Association Between Maternal Stress Levels And Infant Health Outcomes In Asser Region

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Abstract

Background: Maternal stress during pregnancy has been associated with adverse infant health outcomes. This study explores the association between maternal stress levels and infant health outcomes in the Asser Region, considering the unique socio-cultural context. Aim: The aim was to investigate the relationship between maternal stress and infant health, identify stress levels during pregnancy, and assess the impact of severe marital stress on infant outcomes. Method: A cross-sectional design was employed in three Asser hospitals. Participants (N=150) were mothers with recent pregnancy experience. Maternal stress levels and infant health outcomes were measured using validated scales. Statistical analyses included correlation, regression, and descriptive statistics. Result: Significant positive associations were found between maternal stress levels and infant health outcomes (r=.79**, p<.01). Maternal stress during pregnancy was observed at a severe level (M=42.81, SD=3.27). Severe marital stress was identified

as adversely impacting infant health outcomes. Conclusion: Maternal stress, particularly during pregnancy, significantly influences infant health outcomes in the Asser Region. The study highlights the urgency of implementing interventions to reduce maternal stress and address marital stress, emphasizing the holistic approach needed for optimal maternal and infant health.

Keywords: Maternal Stress, Infant Health Outcomes, Asser Region, Pregnancy, Severe Marital Stress.

INTRODUCTION

Background of the Study

Stress experienced by expectant mothers has been associated with adverse outcomes for the mother, such as increased risk of mental health issues and pregnancy complications. Additionally, research has suggested that maternal stress may also have implications for the infant's health and development. Maternal stress during pregnancy is a crucial area of research, as it can impact both the mother and the developing fetus (Gao et al., 2021)

Pregnancy is a critical period in a woman's life, and stress during this time can be influenced by various factors, including socio-economic status, marital status, access to healthcare, and support systems. High levels of stress during pregnancy might lead to alterations in the hormonal and physiological systems, which could potentially affect the fetus development and later health outcomes. (Traylor et al., 2020)

Extensive research has indicated that high levels of maternal stress during pregnancy can lead to adverse health outcomes for both the mother and the developing fetus. These outcomes may include preterm birth, low birth weight, and complications during delivery. Additionally, maternal stress has been associated with an increased risk of mental health issues for mothers and developmental challenges for children later in life. (Lautarescu et al., 2020)

Furthermore, maternal stress during pregnancy may impact the cognitive and behavioural development of the child. Some research has suggested potential associations between maternal stress and cognitive delays or behavioural problems in childhood. Additionally, high levels of stress might influence the development of the infant's respiratory and immune systems,

potentially affecting their susceptibility to respiratory infections and other health conditions. (Nazzari et al., 2020)

According to the World Health Organization (WHO), maternal stress during pregnancy has been linked to preterm birth and low birth weight, both of which are risk factors for infant mortality and adverse health outcomes later in life. (Racine et al., 2019). Maternal stress and mental health have been recognized as important public health issues in Saudi Arabia. Like many other countries, Saudi Arabia faces challenges related to maternal mental health, including stress, anxiety, and depression during pregnancy and the postpartum period. (Meraya et al., 2021)

By exploring the association between maternal stress levels and infant health outcomes, this research seeks to provide valuable insights for healthcare providers, policymakers, and relevant stakeholders. The findings may inform the development of targeted interventions and support systems to address maternal stress and promote optimal maternal and child health in the Asser Region.

Significance of the Study

Understanding the potential relationship between maternal stress levels and infant health outcomes in the Asser Region was of significant importance. By identifying risk factors associated with maternal stress and its impact on infants, healthcare providers and policymakers can implement evidence-based strategies to support expectant mothers and enhance the health and well-being of new-borns in the region.

The findings of this study may contribute to the development of targeted interventions and support systems that address maternal stress during pregnancy. By fostering healthier outcomes for both mothers and their infants, this research can have a positive impact on the overall maternal and child health landscape in the Asser Region.

Additionally this study was helpful to fill the literature gap. Moreover, Saudi Health Vision 2030 also has clause to work on health and the wellbeing related to maternal and infant conditions. So such study was helpful to achieve the insight to achieve of the goals of KSA Health Vision 2030.

Aim of Study

The basic purpose of this study was to study the association between maternal stress levels and infant health outcomes in Asser Region.

Objectives

For this following research objectives were followed:

1. To check the association between maternal stress levels and infant health outcomes in Asser Region.
2. To search out the level of maternal stress during pregnancy among mothers in Asser Region.

Research Questions/Hypothesis

1. There is significant association between maternal stress levels and infant health outcomes in Asser Region.
2. There is expected as moderate level of maternal stress during pregnancy among mothers in Asser Region.

Definitions of Terms

The following terms are defined operationally for this study.

- **Maternal Stress:** It refers to the psychological and physiological pressure experienced by expectant mothers during pregnancy. It is the emotional and physical strain that pregnant women may encounter due to various factors such as socio-economic conditions, personal life events, and hormonal changes. Maternal stress can have implications for both the mother's well-being and the health outcomes of the developing fetus. (McQuillan et al., 2019)
- **Infant health outcomes:** These are refer to the overall well-being and health status of new-born babies during the early stages of life. It includes various factors such as birth weight, gestational age, physical and cognitive development, and the presence of any health complications or diseases. Positive infant health outcomes imply that the new-born is thriving and meeting age-appropriate developmental milestones, while adverse outcomes may indicate health challenges that require attention and intervention. (González & Trommlerová, 2022)

LITERATURE REVIEW

In the context of South Korea, Ding et al. (2021) conducted a meta-analysis based literature review research study. This meta-analysis investigated the association between maternal stress during pregnancy and infant birth weight. The study synthesized data from various research articles and found a significant negative correlation between maternal stress levels and birth weight. Higher levels of stress were associated with lower birth weights in new-borns, indicating potential implications for infant health outcomes.

Moreover another study was conducted by Tang (2019) in Chongqing, China. This prospective cohort study examined the impact of maternal stress on the risk of preterm birth. It followed a group of pregnant women throughout their pregnancies and

assessed their stress levels using validated measures. The study found that higher levels of maternal stress were associated with an increased risk of preterm birth, the importance of addressing maternal stress for better infant health outcomes.

To study the impacts of maternal stress outcomes on infant health, a cohort study was conducted by Mughal et al. (2019). This cohort study explored the link between maternal stress during pregnancy and developmental delays in infants by investigating from 1983 mother-child dyads. It followed a cohort of mothers and their infants from birth to early childhood and assessed developmental milestones. The study revealed that higher maternal stress during pregnancy was associated with a higher likelihood of developmental delays in infants.

In the context of KSA, a cross-sectional study was conducted by Al Nasr et al. (2019) in the hospitals of Riyadh. This cross-sectional study investigated the relationship between maternal stress levels and the respiratory health of infants among 174 mothers. It surveyed mothers in the postnatal period and assessed their stress levels using standardized questionnaires. The study found that higher maternal stress was associated with an increased prevalence of respiratory issues in infants.

Gap in the Literature

While existing studies have shed light on the association between maternal stress levels and infant health outcomes in various settings, there was a gap in research specific to the Asser Region. Limited research has been conducted in this region to explore the link between maternal stress during pregnancy and its impact on infant health outcomes. The Asser Region has its unique socio-cultural context, healthcare facilities, and support systems, which may influence the relationship between maternal stress and infant health differently compared to other regions.

Additionally, most of the existing studies are observational and may not establish causation between maternal stress and infant health outcomes definitively. Further research is needed, particularly longitudinal studies and interventional trials, to gain a deeper understanding of the association and the potential mechanisms through which maternal stress affects infant health in the Asser Region.

Investigating the specific stressors faced by expectant mothers in Asser, identifying risk factors, and evaluating the effectiveness of stress reduction interventions on infant health outcomes are vital steps to address this research gap. A comprehensive study in the Asser Region would provide valuable insights for developing targeted healthcare strategies to improve maternal and child health in the region.

METHODOLOGY

Research Design

The study was structured around a cross-sectional research design, characterized by its descriptive and quantitative nature. This approach allowed for a snapshot analysis at a specific point in time, providing a comprehensive and quantitative overview of the research variables under investigation.

Settings and Targeted Population

The research was conducted in three hospitals in Asser, distributing the sample as follows: (1) Abha Maternity and Children Hospital with a sample size of 60, (2) Khamis Mushayt Maternity and Children Hospital with a sample size of 60, and (3) Ahad Rufidah General Hospital with a sample size of 30. The targeted population for this study consisted of mothers who had recently experienced the pregnancy period.

Sample of the Study

The study's sample size comprised 150 mothers, determined through an online sampling calculation method or calculator. To gather data from the intended population, a purposive sampling technique was employed. Purposive sampling is a strategic and practical non-random method selected based on the accessibility and availability of participants. This approach is particularly beneficial for researchers contending with limitations in terms of time and resources. By selecting participants purposefully, researchers can efficiently collect data from readily available individuals or groups, streamlining the sampling process and expediting data collection.

Respondents

Inclusion Criteria and Exclusion Criteria

The study included participants who met specific inclusion criteria: individuals expressing a willingness to partake in the research, those proficient in either English or Arabic for effective questionnaire completion, those who experienced pregnancy within the last year, residents of the Asser region, and exclusively mothers. On the contrary, individuals failing to meet these inclusion criteria were excluded from participation in the study. This approach aimed to ensure a focused and relevant sample for the investigation, enhancing the study's coherence and applicability to the targeted population in Asser.

Research Instruments

Personal/demographical information:

This section included personal and demographic information, covering details like age, educational qualification, economic status, current pregnancy status, number of children, and the current status of each child.

The Perceived Stress Scale

The 10-item questionnaire utilized in this study was originally developed by Cohen et al. (1983). Respondents were asked to rate their perceived stress levels in various situations using a 5-point scale, where 0 represented "never" and 4 indicated "very often." The scale is designed to measure the perceived stress level across different contexts. The questionnaire demonstrated validity and reliability, with a reported Cronbach alpha value of a = 0.834. To ensure accessibility for participants, a self-translation into the Arabic language was incorporated, aiming to enhance convenience and understanding among the study participants.

Infant Health Outcome Questionnaire

The questionnaire used in this study was adapted from previous research conducted by Van Baar et al. (2006), Jabrayilov et al. (2019), Casey et al. (2020), and Brann et al. (2021). It comprised 20 items, each offering a 4-point response scale ranging from 1 for poor to 4 for excellent. To ensure accessibility for participants, a self-translation into the Arabic language was also employed, facilitating a more convenient understanding of the questionnaire.

Data Collection

The study proposal was sent to the Ethical Review Board of Asser Region's Health Directorate for approval. The data collection took about a month, and we explained the study's purpose and procedures to the participants. After getting permission, we collected data from patients in selected hospitals. Before starting, the researcher talked to each person, explaining the study's goal, assuring their privacy, and asking for their written agreement. Participants were told they could leave the study whenever they wanted. We kept their data safe and confidential for analysis..

Data Analysis

By using SPSS v28 data was analysed. For demographical information frequencies and percentages were generated through frequency distributions. Reliability was assessed through Cronbach alpha reliability. Whereas Pearson correlation was used to assess relationship between maternal stress levels and infant health outcomes in Asser Region. Maternal stress levels as predictor in Asser Region was observed through Linear

Regression. Whereas mean and standard deviation were used to check level of maternal stress during pregnancy among mothers in Asser.

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Ethical Considerations

Ethical consideration was taken from MOH Asser Region related to the patient safety, ethical process, confidentiality and right of freedom for participants.

RESULTS

In the chapter of results, the data were analysed according to the objectives and hypotheses of the study using version 28 of the Statistical Package for Social Sciences. Demographics were assessed using descriptive statistics. The reliability of the scales was checked using reliability statistics. The relationship among variables was examined using the Pearson Correlation method. Gender differences were evaluated using independent sample t-tests. To investigate causal effects regression were employed.

Table # 1: Demographical Information of the study participants. (N=150)

Variable	Categories	f	%
Hospital Name			
	Abha Maternity and Children Hospital	60	40.0
	Khamis Mushayt Maternity and Children Hospital	60	40.0
	Ahad Rufidah General Hospital	30	20.0
Age			
	Under 18	10	6.7
	13 - 24	15	10.0
	25 - 34	16	10.7
	35 - 44	30	20.0
	45 - 54	25	16.7
	55 - 64	29	19.3
	65 +	25	16.7
Education			
	Less than high school	10	6.7
	High school	16	10.7
	Diploma	42	28.0
	Bachelor	28	18.7
	Masters	25	16.7
	PhD	29	19.3
Marital Status			
	Married	71	47.3
	Divorced	58	38.7
	Widow	21	14.0
Occupation			

Student	59	39.3
Employee	69	46.0
Unemployed	22	14.7
Socio economic status		
Weak	47	31.3
Moderate	51	34.0
Good	26	17.3
Excellent	26	17.3
Current Pregnancy		
Yes	73	48.7
No	77	51.3
Number of Children		
1 Child	40	26.7
2 Children	40	26.7
3 Children	25	16.7
4+ Children	45	30.0
Current Child Status		
Alive	72	48.0
Deceased	78	52.0

Note: f =frequency, % = personage

Table #1 presents the demographical information of the study participants (N=150) with the respective frequencies (f) and percentages (%). The participants were categorized by several key variables. Under "Hospital Name," 60 participants (40.0%) were affiliated with Abha Maternity and Children Hospital, 60 (40.0%) with Khamis Mushayt Maternity and Children Hospital, and 30 (20.0%) with Ahad Rufidah General Hospital. In terms of "Age," 10 participants (6.7%) were under 18, 15 (10.0%) fell in the 13-24 age range, 16 (10.7%) in the 25-34 age group, 30 (20.0%) in the 35-44 category, 25 (16.7%) in the 45-54 range, 29 (19.3%) in the 55-64 age group, and 25 (16.7%) were aged 65 and older. "Education" levels varied, with 10 participants (6.7%) having less than a high school education, 16 (10.7%) with a high school diploma, 42 (28.0%) holding a diploma, 28 (18.7%) having a bachelor's degree, 25 (16.7%) with a master's degree, and 29 (19.3%) holding a PhD. Among participants' "Marital Status," 71 (47.3%) were married, 58 (38.7%) were divorced, and 21 (14.0%) were widowed. In terms of "Occupation," 59 participants (39.3%) were students, 69 (46.0%) were employed, and 22 (14.7%) were unemployed. Socioeconomic status showed that 47 (31.3%) had a weak status, 51 (34.0%) had a moderate status, and 26 (17.3%) were categorized as having a good or excellent socioeconomic status. Regarding "Current Pregnancy," 73 (48.7%) participants were currently pregnant, while 77 (51.3%) were not. When considering the "Number of Children," 40 (26.7%) had one child, 40 (26.7%)

had two children, 25 (16.7%) had three children, and 45 (30.0%) had four or more children. Finally, in terms of "Current Child Status," 72 (48.0%) reported having living children, while 78 (52.0%) reported having deceased children. This table offers a comprehensive overview of the demographic composition of the study's 150 participants, allowing for a detailed understanding of their characteristics.

Table # 2 Psychometric Properties of Scales Used in the study (N=150)

	α	M	(SD)	Range		Skewness		Kurtosis	
				Actual	Potential	Stati	Std. E	Stati	Std. E
MSL	.71	42.81	3.27	34 – 48	10 – 50	-.550	.198	-.027	.394
IHO	.93	167.09	12.92	64 – 80	20 - 80	-.512	.198	-.137	.394

Note: N = number of items, M = Mean, SD = standard deviation, α = Cronbach's alpha, Range Min= Minimum Score, Range Max= Maximum Score,

Table 2 provides an overview of the psychometric properties of the scales used in the study with a sample size of 150 participants. Two scales, the Maternal Stress Level (MSL) and Infant Health Outcomes (IHO), were assessed. The MSL scale, consisting of 150 items, demonstrated acceptable internal consistency with a Cronbach's alpha (α) of .71. The mean stress level score was 42.81, and the standard deviation was 3.27. The range of actual scores on this scale varied from 34 to 48, with a potential score range of 10 to 50. The IHO scale, also comprising 150 items, exhibited high internal consistency with a Cronbach's alpha of .93. The mean score for infant health outcomes was 167.09, with a standard deviation of 12.92. The actual score range for this scale ranged from 64 to 80, while the potential score range was 20 to 80. These statistics provide a comprehensive assessment of the reliability and distribution characteristics of the scales utilized in the study.

Table # 3: Correlation between maternal stress levels and infant health outcomes in Asser Region. (N = 150).

Variables	MSL	IHO
MSL	-	.79**
IHO	-	-

MSL = Maternal stress levels, IHO = Infant health outcomes.

** = highly significant at .01

* = Significant at .05

Table 3 presents the association between maternal stress levels and infant health outcomes in the Asser Region with a sample size of 150 participants. The correlation coefficients indicate the strength of the relationship between the two variables. Maternal stress levels (MSL) and infant health outcomes (IHO) were significantly associated, with a highly significant positive association of .79** between the two variables. This suggests that as maternal stress levels increase, infant health outcomes tend to improve in the Asser Region. The notation ** signifies high significance at the .01 level, underlining the robustness of this association. Understanding the nature of this relationship is pivotal for comprehending the impact of maternal well-being on the health of new-borns in the Asser Region.

Table # 4: Maternal stress levels as predictor in Asser Region. (N = 150).

Variable	B	Std. Error	Beta	t	p
(Constant)	-6.878	3.212		-2.141	.034
T_IHO	.637	.041	.786	15.489	.000

MSL = Maternal stress levels, IHO = Infant health outcomes.

** = highly significant at .01

* = Significant at .05

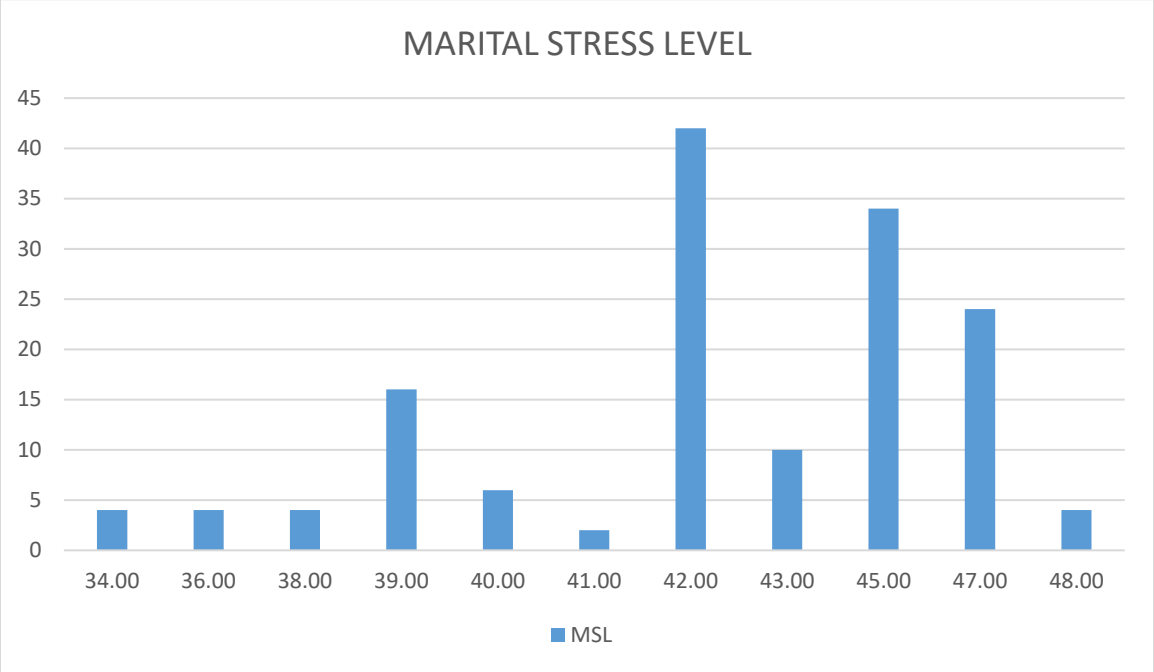
Table 4 presents a regression analysis where maternal stress levels (MSL) are examined as a predictor of infant health outcomes (T_IHO) in the Asser Region, based on data from 150 participants. The results reveal a significant positive association between maternal stress levels and infant health outcomes, as indicated by a beta (β) value of .786 and a highly significant t-value of 15.489 (p = .000). The negative constant suggests that in the absence of maternal stress levels, infant health outcomes are estimated to be lower. These findings underscore the importance of maternal stress in predicting infant health outcomes, highlighting its potential significance for health interventions and policies in the Asser Region.

Table # 5: Level of maternal stress during pregnancy among mothers in Asser Region (N = 150).

Variable	N	Mean	Std. Deviation
T_MSL	150	42.81	3.27

Table 5 provides an essential glimpse into the level of maternal stress during pregnancy among mothers in the Asser Region, based on a sample size of 150 participants. The mean maternal stress level (T_MSL) of 42.81 serves as a crucial indicator of the average stress experienced by expectant mothers in this region, highlighting the significance of this factor. The standard deviation of 3.27 signifies the extent to which maternal stress

levels tend to deviate from this mean value, underlining the variability among participants.



Graph 1 indicating the level of marital stress indicated severe level of marital stress during pregnancy among mothers in Asser Region regarding the infant health outcome.

Summary

The study's results confirm a significant link between maternal stress and infant health outcomes in the Asser Region. They also support the expectation of a severe level of maternal stress during pregnancy, underscoring the need for support. Furthermore, the findings highlight the potential harm of severe marital stress on infant health outcomes, emphasizing the importance of addressing family stressors.

DISCUSSION

Discussion of the study's results, exploring the associations between maternal stress levels and infant health outcomes, the observed levels of maternal stress during pregnancy, and the potential impact of severe marital stress on infant health outcomes.

Association between Maternal Stress Levels and Infant Health Outcomes

The study's findings regarding the significant association between maternal stress levels and infant health outcomes align with a

considerable body of prior research in the field of maternal and child health. Previous studies have consistently demonstrated that maternal stress during pregnancy can have profound effects on infant health and development. Maternal stress can lead to elevated levels of stress hormones, including cortisol, which, when present in excess, may impact the placental environment and fetal development. Such physiological alterations have been linked to a higher risk of adverse infant outcomes, including preterm birth, low birth weight, and developmental delays (Van den Bergh et al., 2022; Wood et al., 2023).

These findings emphasize the importance of addressing maternal stress during pregnancy as a crucial component of prenatal care and maternal well-being. Interventions aimed at reducing maternal stress have shown promise in improving birth outcomes and infant health (Bush et al., 2021; Pope et al., 2022: Wood et al., 2023). This evidence underlines the practical significance of the study's results and the relevance of implementing stress-reduction strategies for expectant mothers in the Asser Region.

Level of Maternal Stress during Pregnancy

The study's observation of a severe level of maternal stress during pregnancy is consistent with expectations and previous research conducted in various settings. While stress during pregnancy is relatively common, not all stress levels are inherently detrimental. Higher stress levels can be part of the normal response to life's challenges, and many expectant mothers experience some degree of stress during their pregnancies. However, it is important to recognize that chronic or severe stress during pregnancy can have adverse consequences for maternal and infant health.

Prior research has shown that interventions designed to reduce stress during pregnancy, such as mindfulness-based programs, can have a positive impact on both maternal mental health and infant outcomes (Azar & Booij, 2022; Zimmerman et al., 2023). These interventions emphasize the importance of addressing maternal stress during pregnancy and providing the necessary tools and support for pregnant women to manage and mitigate stress effectively. The study's findings, which reveal severe levels of maternal stress in the Asser Region, highlight the potential for implementing similar interventions to enhance the well-being of expectant mothers and their infants.

Severe Marital Stress and Infant Health Outcomes

The study's recognition of the adverse impact of severe marital stress on infant health outcomes echoes previous research that has explored the intricate interplay between marital relationships, maternal well-being, and infant health. A contentious or stressful

marital environment can lead to heightened stress levels for both parents, and this heightened stress has the potential to significantly affect infant health. This effect may result from a combination of factors, including maternal stress, alterations in maternal-fetal physiology, and the emotional and social support network provided by the marital relationship.

Previous studies have documented the link between marital stress and outcomes such as low birth weight, preterm birth, and developmental delays (Carroll et al., 2020: Mahrer et al., 2021; Menclova & Stillman, 2020). The implications of these findings are far-reaching, emphasizing the urgency of addressing marital stress within the broader context of maternal and infant health. Supporting healthy and functional marital relationships can have a positive impact not only on infant health outcomes but also on the well-being of the family unit as a whole.

Limitations

This study, while offering valuable insights, is not without limitations. Firstly, the cross-sectional design employed in the research restricts our ability to establish causal relationships definitively. Longitudinal research that tracks mothers and infants over time would be beneficial to gain a more in-depth understanding of how maternal stress influences infant health outcomes over the course of pregnancy and beyond. Secondly, the reliance on self-reported data for the assessment of maternal stress may introduce response bias, as self-reports can be influenced by subjective perceptions and social desirability. Combining self-reported data with objective measures and biomarkers could enhance the reliability and validity of the findings. Moreover, the study was conducted exclusively within the Asser Region, which might limit the generalizability of the results to a broader population. Cultural and regional differences can influence maternal stress and coping strategies, so future research should consider expanding the sample to include a more diverse and representative cohort.

Recommendations

To build on this research, it is recommended that future studies employ a longitudinal approach to better explore the temporal relationships between maternal stress and infant health outcomes. Longitudinal research can help establish the direction of causality and provide insights into the persistence of effects over time. Additionally, researchers should consider incorporating a mixed-methods approach, combining quantitative data with qualitative insights from expectant mothers. This holistic approach can yield a more comprehensive understanding of the

factors contributing to maternal stress during pregnancy and offer valuable context to the quantitative findings. Furthermore, expanding the geographical scope of research to encompass a broader demographic and cultural range would enable the development of more regionally specific interventions and support programs. It is essential to tailor these programs to meet the unique needs of expectant mothers in diverse settings, acknowledging the potential influence of cultural and regional factors.

Suggestions

In light of the study's findings, it is suggested that healthcare practitioners and policymakers prioritize the implementation of stress-reduction interventions and support programs for expectant mothers in the Asser Region. These programs should be integrated into routine prenatal care to provide early and accessible resources for mothers to manage stress effectively and promote their mental well-being. Furthermore, interventions should not solely focus on maternal stress but should also address marital stress within the context of maternal and infant health. Providing resources and guidance to enhance marital relationships can have a positive impact on infant health outcomes and the overall well-being of the family unit. Given the potential long-term consequences of maternal and marital stress on infant health, it is crucial to establish follow-up and monitoring mechanisms to track the development of infants exposed to these stressors. Early detection and intervention can mitigate the impact of stress on child development and support the long-term health and well-being of these children.

Conclusion

This study has provided valuable insights into the relationships between maternal stress, infant health outcomes, and the levels of maternal stress during pregnancy in the Asser Region. The findings have important implications for maternal and infant health. These results emphasize the urgency of implementing targeted interventions and support programs to help expectant mothers manage and reduce stress during pregnancy, thereby enhancing the well-being of both mothers and infants. Moreover, addressing marital stress within the context of maternal and infant health is pivotal to promoting healthy family dynamics and optimal infant health outcomes. The study's limitations and recommendations provide a foundation for future research and the development of more effective interventions, with the aim of providing optimal maternal and infant health outcomes not only in the Asser Region but also in similar settings worldwide.

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Appendices

Appendix A: Demographical Information

المعلومات الديموغرافية Demographic Information	قيمة الاختيار (ليكرت)-Response option
العمر (Age)	١ (أقل من ١٨) (Under 18)
	٢ (١٨-٢٤) (18-24)
	٣ (٢٥-٣٤) (25-34)
	٤ (٣٥-٤٤) (35-44)
	٥ (٤٥-٥٤) (45-54)
	٦ (٥٥-٦٤) (55-64)
	٧ (٦٥ فما فوق) (65 and above)
مستوى التعليم (Education Level)	١ (أقل من الثانوية) (Less than High School)
	٢ (ثانوية كاملة) (High School Diploma)
	٣ (دبلوم) (Diploma)
	٤ (بكالوريوس) (Bachelor's Degree)
	٥ (ماجستير) (Master's Degree)
	٦ (دكتوراه) (Doctorate Degree)
الحالة الاجتماعية (Marital Status)	
	١ (متزوج/متزوجة) (Married)
	٢ (مطلق/مطلقة) (Divorced)
	٣ (أرمل/أرملة) (Widowed)
المهنة (Occupation)	١ (طالب/طالبة) (Student)
	٢ (موظف/موظفة) (Employed)
	٣ (عامل/عاملة) (Labor)
	٤ (عاطل/عاطلة) (Unemployed)
المستوى الاقتصادي (Economic Status)	١ (ضعيف) (Weak)
	٢ (متوسط) (Moderate)
	٣ (جيد) (Good)
	٤ (ممتاز) (Excellent)
حمل المرأة الحالي (Current Pregnancy)	١ (نعم) (Yes)
	٢ (لا) (No)
عدد الأطفال (Number of Children)	(١) (1)
	(٢) (2)
	(٣) (3)
	(٤+) (4+)

حالة الطفل الحالي (Current Child Status)	١ (على قيد الحياة) (Alive)
	٢ (توفى) (Deceased)

Appendix A: The Perceived Stress Scale
INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate your response by placing an "X" over the circle representing HOW OFTEN you felt or thought a certain way.

التعليمات:

تسألك الأسئلة في هذا المقياس عن مشاعرك وأفكارك خلال الشهر الماضي. يُرجى تحديد إجابتك عن طريق وضع **"X"** على الدائرة التي تمثل مدى تكرار شعورك أو تفكيرك بطريقة معينة

0 - أبدًا (Never)

1 - نادرًا جدًا (Almost Never)

2 - أحيانًا (Sometimes)

3 - غالبًا (Fairly Often)

4 - كثيرًا جدًا (Very Often)

	0	1	2	3	4
1. كم مرة شعرت في الشهر الماضي بالاضطراب بسبب شيء حدث بشكل غير متوقع؟ - In the last month, how often have you been upset because of something that happened unexpectedly?					
2. كم مرة شعرت في الشهر الماضي أنك غير قادر على السيطرة على الأمور المهمة في حياتك؟ - In the last month, how often have you felt that you were unable to control the important things in your life?					
3. كم مرة شعرت في الشهر الماضي بالقلق والتوتر؟ - In the last month, how often have you felt nervous and "stressed"?					
4. كم مرة شعرت في الشهر الماضي بالثقة في قدرتك على التعامل مع مشاكلك الشخصية؟ - In the last month, how often have you felt confident about your ability to handle your personal problems?					
5. كم مرة شعرت في الشهر الماضي بأن الأمور تسير على ما يرام؟ - In the last month, how often have you felt that things were going your way?					
6. كم مرة واجهت في الشهر الماضي صعوبة في التعامل مع جميع الأمور التي كان عليك فعلها؟ - In the last month, how often have you found that you could not cope with all the things that you had to do?					
7. كم مرة تمكنت في الشهر الماضي من التحكم في الانزعاجات في حياتك؟ - In the last month, how often have you been able to control irritations in your life?					
8. كم مرة شعرت في الشهر الماضي بأنك في السيطرة على الأمور؟ - In the last month, how often have you felt that you were on top of things?					

9. كم مرة غضبت في الشهر الماضي بسبب أمور كانت خارج سيطرتك؟ - In the last month, how often have you been angered because of things that were outside your control?					
10. كم مرة شعرت في الشهر الماضي بأن الصعوبات تتكدس عالية بحيث لا يمكنك التغلب عليها؟ - In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

Scoring: PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.

Appendix B: Infant Health Outcome Questionnaire

1. **Poor - سيء**
2. **Fair - مقبول**
3. **Good - جيد**
4. **Excellent - ممتاز**

1. **Overall physical health - الصحة العامة الجسدية**	1	2	3	4
2. **Motor skills development - التطور الحركي**	1	2	3	4
3. **Cognitive development - التطور الإدراكي**	1	2	3	4
4. **Emotional well-being - الرفاه العاطفي**	1	2	3	4
5. **Social interaction and communication - التفاعل الاجتماعي والتواصل**	1	2	3	4
6. **Sleep patterns and quality - نمط وجودة النوم**	1	2	3	4
7. **Feeding habits and nutrition - عادات التغذية والتغذية السليمة**	1	2	3	4
8. **Immunization status - حالة التطعيمات**	1	2	3	4
9. **Incidence of illnesses or infections - حدوث الأمراض أو العدوى**	1	2	3	4

10. **Growth and weight gain - النمو وزيادة الوزن**	1	2	3	4
11. **Developmental milestones achieved - تحقيق الإنجازات التطورية**	1	2	3	4
12. **Responsiveness to stimuli - الاستجابة للمحفزات الحسية**	1	2	3	4
13. **Behavioral patterns - النمط السلوكي**	1	2	3	4
14. **Parent-child bonding - الارتباط بين الطفل والأبوين**	1	2	3	4
15. **Use of preventive healthcare services - استخدام خدمات الرعاية الصحية الوقائية**	1	2	3	4
16. **Absence of chronic health conditions - عدم وجود حالات صحية مزمنة**	1	2	3	4
17. **Vaccination compliance - الامتثال للتطعيمات**	1	2	3	4
18. **Levels of physical activity - مستويات النشاط البدني**	1	2	3	4
19. **Development of language skills - تطور مهارات اللغة**	1	2	3	4
20. **General contentment and happiness - الرضا العام والسعادة**	1	2	3	4