Original Article

Reported Self-care Practices in Pregnancy and Their Relationship with Birth Outcomes in Women Presented to Allied Hospitals of Rawalpindi Medical University

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Abstract

Introduction: Self-care is crucial for promoting health, preventing disease, and maintaining health during pregnancy. Understanding specific healthcare behaviors adopted by women is necessary to improve maternal healthcare delivery and birth outcomes.
Objectives: This study aimed to assess self-care practices during pregnancy and analyse the relationship between mother self-care and birth outcomes- both maternal and fetal.
Materials and Methods: A descriptive cross-sectional study was conducted in postnatal wards of gynecology departments of Allied hospitals of Rawalpindi Medical University from March 2024 to June 2024. Our study population included post-partum primigravida and multigravida women, excluding those having a previous history of comorbidities. For sample size calculation, we used Epi info sample size calculator and it was 175. Data was collected using a validated self-structured questionnaire. Statistical analysis of data was done using SPSS version 27.
Results: The study found that 48% of participants had moderately healthy lifestyles, followed by 31.4% with healthy lifestyles, and 20.57% with least healthy lifestyles. Similarly, 57.14% had moderately healthy behaviours, 29.14% had healthy behaviours, and 13.71% had unhealthy behaviours. The relationship between healthy lifestyles and number of pregnancies was significant. PCOS prevalence was higher in participants with moderately healthy or healthy lifestyles. Stillbirths were more prevalent in participants with unhealthy lifestyles. The relationship between pregnancy-induced hypertension, pregnancy-induced diabetes, and healthy behaviours was significant.
Conclusion: The study suggests that education regarding childbirth is needed, especially for first-time mothers. Healthy lifestyles lead to better birth outcomes.
Keywords: Pregnancy, self-care, healthcare

Introduction

Self-care in pregnancy is important to discuss owing to its substantial contribution to maternal and fetal outcomes, which are the main determinants of maternal and fetal morbidity and mortality.[1] Self-care is "the ability of individuals, families and communities to promote health, prevent disease, maintain health, and cope with illness and disability with or without the support of a health worker". It also provides guidelines to improve preconception, antenatal, intrapartum and postpartum care.[2] Early ante-natal care is crucial for early detection and management of complications that may arise during pregnancy; meanwhile, a lack of optimal prenatal care may lead to adverse outcomes.

In a related study in Tanzania, it was concluded that pregnant females had unsatisfactory self-care during pregnancy owing to a lack of knowledge, resulting in poor outcomes for both the mother and the child.[3] It is reported that poor healthcare practices and bad psychosocial profile resulted in 10.9% low birth weight, 10.1% preterm delivery and 7.3% intrauterine growth retardation in pregnant women.[4] As per the study, the mortality rate of extremely low birth weight babies was 9.8% in Japan in 2015.[5] Those who survive are highly susceptible to infection spreading among them.[6] The infant mortality rate is 20.3% higher in smaller, underdeveloped areas as compared to larger cities in American Alaskan natives.[7] The research conducted in Pakistan has concluded that the neonatal mortality rate is 44 deaths per 1000 live births, which increases to 62 deaths per 1000 live births in rural areas.[8]

In Pakistan, malnourished mothers give birth to low-birth-weight babies, which is a grave problem.[9] Research suggests that adherence to complete self-care practices during pregnancy can alleviate the risks of adverse birth outcomes such as low birth weight, premature births, infant mortality, gestational diabetes, and hypertensive disorders[10].Even though Pakistan's government launched the National Maternal, Neonatal, and Child Health Programme in 2007 to improve maternal and neonatal health outcomes, the targets for MGD couldn't be achieved.[7]

Another study conducted in Peshawar, Pakistan, has reported sociocultural factors associated with higher infant mortality rates in Pakistan, including poverty, lack of access to healthcare, negligent antenatal care, and low birth spacing between two subsequent pregnancies.[11]

Early ante-natal care is crucial for early detection and management of complications that may arise during pregnancy. Meanwhile, a lack of optimal prenatal care may lead to adverse outcomes.[7] The birth outcomes the young woman's baby may succumb to are intrauterine growth retardation, intrauterine death, prematurity, low birth weight, low APGAR scores and stillbirth. Substantial literature exists on antenatal care and birth outcomes in pregnancy. However, the literature on the importance of self-care during pregnancy is not sufficient to bridge the knowledge gap among pregnant women.

This research aims to investigate the self-care practices during pregnancy among women attending Allied Hospitals of Rawalpindi Medical University (RMU) and their impact on birth outcomes. By understanding the specific self-care behaviours adopted by Pakistani women, this study seeks to inform clinical practices and interventions tailored to improve maternal healthcare delivery. Ultimately, this research holds potential for optimizing antenatal care protocols and enhancing maternal health outcomes in the local context.

Materials and Methods

A descriptive cross-sectional study was conducted in the Postnatal wards of gynaecology departments of allied hospitals of Rawalpindi Medical University from March 2024 - June 2024 after approval from the Department of Community Medicine, Rawalpindi Medical University. In our study, postpartum women, both primigravida and multigravida, admitted to the gynaecology wards were included. Those having a previous history(preconception) of comorbidities such as diabetes mellitus, hypertension, ischemic heart disease and chronic kidney disease were excluded from the study. The sample size was estimated to be 204 with a 95% confidence interval and 83.6% estimated frequency with the outcome (taken from a parent study conducted by Gomora et al. and an absolute precision of 0.05)[7]. Epi info sample size calculator was utilized. Data was collected after obtaining informed consent from participants using a self-structured questionnaire consisting of 3 sections. Section A consists of the participants' demographic profile, basic health profile and current pregnancy status. Section B consists of birth outcomes, and section C includes self-care practices, which are subdivided into a general healthy lifestyle, healthy behaviours, and pregnancy care. Birth outcomes were assessed via utilization of the APGAR score provided by the field specialist for each neonate. The scores were graded between 0 to 10; a score of 0-3 was considered a poor birth outcome, a score of 4-6 was considered a fair birth outcome and a score greater than 7 was considered a good birth outcome. Self-care was assessed using an 18-item questionnaire called Self Care Prenatal Questionnaire (SCPQ). In self-care section, participants were additionally asked whether they are suffering from or had a past history of PCOS or not to assess the effect of PCOS with maternal or fetal outcome. The validity of the questionnaire was ensured by the use of Cronbach's Alpha (0.88). After taking informed consent, the questionnaire was briefed to the participants. All the females meeting the inclusion criteria were interviewed face-to-face while maintaining privacy and confidentiality. Participation was voluntary, and they had the right to withdraw from the research at any stage. Data was collected on hard copy forms during the interview and was transferred to Google Forms. After entering all the sections, the Excel file was imported onto Statistical Package for Social Sciences (SPSS) version 27 and was analyzed. Frequency and percentages were calculated for descriptive data. Inferential statistics were used to analyze the data using Pearson's Chi-square test.

Results

A total of 175 females participated in our study. The highest level of our participants, and most of the them reported having education up to intermediate level (58 or 33.1%) followed by primary education (39 or 22.3%)**.** Most of the participants belonged to a relatively poor background with income below Rs. 50,000/- per month (132 or 75.4%). Additionally, 121 (69.1%) they reported belonging to joint families, followed by nuclear families (49 or 28%). We inquired about the number of family members in the household, and the mean was 8.05 (± 4.604 SD). Additionally, history of any Polycystic Ovarian Syndrome (PCOS) in the past was also inquired. 162 (92.6%) of the participants reported having no ovarian syndrome, 8 (4.6%) were not aware whether they had or had not acquired PCOS in their life, and 5 (2.9%) participants reported having acquired PCOS in the past. 132 (75.4%) reported having previous pregnancies, while 43 (24.6%) presented with their first-ever pregnancy. 120 (68.9%) participants reported having no previous miscarriages, while 159 (90.9%) reported having no previous stillbirths. (**Table 1**).

Table 1 *Demographics and Descriptive Statistics*

Variables		**Frequency (percentage)**
Highest Level of Education		
	No formal Education	22 (12.6%)
	Madrasa Education	9 (5.1%)
	Primary	39 (22.3%)
	Matric	28 (16%)
	Intermediate	58 (33.1%)
	Graduate	15 (8.6%)
	Professional Degree	4 (2.3%)
History of Polycystic Ovarian Syndrome (PCOS)		
	No	132 (75.4%)
	Yes	43 (24.6%)
Occupation		
	Housewife	164 (93.7%)
	Government Job	4 (2.3%)
	Maid	2 (1.1%)

	Private Office	2 (1.1%)
	No Job	1 (0.6%)
	Any Other	2 1.1%)
History of Miscarriages	No	120 (68.9%)
	Yes	55 (31.4%)
History of Stillbirths	No	159 (90.9%)
	Yes	16 (9.1%)

Most of our participants 167 (95.4%) reported that their baby was delivered alive, while a total of 126 (72%) babies had a birth weight equal to or more than 2.5kg. 61 (34.9%) females suffered from raised blood pressure during their last pregnancy, while 60 (34.3%) patients received blood during their last pregnancy. We checked the APGAR scores of the babies and found that the mean APGAR score was 8.3 (± 2.16 SD). Most of our participants i.e., 115 (65.7%), received tetanus vaccines during their pregnancies (**Table 2).**

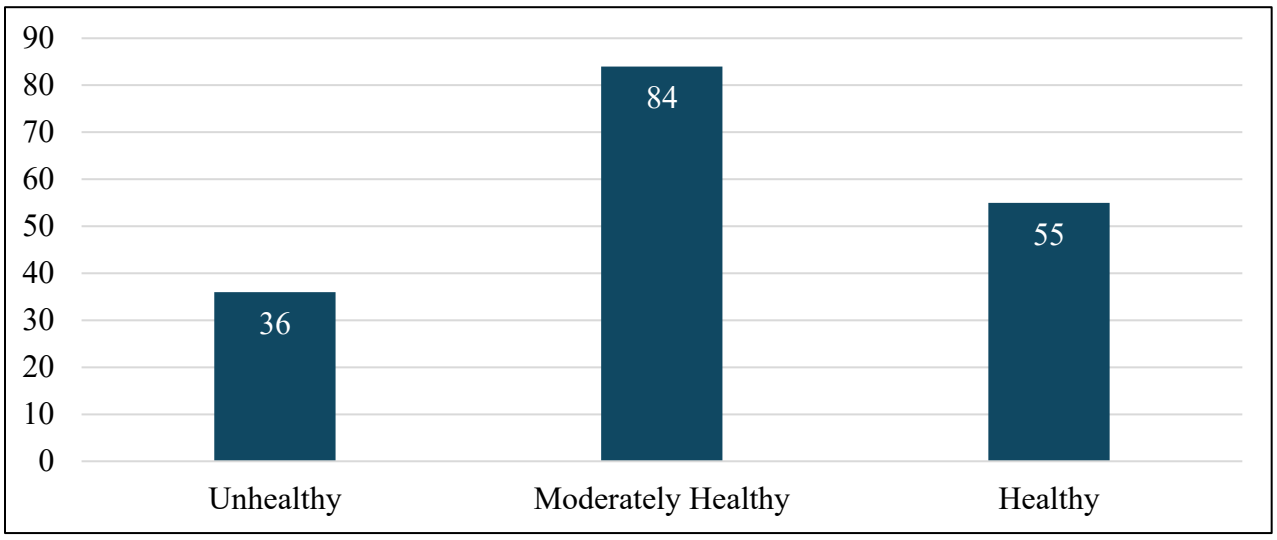
Table 2 *Birth Outcomes, both Maternal and Fetal*.

Variables		**Frequency (percentage)**
Delivering the baby alive	Yes	167 (95.4%)
	No	8 (4.6%)
Weight of Baby at Birth	2.5kg and more	126 (72%)
	Less than 2.5kg	49 (28%)
Suffering from Raised Blood Pressure during Pregnancy	No	114 (65.1%)
	Yes	61 (34.9%)
Did you suffer raised blood sugar levels during the pregnancy	No	143 (81.7%)
	Yes	32 (18.3%)

Receiving blood products during pregnancy	No	115 (65.7%)
	Yes	60 (34.3%)
Receiving Tetanus Vaccine During Pregnancy	No	60 (34.3%)
	Yes	115 (65.7%)
APGAR Scores		Mean = 8.3029 (± 2.16 SD)

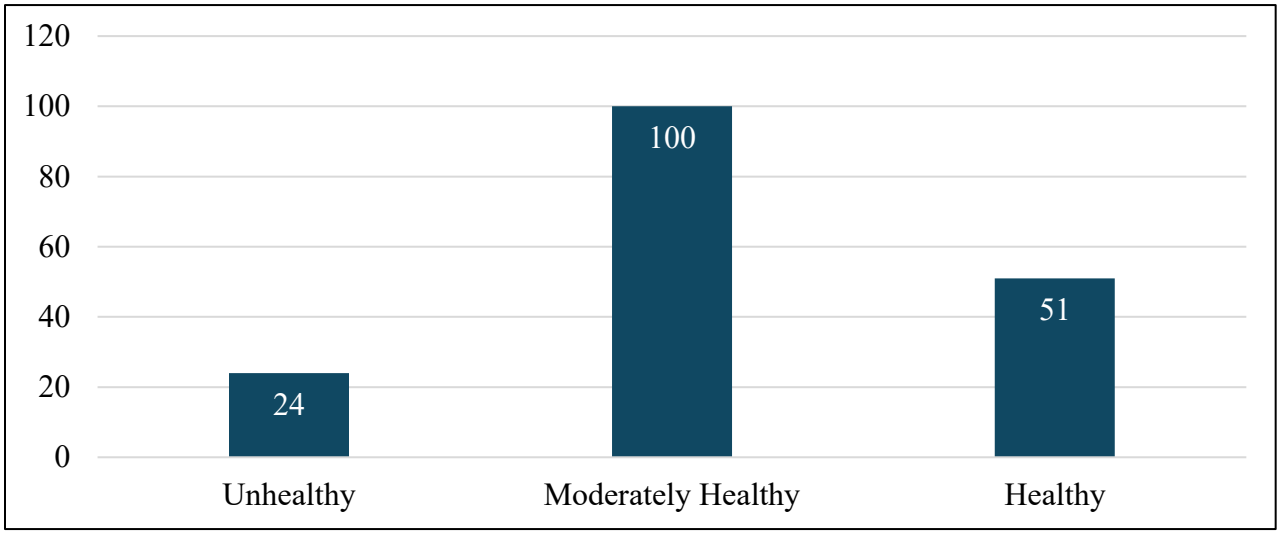
We checked the prevalence of Healthy lifestyles and behaviours of our participants by asking them a number of questions. The questions were scored and divided into categories of Unhealthy, Moderately Healthy, and Healthy Lifestyle behaviours, respectively. Most of our participants reported moderately healthy lifestyles (84 or 48%), followed by healthy lifestyles (55 or 31.4%), and only 36 or 20.57% reported least healthy lifestyles (**Figure 1**). Similar healthy behaviours were reported, with 100 (57.14%) reporting moderately healthy, 51 (29.14%) reporting healthy and 24 (13.71%) reporting unhealthy behaviours (**Figure 2**).

Figure 1 *Frequency of Healthy Lifestyle*



Note. Behavior categorized as Unhealthy, Moderately Healthy, and Healthy.

Figure 2 *Frequency of Healthy Behaviors*



Note. Behavior categorized as Unhealthy, Moderately Healthy, and Healthy.

The chi-square test was utilized to assess the relationship between the healthy lifestyles of the patients and the number of pregnancies they had. The relationship was significant with the following value of **X^2 (2, n=175) = *7.214 (p= 0.027).*** The cross-tabulations showed that the patients with more than 1 pregnancy showed higher adherence to healthy lifestyles while those with first pregnancy had comparatively less adherence. PCOS was found to have a comparatively higher prevalence in patients with moderately healthy lifestyles or healthy lifestyles with a value of **X^2 (4, n=175) = *18.641 (p< 0.001).*** We also found the prevalence of stillbirths to be higher in the females with comparatively unhealthy lifestyles, as the chi-square test showed **X^2 (2, n=175) = *6.540 (p=0.03).*** Additionally, we checked the relationship between pregnancy-induced hypertension and pregnancy-induced diabetes with the healthy behaviours of our participants. The chi-square test came out to be significant in both the relations with values of **X^2 (2, n=175) = *11.973 (p= 0.003)*** and **X^2 (2, n=175) = *13.964 (p< 0.001).*** The cross-tabulations showed that the participants who reported comparatively healthy behaviours had a greater prevalence of raised blood pressure or raised blood sugar levels during pregnancy (**Table 3**).

Table 3 *Chi-Square tests*

Variables	X^2	Degree of freedom	P-value
Healthy Lifestyles * No. of Pregnancies	7.214	2	0.027
Healthy Lifestyles * PCOS	18.641	4	< 0.001
Healthy Lifestyles * Stillbirths	6.540	2	0.03
Healthy Behaviors * Pregnancy-induced Hypertension	11.973	2	0.003

Note. Variables presented as Independent variable*Dependent variable

Discussion

In this study, we evaluated self-care practices in pregnancy and their relationship with birth outcomes in women presented to allied hospitals of Rawalpindi Medical University. Regarding demographics, the education level among these women was intermediate, mostly belonging to the poor socioeconomic status of living in a joint family. The majority of women did not have PCOS, prior miscarriages and stillbirths. For most women, it was not their first pregnancy. Mostly, alive babies were delivered with a birth weight of 2.5kg or more. Most women did not suffer from raised blood pressure during pregnancy and did not receive blood or blood products. The majority received the tetanus vaccine during pregnancy. Our study showed most of the patients followed moderately healthy lifestyles and behaviors, then followed by those having healthy and finally those with unhealthy lifestyles and behavior. A healthy lifestyle and several pregnancies had a positive association. Women with more than one pregnancy showed higher adherence to healthy lifestyles. History of PCOS was more prevalent in moderate and healthy lifestyles. History of Stillbirths was reported to be more prevalent in patients having unhealthy lifestyles. Patients with healthy lifestyles reported comparatively raised blood sugar levels and blood pressures during pregnancy.

Targeted health education and support services are necessary, as evidenced by most participants' intermediate level of education and low socioeconomic situation. The intermediate education level suggests possible gaps in health literacy that community-based interventions might fill. Education is a crucial factor in determining health outcomes. According to a study by Solhi et al. (2019), there was a significant difference in the control and intervention groups' mean scores on the total self-care and total health literacy questionnaires. This difference indicates a relationship between self-care practices and education status.[12]

The majority of the study's participants were previously pregnant and had given birth to healthy babies weighing at least 2.5 kg. Birth order is an independent predictor of birth weight up until the tenth delivery, according to a study by Grand Multiparty and Birth Weight: Obstetrics & Gynecology, n.d.[13] This implies that many women were able to have successful pregnancies in spite of the socioeconomic obstacles. However, the frequency of previous pregnancies also emphasizes how crucial it is to provide consistent maternal health care throughout several pregnancies in order to preserve these results. According to a study by Bird et al., women who have a number of health problems are especially vulnerable to unfavorable delivery outcomes.[14] According to a study by Mojoyinola (2011), it was recommended that health caregivers should encourage pregnant women and nursing mothers to enroll in adult education programs to improve their level of literacy and become better educated on what to do when they perceive danger signs during pregnancy.[15]

Moreover, our study found an unexpectedly lower prevalence of hypertension among women visiting allied hospitals of Rawalpindi Medical University. It was also observed that there is a low requirement for blood or blood products during pregnancy. It

is unexpected and calls for more research because women with healthy lives are observed to have elevated blood sugar levels. This could be a sign of poorly treated or undetected gestational diabetes, which requires better screening and management procedures. Antenatal lifestyle intervention is linked to limited gestational weight gain and a trend towards a decreased prevalence of gestational diabetes in the overweight and obese population, according to a study by Oteng-Ntim et al.[16]

According to a study by Cheung et al., gestational diabetes is a prevalent condition that is best treated with diet alone in most cases. These include limiting the amount of fat and simple carbohydrates consumed, distributing meals regularly, choosing carbohydrates that have a low glycemic index, and restricting calories for obese people. Promoting moderate physical activity is a good idea. Post-prandial glucose measurement and fasting are essential for therapeutic monitoring and advice.[17]

According to the survey, most participants followed a moderately healthy lifestyle, followed by healthy and unhealthy lifestyles. Remarkably, there was a correlation between maintaining a healthy lifestyle and the number of pregnancies. According to a study by Oleiwi (2024), a pregnant woman's gravidity and the total number of abortions and self-care practices she engages in are significantly correlated.[18] This implies that women who have had more pregnancies may develop a stronger awareness of their health, presumably as a result of interacting with healthcare providers more frequently and realizing the value of maternal health.

Notable is the incidence of PCOS among women who lead moderately healthy lifestyles. According to a study by Zehravi et al. (2022), many women with polycystic ovarian syndrome (PCOS) benefit from changing their lifestyles to include more exercise and a healthier diet.[19] A low-glycemic diet is linked to a better menstrual cycle and a lower risk of PCOS. The majority of the patients in our study did not exercise, which raises the possibility of a reason why PCOS is more common in those with moderately active, healthy lifestyles.

PCOS is frequently linked to problems with metabolism and reproductive health, and its prevalence in lifestyle groups that lead healthier lives may suggest that the women in these groups are more proactive in seeking a diagnosis and managing their illness. According to a study by Pramodh (2020), raising awareness through a campaign and early PCOS diagnosis and treatment may assist in increasing Emirati women's fertility rates.[20] Greater health knowledge in these populations or easier access to healthcare resources could support this proactive approach. The greater rate of stillbirths in women who lead unhealthy lives emphasizes how important lifestyle decisions are for the success of pregnancies. This research emphasizes how urgently healthy behavior-promoting interventions are needed, especially for vulnerable people.

The study's findings are relevant to healthcare practice and policy. First, there is a need for improved health education for pregnant women, especially those from lower socioeconomic backgrounds. The importance of upholding healthy lifestyles and

controlling illnesses like PCOS and gestational diabetes should be the key topics of these programs. Second, the healthcare system should prioritize maternity care; tailored therapies combined with routine monitoring can help reduce risks and encourage favorable results.

Finally, in order to lower the frequency of adverse pregnancy outcomes, such as stillbirths, community health programs should give priority to correcting unhealthy behaviors. The findings of our investigation are supplemented by Maas et al.'s study, which claims that starting folic acid supplementation before conception may lower the likelihood of unfavorable pregnancy outcomes.[21] This demonstrates how a lack of self-care during pregnancy causes stillbirths. According to a study by Feleke et al. (2021), the most frequent consequences of stillbirth for subsequent pregnancies following a stillbirth were pregnancy-induced diabetes mellitus and pregnancy-induced hypertension.[22] These programs could help in managing chronic diseases, encouraging physical exercise, and providing dietary counselling.

Patients with moderately active and healthy lifestyles showed elevated blood pressure and blood glucose levels. Since the majority of the women in our sample were of childbearing age, it is probable that our results are due to the fact that women of childbearing age are particularly prone to adverse effects of elevated blood pressure (BP), as noted by Thani et al. (2015) in their study.[23] This research highlights the relationship that exists between socioeconomic position, health issues, lifestyle choices, and pregnancy outcomes. Even though many women had successful pregnancies, there is still improvement needed in the areas of health intervention and education. Healthcare professionals can help pregnant women achieve healthier lifestyles by focusing on these areas.

This study targets a population belonging to a low socioeconomic background. Further research on different socioeconomic classes can be done to observe the findings of this research. More research is required to discover moderate healthy lifestyles and their association with pregnancy-induced hypertension, higher blood glucose levels, and PCOS.

Our study was cross-sectional in design and the data was collected from the postnatal ward. This lowered the generalizability. Due to early discharges and some participant refusals, data were gathered from 175 post-partum females, even though the intended sample size was 204. Due to insufficient information, a few responses were also disqualified. Recruitment of participants was further restricted by time constraints and ethical issues, such as preventing unnecessary stress on recuperating moms. Even so, the sample size was adequate to achieve the study's goals; however, for wider generalizability, bigger sample sizes are advised for future research. Additionally, the cross-sectional design inhibits us from developing causality. Further studies, of either retrospective or longitudinal designs, are needed so that the factors causing lower birth outcomes may be targeted more selectively and with better outcomes.

Conclusion

Our study suggests that more education regarding childbirth is needed, especially in women giving first birth. Healthy and disease-free lifestyles lead to better birth outcomes.

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