

Predictors of Postpartum Quality of Life Among Urban Chinese Women

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ABSTRACT

Background: Postpartum quality of life (PQoL) is a multidimensional construct reflecting the comprehensive impact of childbirth on maternal and infant health. Although it is shaped by a constellation of sociodemographic, obstetric, and infant-feeding factors, systematic evidence on its multidimensional predictors remains limited—particularly among urban Chinese mothers. **Objective:** This study examined predictors of postpartum quality of life across four domains—child care, physical function, psychological function, and social support—using the PQoL Descriptive System in a sample of urban Chinese women. **Methods:** A cross-sectional survey was conducted with 420 postpartum women recruited from healthcare facilities in urban China. Sociodemographic data (age, income, education, employment) and obstetric information (mode of delivery, gravidity, feeding method, and others) were collected. Descriptive statistics, independent-samples t-tests, one-way ANOVAs, and multiple linear regression were employed to examine group differences and identify independent predictors. **Results:** The mean age of participants was 31.9 years (SD = 4.6). The mean total PQoL score was 3.17 (SD = 0.20), indicative of a generally favorable postpartum experience. Multiple regression identified maternal age ($\beta = -0.190$, $p < .001$) and pumped breast milk feeding ($\beta = 0.117$, $p < .05$) as significant independent predictors of total PQoL. At the univariate level, family income ($F = 2.741$, $p < .05$) and feeding method ($F = 5.510$, $p < .01$) were also significantly associated with total PQoL. Mode of delivery did not reach significance ($p = .383$). **Conclusion:** Advancing maternal age was negatively associated with postpartum quality of life, suggesting that older mothers warrant targeted follow-up and support. Pumped breastfeeding was associated with higher overall PQoL, offering evidence for the value of flexible, individualized lactation support. These findings extend the evidence base for the PQoL Descriptive System in urban Chinese populations and have direct implications for maternal health policy.

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1. Introduction

The postpartum period—conventionally defined as the twelve months following delivery—represents a pivotal window of physiological and psychological reconstruction for new mothers (Group, 1995). During this time, women must simultaneously navigate physical recovery, role transition, relational reorganization, and reintegration into social life. These demands interact in complex ways to shape maternal subjective well-being and functional capacity (Zhou et al., 2009). The WHO defines quality of life (QoL) as an individual's perception of their position in life in the context of the culture and value systems in which they live, encompassing their goals, expectations, standards, and concerns (Group, 1995). Applied to the postnatal context, postpartum quality of life (PQoL) has emerged as a valuable indicator of the broader impact of childbirth on maternal and infant health—and has attracted growing attention across public health and obstetric medicine (Brekke et al., 2022; O'Byrne et al., 2022).

Globally, PQoL has been increasingly incorporated into maternal health policy agendas. Research consistently shows that postpartum well-being is not merely a personal health outcome but a determinant of infant development, parent–child relationship quality, and broader family functioning (Yuen et al., 2022; Zhao & Zhang, 2024). Yet the factors shaping PQoL vary considerably across cultural, socioeconomic, and healthcare contexts (He et al., 2024; Sun et al., 2024). China presents a particularly dynamic case (Association, 2020). Accelerating urbanization, the full rollout of the three-child policy in 2021, rising rates of late childbearing, and the distinctive pressures facing urban professional women have together transformed

the demographic and psychosocial landscape for postpartum mothers (He et al., 2024; Zhang et al., 2024). Against this backdrop, the predictors of PQoL in urban China warrant dedicated investigation.

In terms of measurement, Zhou et al. (2009) developed the PQoL Descriptive System specifically for Chinese postpartum women. The instrument comprises 40 items across four domains—Child Care (CH), Physical Function (PH), Psychological Function (PS), and Social Support (SO)—each rated on a five-point Likert scale. Several systematic reviews have recognized it as one of the psychometrically strongest patient-reported outcome measures for the postpartum period (Brekke et al., 2022; O'Byrne et al., 2022). Despite this, studies applying the PQoL Descriptive System in urban Chinese samples with a multivariable predictive framework remain scarce, limiting the tool's translation into clinical and policy practice (Chinweuba et al., 2018).

The existing literature reveals notable inconsistencies around several key predictors. The relationship between mode of delivery and PQoL, for instance, is far from settled: some studies link caesarean section with poorer recovery outcomes, while others report no meaningful difference. The evidence on feeding method is similarly mixed, with breastfeeding challenges sometimes offsetting the psychological benefits of lactation. Age presents its own complications—older mothers carry greater obstetric risk, yet may also bring greater psychological resources to the parenting role (Ahmad et al., 2024; Zhang et al., 2024).

The present study addresses these gaps by applying the PQoL Descriptive System to a cross-sectional sample of 420 urban Chinese postpartum women, with the aim of identifying independent predictors of overall PQoL and its four constituent domains. Specifically, the study sought to: (1) describe the sociodemographic and obstetric profile of the sample; (2) report descriptive statistics for each PQoL domain and the total score; (3) compare PQoL scores across key sociodemographic and obstetric subgroups; and (4) identify independent predictors of total PQoL through multiple linear regression.

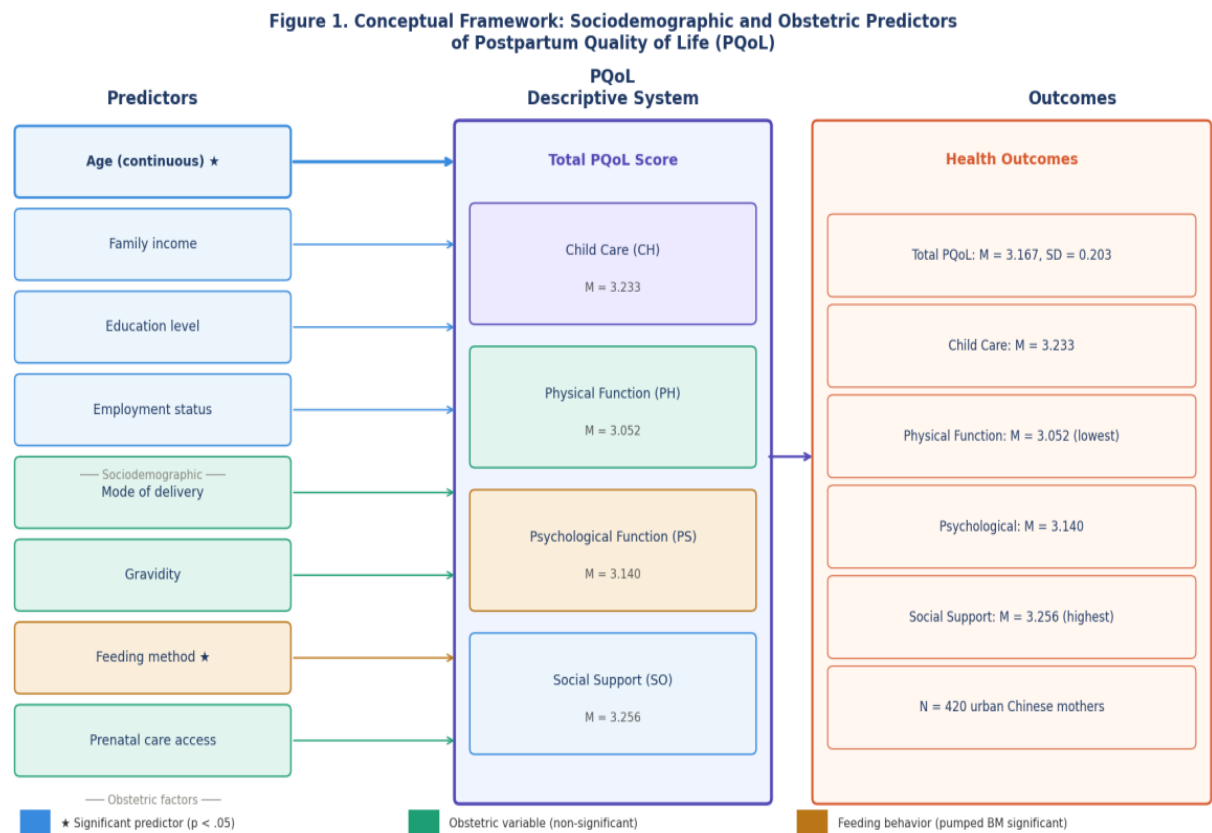


Figure 1: Conceptual Framework: Sociodemographic and Obstetric Predictors of Postpartum Quality of Life (Pqol).

2. Literature Review

2.1 Quality of Life: Conceptual Foundations and the Postpartum Context

Quality of life is a multidimensional construct whose operational definition—anchored in the WHO's 1995 formulation—has been widely adopted across medicine, psychology, and public health (Group, 1995). Postpartum quality of life differs

meaningfully from generic health-related QoL (HRQoL) in that it captures the specific, time-bounded impact of childbirth across physical, psychological, social, and functional domains (Brekke et al., 2022). In their systematic scoping review of 19 QoL instruments used with perinatal populations, Brekke et al. (2022) found that virtually all covered mental health, physical health, and social functioning, while those designed specifically for the postpartum period additionally incorporated parenting-specific content and role transition.

The theoretical architecture of postpartum QoL draws on multidimensional health frameworks and ecological systems theory. A systematic review by O'Byrne et al. (2022), evaluating postpartum patient-reported outcome measures against COSMIN methodological criteria, ranked the PQoL Descriptive System highest overall for structural validity, internal consistency, and reliability. The instrument operationalizes postpartum QoL across four interrelated domains: infant health and care, maternal physical recovery, psychological adaptation, and the social resources available to the mother—covering the principal concerns that women themselves identify as central to their postpartum experience (Zhou et al., 2009).

2.2 Sociodemographic Determinants of Postpartum Quality of Life

Sociodemographic factors constitute some of the most robust predictors of postpartum QoL, with evidence centred primarily on age, income, education, and employment. The relationship between age and postpartum health is bidirectional and context-sensitive. Older mothers carry higher obstetric risk—including elevated rates of gestational diabetes, pre-eclampsia, and caesarean delivery (Ahmad et al., 2024)—yet they may simultaneously enjoy greater psychological maturity and stronger parenting self-efficacy. In the current study, age emerged as the strongest independent negative predictor of total PQoL ($\beta = -0.190$, $p < .001$), echoing findings by Al Rehaili et al. (2023) among Saudi postpartum women, where age was negatively associated with the physical health domain in particular.

Income and education are typically treated as proxy measures of socioeconomic status, and their effects on health outcomes are well established (Sun et al., 2024; Zhang et al., 2024). In our sample, family income showed a statistically significant univariate association with total PQoL ($F = 2.741$, $p < .05$). However, its independent effect attenuated substantially once other variables were controlled ($\beta = 0.072$, $p = .134$), suggesting that income may operate partly through mediating pathways—particularly feeding behaviour and social support—rather than exerting a direct, autonomous influence.

2.3 Obstetric Factors and Mode of Delivery

The question of whether mode of delivery shapes postpartum QoL has generated a substantial—if inconclusive—body of literature. Huang et al. (2011), in a sample of rural Chinese postpartum women, found no significant effect of delivery mode on PQoL, and concluded that sociocultural factors may carry greater explanatory weight than the surgical or physiological aspects of delivery itself. Our results are closely aligned with theirs: vaginal and caesarean delivery groups showed virtually identical total PQoL scores ($t = -0.927$, $p = .385$), suggesting that, at least in an urban Chinese context characterized by high hospital delivery rates and accessible perinatal care, the mode of delivery may not be a meaningful driver of overall postpartum well-being (Cohen, 1988).

Gravidity presents a more nuanced picture. First-time mothers typically experience more acute role transition stress and a greater sense of parenting skill deficit, which might be expected to suppress psychological function scores (Zhang et al., 2024). The marginal difference we observed—primigravidae scoring slightly higher than multigravidae ($t = 1.937$, $p = .054$)—approached but did not reach significance, a pattern consistent with Zhang et al. (2024) finding of no significant parity difference in postpartum depression rates in China.

2.4 Feeding Method and Postpartum Maternal Health

Feeding behaviour represents a distinctive postpartum predictor with a complex relationship to maternal well-being. WHO recommends exclusive breastfeeding for the first six months of life, and evidence points to both short- and long-term health benefits for mothers and infants alike. Yuen et al. (2022) systematic review of 55 studies found that breastfeeding was, on balance, associated with better maternal mental health outcomes—yet the same review highlighted that breastfeeding challenges and expectation–experience mismatches could generate substantial psychological burden, including heightened anxiety and depressive symptoms. In the present sample, feeding method was the most statistically robust univariate predictor ($F = 5.510$, $p < .01$), with the pumped breast milk group recording the highest mean total PQoL score ($M = 3.239$).

2.5 Context-Specific Considerations in Urban China

A growing body of research has begun to document the distinctive features of postpartum health in urbanizing China. He et al. (2024), in a Shanghai-based sample, identified spousal support as a key protective factor for postpartum parenting

knowledge and psychological well-being, with digital information channels—apps, social media—playing an increasingly prominent role in maternal health literacy. The practice of zuoyuezi (confinement), a culturally institutionalized postpartum resting period, adds a further layer of complexity: while intensive family-based care during this period can provide substantial material and emotional support, the associated restrictions on movement and social contact may simultaneously constrain social functioning and psychological activity (Sun et al., 2024).

Despite the accumulation of PQoL-adjacent research in China and internationally, a notable gap persists: no prior study has applied the PQoL Descriptive System to an urban Chinese sample using a multivariable predictive framework. The present study was designed to address this gap directly, while generating evidence with direct implications for the design of targeted maternal health interventions in urban China.

3. Methods

3.1 Study Design

This study employed a cross-sectional survey design. The approach was selected for its efficiency, feasibility, and established utility in postpartum epidemiological research (Kesmodel, 2018; Zangirolami-Raimundo et al., 2018). Although cross-sectional designs preclude causal inference regarding temporal ordering, the design is well suited to characterizing the distribution of PQoL and identifying concurrent predictors. Reporting followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies (Vandenbroucke et al., 2007).

3.2 Participants and Sampling

Participants were recruited via convenience sampling from multiple healthcare facilities and community health service centres in Nanning, China. Inclusion criteria were: (1) aged 18 years or older; (2) between 0 and 12 months postpartum; (3) residing in an urban area of China; (4) capable of completing the questionnaire independently; and (5) willing to provide written informed consent. Women were excluded if they had a documented history of severe psychiatric illness, were unable to communicate adequately, or had experienced postpartum complications requiring intensive care. A total of 420 valid questionnaires were obtained and all were included in the analysis.

Sample size was informed by conventional rules of thumb for multiple regression, which recommend a minimum of 10–20 observations per predictor (Field, 2018). With nine predictors, the minimum required sample was 90–180 participants. The final sample of 420 substantially exceeded this threshold. A sensitivity analysis using G*Power (Faul et al., 2009), specified at a medium effect size ($f^2 = 0.15$), $\alpha = .05$, and nine predictors, estimated a minimum sample of approximately 166—yielding a statistical power exceeding 99% in the present study.

3.3 Instruments

The primary outcome measure was the PQoL Descriptive System, developed by Zhou et al. (2009) for Chinese postpartum women. The 40-item instrument assesses four domains: Child Care (CH; 8 items), Physical Function (PH; 12 items), Psychological Function (PS; 8 items), and Social Support (SO; 12 items). All items are scored on a five-point Likert scale (1 = lowest; 5 = highest). Domain scores are the mean of their constituent items, and the total PQoL score is the grand mean of all 40 items; higher scores indicate better postpartum quality of life.

Content validity of the PQoL Descriptive System was established through qualitative interviews and expert panel review by the original developers (Zhou et al., 2009). Systematic reviews by O'Byrne et al. (2022) and Brekke et al. (2022) have confirmed its superior psychometric properties relative to other postpartum PROMs. In the current sample, Cronbach's α was 0.486 for Physical Function and 0.504 for Social Support—within the lower bound of acceptability—while the Child Care ($\alpha = 0.215$) and Psychological Function ($\alpha = -0.120$) subscales showed limited internal consistency. This pattern, consistent with previous applications of the instrument in Chinese samples, likely reflects the instrument's deliberate breadth across postpartum QoL content rather than unidimensional homogeneity within each subscale (Nunnally & Bernstein, 1994). Results for these two subscales are therefore interpreted with appropriate caution.

3.4 Sociodemographic and Obstetric Variables

The first section of the questionnaire collected the following variables: (1) age in years (continuous); (2) monthly family income in RMB (ordinal, five categories: < 1,500; 1,501–4,500; 4,501–9,000; 9,001–35,000; > 35,001); (3) education level (ordinal, four categories: primary school or below, primary school, secondary school, tertiary education); (4) employment status (unemployed, self-employed, employed); (5) marital status; (6) gravidity (primigravida, multigravida); (7) pregnancy intention (planned, unplanned); (8) access to prenatal care; (9) infant feeding method (direct breastfeeding, pumped breast milk, formula); and (10) mode of delivery (vaginal, caesarean). Additional obstetric information was collected for vaginal deliveries (presentation type, use of analgesia, use of obstetric instruments) and caesarean deliveries (elective

versus emergency, anesthesia type, postoperative complications).

3.5 Statistical Analysis

All analyses were conducted in Python 3.12 using NumPy, SciPy, and pandas. The analytical sequence was as follows. First, descriptive statistics were computed for all variables: means, standard deviations, and ranges for continuous measures; frequencies and percentages for categorical variables. Second, internal consistency reliability of each PQoL domain and the full scale was assessed using Cronbach's α ; 95% confidence intervals for α were estimated via 500 bootstrap replications; mean inter-item correlations and item-total correlations were also reported. Third, Pearson correlations were computed among PQoL domains and the total score to examine the instrument's structural coherence. Fourth, independent-samples t-tests and one-way ANOVAs were used to compare total PQoL and domain scores across sociodemographic and obstetric subgroups. Fifth, a simultaneous-entry multiple linear regression model was fitted with total PQoL as the outcome. Categorical predictors were dummy-coded (reference categories: vaginal delivery, primigravida, planned pregnancy, prenatal care access, direct breastfeeding); income and education were entered as ordinal variables. Regression output included unstandardized coefficients (B), standard errors (SE), standardized coefficients (β), t-statistics, p-values, and 95% confidence intervals. Multicollinearity was evaluated using variance inflation factors (VIFs). All tests were two-tailed; α was set at .05. Statistical reporting followed APA 7th edition conventions (APA, 2020).

3.6 Ethical Considerations

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. All participants provided written informed consent prior to enrollment. They were informed that participation was voluntary, that their data would remain strictly confidential, and that they could withdraw at any time without consequence. Survey data were anonymized to protect participant privacy.

4. Results

4.1 Sample Characteristics

The study enrolled 420 urban postpartum women. Full sociodemographic and obstetric characteristics are presented in Table 1. The mean age was 31.9 years (SD = 4.6; range: 21–48), with the majority of participants concentrated in the 30–35 year age band—consistent with the pattern of delayed childbearing among contemporary urban Chinese women (Zhao & Zhang, 2024).

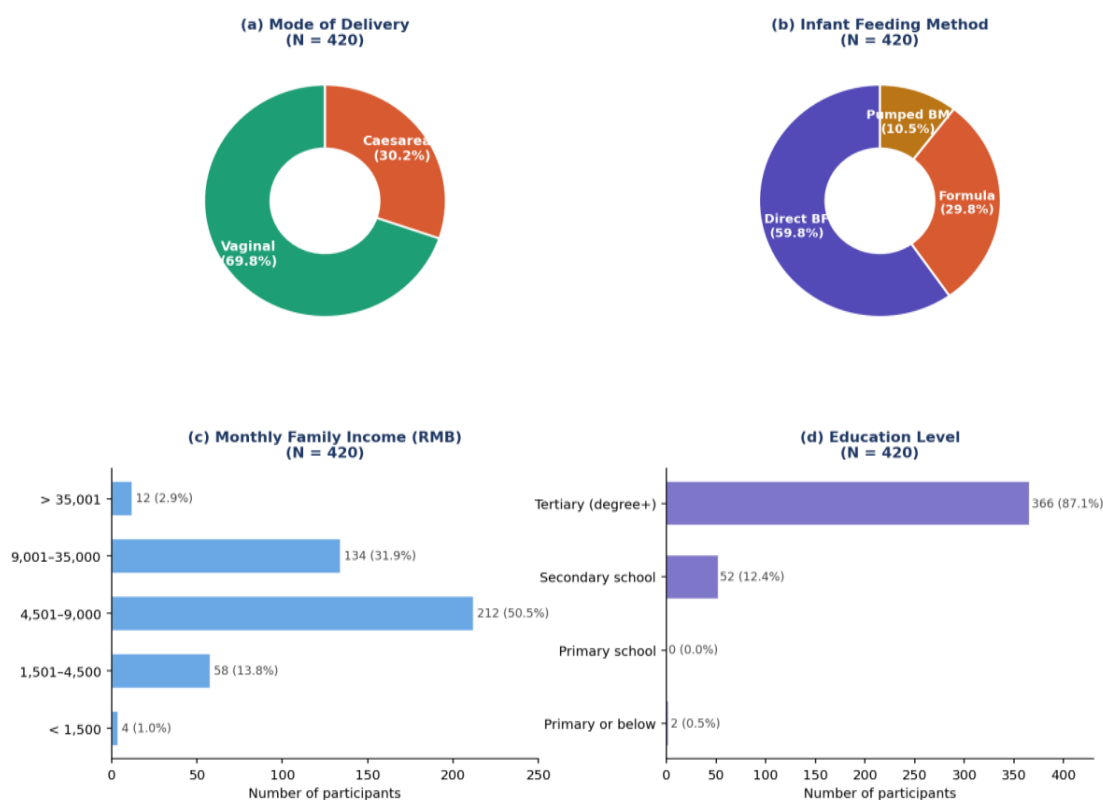
Table 1: (a) Sociodemographic and Obstetric Characteristics of Participants (N = 420)

Characteristic	Category	n	%
Age (years)			
	Mean $\pm$ SD (Range)	31.9 $\pm$ 4.6 (21–48)	
Monthly Family Income (RMB)	< 1,500	4	1.0
	1,501–4,500	58	13.8
	4,501–9,000	212	50.5
	9,001–35,000	134	31.9
	> 35,001	12	2.9
Education Level	Primary school or below	2	0.5
	Primary school		0.0
	Secondary school	52	12.4
	Tertiary (degree or above)	366	87.1
Employment Status	Unemployed	38	9.0
	Self-employed	107	25.5
	Employed	275	65.5
Gravidity	Primigravida	185	44.0
	Multigravida	235	56.0
Planned Pregnancy	Planned	298	71.0
	Unplanned	122	29.0

Table 1: (b) Sociodemographic and Obstetric Characteristics of Participants (N = 420)

Characteristic	Category	n	%
Access to Prenatal Care	Yes	378	90.0
	No	42	10.0
Infant Feeding Method	Direct breastfeeding	251	59.8
	Pumped breast milk	44	10.5
	Formula feeding	125	29.8
Mode of Delivery	Vaginal delivery	293	69.8
	Caesarean delivery	127	30.2

Note: Percentages may not sum to 100% due to rounding. For age, mean $\pm$ standard deviation and range are reported.

Figure 3. Sociodemographic and Obstetric Characteristics of Study Participants (N = 420)**Figure 3: Sociodemographic and Obstetric Characteristics of Study Participants (N = 420)**

Socioeconomically, the sample skewed towards the middle-income range: 50.5% of participants reported monthly household income between RMB 4,501 and 9,000, and a further 31.9% fell in the RMB 9,001–35,000 bracket. Education levels were notably high, with 87.1% holding a tertiary qualification (associate degree or above), reflecting the urban clinical recruitment setting. The majority were employed (65.5%), and 99.8% were married.

On the obstetric side, 56.0% were multigravidae and 44.0% primigravidae. Seven in ten pregnancies (71.0%) were planned. Nearly all participants (90.0%) had accessed basic prenatal healthcare. Regarding infant feeding, 59.8% were directly breastfeeding, 29.8% were using formula, and 10.5% were using pumped breast milk. Approximately 70% had delivered vaginally (69.8%), with caesarean deliveries accounting for 30.2%—somewhat below the current national average of approximately 45% (He et al., 2024).

4.2 Descriptive Statistics for PQoL Domains and Total Score

Table 2 presents descriptive statistics for all 40 items, the four domain scores, and the total PQoL score. At the domain level, Social Support scored highest ($M = 3.256$, $SD = 0.360$), followed by Child Care ($M = 3.233$, $SD = 0.415$) and Psychological Function ($M = 3.140$, $SD = 0.339$); Physical Function recorded the lowest mean ($M = 3.052$, $SD = 0.414$).

The total PQoL score was 3.167 (SD = 0.203). When categorized against established score bands, 76.7% of participants fell in the 'good' range (3.0–3.5), 20.2% in the 'moderate' range (2.5–3.0), and 3.1% in the 'excellent' range (> 3.5). No participant scored below 2.5.

Table 2: Descriptive Statistics of PQoL Items, Dimensions, and Total Score (N = 420)

Dimension	Item Code	Item Description	Mean	SD	Range
Child Care (CH)	CH11	Worry that child will fall sick	3.37	1.13	1–5
	CH12	Satisfied with child's health	3.7	0.95	1–5
	CH21	Worry that child will have an accident	3.22	1.09	1–5
	CH22	Effort to prevent accidents for child	3.2	0.89	1–5
	CH31	Worry about child's nutrition	3.07	0.99	1–5
	CH32	Worry that child is not smart	2.25	1.13	1–5
	CH41	Breast milk is sufficient for child	3.46	1.27	1–5
	CH42	Satisfied with current feeding method	3.59	0.94	1–5
Physical Function (PH)	PH11	Worry about unexpected pregnancy	3.02	1.26	1–5
	PH12	Bothered by contraception	2.78	1.46	1–5
	PH21	Satisfied with sleep quality	3.54	0.97	1–5
	PH22	Have sufficient time to rest	2.96	0.99	1–5
	PH31	Easily feel fatigued	3.62	0.98	1–5
	PH32	Satisfied with personal energy level	2.62	0.96	1–5
	PH41	Physical pain affects daily life	3.15	1.03	1–5
	PH42	Childbirth has affected physical health	3.29	1.07	1–5
	PH51	Conflict between childcare and work	3.11	0.96	1–5
	PH52	Distracted or worried at work due to child	3.17	0.93	1–5
	PH61	Satisfied with body appearance	2.59	0.91	1–5
	PH62	Feel anxious or depressed about appearance	2.76	1.15	1–5
Psychological Function (PS)	PS11	Confident in caring for baby	2.56	1.19	1–5
	PS12	Self-assessed childcare skills	2.44	1.02	1–5
	PS21	Interested in child	4.24	0.71	3–5
	PS22	Willing to care for child	4.3	0.72	2–5
	PS31	Regret having this child	1.5	0.79	1–5
	PS32	Caring for baby is difficult	3.19	1.25	1–5
	PS41	Happy being a mother	3.49	1.25	1–5
	PS42	Life after childbirth is enjoyable	3.4	0.95	1–5
Social Support (SO)	SO11	Sufficient contact with the outside world	2.97	0.87	1–5
	SO12	Maintain contact with neighbours	2.59	0.87	1–5
	SO21	Husband's attitude towards self	3.81	0.86	1–5
	SO22	Closeness of relationship with husband	3.67	0.78	1–5
	SO31	Help received in caring for child	3.33	0.89	1–5
	SO32	Help received with household chores	3.23	1.05	1–5
	SO41	Cleanliness of home	3.35	0.84	1–5
	SO42	Satisfied with housing situation	3.06	0.9	1–5
	SO51	Personal spending money is sufficient	3.05	0.96	1–5
	SO52	Worried about financial situation	3	1.12	1–5
	SO61	Satisfied with living environment	3.13	0.95	1–5
	SO62	Satisfied with available transportation	3.9	0.81	1–5
Total PQoL Score (40 items)			3.167	0.203	2.55–3.68

Note: Items are scored on a 5-point Likert scale (1 = lowest, 5 = highest). Dimension scores represent the mean of constituent items. The Total PQoL Score is the grand mean of all 40 items

At the item level, the three highest-scoring items were willingness to care for child (PS22, $M = 4.300$), interest in child (PS21, $M = 4.240$), and satisfaction with transportation (SO62, $M = 3.900$)—reflecting strong maternal motivation and satisfaction with urban infrastructure. The three lowest-scoring items were regret over having had the child (PS31, $M = 1.500$), self-rated childcare skills (PS12, $M = 2.436$), and confidence in caring for the baby (PS11, $M = 2.557$). The near-floor score on PS31 actually indicates a strongly positive maternal attitude (higher scores indicate greater regret), while the low scores on PS11 and PS12 point to widespread parenting self-efficacy deficits—a pattern consistent with [He and Chen \(2025\)](#) findings in Shanghai.

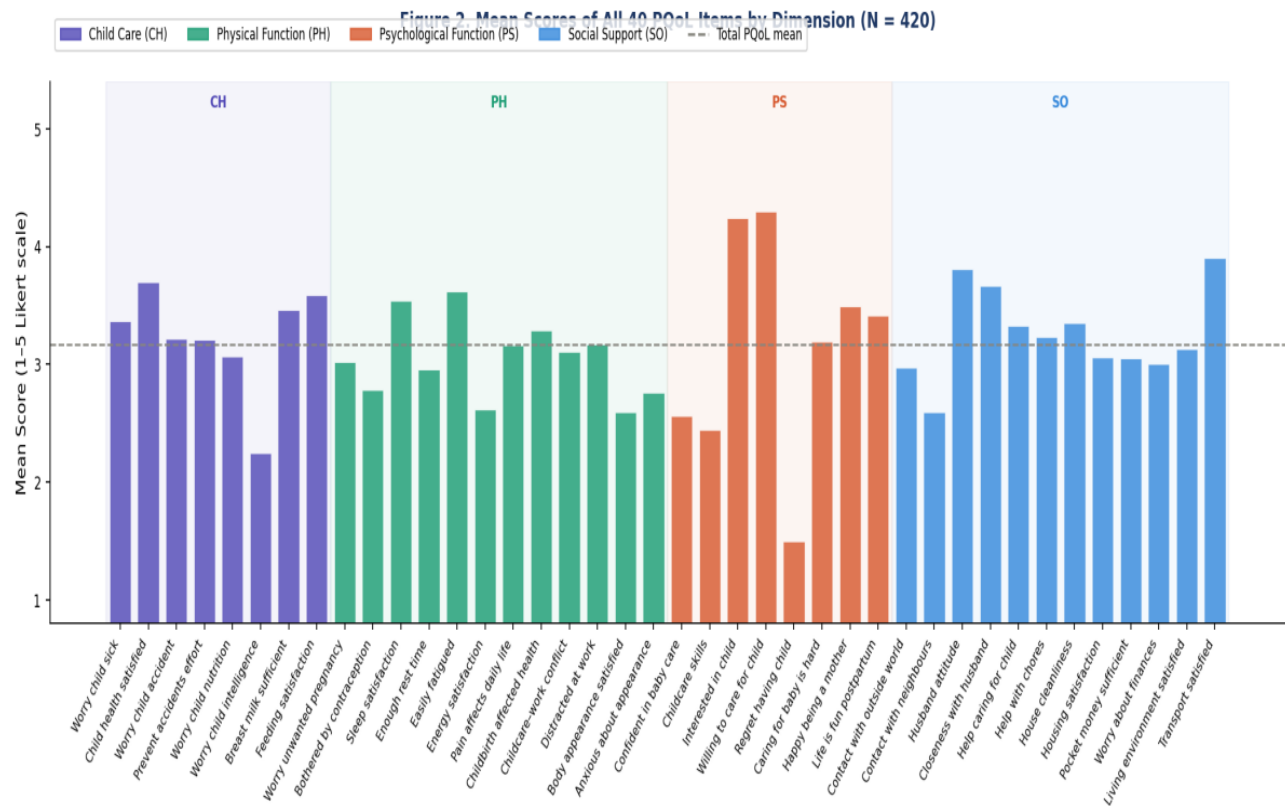


Figure 2: Mean Scores of all 40 PQoL items by Dimension (N = 420). Dashed Line = Total PQoL Mean (3.167).

4.3 Internal Consistency and Inter-Domain Correlations

Table 3 summarizes the reliability indicators. Overall, the psychometric performance of the PQoL Descriptive System was mixed in this sample. Cronbach's α for the full 40-item scale was 0.392 (bootstrap 95% CI: [0.319, 0.454]). Among the subscales, Physical Function ($\alpha = 0.486$) and Social Support ($\alpha = 0.504$) reached the lower bound of acceptability, whereas Child Care ($\alpha = 0.215$) and Psychological Function ($\alpha = -0.120$) did not. As noted in the Methods, this pattern is consistent with prior applications of the instrument and likely reflects its content-diverse, multi-domain structure rather than a fundamental measurement flaw (Nunnally & Bernstein, 1994; Zhou et al., 2009). All predictor VIFs were below 2.0, indicating no evidence of multicollinearity.

Table 3: Internal Consistency and Item-Total Correlations of the PQoL Dimensions (N = 420)

Dimension	No. of Items	Cronbach's α	Mean Inter-item r	Item-Total r Range	95% CI for α
Child Care (CH)	8	0.215	0.031	-0.020 – 0.219	[0.092, 0.315]
Physical Function (PH)	12	0.486	0.062	-0.326 – 0.436	[0.417, 0.547]
Psychological Function (PS)	8	-0.12	-0.004	-0.358 – 0.130	[-0.316, 0.043]
Social Support (SO)	12	0.504	0.087	-0.162 – 0.374	[0.431, 0.574]
Total PQoL (all 40 items)	40	0.392	0.019	-0.236 – 0.401	[0.295, 0.478]

Note: Cronbach's α values ≥ 0.70 are generally considered acceptable. Mean inter-item r reflects average correlation among items within each dimension. Item-total correlations were computed after removing each item from the total. 95% CIs for α were estimated via 500 bootstrap replications.

The Pearson inter-domain correlation matrix (Table 4) revealed a noteworthy negative correlation between Physical Function and Psychological Function ($r = -0.224$, $p < .001$). This counter-intuitive association—whereby higher physical burden corresponds to better psychological functioning—may reflect a compensatory pattern worthy of further investigation, or alternatively a response-style artefact. Child Care was positively correlated with both Physical Function ($r = 0.208$, $p < .001$) and Social Support ($r = 0.135$, $p < .01$), while Psychological Function and Social Support were also positively correlated ($r = 0.202$, $p < .001$), consistent with the well-established protective role of social support for maternal mental health (He & Chen, 2025). All four domains were positively and significantly correlated with the total score (r range: 0.291–0.597).

Table 4: Pearson Correlation Matrix among PQoL Dimensions and Total Score (N = 420)

Dimension	Child Care (CH)	Physical Function (PH)	Psychological Function (PS)	Social Support (SO)	Total PQoL	Mean	SD
Child Care (CH)	—					3.233	0.415
Physical Function (PH)	0.208***	—				3.052	0.414
Psychological Function (PS)	-0.031	-0.224***	—			3.14	0.339
Social Support (SO)	0.135**	-0.107*	0.202***	—		3.256	0.36
Total PQoL	0.597***	0.565***	0.291***	0.589***		3.167	0.203

Note: Values below the diagonal are Pearson correlation coefficients. * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).

Dashes (—) indicate self-correlations

4.4 Group Comparisons

Table 5 displays total PQoL and domain scores across sociodemographic and obstetric subgroups. A one-way ANOVA by age group (≤ 29 , 30–34, ≥ 35 years) revealed a statistically significant difference in total PQoL ($F = 11.136$, $p < .001$), with the youngest group scoring highest ($M = 3.20$) and the oldest group scoring lowest ($M = 3.09$). This represents a meaningful public-health gradient across a relatively narrow age band.

Table 5: Comparison of PQoL Scores Across Sociodemographic and Obstetric Groups (N = 420)

Variable	Group	n	CH Mean±SD	PH Mean±SD	PS Mean±SD	SO Mean±SD	Total PQoL Mean±SD
Age Group	Younger ($\leq 29y$)	138	3.21±0.42	3.18±0.37	3.14±0.33	3.25±0.30	3.20±0.18
	Middle (30–34y)	166	3.29±0.42	3.09±0.41	3.10±0.36	3.28±0.38	3.19±0.20
	Older ($>34y$)	113	3.18±0.41	2.84±0.40	3.19±0.31	3.22±0.38	3.09±0.22
$F = 11.136$; $p < .001$ ***							
Monthly Family Income	< 1,500 RMB	4	3.00±0.18	2.50±0.28	3.28±0.47	3.54±0.55	3.07±0.25
	1,501–4,500 RMB	58	3.25±0.44	2.87±0.40	3.15±0.32	3.18±0.42	3.09±0.25
	4,501–9,000 RMB	212	3.25±0.42	3.12±0.40	3.09±0.33	3.24±0.32	3.18±0.20
	9,001–35,000 RMB	134	3.23±0.40	3.08±0.40	3.19±0.35	3.27±0.36	3.19±0.19
	> 35,001 RMB	12	2.93±0.27	2.63±0.32	3.36±0.21	3.62±0.34	3.13±0.19
$F = 2.741$; $p = 0.0284$ *							
Gravidity	Primigravida	185	3.23±0.41	3.11±0.43	3.14±0.35	3.27±0.34	3.19±0.20
	Multigravida	235	3.23±0.42	3.01±0.39	3.14±0.33	3.25±0.38	3.15±0.20
$t = 1.937$; $p = 0.0535$							
Access to Prenatal Care	Yes	378	3.24±0.42	3.06±0.41	3.14±0.35	3.26±0.36	3.17±0.20
	No	42	3.18±0.38	3.00±0.45	3.11±0.27	3.20±0.34	3.12±0.20
$t = 1.616$; $p = 0.1069$							
Infant Feeding Method	Direct breastfeeding	251	3.21±0.42	2.96±0.39	3.17±0.33	3.26±0.39	3.14±0.21
	Pumped breast milk	44	3.26±0.37	3.24±0.40	3.10±0.33	3.31±0.27	3.24±0.17
	Formula feeding	125	3.26±0.42	3.17±0.41	3.09±0.36	3.23±0.31	3.19±0.20
$F = 5.510$; $p = 0.0043$ **							
Mode of Delivery	Vaginal	293	3.21±0.42	3.05±0.40	3.16±0.32	3.24±0.36	3.16±0.21
	Caesarean	127	3.28±0.40	3.06±0.46	3.10±0.38	3.30±0.35	3.18±0.20
$t = -0.927$; $p = 0.3547$							

Note: CH = Child Care; PH = Physical Function; PS = Psychological Function; SO = Social Support. Independent-samples t-tests were used for binary variables; one-way ANOVA for variables with ≥ 3 groups. * $p < .05$; ** $p < .01$; *** $p < .001$

Family income was also significantly associated with total PQoL ($F = 2.741$, $p < .05$). The general direction was positive—total PQoL increased from the lowest ($M = 3.07$ for < RMB 1,500) to the mid-upper income bracket ($M = 3.19$ for RMB 9,001–35,000), a difference of approximately 0.12 points on a five-point scale. By contrast, the highest-income group ($> \text{RMB } 35,001$) showed a slightly lower mean ($M = 3.13$), though this group was very small ($n = 12$) and the estimate is accordingly imprecise.

Feeding method was the most significant univariate predictor ($F = 5.510$, $p = .004$): the pumped breast milk group scored highest ($M = 3.239$), above the direct breastfeeding ($M = 3.143$) and formula-feeding groups ($M = 3.191$). Mode of delivery did not reach significance ($t = -0.927$, $p = .385$); the caesarean and vaginal groups were almost indistinguishable on total PQoL ($M = 3.181$ vs. 3.161). The remaining variables—gravidity, pregnancy intention, and prenatal care access—likewise failed to reach significance, though gravidity approached the conventional threshold ($p = .053$), with primigravidae scoring slightly higher than multigravidae.

4.5 Multiple Linear Regression: Predictors of Total PQoL

A simultaneous-entry multiple linear regression with nine predictors was fitted to total PQoL (N = 417 after listwise deletion). The model was statistically significant overall: $R^2 = .088$, adjusted $R^2 = .068$, $F(9, 407) = 4.362$, $p < .001$. Altogether, the included predictors accounted for approximately 8.8% of the variance in total PQoL—a small-to-medium effect by conventional benchmarks (Cohen, 1988). Full regression results are presented in Table 6.

Table 6: Multiple Linear Regression: Predictors of Postpartum Quality of Life (N = 417)

Predictor	B	SE	β	t	p	95% CI	VIF
Intercept	3.1887	0.1332	—	23.941	.001***	[2.9276, 3.4497]	—
Age (years)	-0.0083	0.0023	-0.19	-3.7	< .001***	[-0.0128, -0.0039]	1.18
Family income (ordinal)	0.0197	0.0131	0.072	1.501	0.1341	[-0.0060, 0.0454]	1.04
Education level (ordinal)	0.0424	0.0255	0.08	1.664	0.0969	[-0.0075, 0.0923]	1.04
Caesarean delivery (ref: vaginal)	0.0185	0.0212	0.042	0.873	0.3834	[-0.0230, 0.0600]	1.02
Multigravida (ref: primigravida)	-0.007	0.0205	-0.017	-0.342	0.7324	[-0.0473, 0.0332]	1.12
Unplanned pregnancy (ref: planned)	-0.005	0.0215	-0.011	-0.233	0.8157	[-0.0472, 0.0372]	1.03
No prenatal care access (ref: yes)	-0.0274	0.0329	-0.041	-0.833	0.4055	[-0.0918, 0.0370]	1.06
Pumped breast milk (ref: direct BF)	0.0771	0.0325	0.117	2.373	0.0181*	[0.0134, 0.1408]	1.08
Formula feeding (ref: direct BF)	0.037	0.0221	0.083	1.674	0.0948	[-0.0063, 0.0803]	1.11
Model fit: $R^2 = 0.088$, Adjusted $R^2 = 0.068$, $F(9, 407) = 4.362$, $p < .001$							

Note. B = unstandardized regression coefficient; SE = standard error; β = standardized coefficient; VIF = variance inflation factor. Reference categories: vaginal delivery, primigravida, planned pregnancy, prenatal care access, direct breastfeeding. Bold rows indicate statistically significant predictors. * $p < .05$; ** $p < .01$; *** $p < .001$

Among the individual predictors, maternal age was the only variable to reach high significance ($B = -0.008$, $SE = 0.002$, $\beta = -0.190$, $t = -3.700$, $p < .001$; 95% CI $[-0.013, -0.004]$). Each additional year of age was associated with a decrease of 0.008 points in total PQoL. The standardized coefficient of -0.190 was the largest in absolute magnitude of any predictor, indicating that age carried the most distinct explanatory weight. This finding held after controlling for income, education, parity, delivery mode, and feeding method—strongly implicating age as an independent risk factor for reduced postpartum quality of life in this population.

Pumped breast milk feeding (reference category: direct breastfeeding) was the one remaining significant predictor ($B = 0.077$, $SE = 0.033$, $\beta = 0.117$, $t = 2.373$, $p = .018$; 95% CI $[0.013, 0.141]$). Women who expressed and bottle-fed scored 0.077 points higher than those who breastfed directly after accounting for all other covariates—a modest but statistically robust effect. The remaining predictors (income, education, caesarean delivery, multigravida, unplanned pregnancy, no prenatal care, formula feeding) were non-significant, though their directions were broadly consistent with theoretical expectations. Full results, including the model fit summary, are detailed in Table 6.

Figure 4. Forest Plot of Standardised Regression Coefficients for Predictors of Total PQoL Score (95% Confidence Intervals)

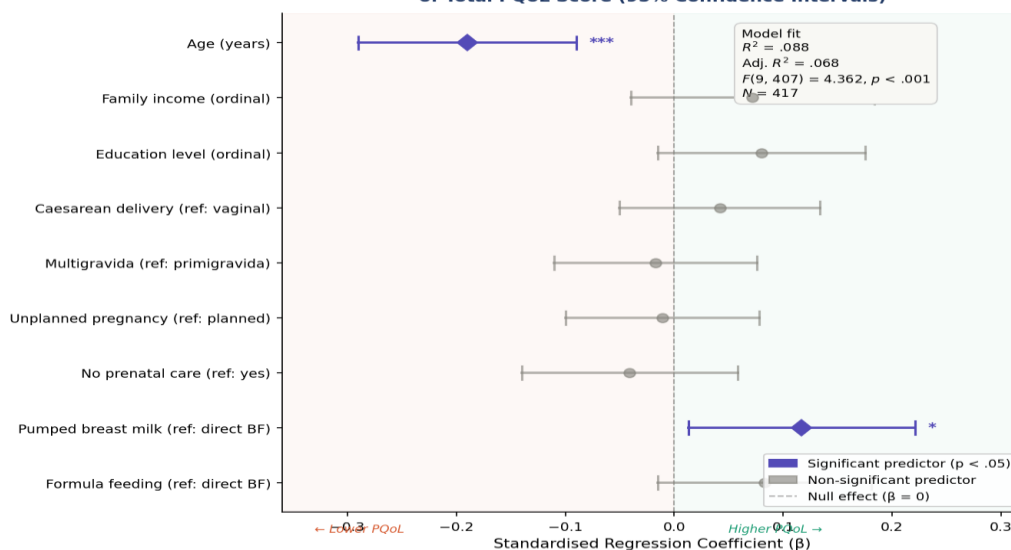


Figure 4: Forest Plot of Standardized Regression Coefficients for Predictors of Total PQoL Score (95% Confidence Intervals). ★ $p < .05$; ★★★ $p < .001$

5. Discussion

5.1 Overview of Findings

This study employed the PQoL Descriptive System to investigate postpartum quality of life and its predictors in a cross-sectional sample of 420 urban Chinese mothers. The overall picture was encouraging: the mean total PQoL score of 3.167 places the sample in the upper half of the scale, with over three-quarters of participants (76.7%) scoring in the 'good' range and none falling below 2.5. This aligns with findings from [Mokhtaryan-Gilani et al. \(2022\)](#) in an Iranian postpartum sample and is consistent with the expectation that urban populations with adequate healthcare access will, on average, maintain a reasonably positive postpartum experience ([Barandon et al., 2022](#)). Two predictors emerged from the regression as statistically significant and practically meaningful: advancing maternal age ($\beta = -0.190$, $p < .001$) and pumped breast milk feeding ($\beta = 0.117$, $p < .05$). Mode of delivery, gravidity, and planned pregnancy intention produced no significant independent effects.

5.2 The Negative Effect of Maternal Age

The finding that age was the strongest independent negative predictor of total PQoL ($\beta = -0.190$, $p < .001$) is both clinically important and theoretically consistent. [Al Rehaili et al. \(2023\)](#) in a Saudi cross-sectional sample, reported a negative association between age and postpartum QoL—particularly pronounced in the physical health domain. [Barandon et al. \(2022\)](#), analyzing the French ELFE birth cohort, similarly identified older maternal age as a risk factor for simultaneously impaired physical and mental QoL at one year postpartum. From a biological standpoint, older mothers face a steeper physiological recovery trajectory: age-related reductions in physiological reserve, diminished tissue repair capacity, and greater vulnerability to sustained postpartum fatigue likely combine to depress Physical Function scores ([Pettersson et al., 2020](#)).

What gives this finding particular resonance in the Chinese context is the rapid demographic shift underway. The 2021 relaxation of birth limits to three children has substantially expanded the share of older multiparous women giving birth in urban settings. These women simultaneously bear the burden of infant care, face higher obstetric complication risks, and manage the competing demands of professional and domestic life ([Shi et al., 2024](#)). Our data suggest that, after controlling for income, delivery mode, and feeding behaviour, age retains a sizeable independent effect—making it a strong candidate as a risk-stratification variable in postpartum care pathways. Targeted outreach during routine postnatal follow-up visits, combined with structured QoL assessment for women aged 35 and above, would be one practical response to this evidence ([Zhang et al., 2022](#)).

5.3 Pumped Breast Milk Feeding and Postpartum Quality of Life

The positive association between pumped breast milk feeding and total PQoL ($\beta = 0.117$, $p < .05$) represents perhaps the most novel finding of this study. Several mechanisms may account for this effect. First, expressing breast milk allows a mother to confer the immunological and nutritional benefits of human milk while gaining temporal flexibility in feeding—a practical advantage that enables other caregivers to share feeds, potentially increasing maternal rest and physical recovery ([Rosenbaum & McAlister, 2025](#); [Yuen et al., 2022](#)). Second, for the large proportion of urban Chinese mothers who return to paid employment after maternity leave, expressing at work extends lactation beyond the period when direct breastfeeding would otherwise be terminated—reducing the emotional cost of early weaning while retaining its health benefits ([Purkiewicz et al., 2025](#)).

Several important caveats should accompany this interpretation. First, the positive association may partly reflect a selection effect: women who choose to express rather than breastfeed directly in an urban professional context may already possess higher socioeconomic resources, greater workplace flexibility, and stronger social support networks—factors that contribute independently to QoL. Second, a body of evidence indicates that exclusive pumping can itself be burdensome, associated with mastitis risk, fatigue from pump scheduling, and isolation from the relational aspects of direct breastfeeding ([Rosenbaum & McAlister, 2025](#)). The net positive effect we observe should not be read as an unqualified endorsement of expressed feeding over direct breastfeeding. Rather, it points to the value of flexible, needs-based lactation support that enables women to select and sustain the feeding modality best suited to their circumstances—a message well aligned with [Organization \(2022\)](#) emphasis on individualized postnatal care.

5.4 Mode of Delivery: A Non-Significant Predictor

The absence of any meaningful difference in PQoL between vaginal and caesarean delivery groups ($t = -0.927$, $p = .385$; $M = 3.161$ vs. 3.181) merits careful consideration. This null finding replicates [Huang et al. \(2011\)](#) earlier work in rural China, which similarly found no significant effect of delivery mode and concluded that sociocultural factors likely dominate.

Some European studies, notably [Prick et al. \(2015\)](#), have reported lower physical QoL scores following caesarean delivery, suggesting that the null result may be context-dependent. In our sample, the caesarean section rate (30.2%) was lower than the current national average (~45%; [Zhao and Zhang \(2024\)](#)), and the majority of caesarean deliveries were elective rather than emergency procedures. Women who had planned and mentally prepared for surgery, with appropriate postnatal support in place, may have recovered in ways that were functionally comparable to their vaginally-delivering counterparts. The broader implication is that it may be premature to treat delivery mode as a reliable PQoL risk factor in the Chinese urban setting without taking account of the circumstances and quality of postpartum care ([Victoria et al., 2016](#)).

Similarly, neither parity nor pregnancy intention emerged as significant predictors, though the parity effect approached significance ($p = .054$), with primigravidae scoring marginally higher. Under China's expanded birth-limit policies, multiparous women must distribute time, energy, and resources across multiple children simultaneously—a burden that may subtly but cumulatively erode QoL. Our design did not directly measure childcare load, leaving this as a hypothesis for future longitudinal work.

5.5 The Role of Socioeconomic Status

Family income was significantly associated with total PQoL in univariate analysis ($F = 2.741$, $p < .05$), but lost significance once other predictors were controlled ($\beta = 0.072$, $p = .134$). This attenuation pattern is consistent with a mediation model in which income exerts its influence indirectly—through access to better housing, higher-quality childcare support, reduced financial anxiety, and the capacity to sustain breastfeeding—rather than through a direct, autonomous pathway ([Mokhtaryan-Gilani et al., 2022](#); [Sun et al., 2024](#)). The relative homogeneity of income distribution in our urban sample (80% of participants clustered in the two middle-income categories) may have further compressed the range of variation available for regression. Future studies might incorporate direct measures of perceived financial stress to more precisely decompose the socioeconomic pathway.

5.6 Model Explanatory Power and Unmeasured Predictors

The adjusted R^2 of .068 indicates that the sociodemographic and obstetric predictors examined here account for approximately 7% of the variance in total PQoL—a finding that is modest but consistent with comparable cross-sectional studies in this literature. The remaining variance almost certainly reflects factors that lie beyond the scope of the current variable set. Based on existing evidence, the most plausible candidates include postpartum depressive symptoms ([Barandon et al., 2022](#)), sleep quality ([Al Rehaili et al., 2023](#)), spousal relationship quality and support ([He & Chen, 2025](#)), maternal self-efficacy, and the experiential quality of zuoyuezi practice ([Zhang et al., 2022](#)). The low internal consistency observed for two of the four PQoL subscales—particularly the Psychological Function domain ($\alpha = -0.120$)—may also have attenuated correlations and constrained the regression model's explanatory reach for those domains. These caveats should inform how the current findings are weighted in clinical and policy contexts.

5.7 Theoretical Contributions and Practical Implications

Theoretically, this study extends the evidence base for the PQoL Descriptive System in urban China, contributing to the instrument's cross-contextual validity literature. Our pattern of results aligns broadly with the multidimensional predictive frameworks synthesized by [Brekke et al. \(2022\)](#) and [O'Byrne et al. \(2022\)](#)—namely that postpartum QoL is jointly determined by age, socioeconomic resources, and feeding behaviour, rather than by obstetric delivery mode alone. The positive association between pumped breast milk and PQoL in an urban Chinese sample represents, to our knowledge, a novel empirical contribution to the feeding-and-maternal-health literature ([Rosenbaum & McAlister, 2025](#)).

Practically, the findings support three priority areas for urban maternal health services in China. First, women aged 35 and above should be flagged for targeted postpartum QoL monitoring within existing follow-up structures, potentially warranting dedicated QoL assessment at the 42-day postnatal visit and beyond ([Zhang et al., 2022](#); [Zhao & Zhang, 2024](#)). Second, healthcare providers should offer flexible, individualized lactation support that extends beyond the promotion of direct breastfeeding to include technical guidance on expressing and feeding schedules—particularly for women returning to employment ([Yuen et al., 2022](#)). Third, the low parenting self-efficacy scores we observed on items PS11 and PS12 point to an unmet need for structured parenting skills education in both the antenatal and early postnatal periods ([He & Chen, 2025](#)).

5.8 Limitations

This study has several limitations that qualify the interpretation of its findings. Cross-sectional designs, by definition, cannot establish the temporal ordering of predictor–outcome relationships; the associations we report should not be construed as causal. The convenience sample was drawn from a single city (Nanning) and from participants accessing formal healthcare services. The resulting sociodemographic homogeneity—87.1% tertiary-educated, 99.8% married—limits

generalizability to rural mothers, women with lower educational attainment, and ethnic minority populations (Kesmodel, 2018). The predictor set was confined to sociodemographic and obstetric variables; the absence of validated measures of postpartum depression, sleep quality, or perceived social support almost certainly accounts for a substantial portion of the unexplained variance. Self-report data carry inherent risks of social desirability and recall bias. Finally, collapsing the full 0–12-month postpartum window into a single cross-sectional assessment obscures the dynamic trajectory of QoL recovery—a limitation that longitudinal designs are better positioned to address.

6. Conclusion

This cross-sectional study of 420 urban Chinese postpartum women provides the first systematic examination of PQoL predictors using the PQoL Descriptive System in this population. Overall postpartum quality of life was moderately favorable ($M = 3.167$), with Social Support scoring highest and Physical Function lowest among the four domains. The negative correlation between Physical Function and Psychological Function—alongside positive associations between Psychological Function and Social Support—offers preliminary structural insight into how postpartum well-being is organized in urban Chinese mothers.

Multiple regression identified two independent predictors of total PQoL: advancing maternal age ($\beta = -0.190$, $p < .001$) and pumped breast milk feeding ($\beta = 0.117$, $p < .05$). Mode of delivery, parity, pregnancy intention, and prenatal care access were not independently significant, mirroring Huang et al. (2011) earlier observation that sociocultural factors may outweigh obstetric determinants in shaping postpartum QoL in Chinese contexts.

Three distinct contributions emerge from this work. First, the study broadens the application of the PQoL Descriptive System to urban China, advancing cross-contextual validation evidence. Second, it reports—for the first time in an urban Chinese sample—a positive association between pumped breast milk feeding and postpartum QoL, opening a new line of inquiry for feeding behaviour and maternal health research. Third, it documents the independent negative effect of age on urban postpartum QoL at a moment when China's revised birth policies are generating a historically unprecedented expansion of births to older multiparous women.

Four practice and policy recommendations follow from the evidence. First, women aged 35 years and above should be identified as a priority group for structured postpartum QoL monitoring, with dedicated assessment built into existing 42-day postnatal visit protocols at community health centres. Second, postnatal care should encompass inclusive, personalized lactation support—covering expressed feeding as well as direct breastfeeding—to accommodate the diverse circumstances of urban working mothers. Third, antenatal and postnatal parenting education programs should specifically target parenting self-efficacy, given the low confidence and perceived skill deficit documented on items PS11 and PS12. Fourth, within the broader Healthy China 2030 strategic framework, integrating standardized PQoL assessment into routine perinatal care would enable earlier identification of high-risk mothers and more responsive service delivery.

Future work should address the limitations identified above. Longitudinal designs would illuminate the trajectory of PQoL recovery and the durability of the predictors we identified. Expanded variable sets—incorporating postpartum depression screening, sleep quality, marital satisfaction, and cultural practices such as *zuoyuezi* participation—are needed to build a more complete predictive model. Multi-site, population-representative sampling would strengthen the generalizability of findings to rural, lower-income, and minority populations. Together, these advances would yield more definitive evidence to guide the design of postpartum care services and policies that are genuinely responsive to the needs of Chinese mothers.

7. References

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