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Psychosocial Predictors and Health Behavior of Quality of Life among Pregnant Women

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ABSTRACT
The aim of the current study was to find out the role of prenatal stress and health behaviors in quality of life of pregnant women. Meanwhile perceived stress during 1st to 3rd trimester was also tested. The sample of the current study is comprised of 200 pregnant women from different clinics and hospitals of faisalabad. The results indicated prenatal stress, perceived stress and prenatal health behavior has positive relationship with quality of life and its subscales. Stepwise multiple regression indicated that prenatal stress, perceived stress and prenatal health behavior are significant predictor of overall quality of life by accounting 45% variance in quality of life among pregnant women. The anticipated findings of current research could be helpful for women when it comes to their psychological health during pregnancy. The outcome can also be useful to adopt significant behaviors that can increase the quality of life of pregnant women.

Keywords: Prenatal Stress, Health Behavior, Perceived Stress, Pregnant Women

INTRODUCTION

Pregnancy is a period of transition accompanied by significant physical and emotional changes in a woman`s life that can affect maternal and infant health. Even in uncomplicated pregnancies, these changes can have an effect on the quality of life (QOL) of pregnant women (Lagadec et al., 2018). Economic factors and stressful events can affect women`s health throughout three trimesters even if the expectant mother does not have any physical or psychological illness (Calou et al., 2014).

Perceived prenatal maternal stress is associated with low birth weight, lower gestational age and preterm birth. Prenatal maternal stress may induce long term adverse health effects on the mother, the unborn child, and the development of child (Stenva et al., 2015). One out of five pregnant women suffered from probable depression throughout pregnancy. Approximately one in four pregnant women experienced high perceived stress levels, which in turn was significantly associated with probable depression during both early and late pregnancy. Participants with low social support or a lower education level had increased risk of depression throughout pregnancy. Pregnant women aged 20 to 34 years had more chance of probable depression during the third trimester than women aged 16–19 years (Ahmed et al., 2017).

Perceived stress during pregnancy is associated with poor obstetric outcomes, including preterm birth, preterm delivery and low birth weight. Perceived stress symptoms were significantly associated with divorce (Rizvi & Batool, 2024), separation from spouse, physical or psychological trauma from family, marital conflict, and family conflict. Predictive factors for perceived stress symptoms were marital conflict and family conflict (Waqas et al., 2020).

Health behaviors, such as nutrition, substance use, and physical activity, have been shown to influence the risk for pregnancy complications, adverse birth outcomes, and neurodevelopmental disorders (Blair et al. Furthermore, literature also indicates that poorer sleep, as measured by quality, duration, and clinical diagnosis, can result in adverse maternal health (gestational diabetes) and birth outcomes (preterm birth; (Carroll et al., 2008), sleep hygiene such as routines and use of electronic devices, and other health behaviors such as physical

activity (Bacaro et al., 2020). Besides this, studies have also shown that pregnancy can result in a change in health behaviors of pregnant women. Prospective studies from pre-pregnancy to the perinatal period have cited positive changes when it comes to some specific health behaviors. But there are very few researches conducted regarding prenatal stress, health behaviors and quality of life among pregnant women. Our study`s prime motive is to elaborate the relationship between prenatal stress, health behaviors and quality of life.

Researchers have also found that, to improve the quality of life in pregnant women, it is important to improve background conditions (such as education and income) for women (Payesh et al. 2009). Because the quality of life of pregnant women can affect maternal health as well as infant and fetal health (Volpato et al., A survey was conducted over 3000 females, and the results showed that around 86% of these women experienced stress during their pregnancy (Sable & Wilkinson, 2000). Besides this, researches have shown that previous adverse pregnancy outcomes (abortion, fetal death, preterm birth or early neonatal death) can also affect the quality of life of pregnant women (Couto et al. Maternal health behaviors are very important in pregnancy, as they not only affect the pregnant woman but also affect the fetal development and neonatal outcomes (Mitchell, 2022).

Research was conducted in China, in hospital of Jilin province on stress and quality of life among women in late pregnancy, along with mediating role of depressive symptoms and sleep quality. The study`s objective was to investigate the parallel multiple mediators of depressive symptoms and sleep quality in association between stress and physical health-related quality of life along with mental health-related quality of life among the women in late pregnancy. It was a cross-sectional study in which 1120 pregnant women participated who were above twenty years and in third trimester of pregnancy by using convenient sampling method. They filled questionnaires of Perceived Stress Scale, Edinburgh Postnatal Depression Scale, Pittsburgh Sleep Quality Index and MOS 12-item Short Form Health Survey. Correlation analysis was used to check relationship between stress and quality of life; and hierarchical linear regression model was used to examine the mediating role of depressive symptoms and sleep quality. It was concluded that there was a partial negative relationship between perceived stress and physical quality of life through the indirect path of sleep quality, and there was significant negative relationship between perceived stress and mental health quality of life as depressive symptoms and sleep quality played role of parallel mediators. This study showed the influence of stress on physical and mental health quality of life, in addition to significance of sleep quality and depressive symptoms for improving quality of life in late pregnancy (Zhang et al., 2019).

There are a few researches were done on perceived maternal stress, health behaviors and quality of life in women. As it is reported that there is a lack of research available on finding the affect of Pregnant women's psychological, physical, and emotional well-being. So the current study is being conducted to know about the consequences of prenatal stress and its relationship to health behaviors. The findings can be helpful for pregnant women to adopt significant behaviors.

OBJECTIVES

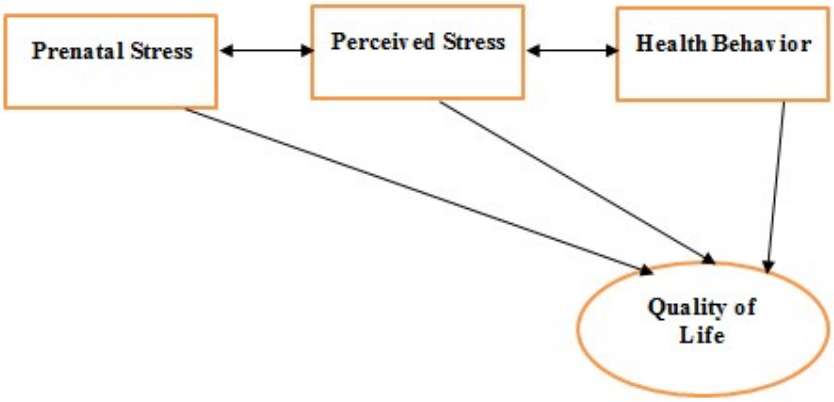
1. To study the link between prenatal stress and health behaviors among pregnant women.
2. To investigate the association between prenatal stress and quality of life among pregnant women.
3. To explore the connection between health behaviors and quality of life among pregnant women.
4. To compare the level of stress, health behaviors and level of quality of life across 3 trimesters.
5. To check the role of health behaviors as mediator of prenatal stress and quality of life.

Hypotheses

1. There will be a significant relationship between prenatal stress, perceived stress, health behaviors and quality of life among pregnant women.
2. Prenatal stress will predict quality of life among pregnant women.
3. Perceived stress will predict quality of life among pregnant women.
4. Health behavior will predict quality of life among pregnant women.
5. There will be better quality of life during pregnancy among women with low level of stress as compared to women with high level of stress.

Conceptualized Model

Fig 1 demonstrated Prenatal stress, perceived stress and Health Behaviors as predictors of quality of life among pregnant women.



METHODS

Sample:

The sample of the current study consisted of N=200 pregnant women without any age restrictions. Almost N= 66 cases of each trimester were taken, as the sample size was equally divided in first, second, and third trimester. The participants were taken from the province of Punjab (Faisalabad, Samundri and Chiniot), both from rural and urban areas. Purposive sampling technique was used for selecting the participants. Prenatal period was included in this study, while postnatal period was not included in this study.

Table 1 *Demographic Characteristics of Study Sample (N=200)*

Variables	Groups	*F*	*Percentage*
Education	None or Primary	25	10
	Graduate	130	70
	Postgraduate	45	20
	Total	200	100
Family system	Nuclear	74	37
	Joined	126	63
	Total	200	100
Trimester	1st	67	33
	2nd	65	32.5
	3rd	68	34
	Total	200	100
Miscarriage	Yes	61	30.5
	No	139	69.6
	Total	200	100

Table 1 showed frequency distribution of demographic variables including education, family system, trimester and miscarriage.

INSTRUMENTS

Perceived Prenatal Maternal Stress Scale (Gangadharan & Jena, 2019).

The scale measure prenatal stress among women. It has 15 items with four subscales (i.e., perceived social support (items 1, 2, 3, 4), pregnancy-specific concerns (item 5, 6, 7,8, 9), intimate partner relationships (items 10, 11, 12), and financial concerns (items 13, 14, 15) based on 4 point Likert Scale 1= Strongly disagree, 2= disagree, 3= Agree and 4= Strongly agree. Internal consistency of this scale was Cronbach's alpha is 0.80.

Perceived Stress Scale (Cohn et al., 1983).

It is a 10-items questionnaire, developed by Cohen et al. (1983) that measures stress levels in young people or adults. All items of this scale are constructed on a variations of a 5-point Likert scale, with scores ranging from 0 to 4, enquiring on "never", "almost never", "sometimes", "fairly often", "very often". Respondents are asked to rate their thoughts and feelings on the basis last month. It has a good reliability which is .78.

Prenatal Health Behavior Scale (Auerbach et al., 2018)

Prenatal health behavior scale is a 20-items scale, developed by Auerbach et al. (2018) that measures prenatal

health behaviors. This scale has two subscales, mainly named as health promoting behaviors and health impairing behaviors. It based on 5 point scale, from 0 "Never" to 4 "very often".

The WHO Quality of Life Scale- Brief (Lodhi et al., 2017):

Urdu version of the World Health Organization Quality of Life brief scale were used. It is a 26 items scale. This scale is a subjective assessment of an individuals perceived QoL in the past two weeks in four domains; physical health, psychological, social relationships, and environment. All items are constructed on a variations of a 5-point Likert scale, with scores ranging from 1 to 5, enquiring on "how completely", "how good", "how much", "how often", or "how satisfied" the individual felt, with a high score indicating high QOL except in 3 questions targeting pain and discomfort, need for medical treatment, and negative feeling. The Cronbach's alpha of Physical health 0.80, Psychological 0.82, Social relationships 0.75, and Environment 0.83. The overall internal consistency of WHOQOL-BREF scale is .93.

Procedure

Before collecting the data, permission was taken from the authors of all scales via emails. After seeking permission, approval of data collection was taken from different clinics of Faisalabad, Samundri, and Chiniot. Before administration of the scales pregnant women were contacted and informed consent was signed and they were informed that incase of difficulty and any problem while completing the survey they had right to withdraw. After that, pregnant women were briefed about the study and survey and assured that their responses and given information would be kept confidential. So the analysis was carried out on a sample of 200 pregnant women. The data were entered in Statistical package for the social sciences (SPSS) version 22.0 for windows. Where a significant difference was displayed on ($p<.001$ or $p<.05$).

RESULTS

Correlation

In order to assess the relationship among study variables, Pearson's product moment coefficient of correlation was run.

Table 2 *Pearson's Product Moment Coefficient of Correlations between the Study Variables (N=200)*

	1	2	3	4	5	6	7	8	9	10	11	12
1. PPMS	1											
2. PSoc	.43**	1										
3. PSC	.23*	.09*	1									
4. IPR	.21*	.07	.73**	1								
5.Finance	.032**	.09*	.80**	.39**	1							
6. PSS	.46**	.07	.96**	.64**	.70**	1						
7.HB	.32**	.18**	.19**	.18**	.14**	.13**	1					
8.QOL	.45**	.16**	.19**	.09*	.16**	.13*	.70**	1				
9.PH	.02	.18**	.07	.05	.13**	.05	.32**	.36**	1			
10.Psyc	.21*	.22*	.18*	.22*	.25*	.39**	.38**	.36**	.22*	1		
11.SR	.23*	.23*	.22*	.24*	.12*	.23*	.33**	.33**	.21*	.29*	1	
12.Env	.22*	.18*	.22*	.28*	.21*	.22*	.39**	.35**	.23*	.20*	.22*	1

Note. PPMS= perceived prenatal maternal stress, PSOC= perceived social support, PSC= pregnancy-specify concern, IPR= intimate partner relationship, Fianc= Financial concern, PSS= Perceived stress scale, HB= Health behavior, QOL= quality of life, PH= Physical health, Psyc= psychological, SR= Social relationship, Env= Environmental. p**<.01, p*<.05.

Table 2 shows the Pearson's product-moment coefficient of correlation between the study variables. Where, there was positive significant statistical relationship between study variables. Results indicate that perceived prenatal maternal stress and subscale, perceived stress, health behavior play positive role in quality of life among pregnant women.

Table 3 *Pearson's Product Moment Coefficient of Correlation between the Demographic and Study Variables (N=200)*

Demographics	**Study Variables**			
	PPMS	PSS	HB	QOL
1. Education	.76**	.43**	.76**	.35**
2. Family system	.01	.12	.01	.02
3.Trimester	-.03	.02	-.03	-.09
4.miscarriage	.03	-.03	.02	.00

Note. PPMS= perceived prenatal maternal stress, PSS= perceived stress scale, HB= health behavior, QOL= quality of life. **p<.01, *p<.05.

Table 3 shows, correlation between demographics (education, family system, trimester and miscarriage) and study variables. Results indicate that only Education play significant role on study variable rather than other demographics.

Stepwise Multiple Regression Analysis

Table 4 *Stepwise Multiple Regression Analysis for Predicting Quality of Life* (*N*=200)

Predictor	*B*	*SE*	*β*	*t*	*p*
Step 1					
Education	4.25	.42	.38**	10.00	.001
Step 2					
Education	4.01	.43	.35**	9.27	.001
PPMS	5.29	.32	.42***	2.56	.000
Step 3					
Education	3.98	.41	.32**	9.01	.001
PPMS	5.11	.30	.40***	2.67	.000
PSS	3.45	.39	.38***	2.33	.000
Step 4					
Education	3.85	.39	.30**	8.11	.001
PPMS	4.89	.29	.39***	2.54	.000
PSS	3.34	.30	.35***	2.11	.000
HB	4.29	.39	.40***	4.31	.000
R^2	.45***				
ΔR^2	.45***				

Note. ***p<.001; Step 1= R^2=.20, ΔR^2 =.23; Step 2= R^2= .24, ΔR^2 =.25; Step 3= R^2= .32, ΔR^2 =.35, Step 4= R^2=.45, ΔR^2 =.45

Table 4 shows the result of stepwise regression analysis, Variables which appeared as significant correlates of Quality of Life (e.g., education, perceived prenatal maternal stress, perceived stress, and health behavior) were entered in step wise regression to find out their relative predictive strength. Result shows that education, perceived maternal stress, perceived stress and behavior health are significant predictors of quality of life. In step1, education emerges as the most significant predictor of quality of life, accounting for 20 percent of the variance R^2= .20, F (1, 598) =100.83, p < .001. Whereas perceived prenatal maternal stress appears to be 2nd significant predictor accounting for additional 4 percent of variance leading it up to 24 percent in step 2; R^2= .25, F (2,597) =54.18, p < .001. In step 3, perceived stress appears 3rd significant predictor of quality of life by adding 7 percent more variance leading it up to 32 percent in step 3 R^2= .35, F (3,596) =38.21, p < .001. In step 4, health behavior appears 4th significant predictor of quality of life by adding 13 percent more variance leading it up to 45 percent in step 4 R^2= .45, F (4,595) =49.21, p < .001. Over all models contribute 45 percent of variance in quality of life.

DISCUSSION

Current study investigates the role of Psychosocial Predictors and Health Behavior of Quality of Life among Pregnant Women for which different scales were used i.e. Perceived Prenatal Maternal Stress Scale (Gangadharan & Jena, 2019), Perceived Stress Scale (Cohn et al., 1983), Prenatal Health Behavior Scale (Auerbach et al., 2018), and The WHO Quality of Life Scale- Brief (WHOQOL-Brief; Lodhi et al., 2017).

Study indicates that no significant differences were observed across Perceived Stress and Perceived Prenatal Stress. It also indicates significant differences were observed across Social Quality of Life and Environmental Quality of life of women with 1st pregnancy and women with 2nd or 3rd time pregnancy. Also, women with 1st pregnancy has better social relationships than women with 2nd or 3rd time pregnancy. Study also shows that the women with 1st pregnancy had better environmental wellbeing than women with 2nd or 3rd time pregnancy.

According to the results of study, significant behavioral differences were observed across women with 1st pregnancy and women with 2nd or 3rd time pregnancy. It was observed that women with 1st pregnancy had more Health Promoting Behaviors than women with 2nd or 3rd time pregnancy. It also indicated significant behavioral differences across Health Impairing Behavior. It was observed that women with 1st pregnancy had less health impairing behaviors than women with 2nd or 3rd time pregnancy.

The results Multiple Regression analysis (stepwise) of Health Promoting Behaviors and Health impairing Behaviors as a Predictor of Physical Quality of Life among pregnant women indicated that Health Impairing

Behaviors were significant predictor of Physical Quality of Life by accounting 11% variance. It also indicated that Health Promoting Behaviors were significant predictor of Physical Quality of Life by accounting 16% variance; among pregnant women. Multiple Linear Regression Analysis (step wise) of Health Promoting Behaviors and Health impairing Behaviors as a Predictor of Psychological Quality of Life indicated that Health Promoting Behaviors were significant predictor of Psychological Quality of Life by accounting 9% variance. It also indicated that Health Impairing Behaviors were significant predictor of Psychological Quality of Life by accounting 13% variance among pregnant women.

Multiple Linear Regression Analysis (step wise) of Perceived Social Support as predictor of Social Quality of Life indicates that Prenatal Stress total was a significant predictor of Social Quality of Life by accounting 16 % variance. It also indicated that Perceived Social Support is a significant predictor of Social Quality of Life by accounting 20% variance among pregnant women. Multiple Regression analysis (stepwise) of Perceived Social Support and Prenatal Stress total as predictor of Psychological Quality of Life indicated that Prenatal Stress Total was a significant predictor of Psychological Quality of Life by accounting 20 % variance. It also indicated that Perceived Social Support is a significant predictor of Psychological Quality of Life by accounting 23% variance among pregnant women.

Simple Linear Regression of Perceived Stress as a Predictor of Health Behaviors indicated that Perceived Distress is significant predictor of Health Promoting Behaviors by accounting 4% variance among pregnant women. Multiple Regression analysis (stepwise) of Perceived Stress and Perceived Prenatal Stress as Predictors of Health Behaviors indicated that Prenatal Stress Total was a significant predictor of Health Impairing Behaviors by accounting 15 % variance. It also indicated that Perceived Copying is a significant predictor of Health Impairing Behaviors by accounting 18% variance among pregnant women.

Simple Linear Regression of Perceived Stress as a Predictor of Health Behaviors indicated that Perceived Distress is significant predictor of Health Promoting Behaviors by accounting 4% variance among pregnant women.

Multiple Regression analysis (stepwise) of Perceived Stress and Perceived Prenatal Stress as Predictors of Health Behaviors indicated that Prenatal Stress Total was a significant predictor of Health Impairing Behaviors by accounting 15 % variance. It also indicated that Perceived Copying is a significant predictor of Health Impairing Behaviors by accounting 18% variance among pregnant women.

LIMITATIONS/SUGGESTIONS

There were some limitations in this study. First , the data was taken just from few hospitals of Faisalabad, Samundri and Chiniot , Pakistan. So, the results cannot be generalized on large population. Secondly , there were a lot scales , due to which participants got fed up while filling scales and showed their subjectivity. Third, it was not easy for illiterate participants to answer and understand all the items , because some words were complicated. Fourth, during collection of data from hospitals , many environmental and physical factors like noise , rush of people, fatigue (as the participants were pregnant) caused problem for the participants to concentrate and give answers correctly. There are some suggestions for the future researches that try to choose less number of scales having reasonable number of items , so that participants may not get fed up while filling the items. Secondly , when ever the researcher is administering the scales , try to find peaceful environment , so the participants can easily fill the items without any distraction.

IMPLICATIONS

1. The anticipated findings of current research could be helpful for women when it comes to their psychological health during pregnancy.
2. The outcome can also be useful to adopt significant behaviors that can increase the quality of life of pregnant women.

Community involvement statement: community members were not involved in the current study

Disclaimer: None

Conflict of Interest: None

Funding Sources: None

Ethical Statement: Our study is approved by Government college university, Faisalabad department of technology (approval no GCUF/IIB/423). All pregnant women provided written informed consent prior to enrollment in the study (all the detail information provided in procedure). There are no potentially harmful activities involved in the study and no involvement of the use of drugs and clinical trials are involved.

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