytic cross-sectional approach allowed comparison of women with and without PPD when exposed to different stressors, such as specific sociodemographic, intrinsic religiosity, abuse, social support, perceived stress and traditional postpartum cultural beliefs (Alexander, Lopes, Ricchetti-Masterson, & Yeatts, n.d.; Polit & Beck, 2012).

Assumptions Pertinent to this Study

The theoretical paradigm for the study is the post positivist paradigm. The post positivist paradigm refers to a scientific method that is based on the rationalistic, empiricist philosophy. It suggests that the phenomenon can be explained by observations and measurements that predict the relationship (Mackenzie & Knipe, 2006) .

For this study, the Transactional Model of Stress and Coping (Lazarus & Folkman, 1987) was used as a framework. The concepts of this theory guided the study to better understand the phenomenon of postpartum depression (PPD) and culturally specific stressors or risk factors of PPD, as well as social support, as they exist in the

context of Karachi, Pakistan. The theory and the application of its concepts to this study are discussed below:

Transactional Model of Stress and Coping

The Transactional Model of Stress and Coping is one of the approaches in the studies of stress. It evolved from two approaches of stress studies in the past. The first approach focuses on the psychological and physiological response to a stressor, whereas the second approach explains stress as a response to the negative stressors in the environment. The third approach to stress theories was evolved by Lazarus and Folkman in the 1960s and 1970s. They view stress as a transactional process that is specific to individuals and the interaction of the person with the environment (Graham, 2015; Lazarus & Folkman, 1987; Quine & Pahl, 1991).

The core assumptions of this theory are that stressful experiences are constructed by the interactions between the person and the environment. These interactions are mediated by two processes in response to the external stressor. The key concepts of this theory are primary appraisal, secondary appraisal, coping efforts and outcomes of coping (Graham, 2015; Quine & Pahl, 1991).

Primary appraisal is an individual's judgment about the stressful event. The individual evaluates the severity of the stressor and makes judgments of whether they are motivational or stressful, hindering goal achievement and evaluating the cause of the stress (Quine & Pahl, 1991). In this current study, this concept would help us to understand the perception of an individual mother who has PPD. It will allow understanding the effects of negative and positive perceptions during the postpartum period.

Secondary appraisal is about the evaluation of how well the stressor can be controlled and emotionally managed and what coping resources are available (Quine & Pahl, 1991). In the Pakistani culture male dominance is pertinent. This concept would help us identify the level of control Pakistani women have when they face stressors. It will help us understand the decision-making powers they have and what kind of control they feel they have over the situation. It will also help us understand the societal, cultural, and family level coping resources pertinent to Pakistani postpartum women.

The coping efforts are the strategies used by an individual to mediate the primary and secondary appraisals. These efforts could be problem focused or emotion focused. Problem focused coping involves seeking more information about the stressor and trying to solve the problem, whereas emotion focused coping seeks resources that effect coping by changing the individual's thoughts and feelings about the stressor. Meaning based coping is also a sub-concept that refers to positive techniques to handle the problem (Quine & Pahl, 1991). The nature of coping depends on the kind of resources available in the environment. Five categories of coping resources are described by Folkman and Lazarus (Quine & Pahl, 1991). These resources could be utilitarian such as socioeconomic status, health, energy or morale, social networks such as close interpersonal relationships, general and specific beliefs such as self-efficacy, and problem solving skills such as intellectual skills (Quine & Pahl, 1991). This concept will guide our understanding of the unique efforts of coping used by the women in Pakistan. It will help us explore the answers to questions regarding how women handle their problems. Does the culture allow women to express their problems freely? Who is the decision maker in the family to resolve problems being faced by women? Is it she herself, the husband,

mother-in-law or some other authoritative person? On the other hand, we would also be able to understand what kind of feelings the women have about the way the problems are managed in their culture.

The outcomes of coping draw our attention to emotional wellbeing, functional wellbeing, and health behaviors. The outcomes of coping can be affected by dispositional coping style. The disposition coping style refers to the stability of personality trait and social support that moderates the perceptions and coping abilities. The positive dispositional coping styles is characterized by optimism and information seeking. Optimism is a more effective coping style as there are positive perceptions about the outcome whereas the information seeking needs to be monitored (Graham, 2015). This construct will help us to understand the outcomes of the coping efforts pertinent to Pakistani women. It will help us to understand the feelings of the mother, about her functional status. In addition, it will also help us understand the general health behaviors of the women in Pakistan during the postpartum period. It will guide us to understand whether their behaviors are more prone to avoidance or seeking solutions by approaching health care professionals or others.

Conceptual Model of the Study

Based on the concepts of the Lazarus & Folkman Transactional Model of Stress and Coping, a conceptual model titled ‘Postpartum Depression Predictor Model’ was developed for this study, as shown in figure 1.

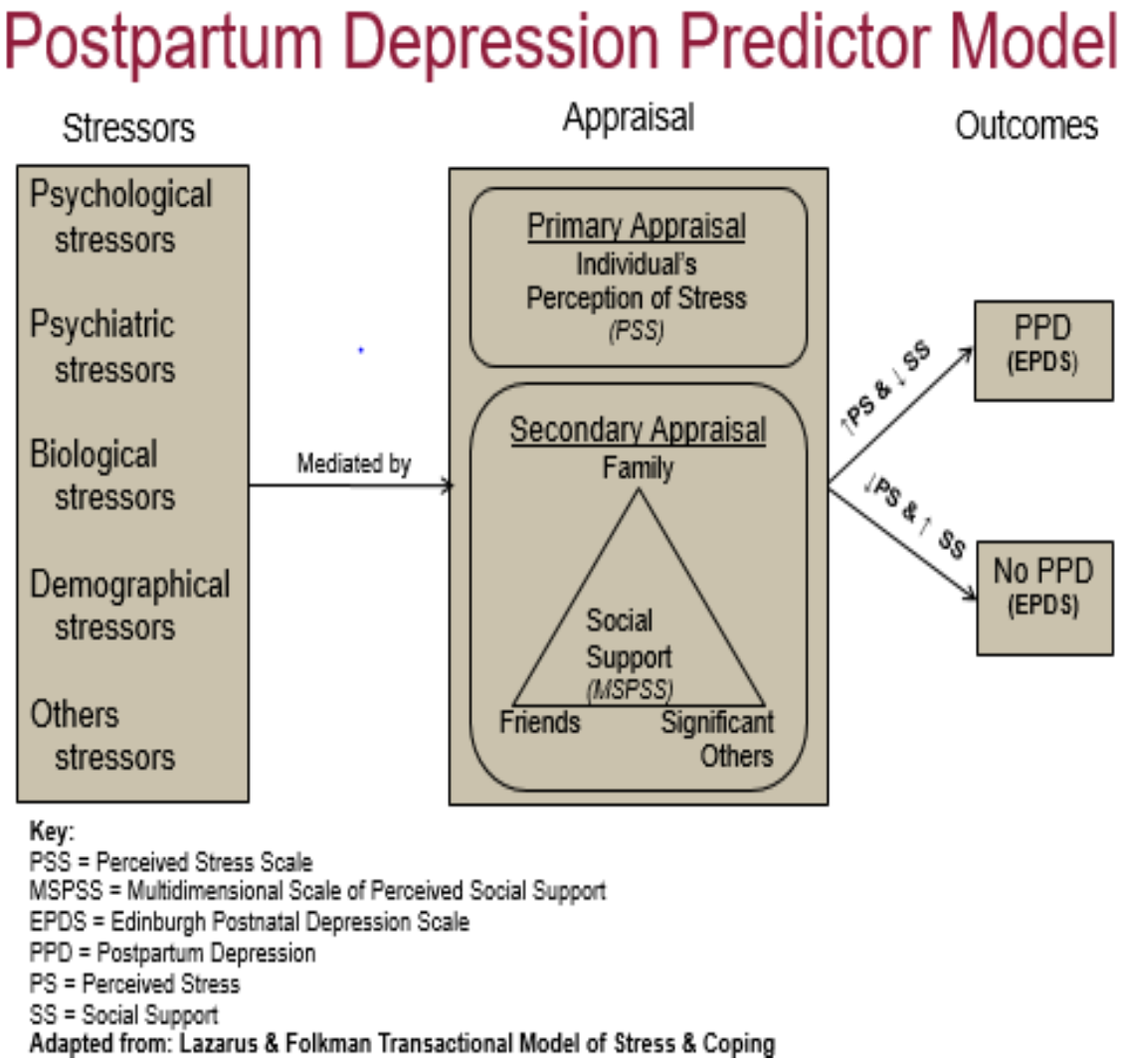

Figure 1. Postpartum Depression Predictor Model

The stressors found in the environment of the postpartum women were measured by a self-developed questionnaire that consisted of sociodemographic variables found important, and cultural beliefs about postpartum rituals identified in the literature, as well as a validated scale to measure domestic violence, 'the Abuse Assessment Screen (AAS)'. These stressors are mediated by two processes, namely, the primary appraisal and the secondary appraisal. The primary appraisal which is the individual's judgement

about stress was measured by Cohen's 10-item Perceived Stress Scale (PSS). Whereas, the secondary appraisal is about the evaluation of how well the stressor can be controlled and emotionally managed and what coping resources are available. This was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) which contains three subscales for family support, friend's support, and significant other's support. The outcome was measured by Edinburgh Postnatal Depression Scale (EPDS) to identify the women with postpartum depression and women without postpartum depression.

Hypothesis and Questions

The hypothesis of the study is that the women who have increased perceived stress and decrease in social support are more likely to experience PPD than the women who have less perceived stress and increased social support during their postpartum period.

Research Questions

- What is the perceived level of stress among women with and without postpartum depression in Karachi, Pakistan?
- What is the perceived level of social support among women with and without postpartum depression in Karachi, Pakistan?
- Is there an association between sociodemographic variables, intrinsic religiosity, perceived stress, perceived social support, and abuse with PPD in Karachi, Pakistan?
- What are the stressors that predict postpartum depression in Karachi-Pakistan?

Method

Sample

The sample was recruited in Karachi, Pakistan. Karachi consists of a population of about 21 million people who belong to different religions, races, and ethnicities. The majority of the population is migrants from India after the 1947 independence. Besides the Indian immigrants, the Pashtu, Bengalis, Iranian (who fled the 1979 revolution), Palestinians, Burmese, Pathans, Sindhi, Punjabi, Gilgiti, Balochi, and Afghani make up the rest of the population (Mirza, 2015; Quraishi, 2015). Karachi is a beautiful mix of diverse cultures and traditions (Mirza, 2015). Many refer to Karachi as mini Pakistan because of its diversity.

The sample was recruited from one tertiary care hospital in Karachi, Pakistan. The hospital is a private, non-profit hospital that provides obstetrics and gynecology care to the women and their newborns, besides offering other services. The women coming to this hospital are mainly from the middle socioeconomic class but there are also women from higher socioeconomic backgrounds.

Purposive convenience sampling was used for this study. Women were recruited from the obstetrics and gynecology outpatient departments when the women came to visit the gynecologist after childbirth during the postpartum phase. A priori sample size calculation was done using a small to medium effect size based on findings in the literature. According to the Linear Regression power analysis a sample size of 185 observations would achieve 80% power at a 0.05 significance level. With 20% attrition, the goal was to obtain a sample of 230 women.

Interested participants were given detailed information about the study. Informed consent was obtained after they agreed. The eligibility criterion was women who had delivered a baby and were in the post-partum phase. All types or modes of deliveries within the last six weeks were included. All ethnicities, religions and women ages 16 and above with any number of children were included. The legal age of adulthood is 18-years-old for a male and 16-years-old for a female ("Pakistan - Age of Consent," 2002) so women younger than 16 were excluded. Postpartum women with other types of diagnosed mental health disorders (other than PPD) were excluded.

Protection of Human Subjects

The human dignity and rights for all participants was protected by providing study information before taking an informed consent in Urdu or English, and allowing participants to withdraw from the study if they felt uncomfortable at any time. A script was prepared to guide the researcher and a certified data collector as they approached potential participants while they were waiting in the outpatient clinics. While recruiting the sample, twenty women refused to participate in the study. The reasons they gave for why they did not want to participate included being in a hurry to attend their child at home, being in a hurry as their husband had to go back to his office, and a few whose husbands or mother in laws did not allow them to participate, as they were suspicious that information could be given to the media.

Privacy was provided by having the women participate in a room for women where they came for breast feeding or changing diapers for their babies without their attendants. The room was big enough to ensure that other women could not hear.

In addition, before conducting the study the proposal was submitted to the institutional review board of Loma Linda University and approved. Further, permission was granted by the Health Ministry in Karachi and the administration of the tertiary care hospital from where the participants were recruited. The women were recruited on a voluntary basis. Their willingness was sought after briefing them about the research during their out-patient visits. In addition, the informed consent form was given to the women to read before the interview. It provided complete information written in simple, clear, concise and user-friendly language. As Urdu is the national language in Pakistan the informed consent (and the questionnaire) was translated into Urdu. Confidentiality and anonymity was maintained by protecting identifiable information about the mother. The mothers were not asked for their name and medical record number on the questionnaire. In addition, privacy was given to mothers while they were filling out the questionnaires, both for those who were able to read and those who were unable to read and therefore needed to be assisted by the researcher. The data was protected and secured by keeping all the consent forms and the completed questionnaires in a safe place which was locked and to which only the researcher had access. After the data was entered into the computer, a backup was created in a separate location from the original. All the computers and the storage devices were kept locked with a strong password. Once the data was entered and analyzed it was handed over to the University for safe storage.

Procedure

All postpartum women coming for follow-up visits in the outpatient departments (OPD) of the tertiary care hospital who chose to participate in the study were screened for postpartum depression using the Edinburgh Postnatal Depression Scale (EPDS) as part of

the survey (questionnaire) they completed. The survey also included demographics and other variables found to be associated with PPD in my literature review. English and Urdu versions of the questionnaire were used, according to the participant's choice. Those who were able to read and understand were given these questionnaires after explaining to them how to fill out the forms. However, those who were illiterate or could not read either language were assisted by the researcher by reading out the questions and marking their responses. The data was collected between the months of January 2017 to February 2017.

Measurement of Concepts

The variables of PPD, social support, perceived stress, abuse, intrinsic religiosity, sociodemographic, and traditional postpartum cultural beliefs were measured by using the EPDS (Marshall, 2006; Shrestha, Pradhan, Tran, Gualano, & Fisher, 2016; Teissèdre & Chabrol, 2004; Zubaran, Schumacher, Roxo, & Foresti, 2010), the MSPSS (Akhtar et al., 2010; Dahlem, Zimet, & Walker, 1991; Rizwan & Aftab, 2009; Zimet, Dahlem, Zimet, & Farley, 1988; Zimet, Powell, Farley, Werkman, & Berkoff, 1990), the Cohen's 10-item Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988; Kausar & Anwar, 2010; Lee, 2012; Rafique & Amjad, 2013), the Abuse Assessment Screen (ASS) (Gul, Zeb, & Faiz, 2013; McFarlane, Parker, Soeken, & Bullock, 1992; Norton, Peipert, Zierler, Lima, & Hume, 1995; Soeken, McFarlane, Parker, & Lominack, 1998; Weiss, Ernst, Cham, & Nick, 2003), the DUREL Religion Index subscale three to measure intrinsic religiosity (IR) (Koenig & Büssing, 2010; Koenig, Parkerson Jr, & Meador, 1997), and questions pertaining to additional possible sociodemographic and twenty-seven traditional postpartum cultural beliefs (Choudhury et

al., 2012; Dennis et al., 2007), predictors of PPD as discussed in the literature review. These measures are described below. The official language in Pakistan is Urdu. Therefore, the Urdu versions of these instruments were obtained whenever possible. Those that were not already available in Urdu namely the DUREL Religion Index subscale three to measure IR, the AAS, the sociodemographic variables, and the twenty-seven traditional postpartum beliefs, were translated using standard forward and back translation methods. Few words in Urdu from the scales already translated were changed to an easier word in Urdu for better understanding of the women in Karachi. The Brislin's model (1970, 1986) suggests that one bilingual expert translates the instrument into target language and then the second bilingual expert translates back to the original language, without access to the original version, then the back translated version is compared for any discrepancies in meaning. This process is repeated until there is no error in meaning (Jones, Lee, Phillips, Zhang, & Jaceldo, 2001). The questionnaire used for this study followed this procedure until there was no error in meaning. It was appropriate to use both the English and Urdu versions of the scales, as the population in Karachi consists of women from diverse cultures, where some were more comfortable in answering questions in English and some in Urdu language. As far as the language abilities of the Pakistani population are concerned, English is spoken by the educated class and for official correspondence; in addition, the general literacy ratio in Pakistan is 44% with about 50% of population receiving only primary or below primary education, which suggests that there are many Pakistanis who are unable to read and write English (Ahmer, Faruqui, & Aijaz, 2007).

Edinburgh Postnatal Depression Scale (EPDS):

The EPDS is a tool that is designed to measure postnatal depression. According to Zubaran, Schumacher, Roxo, & Foresti (2010), "The Edinburgh Postnatal Depression Scale (EPDS) is the most well-known and evaluated instrument for postpartum depression" (p. 358) (Zubaran et al., 2010). More recently it is also being used to screen for antenatal depression in women and depression in men in both the antenatal and postnatal period. It was originally developed in the 1980s by John Cox, a consultant psychiatrist in the United Kingdom, and his colleagues Jeni Holden and Ruth Sagovsky. It is a self-report questionnaire that consists of 10 items (Marshall, 2006). According to Teissedra and Chabrol (2004) items 1 and 2 assess anhedonia, item 3 assesses self-blame, item 4 assesses anxiety, item 5 assesses fear or panic, item 6 assesses inability to cope, item 7 assesses difficulty in sleeping, item 8 assesses sadness, item 9 assesses tearfulness, and item 10 assesses self-harm (Teissèdre & Chabrol, 2004). Each item has four responses that have to be scored as 0, 1, 2, or 3, increasing according to the severity of the symptom. The scale anchors differ from one question to the next. For example, one of the questions uses the anchors *no, not at all*, *not very often*, *yes quite often*, and *yes most of the time*, but those anchors are never repeated exactly. Adding the score of each item gives a total score that ranges from 0 to 30. According to Zubaran, Schumacher, Roxo, & Foresti (2010), "In the initial studies, the sensitivity and specificity of the EPDS were 86% and 78%, respectively, with a positive predictive value of 73% using a cutoff point of 9/10. This value is capable of detecting most cases of postnatal depression" (p. 358) (Zubaran et al., 2010). A score of 10 or higher indicates presence of depressive symptoms (Marshall, 2006). Those scoring 9 or below are considered not to have PPD.

The EPDS has many translated versions including the Urdu version. Different cut-off scores are recommended for the different translated versions of EPDS for optimal sensitivity. The recommended cut-off score for the Urdu version is 9/10 which is chosen based on the results from the original validation study of the English-EPDS. Dennis et al as cited in Zubaran et al., 2010 report that the EPDS when applied with a cutoff score of 9/10 during the first week of postpartum depression has satisfactory discriminatory and prognostic power to distinguish the mothers with increased risk of developing depression during the fourth and eighth week of postpartum depression. On the other hand, Lee et al as cited in Zubaran et al., (2010) state that the EPDS when applied during the 48 hours after the child's birth will show false-positive results. Limitations of EPDS are that it does not assess the experiences of the new mother or features such as loss of control, loneliness, unrealness, irritability, loss of self and concentration difficulties (Zubaran et al., 2010).

A systematic review conducted by Shrestha et al. (2016), reported the validity and reliability of the local language versions of EPDS. This included two studies conducted in Pakistan with the Urdu version of EPDS. Rahman et al., 2005 as cited in Shrestha et al., 2016 conducted a study in the rural sub-district of Rawalpindi, Pakistan and reported the psychometric properties of the Urdu version EPDS at cut-off point of 9/10 as having a sensitivity of 81.5 %, specificity as 73.5 %, and positive predictive value as 52.6. On the other hand Husain et al., 2013 as cited in Shrestha et al., 2016 conducted a study in the urban slum in Karachi Pakistan reported the psychometric properties of the Urdu version of EPDS at cut off point of 13/14 as having a sensitivity of 79, specificity of 74, positive

predictive value 82, and negative predictive value of 70 (Shrestha et al., 2016). In this study, a reliability of .65 was found for the Edinburgh Postnatal Depression Scale.

Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support is a brief, self-explanatory, easy to use scale to assess perceived social support. Developed in 1988 by Zimet, Dahlem, Zimet, & Farley, it consists of twelve items that have to be rated on a seven-point rating scale ranging from *very strongly disagree* to *very strongly agree*. It assesses social support from three sources, i.e. family, friends, and significant other. Each group is assessed by four items on the scale. Items 1, 2, 5, and 10 assess significant other support; items 3, 4, 8, and 11 assess family support, whereas items 6, 7, 9, and 10 assess friend support. A measure of reliability (i.e., Cronbach's alpha) for the total scale is .88 whereas the Cronbach's alpha for each subscale is .91 for significant other, .87 for family, and .85 for friends. This indicates good internal reliability for the scale as a whole and for the three subscales. The reported test-retest reliability with a 2 to 3-month interval for the significant other, family, and friends' subscales are .72, .85, and .75 respectively. The MSPSS is a psychometrically sound instrument demonstrating adequate internal, test-retest reliability, strong factorial validity and moderate construct validity (Zimet et al., 1988).

Dahlem (1991) conducted a study to examine the psychometric properties of the MSPSS scale with a diverse group of 154 students and reported good internal reliability, factor analysis confirmed the subscale structure of the measure; family, friends, and significant other and they also reported that social support was related to depression only for those subjects who were experiencing high levels of life stress (Dahlem et al., 1991).

Further, Zimet et al, (1990) conducted a study using this scale with different subject groups and reported that MSPSS had good internal reliability across subject groups, and had a strong factorial validity (Zimet et al., 1990). Rizwan & Aftab (2009) conducted a study to assess psychometric properties of the MSPSS on Pakistani young adults and reported a total Cronbach's alpha as .90 and on the subscales of significant others, family, and friends the values were .86, .87 and .86 respectively (Rizwan & Aftab, 2009). Akhtar et al. 2010 translated the MSPSS into the Urdu language and tested the psychometric properties of the Urdu version. They report that the Urdu version had good construct validity, and internal consistency. However, they pointed out that the women perceived social support as a unitary construct as opposed to the tri-dimensional construct identified in the Western population (Akhtar et al., 2010). The mean score on MSPSS ranging from 1 to 2.9 is considered low support, a score of 3 to 5 is considered moderate support whereas a score from 5.1 to 7 is considered high support (Zimet et al., 1988). In this study, the reliability of the MSPSS total was .86, the reliability for MSPSS significant other subscale was .81, the reliability for the family subscale was .81, and the reliability for the MSPSS friends' subscale was .91.

Cohen's Perceived Stress Scale

The global measure of perceived stress scale (PSS) was developed by Cohen, et al in 1983. It is a self-reported tool that measures the degree to which an individual evaluates the stressful situations in their lives. There are three versions of PSS. The original item is a 14-item PSS scale with 7 positive items and 7 negative items rated on a five point Likert scale (Cohen et al., 1983). The original scale was shortened to 10-items in 1988, after five years of introduction of the 14-item PSS (Cohen & Williamson, 1988).

In addition another shorter version was introduced for telephone interview purpose (Cohen et al., 1983). This scale has been translated into 25 different languages including Urdu language (Lee, 2012). The PSS-10 gives a slighter higher inter-rater reliability than the PSS-14 inter rater reliability (Cohen & Williamson, 1988). The inter-rater reliability of the Urdu version is 0.77 (Rafique & Amjad, 2013). In another study where the Urdu version was used the internal consistency is reported as .08 (Kausar & Anwar, 2010). The psychometric properties of the PSS-10 is reported to be higher than the psychometric properties of PSS-14 (Lee, 2012) therefore, both English and Urdu translated version of the PSS-10 were used for this study. The total score is calculated by sum of 10 items with a range of scores between 0 and 40 with higher scores indicating higher perceived stress. The PSS is not a diagnostic instrument therefore there are no classifications for high, medium, or low stress, there are only comparisons in the sample (Cohen & Williamson, 1988). However, the State of New Hampshire Employee Assistance Program used the scores ranging from 0-13 considering it as low stress, scores ranging from 14-26 as moderate stress and the scores ranging from 27 – 40 as high perceived stress ("Perceived Stress Scale,"). A reliability of .76 was found in this study for Cohen's 10-item perceived stress scale.

The Duke University Religion Index (DUREL)

The Duke University Religion Index (DUREL) is a 5-item scale that measures the religious involvement and the relationship between religion and health outcomes. It captures three dimensions of religiosity. These three dimensions are the organizational religious activity, non-organizational religious activity, and subjective or intrinsic religiosity. Each of these dimensions is measured by separate subscale to estimate the

correlations to the health outcomes. Overall the scale has high two-week test-retest reliability of 0.91, high internal consistency with Cronbach alphas between 0.78 – 0.91, and high convergent validity with other measures of religiosity r's = 0.71-0.87. The overall score of the DUREL ranges from 5 to 27 however, since it measures three dimensions of religiosity and has three subscales so it can be used separately. In the original Duke Hospital study, the three-item intrinsic religiosity subscale had a Cronbach alpha of 0.75. In addition, of the three items the best item that predicts the total intrinsic religiosity is "My religious beliefs are what really lie behind the whole approach to life". In this study, the participants were screened for their subjective or intrinsic religiosity by using the DUREL Religion Index subscale three (questions 3-5) to obtain intrinsic religiosity. These items consist of three statements that are rated on a scale from 1 to 5 (1 = definitely not true, whereas, 5 = definitely true), which are reversed and then summed for a total score ranging from 3 to 15 with higher scores indicating greater intrinsic religiosity. This DUREL is available in 10 different languages but has not been translated in Urdu (Koenig & Büssing, 2010; Koenig et al., 1997). In this study, both the English and Urdu translated version of the DUREL religion index subscale three was used to evaluate the intrinsic religiosity and the reliability found was .72.

Abuse Assessment Screen

The abuse assessment screen (AAS) was included in the questionnaire to detect the presence of abuse in postpartum women. It was developed by McFarlane, Parker, Soeken, & Bullock in 1992. It is a well validated screening tool which is initially used to identify the abuse and then to continually assess for intimate partner violence. It consists of five questions with yes and no options that measure the presence or absence of

emotional and/or physical abuse by a partner or someone important. If there is any positive answer to any of the five questions the postpartum women was considered subject to abuse. The 5 items include the questions on physical, emotional, and sexual violence during three periods. These three periods are, during marital life if they were ever beaten, last year and during the current pregnancy. It also measures the frequency of abuse and a body map to mark the injuries. The reported test/retest reliability in previous studies for across the same trimester for pregnant women is 83%, whereas the sensitivity is 93% and specificity is 55%. This scale has been translated in Urdu in one of the study done by Gul, Zeb, & Faiz, 2013 however, the translated version was not validated by the researchers (Gul et al., 2013; McFarlane et al., 1992; Norton et al., 1995; Soeken et al., 1998; Weiss et al., 2003). The reliability of Abuse Assessment Screen in this study was .70.

Traditional Postpartum Beliefs

There are many postpartum rituals and beliefs being practiced among women belonging to different parts of the world (Choudhury et al., 2012; Dennis et al., 2007). From the many beliefs Twenty-seven postpartum beliefs commonly practiced among South Asian women and reported in the literature (Choudhury et al., 2012; Dennis et al., 2007) were listed at the end of the questionnaire to determine which of the traditional postpartum beliefs of Pakistani women are the same as the beliefs of the South Asian women and those that are differently practiced in Pakistan (Choudhury et al., 2012). The participants were asked to mark their agreement with these items as a dichotomous yes/no option. These beliefs were categorized under three main headings namely the beliefs about the ways of living during postpartum period, the beliefs about diet during

postpartum period, and the beliefs about healing of the mother's body during the postpartum period. There were seven beliefs about ways of living during postpartum period, six beliefs about the diet during postpartum period, and fourteen beliefs about healing of the mother's body during postpartum period.

Demographics

The demographic variables consisted of the variables found to be significant predictors of postpartum depression in the literature. They included age, residence, ethnicity, religion, mother's educational status, husband's educational status, mother's employment, husband's employment, marital status, type of family (nuclear or extended), reproductive history, any habits detrimental to health, or exposure to life threatening events (such as explosions, fire, shooting, etc.). Reproductive history included number of children, number of sons, number of daughters, number of pregnancies, number of live births, abortion or miscarriage, stillbirths, baby's gender, gestational age and weight at birth, any illness or deformity of the baby, feeding methods, type of delivery, and history of illness during pregnancy. The MSPSS scale is based on perceived support received from a special person; therefore we added a question asking who their special person is, with response options of husband, friend, or other family member.

Analysis Plan

Data Preparation and Management Plan

The data was managed and prepared for data analysis by logging in forms, reviewing data for completeness and legibility, retrieving pieces of missing information, assigning identification numbers, selecting statistical software (SPSS version 24), coding the data, entering the data to computer files to create the data set, verifying entries and

correcting mistakes, data cleaning by checking for outliers and wild codes and creating a code book. The dependent variable, postpartum depression, was measured with the EPDS which gives summed scores, and is an interval type of variable. The independent variables, possible predictors of postpartum depression, were measured by different scales, the demographics mentioned above, and a self-developed questionnaire regarding traditional postpartum beliefs and practices. The MSPSS, PSS, DUREL Religion Index subscale three, and EPDS were interval variables as they gave a summed score. Other possible predictors of PPD were categorical variables and included the demographics, AAS, and the questions pertaining to traditional beliefs and practices.

Descriptive Analysis Plan

Descriptive statistics are given below as mean ± standard deviation for interval variables, and number with percentages for categorical variables. Cronbach's alpha was used to assess the internal reliability of the items for EPDS, MSPSS total, MSPSS significant other subscale, MSPSS family subscale, MSPSS friend's subscale, AAS, intrinsic religiosity, and PSS.

Inferential Analysis Plan

Independent samples *t*-test was performed to test if there were differences in the independent variables by the postpartum depression status. Independent Samples Mann-Whitney U test were not necessary because the assumptions of Independent Samples *t*-tests were met. Pearson Chi-Square procedure was used in the analysis to assess the association between categorical variables. Fisher's exact test was used in the analysis for the variable abuse, as the assumptions of Pearson Chi-Square were not met.

Multiple linear regression was used to regress PPD (as measured by EPDS) on PSS, and MSPSS (as well as their interactions) along with covariates (demographic variables or predictors) which were found to be significantly different between women with and without PPD on *t*-tests. Statistical analyses were performed using IBM SPSS Statistics (Version 24; IBM Corporation 1989, 2014.). Alpha was set at 0.05 significance level.

CHAPTER FOUR

RESULTS

Introduction

As stated in chapter one the study purpose was to determine the predictors of PPD among women in Karachi, Pakistan. This chapter reports the findings, including sociodemographic differences and differences in the scores on the DUREL Religion Index subscale three to measure the intrinsic religiosity, EPDS, Cohen's 10-item PSS, AAS, MSPSS, and other predictors of sociodemographic and traditional postpartum beliefs.

Description of the Sample

Two hundred and thirty-four surveys were filled by the participants who had given birth within the last six weeks and presented to Liaquat National Hospital obstetrics and gynecology outpatient department (OPD) for postpartum care. Very few participants filled out the survey by themselves. The majority were completed as structured interviewed because most of the participants preferred that format, which was faster and easier for them because they were research naïve, though from a literacy standpoint they were educated and could have self-reported.

The women came from seventy different areas of Karachi, and six areas outside Karachi. Out of them 224 (95.7%) self-identified as Muslim, with the remaining ten identifying themselves as Christians.

The mean age of all participants was 27.78 ± 4.43 years, ranging from 19 to 42 years old, with approximately two children, though on average, most had experienced more than two pregnancies, representing perinatal loss. There was no statistical

difference between the mothers who had PPD and those who did not have PPD in terms of age, number of children, number of daughters/sons, the number of pregnancies, illness during pregnancy, pregnancy outcomes, or birth weight of the baby delivered within the last 6 weeks. See Table 1 for further details on these variables.

Table 1. Interval demographic variables for all participants and comparing women with and without postpartum depression.

Characteristics	All women (*N* = 234) M (*SD*)	Women with PPD (*n* = 163) M (*SD*)	Women without PPD (*n* = 71) M (*SD*)	*P* value
Age	27.78 (4.43)	27.71 (4.20)	27.94 (4.93)	0.71
Number of Children	1.97 (1.08)	1.99 (1.09)	1.92 (1.07)	0.62
Number of daughters	1.45 (0.87)	1.44 (0.84)	1.49 (0.93)	0.72
Number of sons	1.34 (0.71)	1.36 (0.68)	1.28 (0.79)	0.51
Number of pregnancies	2.33 (1.35)	2.41 (1.34)	2.14 (1.36)	0.16
Number of live births	1.94 (1.07)	1.98 (1.08)	1.85 (1.05)	0.37
Number of abortion / miscarriage	0.32 (0.71)	0.37(0.73)	0.23 (0.65)	0.16
Number of stillbirth	0.06 (0.26)	0.08 (0.29)	0.03 (0.16)	0.16
Weight at birth in kg	2.88 (0.57)	2.85 (0.60)	2.95 (0.49)	0.23

Nearly all the women were married (98.7%). In terms of education, just over half (52.2%) of the women had a high school diploma or less, while their husbands were more likely to have higher education (61.1%) having a college or university degree. There

were no significant differences on these variables between women who were positive or negative for PPD.

Pertaining to their recent pregnancy and delivery, more than half (61.1%) of the women reported exclusive breastfeeding, half (50%) had experienced one or more illness during the pregnancy, few reported habits detrimental to health or life-threatening events (7.7% and 3.4% respectively), and most (86.8%) delivered at term. The only variable that significantly differed when comparing women with and without PPD was habits detrimental to health. See Table 2 for details.

Table 2. Categorical demographic variables for all participants, and comparison of women with and without postpartum depression.

Characteristics	All women (N = 234)	Women with PPD (n = 163)	Women without PPD (n = 71)	
	N (%)	N (%)	N (%)	*P* Value
Mothers' Educational Status				0.56
Matriculation and below	61 (26.1)	45 (27.6)	16 (22.5)	
Intermediate and or diploma	61 (26.1)	40 (24.5)	21 (29.6)	
Bachelors / Undergraduates	43 (18.4)	27 (16.6)	16 (22.5)	
Masters & above / Graduates	66 (28.2)	48 (29.4)	18 (25.4)	
Husbands' Educational Status				0.63
Matriculation and below	37 (15.8)	28 (17.2)	9 (12.7)	
Intermediate and or diploma	51 (21.8)	35 (21.5)	16 (22.5)	
Bachelors / Undergraduates	60 (25.6)	39 (23.9)	21 (29.6)	
Masters & above / Graduates	83 (35.5)	59 (36.2)	24 (33.8)	
Marital Status				0.98
Married	231 (98.7)	161 (98.8)	70 (98.6)	
Separated / Divorced	2 (0.9)	1 (0.6)	1 (1.4)	
Feeding Method				0.48
Exclusive breast feeding	143 (61.1)	92 (56.4)	51 (71.8)	
Bottle feeding only	25 (10.7)	17 (10.4)	8 (11.3)	
Combination of both	59 (25.2)	48 (29.4)	11 (15.5)	
History of illness during pregnancy				0.27
No Illness	112 (47.9)	74 (45.4)	38 (53.5)	
One illness	96 (41.0)	71 (43.6)	25 (35.2)	
More than one illness	25 (10.7)	17 (10.4)	8 (11.3)	
Habits				.00*
None	215(91.9)	153(93.9)	62(87.3)	
Chewing Pan, Gutka & Chalia	16 (6.8)	7 (4.3)	9 (12.7)	
Other Habits	2 (0.9)	2 (1.2)	0	
Life threatening events				.99
No threat	221 (94.4)	152 (93.3)	69 (97.2)	
Fire/explosion, sudden death, shooting/firing, accidental injury	8 (3.4)	8 (4.9)	0	
Gestational Age				.19
Premature	23 (9.8)	18 (11.0)	5 (7.0)	
Normal	203 (86.8)	139 (85.3)	64 (90.1)	

Note: * = $p < .05$

Reliability of the Scales

The reliability of the scales ranged from acceptable for the EPDS (Cronbach alpha .65) to excellent for the MSPSS friends' subscale (Cronbach alpha .92). Table 3 provides the Cronbach's alpha for each scale and all three MSPSS subscales.

Table 3. Reliability for each scale

Scale	Cronbach's Alpha
DUREL intrinsic religiosity subscale	.72
Edinburgh Postnatal Depression Scale (EPDS)	.65
Cohen's 10 item Perceived Stress Scale (PSS)	.76
Multidimensional Scale of Perceived Social Support	.86
Significant Other Subscale	.81
Family Subscale	.81
Friends Subscale	.91
Abuse Assessment Scale (AAS)	.70

Besides the demographic variables mentioned above five scales were used in the questionnaire administered to the participants namely, Cohen's 10-item perceived stress scale (PSS), the DUREL religion index's last three questions which measures Intrinsic Religiosity, Edinburgh postnatal Depression Scale (EPDS), Multidimensional Support of Perceived Stress Scale (MSPSS) that comprises of three subscales namely, significant other, family, and friends' subscale and abuse assessment screen.

On average, the total sample's perceived stress was in the moderate stress range (scores of 14 to 26), with a mean of 18.27 (*SD* 7.07), total MSPSS scores with a possible range of 1 to 12 and higher scores indicating greater perceived support was midrange

with a mean of 6.41 (*SD* 1.66), intrinsic religiosity was 3.69 (*SD* 1.31) at the lower end of possible 3 to 15 score range, and had postpartum depression as indicated by EPDS mean greater than 10 (12.72, *SD* 6.19).

Comparison of Women With and Without PPD

When comparing women with PPD to those without PPD on the scale variables mentioned above, PSS, total MSPSS and friends' subscale, and EPDS were significantly different. Intrinsic religiosity and the significant other and family subscales of the MSPSS were not significantly different (see Table 4 for details).

Table 4. Scores for all women on each scale and comparing women with and without PPD. *N* = 234

Scale Name	All Women (*N* = 234)		Women with PPD (*n* = 163)		Women without PPD (*n* = 71)		
	M (SD)	Range	M (SD)	Range	M (SD)	Range	P value
Perceived Stress Scale	18.27 (7.07)	40 (0.00 – 40.00)	20.67(6.33)	36 (4 – 40)	13.23 (5.83)	30 (0.00 – 30.00)	.00**
(MSPSS) Significant Other Subscale	6.41(1.66)	22.50 (1 – 23.50)	6.32 (1.87)	21.50 (2 – 23)	6.61 (1.03)	8 (1 – 9)	.22
Family Subscale	5.84(1.43)	8 (1 – 9)	5.74(1.44)	8 (1 – 9)	6.08 (1.40)	8 (1 – 9)	.09
Friends Subscale	4.39 (2.16)	8 (1 – 9)	4.19 (2.14)	8 (1 – 9)	4.86 (2.14)	8 (1 – 9)	.03*
Total MSPSS	4.71 (1.10)	9.17 (1.17 – 10.33)	4.60 (1.15)	8.58 (1.75 –10.33)	4.97 (0.94)	6.33 (1.17 – 7.50)	.01**
Intrinsic Religiosity Total	3.69 (1.31)	12 (3 – 15)	3.58 (1.04)	4 (3 – 7)	3.92 (1.75)	12 (3 – 15)	.06
Edinburgh Postnatal Depression Score (EPDS)	12.72 (6.19)	63 (1 – 64)	15.33 (5.53)	54 (10 - 64)	6.73 (2.17)	8 (1-9)	____

Note: * = p < .05, ** = p < .001

Participants identified their special person most often as husband alone (62.8%), however, 33.8% of the participants identified their husband and either a friend or another family member as the special people they rely on. Therefore, these three options of special person were collapsed to a dichotomous variable as either husband or husband and other. In the group of women who had PPD, 95 (58.2%) perceived their husbands as their special person whereas, 62 (38.0%) perceived their husbands and others as their special persons who provided them support. In the group of women who did not have PPD, 52 (73.3%) perceived husbands as their special person, whereas, 17 (23.9%) of them perceived their husbands and others as special persons who provided them support. When calculation was done using independent sample *t*-test for a difference between the special person in women with PPD and without PPD, a *p* value of .031 indicated that there is a significant statistical difference between who is a special person for those who had PPD and the women who did not have PPD.

In the total sample, 215 (91.9%) of the participants reported not being abused whereas, 18 (7.7%) reported being abused. Only women in the PPD group reported being abused. In the group of women who did not have PPD, 71 (100.0%) of them reported not being abused. The fisher exact test was computed for the variable abuse as it had less than 5 expected frequency in each cell and so the assumptions of the Pearson chi-square statistic test was not met. The *p* value of fisher exact test .002 indicates significant difference in occurrence of abuse between the women who had PPD and the women who did not have PPD.

Traditional Postpartum Beliefs

The participants were also assessed on traditional cultural beliefs about

postpartum rituals during the forty days following childbirth. Twenty-seven beliefs commonly practiced among the women in South Asia were taken from the literature (Choudhury et al., 2012; Dennis et al., 2007) that reported various practices of postpartum rituals around the world and were included in the survey questionnaire where the participants were instructed to mark all the rituals they follow during the forty days after their baby is born. The first seven cultural rituals were about the beliefs concerning traditional ways of living during the postpartum period (see Table 5), the next six were about the beliefs concerning their diet during the postpartum period (see Table 6), and the last fourteen were about their beliefs concerning healing of the mothers' body during the postpartum period (see Table 7). None of these beliefs and practices were significantly different between women with and without PPD except the twelfth belief. The results on this belief, 'consume hot foods and drinks are encouraged to restore harmony' showed that 142 (60.7%) of all the women endorsed the belief. However, among the participants who had PPD 89 (54.6%) compared to 53 (74.6%) participants who did not have PPD, endorsed the item. The Pearson chi-square *p* value .005 indicates that there is a significant difference between the group who had PPD and the ones who did not have PPD on this item. This was the only traditional postpartum belief that was significantly different between women with and without PPD.

The Cronbach's alpha indicating reliability of the above mentioned 27 beliefs was .74 in this study, though this was not used as a scale. In future studies these cultural belief items can be combined to produce a traditional postpartum belief scale.

Table 5. The first seven traditional postpartum beliefs and practices.

Ways of Living (Belief 1-7)	All Women (N = 234)	Women with PPD (n = 163)	Women without PPD (n = 71)	p Value
1. Seclusion and confinement for forty days	158 (67.5%)	113 (69.3%)	45 (63.4%)	.33
2. Restricted from doing heavy work	204 (87.2%)	142 (87.1%)	62 (87.3%)	.94
3. Prohibited from crying, reading, or watching television to prevent eye problem	117 (50%)	86 (52.8%)	31 (43.7%)	.17
4. Take a purification bath after the bleeding stops	167 (71.4%)	113 (69.3%)	54 (76.1%)	.32
5. Considered unclean and not allowed to cook for 40 days following childbirth	104 (44.4%)	74 (45.4%)	30 (42.3%)	.62
6. Wash mothers breast prior to initiation of breast feeding	143 (61.1%)	98 (60.1%)	45 (63.4%)	.67
7. Wait for two days before initiation of breast feeding	9 (3.8%)	7 (4.3%)	2 (2.8%)	. 58

Table 6. The traditional postpartum beliefs and practices 8 - 13.

Diet (Belief 8-13)	All Women (N = 234)	Women with PPD (n = 163)	Women without PPD (n = 71)	p Value
8. Consume milk, butter, ghee and some types of fish	172 (73.5%)	118 (72.4%)	54 (76.1%)	.60
9. Diet consisting of puffed rice, tea and hot water for first three days	127 (54.3%)	85 (52.1%)	42 (59.2%)	.34
10. Consume a large quantity of garlic, to aid in contraction of uterus	15 (6.4%)	12 (7.4%)	3 (4.2%)	.36
11. Avoid hard foods	165 (70.5%)	118 (72.4%)	47 (66.2%)	.30
12. Consume hot foods and drinks are encouraged to restore harmony	142 (60.7%)	89 (54.6%)	53 (74.6%)	.00*
13. Avoid fruits and raw, sour, spicy, greasy or oily foods	143 (61.1%)	101 (62.0%)	42 (59.2%)	.64

Note: * = $p < .05$

Table 7. The last 14 traditional postpartum beliefs and practices.

Healing of Mother's Body (Belief 14 - 27)	All Women (N = 234)	Women with PPD (n = 163)	Women without PPD (n = 71)	p Value
14. Cold baths/showers prohibited to avoid blood clots, sore bones and joints	188 (80.3%)	131 (80.4%)	57 (80.3%)	0.91
15. Take bath with hot shower but washing hair is prohibited	66 (28.2%)	48 (29.4%)	18 (25.4%)	0.50
16. Take steam bath (with medicinal leaves or herbs)	34 (14.5%)	22 (13.5%)	12 (16.9%)	0.50
17. Mother sits on the pot of boiling herbs and covers herself with blanket	9 (3.8%)	7 (4.3%)	2 (2.8%)	0.58
18. Sexual activity is avoided for 20 to 100 days	190 (81.2%)	130 (79.8%)	66 (84.5%)	0.44
19. Use of special herbs	47 (20.1%)	35 (21.5%)	12 (16.9%)	0.41
20. Bind hot substances around the abdomen and lie above or near a fire	12 (5.1%)	6 (3.7%)	6 (8.5%)	0.13
21. A thorough massage for three days	130 (55.6%)	90 (55.2%)	40 (56.3%)	0.91
22. Massage with hot salt	14 (6%)	10 (6.1%)	4 (5.6%)	0.87
23. Wear warm clothes	140 (59.8%)	96 (58.9%)	44 (62.0%)	0.69
24. Lie on a wooden bed over a warm fire for thirty days	3 (1.3%)	3 (1.8%)	0 (0%)	0.25
25. Place heated rocks on stomach	4 (1.7%)	3 (1.8%)	0 (0%)	0.80
26. Sleep near a fire for three days	1 (0.4%)	1 (0.6%)	0 (0%)	0.50
27. Binding mother's abdomen	53 (22.6%)	40 (24.5%)	13 (18.3%)	0.50

Traditional Postpartum Beliefs Specific to Pakistani Women

The participants marked some beliefs positively but verbally added qualifiers, explaining that their beliefs and practices differed slightly from the way the items were written on the questionnaire, which was general to South Asian women. The participants were probed for clarification of those beliefs during structured interviews and as items were explained to the few women who self-reported. These nuances are described below:

- For belief 1 'seclusion and confinement for forty days' they believed in staying indoors for forty days rather than being secluded.
- For belief 5, 'considered unclean and not allowed to cook for 40 days following childbirth' the participants believed that they considered themselves unclean during the forty days but did not believe that they should not be allowed to cook. They further, elaborated that they are not allowed to cook because the family members want them to rest but not because they were unclean.
- For belief 9, 'diet consisting of puffed rice, tea and hot water for first three days', the participants believed in taking hot tea and hot water for first three days but they did not believe in taking puffed rice.
- For belief 16, 'taking steam bath (sitting on hot bricks and medicinal leaves or inhaling steamed medicinal herbs)', the participants only believed in taking a steam bath and taking medicinal leaves or inhaling medicinal leaves but did not believe in sitting on hot bricks.
- For belief 17, 'boiling herbs in a pot and covering the pot with a blanket while the mother sits on the pot and covers herself with blanket, the participants reported that

they believed in using water boiled with herbs for bathing or using as a steam but they did not believe in boiling herbs in pot and sitting on it covered with a blanket.

- For belief 20, 'Bind hot substances around the abdomen and lie above or near a fire source', the participants believed in binding a hot substance around their abdomen but did not believe in laying above or near a fire source.
- For belief 24, 'Lie on wooden bed over a warm fire for thirty days', the women believed in keeping themselves warm but did not belief in laying over a warm fire or on a wooden bed.
- For belief 26, 'Sleep near a fire for three days' the participants believed in sleeping in a warm room but not near a fire.

Correlations with Postpartum Depression

Analyses were done to identify variables that were significantly correlated with PPD. The correlation analysis showed that the variable intrinsic religiosity had a significant, very large negative correlation with PPD, whereas, the Perceived Stress Scale had a significant, large positive correlation with PPD. The MSPSS total, MSPSS significant others subscale, MSPSS family subscale, MSPSS friends' subscale, age, and number of sons had a non-significant negative correlation with PPD. On the other hand, the number of children, number of daughters, number of pregnancies, number of live births, number of abortion or miscarriage, and stillbirth had a non-significant positive correlation with PPD. See Table 5 for details.

Table 8. Correlations between the interval variable and the Edinburgh Postnatal Depression Scores, *N*=234.

Name of the Interval Variable	Pearson Correlation	P Value
Intrinsic Religiosity	-.148	.02*
Cohen's 10 item perceived stress scale	.527	.00**
MSPSS total	-.086	.19
MSPSS significant other subscale	-.056	.39
MSPSS family subscale	-.083	.20
MSPSS friends' subscale	-.051	.43
Age	-.058	.37
Number of children	.027	.67
Number of daughters	.029	.71
Number of sons	-.028	.71
Number of pregnancies	.054	.41
Number of live births	.011	.87
Number of abortion/miscarriage	.074	.26
Number of still birth	.086	.19
Weight at birth in kg	-.086	.20

Note: * = $p < .05$, ** = $p < .001$

Predictors of Postpartum Depression

A multiple linear regression was calculated to identify predictors of postpartum depression based on the significant variables, which included habits detrimental to health, special person, AAS, MSPSS friends' subscale, MSPSS total, PSS and intrinsic religiosity. Before running the multiple linear regression, the variable habits detrimental to health was dummy coded into two variables namely, habits of eating pan, gutka, and chalia (products of the beetle nut family), and other habits detrimental to health with reference as no habits detrimental to health. The twelfth belief, 'consumption of hot foods and drinks to restore harmony', was not included in the multiple linear regression model even though it was significant on the independent samples *t*-test because when we take 27 beliefs and test each one separately the odds of a least one coming up significant by chance is $1-,95^{27}= .75$. The variable intrinsic religiosity was added to the model as it was approaching significance on the independent samples *t*-test ($p = .06$) and therefore worthwhile to include in the model. The results showed that MSPSS total (Beta = -.867, p .04), abuse (Beta = 2.362, p .04), and perceived stress score (Beta = 0.347, $p < 0.001$) were significant predictors. Habits detrimental to health, other habits detrimental to health, special person, MSPSS friends' subscale, and intrinsic religiosity were not significant predictors of postpartum depression. The overall model fit was $R^2 = 0.306$, indicating that the significant predictors, namely MSPSS total, abuse, PSS, explain 30% of the variance. See table 6 for details.

Table 9. Predictors of Postpartum Depression, *N* = 234.

Variable	B	Std. Error	P value
Constant	9.125	2.305	.00
Habits of eating pan, gutka, and chalia	-8.34	1.157	.47
Other habits detrimental to health	1.648	3.150	.60
Special Person	0.563	0.633	.37
Abuse	2.362	1.153	.04*
Multidimensional Scale of Perceived Social Support (MSPSS) – Friends Subscale	0.200	0.219	.36
Multidimensional Scale of Perceived Social Support (MSPSS) – Total	-.867	0.437	.04*
Cohen's 10 item Perceived Stress Score	0.347	0.045	.00**
Intrinsic Religiosity	-.133	0.237	.57
$R^2 = 0.306$			

Note: * = p < .05, ** = p < .001

CHAPTER FIVE

DISCUSSION

Introduction

This chapter presents a summary of the study, major findings and conclusions drawn from the findings. It discusses the findings related to the literature and some additional findings and surprises. It provides discussion for implications for the profession of nursing, practice, theory, and future research.

Summary of Study

The postpartum period refers to the forty days following childbirth. Different cultures practice many different rituals during the postpartum period. These customs were aggressively followed before the 1950s but now the modern medical institutional systems have largely replaced the family, community, and religious experts in providing care to the mother during this period. Pakistan has poor reproductive health indicators and has a high maternal mortality rate. During the postpartum period, the mothers may develop a mental and behavioral disorder called PPD which has distressing effects on the mother, child, and family. The prevalence of PPD in Pakistan ranges from 28 percent to 63.3 percent which is the highest among the Asian countries (Gulamani, Premji, Kanji, & Azam, 2013a). Therefore, the purpose of this quantitative, cross-sectional study was to identify the predictors of PPD in Karachi, Pakistan. The research questions were: What is the perceived level of stress among women with and without postpartum depression? What is the perceived level of social support among women with and without postpartum depression? Is there an association between sociodemographic variables, intrinsic religiosity, perceived stress, perceived support and abuse with PPD? and What are the

stressors that predict postpartum depression in Karachi, Pakistan? The Transactional model of stress and coping was used as a framework for this study. Purposive convenience sampling was done and the sample of 234 participants who met the eligibility criteria were recruited from one of the tertiary care hospital in Karachi, Pakistan. Institutional Review Board approval, permission from the Health Ministry in Karachi, Pakistan and head of the department of the obstetrics and gynecology at the selected tertiary care hospital were obtained before commencing data collection. We used a survey consisting of questions on sociodemographic, validated scales (EPDS, MSPSS, AAS, DUREL Religion index subscale three and PSS), as well as questions drawn from the literature pertaining to traditional postpartum cultural beliefs and practices as possible predictors of PPD. The survey was provided in both English and Urdu for the convenience of the participants.

Data analysis included descriptive statistics, internal reliability of all the scales, and inferential statistics, which consisted of independent samples *t*-test, Pearson Chi-Square, Fishers Exact test, Pearson Correlations and Multiple Linear Regression. The statistical analysis was performed using the IBM SPSS version 24. Alpha was set at 0.05 for significance.

Summary of Major Findings

The major findings of the study include the PPD prevalence of 163(69.65%) and a non-significant relationship of demographic variables and PPD. These variables include age, number of children, number of daughters, number of sons, number of pregnancies, number of live births, number of abortion/miscarriage, number of still birth, weight at birth in kg, mothers' educational status, husband's educational status, marital status,

feeding method, history of illness during pregnancy, life threatening events during pregnancy or past year, and gestational age of the baby. However, the variable habits detrimental to health was found to be significantly different when comparing women with and without PPD.

The variance of the prevalence of PPD found in the literature and in this study, could be because of difficulty in getting accurate estimates due to the cultural norms that effects the women's reporting of their symptoms, lack of reliable screening tools leading to underreporting, different methods used to determine prevalence rates that may impact accuracy, and the diverse ethnic and cultural background in Pakistan which defines the social support and rituals in postpartum (Gulamani et al., 2013a).

The findings of non-significant relationship of demographic variables and PPD were contrary to the findings found in my literature review for predictors of PPD in Pakistan where educational status, having four or more children, having more daughters and fewer sons or no son at all, and age less than 18 years at marriage were significant predictors (Humayun et al., 2013; Zahidie & Jamali, 2013). Furthermore, globally both younger and older age is associated with PPD (Bener et al., 2012; Katon et al., 2014; Prost et al., 2012; Staehelin et al., 2013). Possible reasons that age was not a significant predictor in this study could be that the mean age of women in both groups, women with PPD and without PPD was the same, so it did not allow a comparison. Secondly, unlike literature we did not have women less than 18-years-old in our sample. The age range of our participants was between 19 to 42 years old.

Overall our participants and their husbands were well educated and may explain why the educational status was not a significantly associated with PPD. The literature at

the global level suggests an association between low educational level for mothers and their partner's may be associated with PPD (Abdollahi et al., 2014a; Gungor et al., 2011; Mohammed et al., 2014; Rubin et al., 2011).

Demographics pertaining to the number of children and gender of the children though not significant in our study are in agreement with the literature. The average number of children in our study was 1.97 (*SD* 1.08) which is almost the same in our PPD positive group 1.99 (*SD* 1.09). Also in our sample we did not have many participants who didn't have any son or daughters; mostly they were primigravida or had their second or third child, rather than having four or more children (Humayun et al., 2013; Zahidie & Jamali, 2013).

In this study, life threatening event was not a significant predictor in contrast to the literature review of global predictors (Clout & Brown, 2015; Demirchyan et al., 2014; Dennis et al., 2012; van der Waerden et al., 2015; Verreault et al., 2014; Yim et al., 2015), though this may be due to the fact that in our sample we had very few who were exposed to any life threatening events. We could not make any associations for the martial status as in our sample due to lack of variance (98.7% were married) we did not find many mothers who were divorced, or separated. According to the global literature research, unsatisfied or disturbed marital status is a predictor of PPD (Nagy et al., 2011; Saleh el et al., 2013), and while marital status was assessed categorically, quality of the marital relationship was not assessed.

The reliability analysis for DUREL intrinsic religiosity subscale three, PSS, MSPSS, significant other subscale of MSPSS, family subscale of MSPSS was good. The reliability of EPDS was acceptable whereas the reliability of the friends' subscale of

MSPSS was excellent. The independent samples *t*-test showed that there was no significant association between the MSPSS total, two of the MSPSS subscales (family and significant other), or intrinsic religiosity with PPD. Whereas, the perceived stress scale scores and the MSPSS friends' subscale showed a significant association with PPD suggesting that PPD is dependent on the perception of stress and support from friends during the postpartum period. Furthermore, the independent samples *t*-test revealed that abuse was significant, indicating that the PPD is dependent on abuse which is in consistency with the findings in my literature review (Humayun et al., 2013).

In addition to the above findings, the participants were asked to choose between the special person as a husband, a friend, or other family member whom they perceived as a social support person. The data analysis revealed that there was a significant difference between the special person of those who had PPD and those who did not have PPD suggesting that PPD is dependent on support received from a specific type of special person.

Additionally, twenty-seven different beliefs common among South Asian women were included in the questionnaire, asking them to mark it if they believed/practiced accordingly and to leave it blank if they did not agree/practice the traditional postpartum cultural beliefs for the postpartum period. The beliefs that the participants added qualifiers to explaining what they believed and practiced that differed slightly from the way the items were written, included belief 1 'seclusion and confinement for forty days', belief 5, 'considered unclean and not allowed to cook for 40 days following childbirth', belief 9, 'diet consisting of puffed rice, tea and hot water for first three days', belief 16, 'taking steam bath (sitting on hot bricks and medicinal leaves or inhaling steamed

medicinal herbs)', belief 17, 'boiling herbs in a pot and covering the pot with a blanket while the mother sits on the pot and covers herself with blanket', belief 20, 'Bind hot substances around the abdomen and lie above or near a fire source', belief 24, 'Lie on wooden bed over a warm fire for thirty days', and belief 26, 'Sleep near a fire for three days'.

A multiple linear regression was calculated to predict postpartum depression based on the significant variables, which included habits detrimental to health, special person, abuse, Multidimensional Scale of Perceived Social Support friends' subscale, Multidimensional Scale of Perceived Social Support total, Cohen's 10-item Perceived Stress Scale and the DUREL Religion Index Subscale Three for intrinsic religiosity. The results showed that Multidimensional Scale of Perceived Social Support total, abuse, and Cohen's Perceived Stress Scale are significant predictors of PPD and they explain 30% of the variance.

In the literature review for predictors of PPD in Pakistan it was reported that family structure plays a significant role in terms of social support and those living in extended family have more support and are thus less likely to develop PPD (Kazmi, 2013). The global literature review also supports the findings that more family support leads to lesser chances of PPD (Al Hinai & Al Hinai, 2014; Bener et al., 2012; Chang et al., 2014; Gungor et al., 2011; Lee & Hung, 2015; Lee & Park, 2015; Yehia et al., 2013; Yim et al., 2015). Literature reports lack of husband's support as a significant predictor (Alasoom & Koura, 2014; Gremigni et al., 2011; Martini et al., 2015; Mohammed et al., 2014; Yim et al., 2015), whereas in our study almost all the participants reported their husbands as their special person of support which did not allow a comparison of

husband's support among women with and without PPD. The perceived stress score was found to be highly significant in our study, which is consistent with the global literature (Bener et al., 2012; Imsiragic et al., 2014; Lee & Park, 2015; Luoma et al., 2015; Yim et al., 2015; Youn & Jeong, 2013).

Strengths of the Study

This study describes PPD in the context of Pakistan, which is extremely limited in the literature and is a significant public health burden. As most of the women elected to participate in a structured interview rather than filling out the survey themselves, there was very little missing data. Additionally, a sample of 234 women was obtained, well above the 185 a priori sample size calculation. These factors allowed full analysis of the data and strengthened the findings. Significant predictors of PPD in the Pakistani context were identified and at the same time confirmed findings in the global literature.

Limitations of the Study

The study has some limitations due to the nature of the cross-sectional study design. The incidence of PPD could not be measured. There was susceptibility to self-report and recall bias. A causal relationship could not be established. Follow-up could not be done as this was not a longitudinal study. The study is also susceptible to selection bias as those who participated might differ from those who refused to participate in the study. The findings are not generalizable to all women in Pakistan as it did not include women at the extremes of the reproductive age continuum to allow a comparison. Few women had a history of stillbirth, few had premature babies, few were poor, and none had other mental health diagnoses.

Implications of the Study

The study has implications for the profession of nursing. It draws attention to the need for nurse educators to emphasis the importance of the mental health of women while going through the process of childbirth and after giving birth to the child. As the study findings suggest that an increase in perceived stress and decrease in social support puts the women at risk to develop PPD therefore, the nurses both at the training and practice level should have awareness on how to reduce the mothers' stress, how to provide them support, and how to involve the family to provide support during the postpartum period. The nursing curriculum should be reviewed to see if the topic of PPD is being included in adequate detail so that the nurses and midwives really understand the phenomenon while going through the training years and are prepared to address this issue. The curriculum should also consist of the methods on how to prevent PPD. Generally, in Pakistan Postpartum Depression is not taught at a detailed level to the diploma and midwifery prepared nurses, although these are the nurses who practically deal with postpartum mothers most often. In addition, mothers are not routinely screened for PPD, whereas this study suggests that PPD is a major issue among Pakistani women.

Policies and protocols can be developed for hospitals where the postnatal mothers could be screened by giving the EPDS self-administered scale while a junior doctor is taking the history before the patient is examined by the senior doctor. The long waiting time of such patients in the outpatient department can be used as an opportunity to assess them for the presence and absence of PPD.

The findings of this study have implications for nurses practicing in the maternal and child in-patients and out-patient departments. As the study suggests that increased

perceived stress places the mother at risk of PPD hence, the nurses and midwives should be trained to deal with postpartum women courteously to avoid adding to their stress. Additionally, trying to help them as much as possible so that the frustrations faced while being in the hospital can be avoided may be a source of support which will help prevent PPD. Identification of those positive for PPD can be done by using the EPDS by nurses. Counselling and how to handle problems that cause stress and PPD can be done by senior nurses. The community health nurses should partner with the NGOs and the social workers to help mothers suffering from PPD.

The study has implications to theory. The findings may be used to guide the development of a situation specific theory. The conceptual framework for this study, 'Postpartum Depression Predictor Model', developed based on the Transactional Model of Stress & Coping can be used as a framework for future studies for the identification of postpartum predictors. The concept of Coping Efforts was not included in this study and there is a need to expand this model by including it in the future studies. The coping mechanisms and moderators of coping efforts specific to this community need to be assessed.

The study has implications for future research. Future quantitative studies including more mothers with stillbirth, premature babies, abortion, chronic illness, very sick babies, women less than 18 years old, women on the higher end of the age continuum, poor and uneducated women is recommended as this study sample did not allow for a comparison on these variables. Comparative studies with postpartum women in other cities, provinces, and different countries in South East Asia and South Asia will contribute to the nursing science. Qualitative studies to understand the meanings and

definitions of concepts specific to the Pakistani context are recommended. Meanings of becoming a mother, meaning of being depressed, and meanings of special person before and after marriage need to be explored among the Pakistani women as in this study almost all women reported their husbands as special person or husband and friend as a special person or husband and significant other as a special person while none reported only a friend as special person or only significant other as a special person. Further, the effects of PPD on the babies and family should also be studied. Better understanding of this phenomenon through further research would help to make an instrument designed specifically for this population to assess the predictors of PPD and help the mother get help before her mental health status becomes worse.

Conclusions

This study contributes to nursing science by describing predictors of PPD in Pakistan, aiding in identification of women at risk for PPD by early detection. Early detection is important, as in our sample out of 234 women 163 women had postpartum depression, whereas only 71 did not have postpartum depression, indicating that most of the women had postpartum depression within 6 weeks of post-delivery. Future research is necessary for the development and integration of a holistic approach that includes screening and treatment of PPD in postpartum care to improve maternal mental health and well-being.

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APPENDIX A

QUESTIONNAIRE (URDU & ENGLISH)

Identification #: _____ شناختی نمبر Age: _____ عمر Residence: _____ رہائش

Ethnicity: _____ قومیت Religion: _____ مذہب

Educational Status: (اپنی تعلیم کے مطابق نشان لگائیں) تعلیمی معیار:

☐ None ☐ Class 1 to 5 ☐ Class 6-8 ☐ Matriculation ☐ Intermediate

ان پڑھ کلاس 1 تا 5 کلاس 6 تا 8 میٹرک انٹرمیڈیٹ

Others: _____ دیگر

Are you employed? ☐ No ☐ Yes If Yes, Occupation_____

کیا آپ ملازمت کرتے ہو؟ نہیں ہاں اگر ہاں تو پیشہ کیا ہے؟

Educational status of husband: آپ کے شوہر کا تعلیمی معیار:

☐ None ☐ Class 1 to 5 ☐ Class 6-8 ☐ Class 9 – 10 ☐ Intermediate

ان پڑھ کلاس 1 تا 5 کلاس 6 تا 8 کلاس 9 تا 10 انٹرمیڈیٹ

Others: _____ دیگر

Is your husband employed? ☐ No ☐ Yes If Yes, Occupation_____

کیا آپ کا شوہر ملازم ہے؟ نہیں ہاں اگر ہاں تو پیشہ کیا ہے؟

Marital Status: ☐ Married ☐ Separated/divorced ☐ Widowed

ازدواجی حیثیت شادی شدہ علیحدہ/طلاق یافتہ بیوہ

Type of Family: ☐ Nuclear ☐ Extended

خاندان کی قسم # مرکزی * وسیع

Number of Children: _____ How many daughters and sons? Daughters _____ Sons _____

بچوں کی تعداد کتنے بیٹے اور بیٹیاں بیٹیاں بیٹے

Religion مذہب

The following section contains 3 statements about religious belief or experience. Please mark the extent to which each statement is true or not true for you.

درج ذیل حصہ میں مذہبی عقائد اور تجربات سے متعلق تین بیانات شامل ہیں۔ آپ کے لئے کوئی بیان کس حد تک صحیح یا غلط ہے اس پر نشان لگائیں۔

1. I try hard to carry my religion over into all my other dealings in life.

1. میں اپنی زندگی کے تمام دوسرے معاملات میں اپنے مذہب کو شامل کرنے کی بھرپور کوشش کرتا ہوں۔

☐ Definitely *not* true ☐ Tends *not* to be true ☐ Unsure ☐ Tends to be true ☐ Definitely true of me

یقیناً صحیح نہیں صحیح نہیں لگتا معلوم نہیں صحیح لگتا ہے میرے بارے یقیناً صحیح

2. In my life, I experience the presence of the Divine.

2. میں اپنی زندگی میں الٰہی قدرت کا تجربہ رکھتی ہوں۔

☐ Definitely *not* true ☐ Tends *not* to be true ☐ Unsure ☐ Tends to be true ☐ Definitely true of me

یقیناً صحیح نہیں صحیح نہیں لگتا معلوم نہیں صحیح لگتا ہے میرے بارے یقیناً صحیح

3. My religious beliefs are what really lie behind my whole approach to life

3. میرے مذہبی عقائد میری زندگی کا حصہ ہیں۔

☐ Definitely *not* true ☐ Tends *not* to be true ☐ Unsure ☐ Tends to be true ☐ Definitely true of me

یقیناً صحیح نہیں صحیح نہیں لگتا معلوم نہیں صحیح لگتا ہے میرے بارے یقیناً صحیح

مرکزی: صرف آپ اور آپ کا شوہر اپنے بچوں کے ساتھ رہتے ہیں۔

* وسیع: آپ لوگوں کے ساتھ آپ کے والدین اور بہن بھائی بھی رہتے ہیں۔

EDINBURGH POSTNATAL DEPRESSION SCALE

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

جیسا کہ آپ حاملہ ہیں یا تھوڑا عرصہ پہلے آپکے ہاں ولادت ہوئی ہے، ہم یہ جاننا چاہیں گے کہ آپ کیسا محسوس کر رہی ہیں ؟ مہربانی فرما کر اپنے جواب جو تقریبا آپکی حالت کے مطابق ہوں اس پر نشان لگائیں کہ پچھلے سات دنوں سے آپکی طبیعت کیسی ہے نہ صرف یہ کہ آج کیسا محسوس کر تی ہیں.

Here is an example, already completed.

ذیل میں پہلے سے حل شدہ مثال دی جا رہی ہے.

I have felt happy:
- ☐ Yes, all the time
- ☐ Yes, most of the time
- ☐ No, not very often
- ☐ No, Not at all

میں نے اپنے آپکو خوش محسوس کیا ہے.
- ☐ ہاں، اکثر اوقات
- ☐ ہاں، زیادہ تر
- ☐ نہیں، بہت زیادہ نہیں
- ☐ نہیں، بالکل نہیں

This would mean: "I have felt happy most of the time" during the past week. Please complete the other questions in the same way.

اس کا یہ مطلب ہو گا کہ "پچھلے ہفتے کے دوران میں نے زیادہ تر اوقات اپنے آپکو خوش محسوس کیا ہے." مہربانی فرما کر باقی سوالات کو اسی طرح مکمل کریں.

In the past 7 days:

پچھلے سات دنوں میں

1 I have been able to laugh and see the funny side of things
- ☐ As much as I always could
- ☐ Not quite so much now
- ☐ Definitely not so much now
- ☐ Not at all

1 چیزوں کے مزاحیہ رخ کو دیکھ کر میں ہنسنے کے قابل تھی:
- ☐ اتنا زیادہ جتنا پہلے ہنس سکتی تھی
- ☐ اب اتنا زیادہ نہیں
- ☐ یقینا اب کے اتنا زیادہ نہیں
- ☐ بالکل نہیں

2 I have looked forward with enjoyment to things
- ☐ As much as I ever did
- ☐ Rather less than I used to
- ☐ Definitely less than I used to
- ☐ Hardly at all

2 میں خوشی سے کسی چیز کے واقع ہونے کا انتظار کرتی ہوں:
- ☐ اتنا زیادہ جتنا پہلے کیا کرتی تھی
- ☐ پہلے سے قدرے کم
- ☐ یقینا اس سے کم جتنا پہلے کیا کرتی تھی
- ☐ بالکل بھی نہیں

*3 I have blamed myself unnecessarily when things went wrong
- ☐ Yes, most of the time
- ☐ Yes, some of the time
- ☐ Not very often
- ☐ No, never

*3 جب کچھ غلط ہو جائے تو میں اپنے آپکو الزام دیتی ہوں:
- ☐ ہاں، زیادہ تر
- ☐ ہاں، بعض اوقات
- ☐ اکثر نہیں
- ☐ نہیں، کبھی نہیں

4 I have been anxious or worried for no good reason
- ☐ No, not at all
- ☐ Hardly ever
- ☐ Yes, sometimes
- ☐ Yes, very often

4 بغیر کسی معقول وجہ کے میں پریشان اور فکرمند رہی ہوں:
- ☐ نہیں، بالکل نہیں
- ☐ شاید ہی کبھی
- ☐ ہاں، کبھی کبھار
- ☐ ہاں، اکثر اوقات

*5 I have felt scared or panicky for no very good reason
- ☐ Yes, quite a lot
- ☐ Yes, sometimes
- ☐ No, not much
- ☐ No, not at all

*5 میں نے بغیر کسی معقول وجہ کے خوف اور گھبراہٹ محسوس کی ہے:
- ☐ ہاں، بہت زیادہ
- ☐ ہاں، کبھی کبھار
- ☐ نہیں، زیادہ نہیں
- ☐ نہیں، کبھی نہیں

*6 Things have been getting on top of me
- ☐ Yes, most of the time I haven't been able to cope at all
- ☐ Yes, sometimes I haven't been coping as well as usual
- ☐ No, most of the time I have coped quite well
- ☐ No, I have been coping as well as ever

*6 چیزیں میرے سر پر سوار رہی ہیں:
- ☐ ہاں، اکثر اوقات میں کئی چیزوں کو نپٹانے میں ناکام رہی ہوں
- ☐ ہاں، کبھی کبھی میں پہلے کی طرح چیزوں کو نپٹانے میں ناکام رہی ہوں
- ☐ نہیں، میں اکثر اوقات چیزوں کو اچھی طرح نہیں نپٹا سکی
- ☐ نہیں، میں پہلے کی طرح ہی خوش اسلوبی سے نپٹتی رہی ہوں

*7 I have been so unhappy that I have had difficulty sleeping
- ☐ Yes, most of the time
- ☐ Yes, sometimes
- ☐ Not very often
- ☐ No, not at all

*7 میں اتنی ناخوش رہی ہوں کہ مجھے سونے میں دشواری پیش آتی رہی ہے:
- ☐ ہاں، زیادہ تر وقت
- ☐ ہاں، اکثر اوقات
- ☐ بہت زیادہ بار نہیں
- ☐ نہیں، بالکل نہیں

*8 I have been felt sad or miserable
- ☐ Yes, most of the time
- ☐ Yes, quite often
- ☐ Not very often
- ☐ No, not at all

*8 میں نے خود کو غمگین اور افسردہ محسوس کیا ہے:
- ☐ ہاں، زیادہ تر وقت
- ☐ ہاں، اکثر اوقات
- ☐ بہت زیادہ بار نہیں
- ☐ نہیں، بالکل نہیں

*9 I have been so unhappy that I have been crying
- ☐ Yes, most of the time
- ☐ Yes, quite often
- ☐ Only occasionally
- ☐ No, never

*9 میں اتنی زیادہ ناخوش رہی ہوں کہ میں روتی رہی ہوں:
- ☐ ہاں، زیادہ تر وقت
- ☐ ہاں، اکثر اوقات
- ☐ صرف کبھی کبھار
- ☐ نہیں، بالکل نہیں

*10 The thought of harming myself has occurred to me
- ☐ Yes, quite often
- ☐ Sometimes
- ☐ Hardly ever
- ☐ Never

*10 خود کو نقصان پہنچانے کا خیال میرے دل میں پیدا ہوا:
- ☐ ہاں، اکثر اوقات
- ☐ کبھی کبھار
- ☐ شاذ ہی کبھی
- ☐ کبھی نہیں

Abuse Assessment Screen بدسلوکی کی پیمائش

1 Have you ever been emotionally or physically abused by your partner or someone important to you?
Yes □ No □

1 کیا آپ کو آپ کے ساتھی یا کسی اور شخص نے جسے آپ اہم سمجھتی ہیں جذباتی یا جسمانی تشدد کا نشانہ بنایا ہے؟
□ ہاں □ نہیں

2 WITHIN THE LAST YEAR, have you been hit, slapped, kicked, or otherwise physically hurt by someone?
Yes □ No □

2 پچھلے سال کے دوران کیا کسی نے آپ کو پیٹا، تھپڑ مارا، لاتیں ماریں، یا کسی نے جسمانی طور پر گزند پہنچائی؟
□ ہاں □ نہیں

If yes, by whom? _____ Total Number of times_____
اگر ہاں، تو کس کی جانب سے؟ کل کتنی مرتبہ

3 Since you have been pregnant, were you hit, slapped, kicked, or otherwise physically hurt by someone?
Yes □ No □

3 آپ کے دوران عمل کیا کسی نے آپ کو پیٹا، تھپڑ مارا، لاتیں ماریں، یا کسی نے جسمانی طور پر گزند پہنچائی؟
□ ہاں □ نہیں

If yes, by whom? _____ Total Number of times_____
اگر ہاں، تو کس کی جانب سے؟ کل کتنی مرتبہ

MARK THE AREA OF INJURY ON A BODY MAP AND SCORE EACH INCIDENT ACCORDING TO THE FOLLOWING SCALE:

ذیل میں دیے گئے تشدد کے چارٹ میں سے آپ سے تعلق رکھنے والے واقعات کو جنھیں اور پھر واقعات کو ان کے شروع میں دیے گئے پیمانہ کے مطابق نمبر دیں۔

1= Threats of abuse including use of a weapon =1 تشدد کی دھمکی جس میں ہتھیار کا استعمال شامل تھا۔

2= Slapping, pushing; no injuries and/or lasting pain =2 تھپڑ مارے گئے، دھکا دیا گیا، کوئی زخم نہ آیا اور درد زیادہ دیر نہ رہا

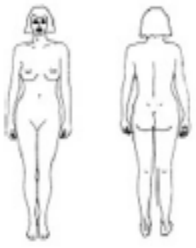
3= Punching, kicking, bruises, cuts, and/or continuing pain =3 گھونسے مارے، لاتیں ماریں، کھروچیں اور زخم آئے اور درد مسلسل رہا

4= Beating up, severe contusions, burns, broken bones =4 مارا پیٹا گیا، شدید زخم آئے، جلنے کے زخم اور ہڈیاں بھی ٹوٹیں

5= Head injury, internal injury, permanent injury =5 سر پر زخم آئے، اندرونی زخم آئے، مستقل زخم آئے

6= Use of weapon; wound from weapon =6 ہتھیار کا استعمال کیا اور اس سے زخم بھی آئے

If any of the descriptions for the higher number apply, use the higher number.
اگر بڑے نمبر کا کوئی بیان لاگو ہوتا ہے تو بڑا نمبر ہی استعمال کریں



4 WITHIN THE LAST YEAR, has anyone forced you to have sexual activities?
Yes □ No □

4 پچھلے سال کے دوران کیا آپ کے ساتھ کسی نے زبردستی جنسی تعلق قائم کیا؟
□ ہاں □ نہیں

5 Are you afraid of your partner or anyone you listed above?
Yes □ No □

5 کیا آپ اپنے ساتھی یا جس کا نام آپ نے اوپر دیا ہے اس سے خوفزدہ ہیں؟
□ ہاں □ نہیں

COHEN PERCEIVED STRESS

کوہن دباؤ کا ادراک

The following questions ask about your feelings and thoughts during THE PAST MONTH. In each question, you will be asked HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are small differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the exact number of times you felt a particular way, but tell me the answer that in general seems the best.

درج ذیل سوالات پچھلے ماہ میں آپ کی محسوسات اور خیالات کے بارے پوچھیں گے۔ ہر ایک سوال میں آپ سے پوچھا جائے گا کہ کتنی بار آپ نے کسی خاص طور سے محسوس کیا یا سوچا۔ اگرچہ چند سوالات ایک جیسے ہیں ان میں چھوٹے چھوٹے فرق ہیں اور آپ کو ان کے ساتھ علیحدہ سوال کے طور پر ہی پیش آنا ہے۔ بہترین حکمت عملی یہ ہے کہ سوال کا جواب جلدی دے دیا جائے۔ اس کا مطلب ہے کہ آپ نے ایسا کتنی بار محسوس کیا اسے گنتے نہ بیٹھ جائیں لیکن وہ جواب دیں جو عموماً بہترین ہے۔

For each statement, please tell me if you have had these thoughts or feelings: never, almost never, sometimes, fairly often, or very often. (Read all answer choices each time)

ہر ایک بیان کے لئے مجھے بتائیں کہ آپ نے کیسا محسوس کیا یا سوچا: کبھی نہیں، تقریباً کبھی نہیں، کبھی کبھار، کئی بار یا بہت بار۔ (ہر مرتبہ جوابات کے تمام چناؤ پڑھیں۔)

		Never کبھی نہیں	Almost Never تقریباً کبھی نہیں	Sometimes کبھی کبھار	Fairly Often کئی بار	Very Often بہت بار
B.1.	In the past month, how often have you been upset because of something that happened unexpectedly? پچھلے ماہ میں آپ کتنی بار کسی چیز کے غیر متوقع ہونے پر پریشان ہوئے؟	0	1	2	3	4
B.2.	In the past month, how often have you felt unable to control the important things in your life? پچھلے ماہ میں آپ نے کتنی بار یہ محسوس کیا کہ آپ اپنی زندگی کی اہم چیزوں پر قابو نہیں پا سکتے؟	0	1	2	3	4
B.3.	In the past month, how often have you felt nervous or stressed? پچھلے ماہ میں آپ نے کتنی بار گھبراہٹ اور دباؤ محسوس کیا ہے؟	0	1	2	3	4
B.4.	In the past month, how often have you felt confident about your ability to handle personal problems? پچھلے ماہ میں آپ نے خود کو اپنے ذاتی معاملات کو سنبھالنے کی صلاحیت میں کتنی بار اعتماد محسوس کیا؟	0	1	2	3	4
B.5.	In the past month, how often have you felt that things were going your way? پچھلے ماہ میں آپ کو کتنی بار یہ محسوس ہوا کہ حالات آپ کے مطابق چل رہے ہیں؟	0	1	2	3	4
B.6.	In the past month, how often have you found that you could not cope with all the things you had to do? پچھلے ماہ میں آپ کو کتنی بار یہ لگا کہ جو چیزیں آپ کو کرنی ہیں آپ ان سے نہیں نمٹ سکتے؟	0	1	2	3	4
B.7.	In the past month, how often have you been able to control irritations in your life? پچھلے ماہ میں آپ کتنی بار اپنی زندگی میں موجود تکلیفوں پر قابو پانے کے اہل ہوئے؟	0	1	2	3	4
B.8.	In the past month, how often have you felt that you were on top of things? پچھلے ماہ میں آپ کو کتنی بار یہ محسوس ہوا کہ معاملات آپ کی گرفت میں ہیں؟	0	1	2	3	4
B.9.	In the past month, how often have you been angry because of things that happened that were outside of your control? پچھلے ماہ میں آپ کتنی بار ان باتوں کی وجہ سے غصہ ہوئے جو آپ کے اختیار سے باہر تھیں؟	0	1	2	3	4
B.10.	In the past month, how often have you felt that difficulties were piling up so high that you could not overcome them? پچھلے ماہ میں آپ نے کتنی بار یہ محسوس کیا کہ مشکلات اتنی بڑھ چکی ہیں کہ آپ ان پر قابو نہیں پا سکے؟	0	1	2	3	4

Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet & Farley, 1988)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

ہدایات: ہم اس بات میں دلچسپی رکھتے ہیں کہ آپ درج ذیل بیانات کے بارے کیا محسوس کرتے ہیں۔ ہر ایک بیان کو احتیاط سے پڑھئے۔ ہر ایک بیان کے بارے آپ کیسا محسوس کرتے ہیں اس کی نشاندہی کریں۔

Circle the "1" if you **Very Strongly Disagree**	اگر آپ کو	قطعی اختلاف	ہے تو 1 پر دائرہ لگائیں
Circle the "2" if you **Strongly Disagree**	اگر آپ کو	پرزور اختلاف	ہے تو 2 پر دائرہ لگائیں
Circle the "3" if you **Mildly Disagree**	اگر آپ کو	تھوڑا اختلاف	ہے تو 3 پر دائرہ لگائیں
Circle the "4" if you are **Neutral**	اگر آپ کو	پتہ نہیں	ہے تو 4 پر دائرہ لگائیں
Circle the "5" if you **Mildly Agree**	اگر آپ	تھوڑا متفق	ہیں تو 5 پر دائرہ لگائیں
Circle the "6" if you **Strongly Agree**	اگر آپ	پرزور متفق	ہیں تو 6 پر دائرہ لگائیں
Circle the "7" if you **Very Strongly Agree**	اگر آپ	قطعی متفق	ہیں تو 7 پر دائرہ لگائیں

1	There is a special person who is around when I am in need میری ضرورت کے وقت کوئی خاص شخص میرے نزدیک موجود ہوتا ہے۔	1	2	3	4	5	6	7
2	There is a special person with whom I can share my joys and sorrows ایک خاص شخص ہے جس سے میں اپنی خوشیاں اور غم بانٹ سکتا سکتی ہوں۔	1	2	3	4	5	6	7
3	My family really tried to help me. میرے خاندان نے حقیقت میں میری مدد کرنے کی کوشش کی۔	1	2	3	4	5	6	7
4	I get the emotional help and support I need from my family مجھے اپنے خاندان سے ہر طرح کی جذباتی مدد اور تعاون حاصل ہے۔	1	2	3	4	5	6	7
5	I have a special person who is a real source of comfort to me میرے ساتھ ایک خاص فرد ہے جو میرے لئے حقیقی سکون کا ذریعہ ہے۔	1	2	3	4	5	6	7
6	My friends really try to help me. میرے دوست حقیقت میں میری مدد کرنے کی کوشش کرتے ہیں۔	1	2	3	4	5	6	7
7	I can count on my friends when things go wrong. مشکل اوقات میں اپنے دوستوں پر بھروسہ کر سکتا سکتی ہوں۔	1	2	3	4	5	6	7
8	I can talk about my problems with my family. میں اپنے خاندان سے اپنے مسائل کے بارے بات کر سکتا سکتی ہوں۔	1	2	3	4	5	6	7
9	I have friends with whom I can share my joys and sorrows. میرے دوست ہیں جن سے میں اپنی خوشیاں اور غم بانٹ سکتا ہوں۔	1	2	3	4	5	6	7
10	There is a special person in my life who cares about my feelings. میری زندگی میں ایک خاص شخص ہے جو میرے جذبات کا خیال رکھتا ہے۔	1	2	3	4	5	6	7
11	My family is willing to help me make decisions. میرا خاندان فیصلے کرنے میں میری مدد کرنے پر رضامند ہے۔	1	2	3	4	5	6	7
12	I can talk about my problems with my friends. میں اپنے دوستوں سے اپنے مسائل کے بارے بات چیت کر سکتا ہوں۔	1	2	3	4	5	6	7

Who is your special person? آپکا خاص شخص کون ہے؟

- ☐ Husband شوہر
- ☐ Friend دوست
- ☐ Other family member خاندان کا کوئی دوسرا فرد

Gynecological History: امراض نسواں سے متعلق معلومات

Number of pregnancies: _____ حمل کی تعداد Number of live births: _____ زندہ بچے پیدا ہونے کی تعداد

Abortion / Miscarriage: _____ اسقاط حمل/وقت سے پہلے حمل گر جانا Stillbirth: _____ مردہ بچہ کی پیدائش

New born baby: نوزائیدہ بچہ

Gender: ☐ Male ☐ Female جنس لڑکا لڑکی Gestational age: _____ حمل کا دورانیہ Weight at birth: _____ پیدائش کے وقت وزن

Any illnesses or deformity in the baby: _____ بچے میں کوئی بیماری یا جسمانی خرابی

Feeding: خوراک دینے کا عمل

☐ Exclusive Breast feeding مکمل طور پر ماں کا دودھ ☐ Bottle feeding only صرف بوتل کے ذریعے خوراک ☐ Combination of both دونوں کا مجموعہ

Any difficulties: _____ کوئی مشکل

Type of delivery: ☐ Normal Vaginal Delivery قدرتی پیدائش ☐ Cesarean Section آپریشن ☐ Instrumental delivery اوزاروں کی مدد سے پیدائش پیدائش کی قسم

Difficulties in delivery: _____ پیدائش میں پیچیدگیاں

History of illnesses during pregnancy: دوران حمل علالت کی تاریخ

☐ None کوئی نہیں ☐ Hypertension فشار خون کا بڑھا ہوا ☐ Gestational diabetes دوران حمل ذیابیطس ☐ Anemia خون کی کمی ☐ Other دیگر

Any ongoing health problems: _____ صحت کے کوئی جاری مسائل

Do you have any habit of? کیا آپ کی کوئی عادت ہے؟

☐ Smoking سگریٹ پینا ☐ Chewing pan پان کھانا ☐ Gutka گٹکا ☐ Chalia چھالیا ☐ Drinking alcohol شراب نوشی

Others: _____ دیگر

Have you experienced any life threatening events during pregnancy or in the past one year? پچھلے ایک سال میں یا حمل کے دوران آپ کو کوئی جان لیوا تجربہ ہوا ہے؟

☐ No نہیں ☐ Yes ہاں If yes, please (√) the ones that you experienced: اگر ہاں تو جو تجربہ آپ کو ہوا اس پر (√) یہ نشان لگائیں:

☐ Fire/explosion آگ/دھماکا ☐ Sudden death اچانک موت ☐ Firing/Shooting اسلحہ چلنا/گولی مارنا

Other life threatening events _____ دیگر جان لیوا واقعات

Please tick all the customs you follow during the forty days after the baby is born: بچے کی پیدائش کے بعد چالیس روز کے دوران مانے جانے والے تمام رسم و رواج پر نشان لگائیں:

Ways of living / Beliefs: رہن سہن/عقائد

☐ Seclusion and confinement for forty days چالیس روز تک الگ تھلگ رہنا۔

☐ Restricted from doing heavy work بھاری کام نہ کرنا

- ☐ Prohibited from crying, reading or watching television to prevent later eye problem
  روئے، پڑھنے یا ٹیلیوژن دیکھنے کی ممانعت تاکہ بعد میں پیدا ہونے والے آنکھوں کے مسائل سے بچا جائے
- ☐ Take a purification bath (ghusl) after bleeding stopped — خون آنا بند ہونے کے بعد پاک ہونے کا غسل:
- ☐ Considered unclean and not allowed to cook for 40 days following childbirth
  ناپاک سمجھا جانا اور بچے کی پیدائش کے بعد چالیس روز تک کھانا پکانے کی ممانعت
- ☐ Wash mothers breast prior to initiation of breast feeding — دودھ پلانے سے پہلے ماں کے پستان دھونا:
- ☐ Wait for two days before initiating breast feeding — دودھ پلانے سے پہلے دو روز انتظار کرنا:

Diet: خوراک

- ☐ Consume milk, butter, ghee and some types of fish — دودھ، مکھن، گھی اور کچھ اقسام کی مچھلی کا استعمال
- ☐ Diet consisting of puffed rice, tea and hot water for first three days
  پہلے تین روز تک چاول، چائے اور گرم پانی کا خوراک کے طور پر استعمال
- ☐ Consume a large quantity of garlic, to aid in contraction of uterus — بچہ دانی کے سکڑاؤ کے لئے لہسن کا استعمال:
- ☐ Avoid hard foods — ثقیل غذاؤں سے پرہیز
- ☐ Consume hot foods and drinks are encouraged to restore harmony
  جسمانی ہم آہنگی کو بحال کرنے کے لئے گرم غذاؤں اور مشروبات کے استعمال کی حوصلہ افزائی کرنا
- ☐ Avoid fruits and raw, sour, spicy, greasy or oily foods. — پھلوں اور کچی، کھٹی، چٹ پٹی اور چکنی غذاؤں سے اجتناب

Healing of mother's body ماں کے جسم کی صحت

- ☐ Cold baths or showers are prohibited to avoid blood clots, sore bones and joints.
  ٹھنڈے پانی کے غسل کی ممانعت تاکہ خون کے انجماد، ہڈیوں اور جوڑوں کے دکھنے سے بچا جائے
- ☐ Take bath with hot shower but washing hair is prohibited — گرم پانی سے غسل لینا مگر بال دھونے کی ممانعت:
- ☐ Taking steam bath (sitting on hot bricks and medicinal leaves or inhaling steamed medicinal herbs). — بھاپ سے غسل (گرم اینٹوں پر بیٹھنا اور ادویاتی پتوں یا ادویاتی جڑی بوٹیوں کی بھاپ لینا)
- ☐ Boiling herbs in a pot and covering the pot with blanket while the mother sits on the pot and covers herself with blanket.
  ایک برتن میں جڑی بوٹیاں ابالنا اور برتن کو ایک کمبل کے ساتھ ڈھانپنا جبکہ ماں برتن پر بیٹھتی ہے اور اپنے آپ کو کمبل میں لپیٹ لیتی ہے۔
- ☐ Sexual activity is avoided for a length of time ranging from 20 to 100 days
  بیس تا سو دنوں کے لئے جنسی تعلق سے پرہیز کرنا۔
- ☐ Use of special herbs — خاص جڑی بوٹیوں کا استعمال کرنا:
- ☐ Bind hot substances around the abdomen and lie above or near a fire source.
  شکم کے گرد کوئی گرم چیز باندھنا اور آگ سے اوپر یا نزدیک لیٹنا
- ☐ A thorough massage for three days — تین دن تک بدن کی مکمل مالش کرنا
- ☐ Massage with hot salt — گرم نمک کے ساتھ مالش کرنا۔
- ☐ Wear warm clothes — گرم کپڑے پہننا
- ☐ Lie on a wooden bed over a warm fire for thirty days — تیس دن تک گرم آگ پر ایک لکڑی کے بیڈ پر لیٹنا
- ☐ Place heated rocks on stomach — پیٹ پر گرم پتھر رکھنا۔
- ☐ Sleep near a fire for three days — تین روز تک آگ کے نزدیک سونا۔
- ☐ Binding mother's abdomen — ماں کے شکم کو باندھنا

APPENDIX B

INFORMED CONSENT FORM (ENGLISH)

Loma Linda University
Adventist Health Science Center
Institutional Review Board
Approved 11/15/16 Void after 11/13/2017
#5160335 Chair

LOMA LINDA UNIVERSITY
School of Nursing

INFORMED CONSENT**

TITLE: SOCIAL SUPPORT AND CULTURAL SPECIFIC STRESSORS THAT PREDICT POSTPARTUM DEPRESSION IN KARACHI, PAKISTAN
SPONSOR: School of Nursing PhD student dissertation fund $ 1000.
PRINCIPAL INVESTIGATOR: *Lisa Roberts, DrPH*

WHY IS THIS STUDY BEING DONE?

The purpose of the study is to find out the changes and experiences a mother faces after giving birth to her child and the kind of support and help offered to her from family, friends and others during this time.

HOW WILL I BE INVOLVED?
Participation in this study involves the following:

- Filling out the survey questions or talking about your experiences after giving birth to a baby.

WHAT ARE THE REASONABLY FORESEEABLE RISKS OR DISCOMFORTS I MIGHT HAVE?

This study poses no greater risk to you than what you routinely encounter in day-to-day life. Participating in this study will involve the following risks: you may feel uncomfortable answering some of our questions, and the information you give us could accidently be exposed.

We will not put your name on any of the information we collect from you and all information will be stored in a locked box, in a locked room. Any published document resulting from this study will not disclose your identity without your permission. Information identifying you will only be available to the study personnel.

WILL THERE BE ANY BENEFIT TO ME OR OTHERS?

Although you may not personally benefit from this study, your participation may help practitioners better identify the changes and experiences faced by mothers after giving birth to a baby and accordingly plan strategies to help mothers cope with the stressors to remain mentally healthy.

WHAT ARE MY RIGHTS AS A PARTICIPANT?

Your participation in this study is entirely voluntary. You may refuse to participate or withdraw once the study has started. Your decision whether or not to participate or terminate at any time will not affect your future standing with the researchers. You do not give up any legal rights by participating in this study. If at any time you feel uncomfortable, you may refuse to answer questions.

WHAT COSTS ARE INVOLVED? There is no cost to you for participating in this study.

WILL I BE PAID TO PARTICIPATE IN THIS STUDY?

You will not be paid to participate in this research study, but will be given a small gift to thank you for your time.

WILL STUDY STAFF RECEIVE PAYMENT?

The study sponsor, Loma Linda University School of Nursing PhD student fund, is providing financial support for this study.

WHO DO I CALL IF I HAVE QUESTIONS?

Call Vimla Gill, PhD student at 03212594986 for information and assistance with complaints or concerns about your rights in this study.

PARTICIPANT'S STATEMENT OF CONSENT

I have read the contents of the consent form and have listened to the verbal explanation given by the investigator. My questions concerning this study have been answered to my satisfaction. Signing this consent document does not waive my rights nor does it release the investigators, institution or sponsors from their responsibilities. I hereby give voluntary consent to participate in this study.

I understand I will be given a copy of this consent form after signing it.

Signature of Participant

Printed Name of Participant

Date

INVESTIGATOR'S STATEMENT

I have reviewed the contents of this consent form with the person signing above. I have explained potential risks and benefits of the study.

Signature of Investigator

Printed Name of Investigator

Date

**Before any data collection occurs the approved English version of this consent form will be translated into Urdu.

Loma Linda University
Adventist Health Science Center
Institutional Review Board
Approved 11/15/16 Void after 11/13/2017
#5160335 Chair

APPENDIX C

INFORMED CONSENT FORM (URDU)

لومالنڈا یونیورسٹی

سکول آف نرسنگ

باخبر رضامندی

عنوان: کراچی، پاکستان میں مخصوص ثقافتی کشیدگیاں اور سماجی حمایت جو بعد از زچگی پیش آنے والے ذہنی دباؤ کی پیش گوئی کرتی ہیں۔

سرپرست: سکول آف نرسنگ، پی ایچ ڈی، ڈسرٹیشن فنڈ، ایک ہزار ڈالر

مرکزی تحقیق کنندہ: لیزا رابرٹس، ڈاکٹر آف پبلک ہیلتھ

یہ تحقیق کیوں کی جارہی ہے؟

اس تحقیق کا مقصد یہ معلوم کرنا ہے کہ ایک ماں زچگی کے بعد کن تبدیلیوں تجربات کا سامنا کرتی ہے اور اُسے خاندان، دوستوں اور دوسرے لوگوں سے اس مشکل وقت میں کیا مدد فراہم ہوتی ہے۔

میں اس میں کیسے شرکت کروں گی؟

اس تحقیق میں شرکت درج ذیل چیزوں پر مشتمل ہے۔

- سروے کے سوالات کے جواب دینے سے اور بعد از پیدائش پیش آنے والی تبدیلیوں اور تجربات پر بات چیت کرنے سے۔

مجھے کون سی ممکنہ دشواریاں پیش آسکتی ہیں؟

یہ تحقیق آپ کو اس سے بڑی مشکل میں نہیں ڈالتی جس سے آپ اپنی روزمرہ زندگی میں نبرد آزما ہوتے ہیں۔ اس تحقیق میں شمولیت سے درج ذیل خطرات لاحق ہو سکتے ہیں: ہوسکتا کہ آپ ہمارے سوالوں کا جواب دینے میں غیر آرام دہ محسوس کریں کہ آپ کی مہیا کردہ معلومات کہیں حادثاتی طور پر منظر عام پر نہ آجائیں۔

آپ سے حاصل کردہ معلومات پر آپ کا نام نہیں لکھا جائے گا اور تمام معلومات ایک تالہ لگے کمرے میں تالہ لگے باکس میں محفوظ کی جائے گی۔ اس تحقیق کے نتیجے میں کسی اشاعت پر آپ کی اجازت کے بغیر آپ کا نام تحریر نہیں کیا جائے گا۔ ایسی معلومات جس سے آپ کی شناخت ہوتی ہو وہ صرف تحقیق کرنے والے اشخاص کو ہی میسر ہوگی۔

مجھے یا کسی اور کو کوئی فائدہ ہوگا؟

اگرچہ آپ کو اس تحقیق سے ذاتی طور پر کوئی فائدہ نہیں پہنچے گا لیکن آپ کی شمولیت پیشہ ور طبیبوں کو بچے کی پیدائش کے بعد ماں کو درپیش مشکلات کی بہتر نشان دہی میں مدد ملے گی اور اس طرح ماؤں کیلئے حکمت عملی کی منصوبہ بندی ہو سکے گی تا کہ وہ دباؤ کا مقابلہ کرتے ہوئے ذہنی طور پر صحت مند رہ سکیں۔

ایک شریک کے طور پر میرے حقوق کیا ہیں؟

اس تحقیق میں آپ کی شرکت مکمل طور پر رضا کارانہ ہے۔ آپ شرکت سے انکار کر سکتے ہیں یا تحقیق کا آغاز ہونے پر پیچھے ہٹ سکتے ہیں۔ آپ کے شریک ہونے یا نہ ہونے یا کسی بھی وقت پیچھے ہٹ جانے کا فیصلہ مستقبل میں آپ کے اور محققین کے تعلقات پر اثر انداز نہ ہوگا۔ اس تحقیق میں شمولیت

سے آپ کو اپنا کوئی قانونی حق نہیں چھوڑتے۔ کسی بھی وقت اگر آپ اچھا محسوس نہیں کرتے تو آپ سوالات کا جواب دینے سے انکار کر سکتے ہیں۔

اس تحقیق میں کیا اخراجات شامل ہیں؟

اس تحقیق میں شرکت کے لئے آپ کو کوئی خرچہ نہیں اٹھانا پڑے گا۔

کیا تحقیق میں شرکت کیلئے مجھے کوئی معاوضہ ملے گا؟

اس تحقیق میں شرکت کے عوض آپ کو کوئی معاوضہ نہیں دیا جائے گا بلکہ وقت دینے کیلئے شکریہ کے طور پر آپ کو کوئی تحفہ دیا جائے گا۔

کیا تحقیق کرنے والا عملہ معاوضہ وصول کرے گا؟

اس تحقیق کی سرپرست، لوما لنڈا یونیورسٹی سکول آف نرسنگ، پی ایچ ڈی سٹوڈنٹ فنڈ اس تحقیق کے لئے مالی مدد فراہم کر رہی ہے۔

اگر کوئی سوال ہو تو کس سے رابطہ کیا جائے؟

اپنی شکایات اور اس تحقیق میں اپنے حقوق سے متعلق معاونت اور معلومات کیلئے آپ ولما گل، پی ایچ ڈی سٹوڈنٹ سے فون نمبر 0321-2594986 پر رابطہ کریں۔

شریک تحقیق کی تحریری رضامندی

میں نے رضامندی فارم کو پڑھ لیا ہے اور محقق کی زبانی وضاحت کو بھی سن لیا ہے۔ اس تحقیق سے متعلق میرے سوالات کا تسلی بخش جواب مل گیا ہے۔ رضامندی کی اس دستاویز پر دستخط کرنے سے میں اپنے حقوق نہیں کھوتی اور نہ ہی اس سے محقق، ادارہ یا سرپرست اپنی ذمہ داریوں سے بری الذمہ قرار پاتے ہیں۔ لہذا میں اپنی مرضی سے اس تحقیق میں شرکت کیلئے رضامند ہوں۔

میں یہ سمجھتی ہوں کہ میرے دستخط کرنے کے بعد مجھے باخبر رضامندی کے فارم کی نقل مہیا کی جائے گی۔

شرکت کرنیوالے کے دستخط	شرکت کرنیوالے کا نام	تاریخ

تحقیق کنندہ کا بیان

جس شخص نے اوپر دستخط کئے ہیں میں نے اس کے ساتھ باخبر رضامندی کے فارم کا دوبارہ جائزہ لیا ہے۔ میں نے اس تحقیق کے ممکنہ خطرات اور فوائد کی بھی وضاحت کر دی ہے۔

تحقیق کنندہ کے دستخط	تحقیق کنندہ کا نام	تاریخ

APPENDIX D

LOMA LINDA UNIVERSITY INSTITUTIONAL REVIEW BOARD APPROVAL

LOMA LINDA UNIVERSITY
HEALTH

INSTITUTIONAL REVIEW BOARD
RESEARCH PROTECTION PROGRAMS
24887 Taylor Street • Suite 202 • Loma Linda, CA 92350
(909) 558-4531 (voice) • (909) 558-0131 (fax)

Initial Approval Notice - Expedited ***IRB# 5160335***

To: **Roberts, Lisa**
Department: **Nursing Graduate Programs**
Protocol: **Social support and cultural specific stressors that predict postpartum depression in Karachi, Pakistan**

This study was reviewed and approved administratively on behalf of the IRB. This decision includes the following determinations:

Risk to research subjects: **Minimal**
Approval period begins: **14-Nov-2016** and ends **13-Nov-2017**
Stipulations of approval:
See attached list of items (if applicable).
See Appendix A for Conditions of Approval.

Adverse events and unanticipated problems must be reported in accord with the attached Adverse Event Reporting Matrix **A.**

All investigators are responsible for assuring that studies are conducted according to the approved protocol. Principal investigators are responsible for the actions of sub-investigators and staff with regard to this approval.

Please note the PI's name and the assigned IRB number, as indicated above, on any future communications with the IRB.

Direct all communications to the IRB c/o Research Protection Programs.

Thank you for your cooperation in LLU's shared responsibility for the ethical use of human subject in research.

IRB Chair/Designee

11/15/16
Date

Loma Linda University Adventist Health Sciences Center holds Federalwide Assurance (FWA) No. 00006447 with the U.S. Office for Human Research Protections and the IRB registration no. is IORG0000226. This Assurance applies to the following: Loma Linda University, Loma Linda University Medical Center (including Loma Linda University Children's Hospital, LLUMC East Campus Hospital), Loma Linda University Behavioral Medicine, and affiliated medical practices groups.

IRB Chair:
Travis Losey, MD
Department of Neurology
(909) 558-4531, tlosey@llu.edu, Pager #4290 for emergencies

IRB Administrator:
Linda G. Halstead, MA, Director
Research Protection Programs
Ext 43570, Fax 80131, lhalstead@llu.edu

IRB Analyst:
Anuradha Dieknann, MPH, CCRP, CIP
Research Protection Programs
Ext 86215, Fax 80131, adieknann@llu.edu

APPENDIX E

PERMISSION LETTER FROM HEALTH MINISTRY

NO.OSD-Legis/Misc-1/16
GOVERNMENT OF SINDH
HEALTH DEPARTMENT
Karachi dated the, 17th November, 2016

To,

Ms. Vimla Seemore John,
Karachi Adventist Hospital,
91-Depot Line MA Jinnah Road,
Karachi.

SUBJECT: APPROVAL FOR COLLECTION OF DATA ON POST PARTUM DEPRESSION BEING PART OF PH.D DEGREE IN NURSING FROM LOMA LINDA UNIVERSITY CA, USA

I am directed to refer to your application on the subject noted above and to convey that Health Department, Government of Sindh has been pleased to approve for conducting survey / collection of data on "Post Partum Depression" for patients of Obstetrics at Karachi, for completion of requirement of your ongoing Ph.D Degree from Loma Linda University CA, United States of America.

2. You will be bound to follow the ethics regarding research / collection of data prescribed by Pakistan Medical Research Council, patient privacy and informed consent.

(DR. AIJAZ AHMED KHANZADA)
Officer on Special Duty for Legislation
For Secretary to Government of Sindh

C.C.to:-

The PS to Secretary Health.

APPENDIX F

PERMISSION LETTER FROM LIAQUAT NATIONAL HOSPITAL

January 16, 2017

To,

MS. VIMLA SEEMORE JOHN
Karachi Adventist Hospital
Karachi

Subject: **Permission to collect data of OBGYN patient from gynae OPD.**

Dear Ms. Vimla,

The department of obstetrics & gynaecology allow you to collect the data of 231 postnatal patients and to conduct 20 interviews of patients including key informant health professional from gynae OPD. You are requested to complete this task within 90 days.

Regards

Yours sincerely **PROF. DR. ZEHRA NAQVI**
MBBS, MCPS, FCPS
Head of Gynaecology & Obstetrics Department
Liaquat National Hospital & Medical College

PROF. ZEHRA NAQVI
Head of Obstetrics & Gynaecology Department
Liaquat National Hospital & Medical College
Karachi

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