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Self-care behaviors among primigravida and multigravida women attending public-sector antenatal clinics in Quetta, Pakistan: a cross-sectional study

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Abstract

Background: Self-care during pregnancy complements antenatal care, yet little is known about how everyday self-care differs between women in their first pregnancy and women who have been pregnant before, particularly in Pakistan. This study assessed self-care behaviors among pregnant women in Quetta and compared primigravida and multigravida women.

Methods: A questionnaire-based cross-sectional study was conducted among 377 pregnant women recruited by convenience sampling from the gynecology and obstetrics outpatient departments of two public-sector tertiary hospitals in Quetta, Balochistan. A 17-item self-developed questionnaire covered physical, psychological, social and help-seeking behaviors (Agree = 2, Neutral = 1, Disagree = 0; total score 0–34). Groups were compared with the Mann–Whitney U test; other associations were examined with Kruskal–Wallis tests and Spearman correlation, and independent predictors were identified by multiple linear regression with HC3 robust standard errors.

Results: Of the participants, 172 (45.6%) were primigravida and 205 (54.4%) multigravida; mean age was 29.4 years (SD 7.8) and 69.8% were in the third

trimester. The mean self-care score was 19.53 (SD 4.36), or 57.4% of the maximum. Agreement was highest for keeping a daily routine (96.6%), having a trusted person to ask for help (80.6%) and staying connected with family and friends (74.8%), and lowest for daily reading (8.5%), regular physical activity (14.1%) and sleeping 7–8 hours (19.9%). Multigravida women scored higher than primigravida women (median 21 vs 17; U = 11,270.5, p < .001; rank-biserial r = 0.36; Cohen's d = 0.60). After adjustment, multigravida status was the only independent predictor (B = 1.79, 95% CI 0.53–3.06, p = .006); age, education, income, locality and gestational week were not. The model explained 9.6% of the variance.

Conclusions: Self-care was uneven across domains and lower among women in their first pregnancy. Antenatal counseling in Quetta should give primigravida women structured orientation and should target physical activity, sleep and relaxation for all pregnant women, without assuming that experienced mothers need no support.

Background

Pregnancy is a normal life event, but it places considerable physiological and psychological demands on women. Contemporary maternal care therefore aims not only to detect and treat disease but also to give women a positive pregnancy experience through health promotion, prevention, good information and respect for their preferences [1]. Self-care is central to this model. The World Health Organization (WHO) defines it as the ability of individuals, families and communities to promote health, prevent disease, maintain health and cope with illness, with or without the support of a health worker [2,3]. In pregnancy, self-care includes sleeping and resting adequately, staying active, eating well, avoiding tobacco, managing stress, finding reliable information, keeping social support and seeking care when needed. It does not replace antenatal care; it extends its reach into the many weeks that women spend between clinic visits [4].

Self-care is particularly important in low- and middle-income countries, where services may be distant, costly or of uneven quality and where most preventable maternal deaths occur [5]. In Pakistan, antenatal-care coverage has improved, but early booking, the content of care and equity remain problematic [6–8]. Provincial and socioeconomic inequalities are marked [9], and attending antenatal care does not guarantee that women know or practice the recommended behaviors: in Karachi, women attending antenatal clinics had incomplete knowledge of the WHO antenatal-care package [10], and few pregnant women knew that antenatal exercise was recommended [11].

Holistic studies show that pregnant women may practice some self-care behaviors well while neglecting others, and that self-care is linked to psychological well-being, social support and information sources [12,13]. Health literacy shapes how women find and use information [14,15], and targeted education, including mobile-health programs, can improve self-care knowledge and practice [16,17]. Most of this evidence, however, concerns single behaviors or comes from outside South Asia.

Gravidity is a plausible but under-examined influence on self-care. Women in their first pregnancy lack personal experience, report more anxiety and seek more information [18–20], and first pregnancy has been associated with better antenatal-care use and supplement adherence in some settings [21,22]. Multigravida women can draw on previous experience, but they may also carry heavier household and childcare responsibilities, treat symptoms as familiar and feel less need for information [11,23]. These opposing mechanisms mean that the direction of any

difference cannot be assumed. No study, to our knowledge, has compared a broad set of everyday self-care behaviors between primigravida and multigravida women in Balochistan, the province with some of Pakistan's weakest maternal-health indicators [7].

This study therefore aimed to (i) describe the level and pattern of self-care behaviors among pregnant women attending public-sector hospitals in Quetta, (ii) compare overall and item-level self-care between primigravida and multigravida women, and (iii) identify sociodemographic and obstetric factors independently associated with self-care.

Methods

Study design and setting

A questionnaire-based cross-sectional study [24] was conducted in the gynecology and obstetrics outpatient departments of Bolan Medical Complex Hospital and Sandeman Provincial Hospital, the two main public-sector tertiary hospitals in Quetta, Balochistan. Both hospitals serve women from Quetta city and surrounding districts. Data were collected from. The study is reported in accordance with the STROBE guidelines for cross-sectional studies.

Participants and sampling

Women were eligible if they were pregnant, were Pakistani nationals, could understand Urdu, were attending one of the two outpatient departments, and agreed to take part. Women in any trimester were included. Eligible women present during data collection were approached consecutively by convenience sampling [25]. Equal group sizes were not sought; gravida status was recorded for every participant and groups were formed from the sample as observed. A primigravida woman was defined as one in her first pregnancy and a multigravida woman as one with at least one previous pregnancy, regardless of outcome.

Sample size

The sample size was calculated with the single-proportion formula $n_o = Z^2p(1 - p)/d^2$ [26], using a 95% confidence level, an assumed proportion of 50% and a 5% margin of error ($n_o \approx 384$). After correction for a finite source population of about 20,000 women, the minimum sample was 377. Allowing 10% for non-response or incomplete questionnaires, about 415 women were approached, and 377 complete records were analyzed.

Questionnaire

Data were collected with a structured, self-developed questionnaire prepared in English and translated into Urdu. The first section recorded age, education, occupation, monthly personal income, locality (urban or rural), gestational week and gravida status. Trimester was derived from gestational week (first, ≤13 weeks; second, 14–27 weeks; third, ≥28 weeks). The second section contained 17 self-care statements covering sleep, physical activity, screen time, junk-food intake, smoking, relaxation, prayer or mindfulness, rest during illness, social connection, reading, positive attitude, daily routine, laughter, help-seeking, body image, understanding of risk-taking and concern about others' opinions (Table 2). Each statement was answered Agree, Neutral or Disagree and scored 2, 1 and 0, respectively, so that higher scores indicated more favorable self-care. Item scores were summed to give a

total score from 0 to 34. Because no validated cut-off points exist for this instrument, the total score was analyzed as a continuous variable.

Statistical analysis

Data were analyzed with IBM SPSS Statistics. Categorical variables are presented as frequencies and percentages, and continuous variables as mean (SD) and median (interquartile range, IQR). Internal consistency was assessed with Cronbach's alpha. Normality of the total score was assessed with the Shapiro–Wilk test, skewness, kurtosis and a Q–Q plot. Because the score departed from normality ($W = 0.978$, $p < .001$), the primary comparison between primigravida and multigravida women used the Mann–Whitney U test, with the rank-biserial correlation, Cohen's d and the 95% confidence interval (CI) of the mean difference reported as effect sizes. Other two-category variables were compared with the Mann–Whitney U test, variables with more than two categories with the Kruskal–Wallis test, and continuous variables with Spearman's rank correlation.

Independent predictors were examined by multiple linear regression of the total score on age, education (ordinal, illiterate to postgraduate), monthly income (ordinal, none to > PKR 40,000), locality (rural vs urban), gestational week and gravida status (multigravida vs primigravida). HC3 heteroscedasticity-robust standard errors were used, and multicollinearity was assessed with variance inflation factors (VIFs). All tests were two-sided with significance set at $p < .05$.

Ethical considerations

The study was approved by Faculty of Pharmacy and Health Sciences, University of Balochistan, and permission was obtained from both hospital administrations. All participants were informed about the purpose of the study, told that participation was voluntary and would not affect their care, and gave informed consent before taking part. No names were recorded in the analysis file.

Ethical clearance and institutional approval were obtained from the Institutional Ethics Committee of the Faculty of Pharmacy and Health Sciences, University of Balochistan. All procedures were performed in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants prior to enrollment. Participant confidentiality and anonymity were maintained throughout the study

Results

Participant characteristics

All 377 records were complete. Participants' mean age was 29.37 years (SD 7.81; range 17–47). Over a quarter (27.6%) were illiterate, 60.7% were not employed and had no personal income, and 59.4% lived in rural areas. Mean gestational age was 30.14 weeks (SD 7.96; median 35), and most women (69.8%) were in the third trimester. In all, 172 women (45.6%) were primigravida and 205 (54.4%) multigravida (Table 1).

Table 1. Sociodemographic and obstetric characteristics of participants (N = 377)

Characteristic	n (%) or value
Age, years, mean (SD)	29.37 (7.81)
Age, years, median (IQR)	29 (24–33)

Characteristic	n (%) or value
Education	
Illiterate	104 (27.6)
Matriculation	85 (22.5)
Intermediate	92 (24.4)
Graduate	89 (23.6)
Postgraduate	7 (1.9)
Occupation	
Not employed	229 (60.7)
Private employee	73 (19.4)
Public employee	9 (2.4)
Self-employed/business	66 (17.5)
Monthly personal income (PKR)	
No income	229 (60.7)
< 20,000	68 (18.0)
20,000–40,000	52 (13.8)
> 40,000	28 (7.4)
Locality	
Urban	153 (40.6)
Rural	224 (59.4)
Gestational age, weeks, mean (SD)	30.14 (7.96)
Gestational age, weeks, median (IQR)	35 (26–36)
Trimester	
First (≤13 weeks)	25 (6.6)
Second (14–27 weeks)	89 (23.6)
Third (≥28 weeks)	263 (69.8)
Gravida status	
Primigravida	172 (45.6)
Multigravida	205 (54.4)

IQR, interquartile range; PKR, Pakistani rupees; SD, standard deviation.

Self-care behaviors

Responses varied widely across items (Table 2; Fig 1). Nearly all women (96.6%) agreed that they had a daily routine that worked well for them, and most felt able to ask a trusted person for help (80.6%) and stayed connected with friends and family (74.8%). Agreement was lowest for daily reading (8.5%), finding something to laugh about every day (9.3%), walking, running or playing sport three to four times a week (14.1%) and sleeping 7–8 hours on most nights (19.9%). Neutral responses predominated for relaxation (47.5%), prayer or mindfulness (46.2%) and daily laughter (71.6%). Only 45.1% agreed with the statement “I do not smoke,” while 31.8% were neutral and 23.1% disagreed.

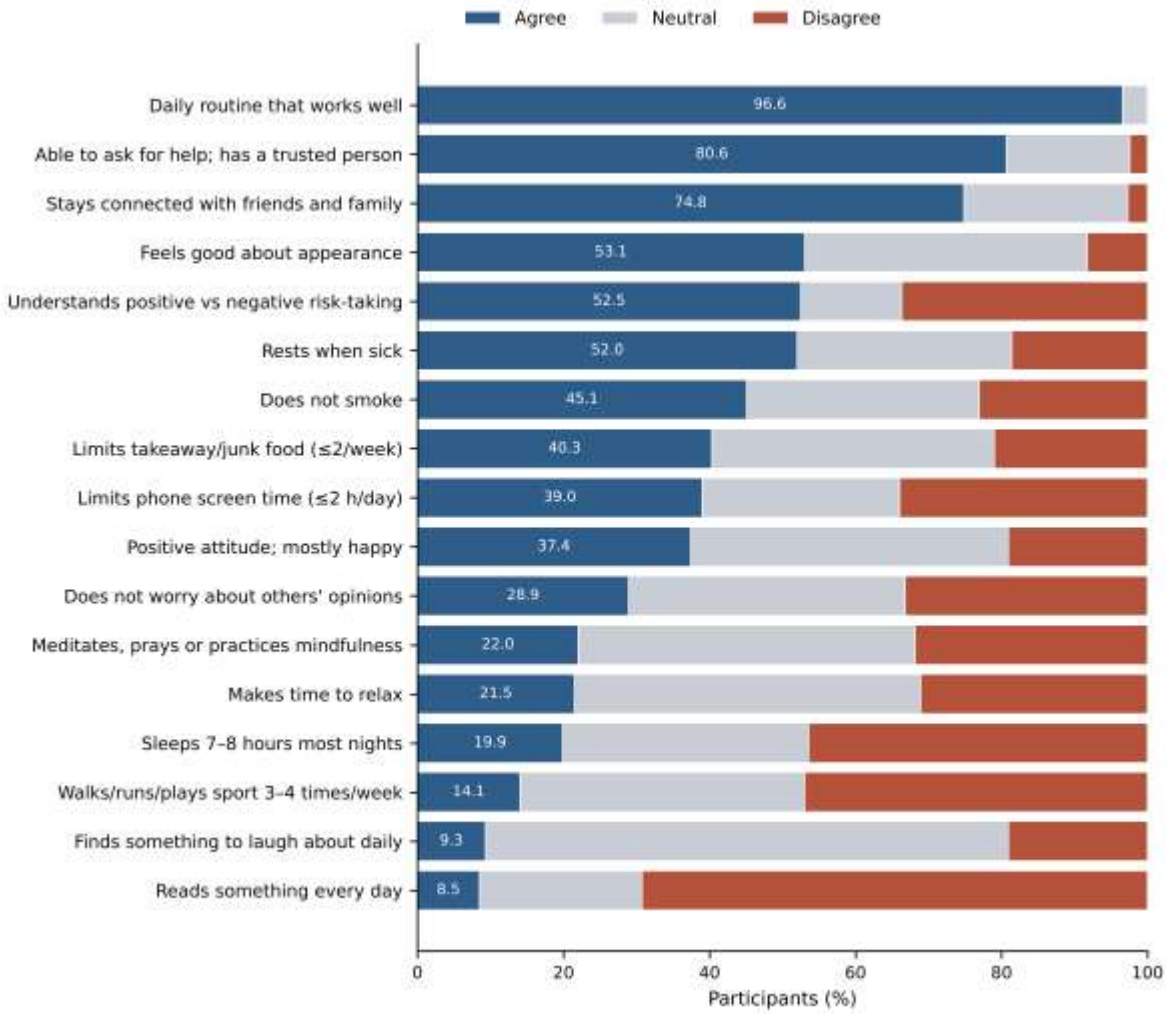

Fig 1. Distribution of responses to the 17 self-care items (N = 377). Items are ordered by the percentage of women who agreed; values within bars are the percentage agreeing.

Table 2. Responses to the 17 self-care items (N = 377)

Item	Agree, n (%)	Neutral, n (%)	Disagree, n (%)	Mean (SD)
Q1. I get 7–8 hours of sleep most nights	75 (19.9)	127 (33.7)	175 (46.4)	0.73 (0.77)
Q2. I walk/run/play sport 3–4 times a week	53 (14.1)	147 (39.0)	177 (46.9)	0.67 (0.71)
Q3. I limit phone screen time to 2 hours a day	147 (39.0)	102 (27.1)	128 (34.0)	1.05 (0.85)
Q4. I limit takeaway/junk food to twice a week	152 (40.3)	146 (38.7)	79 (21.0)	1.19 (0.76)
Q5. I do not smoke	170 (45.1)	120 (31.8)	87 (23.1)	1.22 (0.80)
Q6. I make time to relax for myself	81 (21.5)	179 (47.5)	117 (31.0)	0.90 (0.72)

Item	Agree, n (%)	Neutral, n (%)	Disagree, n (%)	Mean (SD)
Q7. I meditate, pray or practice mindfulness most days	83 (22.0)	174 (46.2)	120 (31.8)	0.90 (0.73)
Q8. When sick, I go to bed/rest to get better	196 (52.0)	111 (29.4)	70 (18.6)	1.33 (0.77)
Q9. I stay connected with friends and family	282 (74.8)	85 (22.5)	10 (2.7)	1.72 (0.50)
Q10. I like to read something every day	32 (8.5)	84 (22.3)	261 (69.2)	0.39 (0.64)
Q11. I have a positive attitude and am mostly happy with my life	141 (37.4)	164 (43.5)	72 (19.1)	1.18 (0.73)
Q12. I have a daily routine that works well for me	364 (96.6)	13 (3.4)	0 (0.0)	1.97 (0.18)
Q13. I find something to laugh about every day	35 (9.3)	270 (71.6)	72 (19.1)	0.90 (0.52)
Q14. I feel able to ask for help and have someone I trust	304 (80.6)	64 (17.0)	9 (2.4)	1.78 (0.47)
Q15. I feel good about how I look	200 (53.1)	146 (38.7)	31 (8.2)	1.45 (0.64)
Q16. I understand positive versus negative risk-taking	198 (52.5)	52 (13.8)	127 (33.7)	1.19 (0.91)
Q17. I do not worry too much about what other people think of me	109 (28.9)	143 (37.9)	125 (33.2)	0.96 (0.79)

Items scored Agree = 2, Neutral = 1, Disagree = 0; higher means indicate more favorable self-care.

Overall self-care score

Total scores ranged from 10 to 30 (possible range 0–34). The mean was 19.53 (SD 4.36; 95% CI 19.09–19.97), equivalent to 57.4% of the maximum, and the median was 19 (IQR 16–23). The distribution was mildly right-skewed (skewness 0.277; kurtosis −0.405). Cronbach's alpha for the 17 items was 0.598.

Comparison by gravida status and associated factors

Multigravida women had higher self-care scores than primigravida women (mean 20.67 [SD 3.74] vs 18.17 [SD 4.67]; median 21 [IQR 18–23] vs 17 [IQR 15–21]; $U = 11{,}270.5$, $p < .001$). The mean difference was 2.50 points (95% CI 1.63–3.37), with a rank-biserial correlation of 0.361 and Cohen's d of 0.60, indicating a moderate effect. In bivariate analysis, age was also positively correlated with self-care ($\rho = 0.264$, $p < .001$), whereas education, occupation, income, locality, gestational week and trimester were not associated with the total score (Table 3).

Table 3. Bivariate associations between participant characteristics and total self-care score

Characteristic	Test	Statistic	p
Gravida status (multigravida vs primigravida)	Mann–Whitney U	U = 11,270.5	< .001
Primigravida, median (IQR); mean (SD)		17 (15–21); 18.17 (4.67)	
Multigravida, median (IQR); mean (SD)		21 (18–23); 20.67 (3.74)	
Age (years)	Spearman	ρ = 0.264	< .001
Education (5 categories)	Kruskal–Wallis	H = 5.118, df = 4	.275
Occupation (4 categories)	Kruskal–Wallis	H = 1.393, df = 3	.707
Monthly income (4 categories)	Kruskal–Wallis	H = 2.378, df = 3	.498
Locality (urban vs rural)	Mann–Whitney U	U = 17,648.5	.621
Gestational week	Spearman	ρ = 0.040	.437
Trimester (3 categories)	Kruskal–Wallis	H = 1.996, df = 2	.369

IQR, interquartile range; SD, standard deviation.

In the adjusted model (robust F[6, 370] = 6.11, p < .001; R^2 = 0.096; adjusted R^2 = 0.081), multigravida status was the only independent predictor of self-care: multigravida women scored 1.79 points higher than primigravida women (95% CI 0.53–3.06, β = 0.205, p = .006). Age was no longer significant once gravida status was included (p = .139), and education, income, locality and gestational week were not associated with the score (Table 4). VIFs ranged from 1.11 to 2.10.

Table 4. Multiple linear regression of total self-care score on participant characteristics (N = 377)

Predictor	B	Robust SE	β	95% CI	p	VIF
Age (years)	0.058	0.039	0.105	−0.019 to 0.136	.139	2.01
Education (ordinal)	0.298	0.258	0.080	−0.209 to 0.805	.249	1.71
Monthly income (ordinal)	0.000	0.250	0.000	−0.490 to 0.491	.998	1.38
Rural locality (ref: urban)	0.396	0.459	0.045	−0.506 to 1.299	.388	1.11
Gestational week	0.045	0.033	0.082	−0.020 to 0.109	.172	1.44
Multigravida (ref: primigravida)	**1.794**	**0.644**	**0.205**	**0.528 to 3.059**	**.006**	**2.10**

Outcome: total self-care score (0–34). HC3 heteroscedasticity-robust standard errors. Model: F(6, 370) = 6.11, p < .001; R^2 = 0.096; adjusted R^2 = 0.081. B, unstandardized coefficient; β, standardized coefficient; CI, confidence interval; SE, standard error; VIF, variance inflation factor.

Discussion

This study of 377 pregnant women in Quetta found that self-care was uneven: social and routine behaviors were widely reported, while physical activity, sleep, relaxation

and daily reading were weak. Women in their first pregnancy reported lower overall self-care than women who had been pregnant before, and this difference was moderate in size and persisted after adjustment for age, education, income, locality and gestational week. The measured sociodemographic and obstetric characteristics explained less than a tenth of the variation in self-care.

The pattern of strong and weak domains mirrors the holistic study by Nguyen et al. in Vietnam, which also found gaps in exercise and diet alongside better social and preventive behaviors [12]. The strong social dimension in our sample is encouraging, because social support is associated with better perinatal mental health and healthier behavior [27,28], and it offers a route for interventions that involve families. The low level of planned physical activity is more concerning. Regular moderate activity is recommended for women without contraindications and reduces the risk of gestational diabetes and hypertensive disorders [29,30]. Pakistani women are often physically busy with household work but unaware that antenatal exercise is advised [11], so our results probably reflect limited knowledge, cultural and safety concerns and the conflation of housework with exercise rather than complete inactivity. Fewer than one in five women reported sleeping 7–8 hours on most nights; given the associations between sleep disturbance and adverse maternal and fetal outcomes [31], sleep deserves explicit attention in antenatal counseling.

The multigravida advantage is consistent with experiential learning: women who have been pregnant before are more familiar with bodily changes, antenatal routines and warning signs, and Ala et al. found that higher parity was associated with better knowledge of antenatal-care components [10]. It also fits evidence that first pregnancy brings more anxiety and uncertainty [20,23], which may be reflected in the lower scores for relaxation, positive attitude and laughter. Our finding contrasts, however, with reports that first-time mothers use antenatal care more and adhere better to supplements [21,22]. These differences suggest that gravidity acts through different mechanisms for different behaviors: a first pregnancy may prompt formal care seeking while everyday self-care practices develop with experience. The crude association with age disappeared after adjustment, indicating that it largely reflected the older age of multigravida women.

No association was found with education, income or locality, unlike the strong socioeconomic gradients reported for antenatal-care use in Pakistan [8,9] and for health literacy internationally [14,15]. Self-care as measured here may depend less on resources than on knowledge, support and confidence; the sample was also relatively homogeneous in economic terms, with 60.7% reporting no personal income, and personal income is a poor proxy for household resources. The low explained variance points to unmeasured influences such as health literacy, the quality of antenatal counseling, family decision-making, household workload and mental health [32,33].

Two item-level findings require caution. More than half of the women did not clearly agree with “I do not smoke,” a proportion far higher than expected for active smoking among pregnant women in this setting; respondents may have interpreted the item as including second-hand smoke or other tobacco products, and the item should be reworded in future use. In addition, near-universal agreement with the daily-routine item limited its ability to discriminate between women. Together with the modest internal consistency ($\alpha = 0.598$), these observations indicate that the questionnaire captures several distinct domains and requires further validation.

Implications for practice

Antenatal clinics in Quetta should offer women in their first pregnancy structured orientation on lifestyle, symptom management, reliable information sources and danger signs, while reviewing, rather than assuming, the knowledge of multigravida women. Counseling for all women should address safe physical activity, sleep and relaxation, and could make use of the strong family networks reported here. Health-literacy education and mobile-health tools delivered in Urdu have improved pregnancy self-care elsewhere and merit local evaluation [16,17,34].

Strengths and limitations

The study provides the first comparison of a broad range of everyday self-care behaviors by gravida status in Balochistan, used an adequately powered sample from the province's two main referral hospitals, and combined nonparametric comparison with robust multivariable adjustment and effect sizes. Its limitations include the cross-sectional design, which precludes causal inference; convenience sampling from two public tertiary hospitals, which limits generalizability to private-sector and primary-care users and to other districts; self-reported data subject to recall and social-desirability bias; the predominance of third-trimester participants; and a self-developed instrument with modest internal consistency and no formal content validation or factor analysis. Health literacy, mental health, social support and pregnancy complications were not measured.

Conclusions

Self-care among pregnant women attending public hospitals in Quetta was moderate and uneven, with clear gaps in physical activity, sleep and relaxation. Women in their first pregnancy reported significantly lower self-care than multigravida women, independent of age and socioeconomic characteristics. Antenatal education should be tailored to pregnancy experience and to specific behaviors, and future research should validate the self-care instrument and examine health literacy, psychosocial and health-system determinants.

Declarations

Ethics approval and consent to participate: Approved by Faculty of Pharmacy and Health Sciences, University of Balochistan. All participants gave informed consent. The study was conducted in accordance with the Declaration of Helsinki.

Consent for publication: Not applicable.

Availability of data and materials: The dataset is available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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