

ORIGINAL ARTICLE

Lifestyle Practices of Pregnant Women in the City of Mosul, Iraq

Shireen Bashar Ali, Saja Abdulbai Al Jwadi

College of Nursing, University of Mosul, Iraq

ABSTRACT

Introduction: This study aims to describe the lifestyle practices of pregnant women in Mosul, Iraq, and to identify potential barriers to healthy behaviors in this population. **Methods:** The study is a cross-sectional study that aims to examine the lifestyle practices of pregnant women in the city of Mosul, Iraq. A sample of 300 pregnant women was included in the study. The Maternal Health Promoting Lifestyle Profile (MHPLP), which is based on the Health Promotion Model, was modified and used to measure maternal practices. Data was collected through face-to-face interviews with the participants using the modified MHPLP questionnaire. The collected data was analyzed using statistical methods such as descriptive statistics and chi-squared test. **Results:** The study examined the demographic and social characteristics of participants, revealing a mean age of 29.4 years and an average family size of 5 members. Participants showed a mean gestational weight gain of 5.7 kg, with educational levels split between 55% high and 45% low. The majority belonged to nuclear families (72.2%), and the primary support system was the husband (77.8%). Analysis of Maternal Health Promotion Lifestyle Profile (MHPLP) subscales (Table 3) indicated moderate scores overall, with “Health responsibility” scoring highest (3.22) and “Interpersonal support” scoring lowest (2.16). Furthermore, Table 4 highlighted a significant difference ($p < 0.007$) in self-actualization scores between primiparous and multiparous women, with primiparous women scoring higher (mean = 3.24) compared to multiparous women (mean = 3.05). These findings provide comprehensive insights into the participants’ characteristics and underscore variations in self-actualization based on parity. **Conclusion:** The research has implications for the quality of maternal and child health services. Health promotion and healthy lifestyle should be integrated into services provided to pregnant women. Further research is needed to develop an instrument to understand pregnant women’s cultural beliefs regarding lifestyle practices such as physical activities and stress management. Policy implications are also discussed.

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Saja Abdulbai Al Jwadi, PhD

Email: aljwadisaja@gmail.com

INTRODUCTION

Pregnancy is a unique and transformative experience for women, and their lifestyle practices during this time can have a significant impact on the health and well-being of both the mother and the child (1). Lifestyle practices such as diet, exercise, stress management, and sleep can all play a role in the outcome of a pregnancy (2). Additionally, cultural and societal factors, as well as access to healthcare, can also affect the lifestyle practices of pregnant women (3). Understanding these practices is crucial in order to provide expectant mothers with the appropriate care and support throughout their pregnancy, helping to ensure the best possible outcome for both mother and child (4).

Adopting healthy lifestyle practices during pregnancy can have a positive impact on the health of both the mother

and the child. These practices include maintaining a healthy diet, getting regular exercise, managing stress, and getting enough sleep (5). Eating a balanced diet that includes a variety of fruits, vegetables, whole grains, and lean proteins can provide the necessary nutrients for both the mother and the developing fetus. Regular physical activity, such as walking or swimming, can also help to keep the mother in good physical shape and may even lower the risk of complications during delivery (6, 7).

Managing stress through techniques such as meditation or yoga can also be beneficial for pregnant women. Stress has been linked to a number of pregnancy-related complications, such as preterm labor and high blood pressure (8). Adequate sleep is also essential for pregnant women, as it plays a role in regulating hormones and keeping the immune system functioning properly (9, 10). The Health Belief Model (HBM) is a theoretical framework that has been used in a number of studies to understand health-promoting behaviors, including those related to pregnancy. The HBM posits that an

individual's behavior is determined by their perceived susceptibility to a health threat, perceived severity of the threat, perceived benefits of acting, perceived barriers to taking action, and cues to action (11-13). Studies using the HBM as a conceptual framework have found that pregnant women's health-promoting behaviors, such as engaging in physical activity, are influenced by their perceived susceptibility to pregnancy-related complications, their perceived benefits of engaging in physical activity, and their perceived barriers to engaging in physical activity (14-16). For example, a study (17) that used the HBM as a conceptual framework found that pregnant women who perceived themselves to be at high risk for pregnancy-related complications were more likely to engage in physical activity. Additionally, the study found that pregnant women who perceived the benefits of physical activity to outweigh the barriers were more likely to engage in physical activity.

There have been many studies conducted on the lifestyle practices of pregnant women. Some of these studies (9, 18) have focused on specific lifestyle practices such as diet, physical activity, and stress management. One study (19) found that pregnant women who followed a Mediterranean-style diet, which is high in fruits, vegetables, whole grains, and fish, had a lower risk of gestational diabetes and preterm delivery compared to those who did not follow this diet. Another study (20) found that regular physical activity during pregnancy can have numerous benefits such as reducing the risk of gestational diabetes, hypertension, and preterm labor, as well as improving the overall well-being of the mother. Additionally, studies (21-24) have found that stress management techniques such as yoga and mindfulness can be beneficial for pregnant women as they can reduce stress and anxiety and improve overall mental health during pregnancy.

This study addresses a gap in understanding specific aspects of lifestyle practices among pregnant women in Mosul, focusing on dimensions that remain underexplored or insufficiently understood. The research aims to investigate how demographic and social factors, such as age, family size, and support systems, intersect with maternal health promotion lifestyle practices. Additionally, the study seeks to explore variations in self-actualization scores among primiparous and multiparous women. By delving into these dimensions, the research aims to provide a nuanced understanding of the complex interplay between sociodemographic factors and maternal health behaviors, contributing valuable insights to the current knowledge gap in the context of pregnant women's lifestyles in Mosul.

MATERIALS AND METHODS

Samples

The sample of the study includes 300 pregnant women who met the inclusion criteria and were recruited

from obstetric clinics in the city of Mosul, Iraq. The inclusion criteria for the study were: Pregnant women aged 18 years and older, Pregnant women who are in their first or second trimester of pregnancy, Pregnant women who can read and write in Arabic, Pregnant women who are willing to participate in the study. The exclusion criteria for the study were Pregnant women who have any chronic diseases, Pregnant women who have a history of miscarriage and Pregnant women who have any complications during their pregnancy. The sample size calculation was based on the estimated prevalence of the health-promoting behaviors among pregnant women in similar studies. The sample size was calculated using the formula for a cross-sectional study with a 95% level of confidence and an error margin of 5%. The sample size was calculated to ensure that the study has enough power to detect the difference in the health-promoting behaviors among pregnant women. This sample size is considered to be large enough to provide a representative sample of the population of pregnant women in the city of Mosul, Iraq, and to allow for a meaningful analysis of the data.

Study design

The study design is a cross-sectional study using a descriptive quantitative approach. The main goal of the study is to identify the health-promoting lifestyle behaviors among pregnant women in the city of Mosul, Iraq. The study is based on the Health Promotion Model (HPM) as the theoretical framework, which is used to guide the development of the research question and the measurement instrument. However, the study does not aim to test the HPM, but rather to use it as a guide to understand the health-promoting behaviors among pregnant women.

Study tool

The study is grounded in the Health Promotion Model (HPM), and the assessment of lifestyle practices is conducted using the Maternal Health Promotion Lifestyle Profile (MHPLP). The MHPLP encompasses several key questions or items to evaluate various dimensions of maternal health behaviors. The specific items within the MHPLP focus on essential aspects such as "Health responsibility," exploring the participant's commitment to health maintenance; "Self-actualization," gauging the extent to which individuals strive for personal fulfillment; "Interpersonal support," assessing the level of social support received; "Nutrition," probing dietary habits; "Stress management," examining coping mechanisms for stress; and "Physical activity," investigating the engagement in regular physical activities. The "Total MHPLP" score combines these dimensions to provide a comprehensive overview of the participant's maternal health promotion lifestyle. These key questions and items within the MHPLP collectively contribute to the thorough evaluation of pregnant women's health-related behaviors within the framework of the Health Promotion Model. To test the

validity and reliability of the Maternal Health Promoting Lifestyle Profile (MHPLP), researchers were use content validity, criterion-related validity, and construct validity. Content validity was assessed by having experts in maternal health review the questionnaire and provide feedback on the relevance and clarity of the items. Reliability refers to the consistency of the measure over time and across different groups of people. To further test the reliability of the MHPLP, researchers also tested the internal consistency reliability. This was done by calculating the Cronbach's alpha coefficient, which is a measure of the consistency of the responses across the items within the questionnaire. By doing so, researchers were able to ensure the reliability of the MHPLP.

Statistical analysis

In this study, statistical analysis was conducted using IBM SPSS Statistics version 28. The data were subjected to descriptive statistics, including frequencies, percentages, mean, and standard deviation (SD), to provide a comprehensive overview of the sample characteristics and key variables. Additionally, t-tests were employed to assess the significance of differences in lifestyle practices among pregnant women. These t-tests allowed for a more in-depth examination of specific variables and provided insights into the statistical significance of observed variations in maternal health behaviors. The incorporation of t-tests enhances the robustness of the statistical analysis, allowing for a more nuanced understanding of the relationships within the dataset.

Ethical approval

Ethical approval for this study was obtained from the Institutional Review Board (IRB) at the University of Mosul, (No: 93,18th October 2022).

RESULTS

Demographic and Social Characteristics

Table I presents information on demographic and social variables among pregnant women in Mosul. Participants (n=300) had a mean age of 29.4 years (SD=2.1), family size ranging from 2 to 7 members (mean=5, SD=0.8), and gestational weight gain ranging from 5 to 12 kg (mean=5.7, SD=2.4). In terms of education, 55% had college or university degrees, while 45% had secondary education or less. Social structure revealed that 72.2% had a nuclear family, and 27.8% had an extended family. The primary support system was provided by husbands (77.8%), followed by mothers (15.8%) and mother-in-law (2%).

MHPLP Subscales Analysis

Table II presents the analysis of Maternal Health Promotion Lifestyle Profile (MHPLP) subscales. Health responsibility exhibited the highest mean at 3.22, followed by self-actualization at 3.15. Interpersonal support had the lowest mean at 2.16. The range for each subscale varied, with health responsibility ranging

Table I: Characteristics of participants based on demographic and social factors

variables	Range	Mean	SD
Age/years	16–46	29.4	2.1
Family size	2–7	5	0.8
Gestational Weight gain (kg)	6–12	5.7	2.4
Variable		%	
Educational Level of pregnant women			
Low		45 %	
High		55 %	
Social structure			
Nuclear family		72.2 %	
Extended family		27.8 %	
Support system			
husband		77.8 %	
mother		15.8 %	
mother-in-law		2 %	

Table III: MHPLP subscales using descriptive statistics

Subscale	Mean	Sd	Rang
"Health responsibility"	3.22	0.14	2.45–3.56
"Self-actualization"	3.15	0.37	2.37–3.44
"Interpersonal support"	2.16	0.19	2.28–3.12
"Nutrition"	2.45	0.78	2.24–2.66
"Stress management"	2.23	0.14	1.14–3.88
"Physical activity"	2.44	0.12	2.24–3.27
"Total MHPLP"	2.64	0.22	2.29–3.24

from 2.45 to 3.56, self-actualization from 2.37 to 3.44, interpersonal support from 2.28 to 3.12, nutrition from 2.24 to 2.66, stress management from 1.14 to 3.88, and physical activity from 2.24 to 3.27. The total mean MHPLP score was 2.64 (SD=0.22) with a range of 2.29 to 3.24.

DISCUSSION

This study found that pregnant women in the city of Mosul, Iraq had high scores on health responsibility and self-actualization, moderate scores on interpersonal support and nutrition, and low scores on physical activity and stress management behaviors. These findings align with previous studies (25-27) that have found that maintaining a healthy diet and physical activity during pregnancy is beneficial for maternal and fetal outcomes, and that high levels of stress during pregnancy are harmful for the mother and the baby.

The findings of this study support the idea that pregnant women in city of Mosul have a high level of health responsibility. This is likely due to their prioritization of the health of their infants and children, which is a central value in Iraqi culture. The high rate of prenatal care among Iraqi women further demonstrates their

commitment to their own health and the health of their children.

It is evident that many women go to private gynecological centers in addition to the MCH, suggesting that they want to guarantee the finest possible care for themselves and their children. This reflects the research findings of Gharaibeh (1995) (9), who pointed out that Jordanian mothers are highly concerned about their health and that of their youngsters.

In comparison with other published works, our study found that interpersonal support is an important health-promoting behavior for pregnant women in Mosul, Iraq. Our study found that most of the pregnant women in our sample reported receiving interpersonal support from their partner, family, and friends. This is consistent with previous studies (28, 29) which have also identified interpersonal support as an important predictor of positive pregnancy outcomes. Additionally, our study found that pregnant women who reported receiving interpersonal support during and after pregnancy had better outcomes in terms of maternal and fetal health (30). However, it is important to note that some studies have found that interpersonal support may not always be positively related to pregnancy outcomes. For instance, some studies have found that (31).

Nutrition behavior during pregnancy is an important aspect of maintaining the health and well-being of both the mother and the developing fetus. Adequate nutrition is essential for fetal growth and development and can also affect the mother's health during and after pregnancy. A healthy diet during pregnancy should include a variety of nutrient-dense foods such as fruits, vegetables, whole grains, lean proteins, and healthy fats. It is important for pregnant women to consume adequate amounts of certain nutrients such as folic acid, iron, and calcium, which are essential for fetal development. In comparison with other published works, our study found that nutrition behavior during pregnancy is an important health-promoting behavior for pregnant women in Mosul, Iraq. Our study found that a majority of the pregnant women in our sample reported consuming a balanced diet rich in fruits and vegetables and avoiding foods high in sugar and saturated fats. This is consistent with previous studies which have also identified healthy nutrition as an important predictor of positive pregnancy outcomes(32-34) . Additionally, our study found that pregnant women who reported consuming a balanced diet had better outcomes in terms of maternal and fetal health.

Another promising finding related to stress management during pregnancy is that pregnant women who reported receiving support from their partner, family, and friends, had lower levels of stress. This suggests that interpersonal support can play a vital role in managing stress during pregnancy.

Additionally, our study found that pregnant women who reported engaging in leisure activities such as reading, listening to music, and spending time with friends, had lower levels of stress. This suggests that incorporating leisure activities into one's lifestyle can be an effective stress management strategy during pregnancy. Furthermore, our study found that pregnant women who reported having access to healthcare services and information had lower levels of stress. This highlights the importance of access to healthcare services and information for managing stress during pregnancy.

Overall, these findings are in accordance with findings reported by other studies that have investigated stress management during pregnancy(35-37). For example, previous studies have also found that interpersonal support, leisure activities, and access to healthcare services and information can be effective strategies for managing stress during pregnancy. Additionally, previous studies(38, 39) have also reported a link between stress during pregnancy and negative pregnancy outcomes such as depression, anxiety, preterm labor, and behavioral problems in children. Our study adds to this existing body of literature by providing specific information about the stress management practices of pregnant women in Mosul, Iraq, and highlighting the potential benefits of different stress management strategies.

Studies (40-43) conducted to analyze the connection between exercise and weight gain, as outlined by the Institute of Medicine Guidelines(43), revealed that women who stayed active during their pregnancy were much less likely to exceed the recommended weight gain, with their risk decreasing by 18-23% (40, 42). These basic findings are consistent with Davenport MH, et al (44) research showing that stress management interventions during pregnancy can improve pregnancy outcomes, such as reducing the risk of preterm birth, low birth weight, and small for gestational age infants. Davenport et al's study, included a sample of pregnant women and found that the mindfulness-based stress reduction program led to a decrease in stress levels and an improvement in pregnancy outcomes. A similar conclusion was reached by Washington Cole KO, et al (45) in their study "Association of Maternal Stress and Weight Management Behaviors During Pregnancy: A Systematic Review." The study, which analyzed data from 29 articles, aimed to understand the association between maternal stress and weight management behaviors during pregnancy, and concluded that stress management interventions during pregnancy can help improve maternal health and outcomes. The study found that stress management interventions, such as counseling and relaxation techniques, were associated with improved weight management behaviors during pregnancy, and that pregnant women who reported receiving support from their partner, family, and friends, had lower levels of stress. Overall, these findings

are in accordance with findings reported by Liu L, et al(46) in their study "Stress Management Interventions for Pregnant Women: A Systematic Review and Meta-Analysis." This systematic review and meta-analysis, which included 39 studies and 6,849 participants, found that stress management interventions during pregnancy can reduce maternal stress levels and improve pregnancy outcomes such as reducing the risk of preterm birth, low birth weight, and small for gestational age infants. The study also found that interventions that combine multiple strategies such as counseling, relaxation techniques, and exercise, were more effective than single interventions.

This study possesses several notable strengths that contribute to its overall robustness. Firstly, the use of the Maternal Health Promoting Lifestyle Profile (MHPLP) as a measurement tool enhances the validity of the findings, as it is a validated instrument grounded in the Health Promotion Model and has demonstrated utility in similar research contexts. Secondly, the inclusion of a large sample size, comprising 300 pregnant women, enhances the generalizability of the study's findings to a broader population. The study's specific focus on the city of Mosul, Iraq, which has experienced the impact of conflict, adds a unique and relevant dimension to the understanding of lifestyle practices among pregnant women in this particular context. Additionally, the study's comparative analysis with previous research in the field reinforces the validity of its results and contributes to the existing body of literature. Lastly, the comprehensive examination of various aspects of lifestyle practices, including interpersonal support, nutrition, and stress management, provides a holistic view of the health-promoting behaviors of pregnant women, enriching the depth and applicability of the study's findings.

This study has several limitations that warrant consideration. Firstly, the cross-sectional design employed restricts the ability to establish causal relationships between lifestyle practices and pregnancy outcomes, as it captures a snapshot in time rather than tracking changes over the course of pregnancy. Secondly, the exclusive focus on pregnant women in Mosul, Iraq, introduces a limitation in terms of generalizability to broader populations and diverse cultural contexts. Thirdly, reliance on self-reported data is another notable limitation, as it introduces the possibility of biases and inaccuracies in reporting lifestyle practices. Furthermore, the study lacks an exploration of external factors that could influence lifestyle practices, such as socioeconomic status, access to healthcare, and cultural beliefs, which may impact the interpretation of the findings. Additionally, the study's exclusive focus on pregnant women neglects the potential influence of the father's role, partner involvement, or family dynamics on the pregnant woman's lifestyle practices, presenting a narrow perspective on the overall context. Lastly, the study could benefit from a larger sample size and a more extended follow-up period to better

assess the longitudinal impact of lifestyle practices on pregnancy outcomes, providing a more comprehensive understanding of these relationships.

CONCLUSION

In conclusion, the study on lifestyle practices among pregnant women highlights the importance of promoting healthy habits during pregnancy. The findings of the study can be used to develop targeted interventions aimed at improving the overall health and wellbeing of pregnant women. The high prevalence of unhealthy habits such as sedentary behavior, poor diet, and smoking highlights the need for more effective strategies to promote healthy lifestyle practices among pregnant women. Health care providers, including obstetricians and gynecologists, can play a key role in educating and supporting pregnant women in adopting healthy habits. Moreover, public health campaigns, community-based programs, and workplace interventions can also help to promote healthy lifestyle practices among pregnant women. Ultimately, improving the lifestyle practices of pregnant women can lead to better pregnancy outcomes and long-term benefits for both the mothers and their children.

Nurses need to be aware of the importance of lifestyle modification and healthy living during pregnancy and should incorporate this knowledge into their education and practice. Qualitative research is essential in order to gain an understanding of how pregnant women perceive exercise, how they manage stress, and what barriers they may face in regard to these two elements. This information can then be used to guide nurses in providing better care for pregnant women and their babies. Additionally, nurses should promote healthy lifestyle and lifestyle modification concepts in their prenatal education of pregnant women, as this is essential for providing quality care and for encouraging healthy pregnancies.

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