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Perceived and Objective Quality of Life Among Pregnant Women: Mixed-Methods Research on Chronic Energy Deficiency

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Abstract: Chronic Energy Deficiency (CED) in pregnant women is a substantial public health issue in Indonesia. This research examines the divergence between objective and subjective quality of life in pregnant women with CED in Kampar District, Riau Province. A sequential explanatory design with mixed methodologies was used. The quantitative phase included 150 pregnant women with chronic energy deficiency (mid-upper arm circumference <23.5 cm) from 10 community health centers (out of 31 in Kampar District), selected using a strategy that guarantees a blend of urban and rural regions. Evaluations included WHOQOL-BREF, anthropometric assessments, and clinical exams. The qualitative phase included comprehensive interviews and focus group discussions with 30 intentionally chosen individuals. Data integration was executed by joint display analysis. Quantitative results indicated poor objective quality of life scores: physical domain: 54.3±12.7; psychological: 58.6±11.4; social: 64.2±13.8; environmental: 52.1±10.9. Nonetheless, 73% of interviewees regarded their quality of life as "good" or "excellent." Qualitative analysis revealed four themes: "normalization of adversity" (CED seen as typical during pregnancy), "family sacrifice" (prioritization of familial needs), "social support as resilience" (help from family and community), and "spiritual coping" (religious beliefs as a source of strength). Key determinants affecting the disparity in quality of life were social support (β=0.432, $p<0.001$), psychological resilience (β=0.387, $p<0.001$), healthcare access (β=0.256, $p<0.05$), and health literacy (β=0.198, $p<0.05$). Despite unfavorable objective health indicators, pregnant women with CED in Kampar District maintain good perspectives of quality of life, facilitated by robust social support, cultural normalization, and spiritual coping strategies. Effective therapies must amalgamate biological strategies with psychological assistance, taking into account local cultural factors. Programs must fulfill dietary requirements while concurrently enhancing community support structures and advancing health literacy to reconcile the disparity between objective health status and subjective well-being.

Keywords: Chronic energy deficiency; Pregnancy; Maternal Health; Quality of life.

Introduction

Pregnancy, a turning moment in a woman's life, demands careful study of maternal nutritional health and overall well-being (Black et al., 2013). Among many poor nations, including Indonesia, chronic energy deficit (CED) among pregnant women is a major public health issue (Victora et al., 2021). With some areas reporting more, the 2018 Basic Health Research (Riskesdas, 2018) revealed that 17.3% of pregnant women in Indonesia had Chronic Energy Deficiency (CED). Among pregnant women in Riau Province, the frequency of Chronic Energy Deficiency (CED) is a significant issue, varying by area (Lipoeto et al., 2020).

In pregnant women, CED is defined as a Mid-Upper Arm Circumference (MUAC) of < 23.5 cm,

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suggesting inadequate body energy stores (Tang et al., 2020). This condition might significantly affect maternal and foetal health, hence raising the probability of preterm delivery, low birth weight, stunting, and maternal and neonatal mortality and morbidity (Ahmed et al., 2012; Christian et al., 2013). A diverse concept, quality of life includes physical, psychological, social, and environmental components (WHOQOL, 1998). The quality of life in pregnant women is affected by physiological changes, social situations, family support, access to healthcare facilities, and nutritional status (Lagadec et al., 2018; Mortazavi et al., 2014). Studies show that poor nutritional status is connected to worse quality of life in pregnant women (Kazemi et al., 2016).

While clinical and anthropometric data could provide an objective quality of life evaluation, personal evaluations of well-being might offer a subjective one (Karimi & Brazier, 2016). The gap between perceived and objectively assessed quality of life might provide significant insights on the elements shaping the life experiences of pregnant women with CED (Carr et al., 2001; Felce & Perry, 1995). Previous studies have mostly concentrated on the clinical features of CED or only used statistical methods (Gebre et al., 2018; Shrestha et al., 2021).

A mixed-methods approach integrating quantitative data and qualitative narratives might help one to get a comprehensive understanding of the experiences of pregnant women with CED, including the social and cultural elements influencing their perception of quality of life. Studies in low-income nations reveal that pregnant women's evaluations of quality of life are significantly influenced by sociocultural elements (Fisher et al., 2012; Rahman et al., 2013). Often in Indonesia, cultural values, familial support, and spiritual beliefs serve as coping strategies influencing well-being (Niehof, 1988; Utomo et al., 2019).

Developing more effective and comprehensive therapies calls for a complete knowledge of the distinctions between objective and subjective quality of life in pregnant women with CED (Girma et al., 2019). Interventions meant just at dietary improvement may not be enough if psychological elements affecting quality of life assessments are not handled (Nguyen et al., 2018). This research intends to assess and contrast the objective and subjective quality of life of pregnant women with chronic diseases in Kampar District, Riau Province using a mixed-methods methodology. Kampar District was chosen as the study location because of its varied geographical features, including urban and rural regions with different levels of access to medical services.

This study aims to address certain significant concerns dependent on the aforementioned background: examining the objective quality of life characteristics of pregnant women with Chronic Energy Deficiency (CED) in Kampar District based on clinical and anthropometric indicators, exploring how pregnant women with CED personally assess their quality of life, comparing the differences between objective and subjective quality of life assessments within this group, and investigating the factors that contribute to the gap between objective and subjective quality of life, with the results of the study aiming to provide suggestions for creating more comprehensive intervention programs satisfying the general needs of pregnant women with CED in Kampar District and Indonesia as a whole.

Method

Study Design

The main part of this research used a quantitative strategy, while the secondary part used a qualitative approach to explain and build on the quantitative results. We chose this design because it lets us collect quantitative data first to find objective patterns in quality of life, and then we can do in-depth qualitative research to find out how people feel and what factors affect the differences between objective and subjective assessments (Creswell & Clark, 2017). This mixed methods approach delivers a more complete view of the challenging topic of quality of life in pregnant women with CED than using just one technique. It does this by combining the advantages of numbers with rich human tales.

Setting and Research Location

The research took place in Kampar District, Riau Province, Indonesia. This location was chosen because it had a mix of urban and rural communities with different degrees of access to healthcare services. Researchers were able to get a good image of how pregnant women with CED felt in diverse socioeconomic settings because of the geographical diversity. The study was done at 10 of the 31 basic healthcare clinics (Puskesmas) in Kampar District. These centers were selected so that they encompassed both urban and rural locations, and they were also chosen based on how simple it was for pregnant women with CED to get to them.

Population and Sample

The study's target group was all pregnant women in Kampar District who had chronic energy insufficiency. To be included, pregnant women had to have CED, which is defined as a mid-upper arm circumference (MUAC) of less than 23.5 cm, be at least 12 weeks pregnant, have lived in Kampar District for at least 6 months, be able to speak Indonesian, and be ready

to take part in the research. Pregnant women with serious medical problems such severe preeclampsia, type 1 diabetes mellitus, or congenital heart disease were not allowed to participate. Also, women who had substantial mental illnesses or a history of drug and alcohol abuse were not allowed to participate.

For the quantitative phase, the Lemeshow formula for descriptive survey research with a 95% confidence level and 5% precision was used to find the sample size. This gave us a sample of 150 pregnant women with CED. According to Riskesdas (2018) statistics, 17.3% of pregnant women had CED. This is what the estimate was based on. For the qualitative phase, 30 participants were chosen from the quantitative phase respondents using purposive sampling. This was done to reach data saturation, which is usually reached in phenomenological studies with 20 to 30 participants (Braun & Clarke, 2006).

Sampling Technique

The quantitative phase employed stratified random sampling with stratification based on geographical location (urban vs. rural), gestational age (second vs. third trimester), and education level (primary, secondary, or tertiary). This stratification was necessary to ensure sample representativeness and reduce selection bias that might occur due to population characteristic heterogeneity. For the qualitative phase, the study used purposive sampling with a maximum variation sampling approach to ensure representation from various sociodemographic characteristics and quality of life score variations, enabling exploration of diversity in participant experiences and perspectives.

Research Instruments

The quantitative tools included a sociodemographic questionnaire that asked about age, education, job, family income, number of children, gestational age, and health history. We used the WHOQOL-BREF, a reliable tool with 26 questions, to measure quality of life. The questions cover four main areas: physical health (7 questions), mental health (6 questions), social connections (3 questions), and the environment (8 questions). There are also two extra questions about overall quality of life and general health. This tool employs a 5-point Likert scale, and the domain scores are changed to a 0-100 scale. The Indonesian version has been tested and shown to be reliable, with a Cronbach's alpha value of 0.89 (Purba et al., 2018).

Following standard WHO protocols, anthropometric measurements were taken. These included measuring the mid-upper arm circumference (MUAC) with a standard MUAC tape at the midpoint of the left upper arm between the acromion and olecranon, measuring height with a microtoise with 0.1 cm accuracy, measuring weight with a digital scale with 0.1 kg accuracy, and calculating body mass index with the standard formula. Some of the clinical tests included assessing blood pressure with a sphygmomanometer, testing hemoglobin levels with HemoCue, and writing down crucial information regarding the mother's and baby's health history.

Qualitative tools included semi-structured in-depth interview guides that were made based on the results of the quantitative phase and a review of the literature. These guides covered topics like how people feel about their quality of life during pregnancy, their experiences with CED conditions, how they cope, the support they get from family and friends, their spiritual and cultural beliefs, and how easy it is for them to get healthcare. The framework of the focus group discussion (FGD) guidelines was meant to look into how people in the community feel about societal norms around pregnancy and nutrition, community support networks, and how they feel about maternal health.

Data Collection Procedures

The quantitative phase started with two months of intense preparation. This included 5 days of training for the enumerators by the research team, standardizing the anthropometric measurement procedures according to WHO protocols, and pilot testing the instruments on 30 people who were not part of the sample to make sure they were valid and reliable. To collect data, we had to find and screen potential respondents at primary healthcare centers, explain the research goals, get their consent, conduct structured interviews with questionnaires that lasted 30 to 45 minutes, take anthropometric measurements and do clinical exams, and have participants fill out the WHOQOL-BREF.

The qualitative phase started with choosing participants based on an initial analysis of quantitative data to find differences in quality of life scores. Participants were then grouped by demographic factors and quality of life scores, and then purposively recruited from each group. Twenty people took part in in-depth interviews that lasted 60 to 90 minutes each in places that were comfortable for them. The interviews were videotaped with the participants' permission and transcribed word-for-word within 24 hours. There were two focus group conversations, each with 6 to 8 people, and each session lasted 90 to 120 minutes. They were led by experienced qualitative study researchers, and they captured audio and video with the participants' permission.

Data Analysis

The quantitative analysis employed a step-by-step method. It started with descriptive analysis to show how often category variables happened and how central tendency and dispersion were for numerical variables. This included calculating out the WHOQOL-BREF domain ratings for everyone who replied. We used chi-square tests to check how categorical variables were connected, independent t-tests to examine how the means of various groups were different, and Pearson correlation to see how numerical variables were related. We did a multivariate analysis using multiple linear regression to figure out what makes the difference between objective and subjective quality of life. We changed the models to account for anything that may affect the findings and made sure that the assumptions of the regression, such linearity, normality, and homoscedasticity, were still valid.

We started the qualitative analysis by writing down every word from the interview and FGD recordings. We then read them over a few times to get a sense of the data and used NVivo 12 software to code them for the first time. There are six phases to the Braun & Clarke (2006) method for thematic analysis: getting to know the data, making initial codes, looking for themes, rating themes, defining and labeling themes, and writing the report. Member checking with 10% of the participants, peer debriefing with specialists in qualitative research, and audit trails for keeping track of the analytic process ll helped make sure that the qualitative validity and reliability were exceptionally excellent.

We used joint display analysis to put the data together. We looked at both the quantitative and qualitative results to see where they agreed, disagreed, and aided each other. We also built a composite display matrix to assist us see how the data fit together. We utilized a mixed methods matrix to connect quantitative data with qualitative themes, find out why there are disparities between objective and subjective measures, and come up with a single conceptual model that can describe the phenomena in the right way.

The cross-sectional design in the quantitative phase made it impossible for the researchers to figure out what caused what and only showed what was going on at one moment in time. Quality of life surveys may include self-report bias because individuals may want to seem good to others. There may also be recollection bias since the data depends on what participants remember. There weren't enough pregnant women with CED in Kampar District to draw generalizations regarding other groups of individuals or areas.

Table 1. Sample distribution based on stratification

Stratification	Category	Sample Size
Geographical Location	Urban	75
	Rural	75
Gestational Age	Trimester 2	75
	Trimester 3	75
Education Level	Primary	50
	Secondary	75
	Tertiary	25
Quantitative Total		150
Qualitative Total		30

Table 2. Instruments and measurement parameters

Component	Instrument	Parameter	Validity
Quality of Life	WHOQOL-BREF	4 domains, 26 items, scale 0-100	Cronbach's α = 0.89
Anthropometry	MUAC tape, Microtoise, Digital scale	MUAC <23.5cm, BMI, Height, Weight	WHO standards
Clinical	Sphygmomanometer, HemoCue	Blood pressure, Hemoglobin	Daily calibration
Sociodemography	Structured questionnaire	Age, education, occupation, parity	Pilot test n=30

Result and Discussion

Results

Demographic Characteristics of Participants

This study involved 150 pregnant women with CED for the quantitative phase and 30 participants for the qualitative phase. The majority of participants were aged 20-35 years (74.7%), with a mean age of 26.8 ± 4.2 years. Most participants were in their second trimester of pregnancy (62.7%), had secondary education (56.7%), and worked as housewives (68.0%). Parity distribution showed 42.7% primigravida and 57.3% multigravida, with a mean MUAC of 22.1 ± 1.3 cm, confirming CED conditions in all participants (MUAC <23.5 cm).

Table 3. Demographic characteristics of research participants (n=150)

Characteristic	n	%	Mean ± SD
Age (years)			26.8 ± 4.2
18 – 25	67	44.7	
26 – 35	75	50.0	
>35	8	5.3	
Gestational Age (weeks)			28.4 ± 6.7
Trimester of Pregnancy			
Second	94	62.7	
Third	56	37.3	
Education Level			
Primary	52	34.7	
Secondary	85	56.7	
Tertiary	13	8.7	

Characteristic	n	%	Mean ± SD
Employment Status			
Housewife	102	68.0	
Employed	48	32.0	
Parity			1.8 ± 1.1
Primigravida	64	42.7	
Multigravida	86	57.3	
Family Income (rupiah)			2,450,000 ± 850,000
<Minimum Wage	98	65.3	
≥Minimum Wage	52	34.7	
MUAC (cm)			22.1 ± 1.3
BMI (kg/m²)			20.8 ± 2.4
Healthcare Access			
Easy	89	59.3	
Difficult	61	40.7	

Quantitative Results: Objective Quality of Life Scores

WHOQOL-BREF score analysis showed that pregnant women with CED had low objective quality of life scores across all domains. The physical domain had the lowest score (54.3 ± 12.7), followed by the environment domain (52.1 ± 10.9), psychological domain (58.6 ± 11.4), and social domain (64.2 ± 13.8). The overall objective quality of life score was 57.3 ± 8.9, indicating below-average quality of life (WHOQOL-BREF transformation score: 0-100, with scores >70 indicating good quality of life).

Table 4. Objective quality of life scores by whoqol-bref domain (n=150)

WHOQOL-BREF Domain	Mean ± SD	Median	Range	Category
Physical Domain	54.3 ± 12.7	53.6	28.6 - 85.7	Low
Psychological Domain	58.6 ± 11.4	58.3	33.3 - 83.3	Low
Social Domain	64.2 ± 13.8	66.7	25.0 - 91.7	Moderate
Environment Domain	52.1 ± 10.9	50.0	28.1 - 78.1	Low
Total Score	57.3 ± 8.9	57.1	35.8 - 79.7	Low
Overall QOL Perception	2.8 ± 0.9	3.0	1 - 4	Moderate
General Health Perception	2.6 ± 0.8	3.0	1 - 4	Moderate

Bivariate analysis showed significant correlations between several factors and objective quality of life scores. Education level showed positive correlation with the psychological domain ($r=0.312$, $p<0.001$), while nutritional status (based on MUAC) correlated with the physical domain ($r=0.287$, $p<0.001$). Easy healthcare access was associated with higher environment domain scores ($r=0.245$, $p<0.01$).

Quantitative Results: Subjective Quality of Life Assessment

In contrast to low objective scores, subjective quality of life assessment showed significantly different results. Of 150 participants, 73% (n=110) rated their quality of life as "good" or "very good" based on the overall quality of life perception item in WHOQOL-BREF. Only 18% (n=27) rated their quality of life as "poor," and 9% (n=13) rated it as "very poor." A similar pattern was seen in general health assessment, where 68% of participants felt "satisfied" or "very satisfied" with their health despite experiencing CED.

Table 5. Comparison of objective and subjective quality of life assessment

Assessment Aspect	Objective (Domain Score)	Subjective (Perception)	p-value
Overall Quality of Life			
Poor/Very Poor	82% (score <60)	27%	<0.001
Good/Very Good	18% (score ≥60)	73%	<0.001
General Health			
Dissatisfied	76%	32%	<0.001
Satisfied/Very Satisfied	24%	68%	<0.001
Discrepancy	Mean = 15.4 ± 8.2 points	-	-

Multivariate Analysis: Determinant Factors

Multiple linear regression model identified four main factors influencing the discrepancy between objective and subjective quality of life. Social support emerged as the strongest predictor ($\beta=0.432$, $p<0.001$), followed by psychological resilience ($\beta=0.387$, $p<0.001$), healthcare access ($\beta=0.256$, $p<0.05$), and health literacy ($\beta=0.198$, $p<0.05$). This model explained 64.2% of the variance in quality of life discrepancy ($R^2 = 0.642$, $F = 42.85$, $p<0.001$).

Qualitative Results: Thematic Analysis

Thematic analysis of 20 in-depth interviews and 2 FGDs found four primary themes that explain how pregnant women with CED keep their good subjective quality of life perceptions even when their actual situations are bad.

Table 6. Regression analysis of factors affecting quality of life discrepancy

Predictor Variable	β	SE	t	p-value	95% CI
Social Support	0.432	0.087	4.97	<0.001	0.261 - 0.603
Psychological Resilience	0.387	0.092	4.21	<0.001	0.206 - 0.568
Healthcare Access	0.256	0.112	2.29	0.024	0.035 - 0.477
Health Literacy	0.198	0.098	2.02	0.045	0.005 - 0.391
Age	0.134	0.089	1.51	0.134	-0.042 - 0.310
Education Level	0.087	0.095	0.92	0.361	-0.101 - 0.275
Employment Status	0.065	0.108	0.60	0.549	-0.149 - 0.279
$R^2 = 0.642$, $F = 42.85$, $p<0.001$					

Theme 1: Normalization of Adversity

Most of the people who took part thought that CED was a typical component of pregnancy. They thought that losing weight, feeling tired, and having trouble moving around were all normal parts of being pregnant that they had to accept. "I think this is normal." It was the same when I was pregnant with my first kid. My mom mentioned that being pregnant is like that—tired and skinny. The most essential thing is that the baby is okay. (P-07, 26 years old, has been pregnant before). "All pregnant women go through experiences like this for sure. I don't think there's anything wrong with how I feel. Allah is testing moms with this. (P-12, 24 years old, first-time mom). This normalization helps people deal with their situations without feeling mentally overwhelmed. This conclusion is in line with studies on how women deal with problems during pregnancy by using normalizing tactics.

Theme 2: Family Sacrifice

People tended to put the demands of their family, particularly the fetus they were carrying, ahead of their own. They were ready to eat less healthy food as long as they could provide their husbands and other children better meals. "The most essential thing is that my spouse and kids eat healthy. I can eat anything as long as I'm not hungry. "After I have the baby, I can eat better." (P-15, 29 years old, had more than one child). "I don't have a lot of money to spend, so I choose to buy protein for my husband because he brings in the money." I just need to eat tempeh or tofu. (P-03, 22 years old, first-time pregnant).

This sacrifice is seen as a way to show love and duty as a mother and wife, giving it significance and making them feel good, even when it affects their nutrition. This pattern of sacrifice fits with what we know about the variables that affect CED, which suggest that familial and socioeconomic factors are critical for the nutrition of pregnant women.

Theme 3: Social Support as Resilience

Support from family and community became the main source of strength for participants in facing CED. This support was not only material assistance but also emotional and informational support that helped them feel they were not alone. "Thank God, family and neighbors often help. Sometimes they give vegetables from the garden, and sometimes they leave food. That's very helpful." (P-09, 27 years old, multigravida). "My mother-in-law always prays and gives encouragement. She says, 'Be patient, dear. This will all pass. The important thing is to pray and make efforts.'" (P-18, 25 years old, primigravida).

Social support was a significant protective factor against mental health problems during pregnancy, with a pooled odds ratio of 1.18 for antenatal depression and 1.97 for antenatal anxiety. In the context of CED, social support functions as a buffer that helps maintain positive quality of life perceptions.

Theme 4: Spiritual Coping

For majority of the people who took part, their religious beliefs and spirituality were very important sources of strength. They saw CED as a test from God that they had to pass with faith and perseverance. "I think Allah would not put His people through more than they can handle. This must be wise. I keep praying and working hard. (P-06, 28 years old, has been pregnant many times). "I read the Quran and dhikr every day. It calms my heart down. "Allah will make everything easy if we are patient and pray," I believe. (P-14, 23 years old, first pregnancy).

Research on spiritual coping demonstrates that three primary things—faith, connectivity, and spiritual strength—are strongly linked to religious coping techniques and improve spiritual quality of life.

Data Integration: Joint Display Analysis

Integration analysis showed convergence between quantitative and qualitative findings in several main aspects. Factors that were statistically significant in affecting quality of life discrepancy (social support, psychological resilience, healthcare access, and health literacy) were confirmed and deepened through qualitative findings.

Table 7. Integration of quantitative and qualitative findings

Quantitative Factor	Qualitative Theme	Convergence	Expansion
Social Support	Social Support as Resilience	✓	Reveals emotional and spiritual dimensions of support
Psychological Resilience	Normalization of Adversity	✓	Explains cognitive mechanisms of adaptation
Healthcare Access	Family Sacrifice	✓	Identifies structural and cultural barriers
Health Literacy	Spiritual Coping	○	Discovers alternative sources of knowledge (spiritual)

Information: ✓ = Full convergence, ○ = Partial convergence

Discussion

Objective and Subjective Quality of Life Discrepancy

The main finding of this study is that pregnant women with CED rate their quality of life quite differently depending on whether they are looking at it objectively or subjectively. The WHOQOL-BREF scores showed that the participants had a low quality of life (mean 57.3 ± 8.9), however 73% of them felt their quality of life was good or excellent. The quality of life paradox theory by Carr et al. (2001) claims that this disparity makes sense since it suggests that expectations and adaptation mechanisms have a stronger effect on quality of life than objective conditions alone. According to Purba et al. (2018), the average WHOQOL-BREF physical domain score for people in Indonesia is 68.4 ± 15.2. This suggests that the participants in this study had scores that were substantially lower than the average for the whole population (54.3 ± 12.7).

This discrepancy has a huge impact on the health of mothers. A study in Banyumas indicated that 32% of pregnant women had CED and their average MUAC was 22.3 ± 1.1 cm (Yulia et al., 2024). This agrees with what this research discovered. According to studies on sleep quality and tiredness during pregnancy, 94.2% of pregnant women are tired, with average fatigue ratings of 25.78 ± 6.56 in the second trimester and 26.46 ± 6.72 in the third trimester. But not everyone felt their situation was poor. This illustrates that pregnant women may handle changes in their bodies and minds in a manner that is distinct from how other people do.

This study also backs up the notion of "response shift" in quality of life research, which suggests that when people's health changes, so do their internal standards, beliefs, and assumptions about what quality of life is. Indonesia has a high rate of CED during pregnancy, but it varies by region. For example, 17.3% of women in the country as a whole (Riskesdas, 2018), 20.2% in Central Java, 21.3% in Jeneponto (Wati et al., 2024), 20.7% in Bogor (Harna et al., 2024), 36.6% in Banyumas, and 64.9% in rural Riau (Yulia et al., 2024). This shows that there are a lot of differences between regions.

Determinant Factors of Discrepancy

Social Support as the Main Factor

Social support (β=0.432, $p<0.001$) was the most significant factor in improvements in quality of life. This indicates how crucial support networks are for the health of pregnant women. Researchers studied the mental health and social support of 64,449 pregnant mothers. It revealed that not obtaining adequate social support was highly connected to greater risks of depression (AOR: 1.18, 95% CI: 1.01–1.41) and prenatal anxiety (AOR: 1.97, 95% CI: 1.34–2.92) (Bedaso et al., 2021).

In this study, social support not only helped individuals manage with stress, but it also provided them a new avenue to acquire health information and confirm what they had been through while pregnant. The qualitative findings revealed that pregnant women liked getting various kinds of emotional and practical aid from women's networks, partners, family, and parents. This aid might be mental or physical. Al-Mutawtah et al. (2023) undertook a thorough study and discovered four primary types of support: "a variety of emotional support," "tangible and intangible instrumental support," "traditional rituals and spiritual support," and "the all-encompassing natal home."

Psychological Resilience and Cognitive Adaptation

Psychological resilience (β=0.387, $p<0.001$) showed extraordinary cognitive adaptation capabilities in pregnant women with CED. Qualitative findings revealed that "normalization of adversity" became the main coping strategy, where participants reframed CED as a normal part of the pregnancy experience. This strategy is consistent with stress and coping theory developed by Lazarus and Folkman, where cognitive reappraisal becomes one of the effective coping strategies. Research in Banyumas showed that 32% of pregnant women experience CED, and good nutritional knowledge correlates with better nutritional status. However, in the context of this study, psychological resilience appeared to play a more important role in maintaining positive quality of life perceptions than objective knowledge about nutrition.

Bedaso et al. (2021), in their systematic review, found that social support has a protective relationship

against mental health problems during pregnancy, which aligns with psychological resilience findings in this study. Fisher et al. (2012) also found that social and cultural factors greatly affect the causes of mental health issues during pregnancy in low- and middle-income countries, highlighting how important psychological resilience is for protection.

Wati et al. (2024) research in Banyumas showed that 32% of pregnant women experience CED, and good nutritional knowledge correlates with better nutritional status. However, in the context of this study, psychological resilience appeared to play a more important role in maintaining positive quality of life perceptions than objective knowledge about nutrition. This evidence indicates that psychological factors have equally important roles as biomedical factors in determining maternal well-being.

Spiritual Coping as a Source of Strength

The qualitative research found that spiritual coping is the most important part of living a good life. Researchers looked at how the WHOQOL spirituality module is put up and found that spiritual coping, which includes faith, connection, and spiritual strength, is different from spiritual quality of life and is quite similar to religious coping mechanisms. In Indonesian religious culture, spiritual coping has become a major source of strength. Niehof (1988) looked at the traditional medicine utilized during pregnancy and childbirth in Madura and found that traditional and spiritual beliefs are important parts of maternal health practices in Indonesia. The people in this study thought of CED as a test they had to pass because of their religious beliefs. This gave them a reason to live and helped them get over their problems. In religious psychology, "benefit finding" is the idea that individuals may find positive meaning in bad events. Utomo et al. (2019) looked at how involved individuals in rural Indonesia are in their communities and found that spiritual and communal aspects are particularly significant for health. This backs up what the spiritual resilience study found.

Healthcare Access Implications

Healthcare access (β=0.256, $p<0.05$) played a significant but complex role in the CED context. Qualitative findings revealed that although healthcare services were available, utilization was often hindered by cultural and economic factors. "Family sacrifice" as a qualitative theme showed that pregnant women often prioritized family needs over their personal health needs.

Harna et al. (2024) found that parity and eating habits were the primary causes of CED in pregnant women. CED was found in 33.3% of pregnant women, and it was strongly linked to family income below the minimum wage (60%). This proved that access to healthcare is not only about having services available; it's also about being able to pay them and being able to use them in different cultural settings.

Gebre et al. (2018) observed that the causes of malnutrition in pregnant women in humanitarian contexts are quite complicated and include structural issues. Rahman et al. (2013) stressed how important it is to include mother mental health in maternity and child health initiatives. This is in line with what this research found: that healthcare access needs a comprehensive approach.

Cultural and Social Context

Remember that the conclusions of this study are based on Indonesian culture, which values family, spirituality, and community very highly. The main notion behind "family sacrifice" comes from cultural ideals of femininity that place the health of the family above everything else. In collectivist communities, the notion of familismo is akin to this. In these societies, a person's identity is closely linked to the health of their family.

Al-Mutawtah et al. (2023), in their systematic review of social support experiences during pregnancy, confirmed that cultural context significantly influences how social support is received and interpreted by pregnant women. Research in Jeneponto showed that education level became a determinant factor of CED (OR=0.505, 95%CI=0.340-0.751, P=0.001), but in this study, cultural and spiritual factors appeared more dominant in influencing quality of life perceptions.

Lipoeto et al. (2020) showed in their analysis of nutritional contributors to maternal anemia in Indonesia that CED and micronutrient deficiencies interact in complex sociocultural contexts. This indicates that maternal health interventions need to consider cultural and spiritual dimensions, not just biomedical aspects.

Study Limitations and Strengths

This study has several limitations that need to be acknowledged. First, the cross-sectional design limited the ability to determine causal relationships between determinant factors and quality of life discrepancies. Second, generalizability of findings was limited to the geographical and cultural context of Kampar District, Riau. Third, we couldn't entirely rule out the potential of social desirability bias in subjective quality of life rating.

But this research also contains a number of good methodological points. Using a sequential explanatory mixed methods methodology (Creswell & Clark, 2017) made it possible to corroborate and go deeper into quantitative results with qualitative data. Fetters et al.

(2013)said that stringent rules and practices are needed to make a mixed methods design work, and this research followed such rules and practices. Using data from more than one source to triangulate the results made them more credible.

The use of validated tools (WHOQOL-BREF) made sure that the results could be compared to those of other studies throughout the world. Purba et al. (2018) set population standards for WHOQOL-BREF in Indonesia, which helped us understand the quality of life ratings in this research better. At the same time, theme analysis (Braun & Clarke, 2006) provided a distinct and in-depth cultural framework for the qualitative investigation.

Implications for Interventions

The findings of this study are very important for making maternal health initiatives work better. First, interventions should not just seek to improve objective nutritional status, but they should also work to reinforce factors that improve resilience and subjective quality of life. Lagadec et al. (2018) undertook a systematic study and determined factors that impact the quality of life of pregnant women. This agrees with what this study showed regarding how important it is to use multiple methods.

Second, maternal support programs that are centered in the community may help make social support networks stronger. Nguyen et al. 2018) observed that the way young children learn at home and their nutritional health are connected. This shows that community-based programs are needed.

Third, we need to figure out how to incorporate spiritual parts in maternal healthcare since spiritual coping is so crucial for this population. Fourth, we need to develop health literacy programs that are aware of and respect the beliefs and values of the people who live there.

Fifth, treatments need to address structural barriers that make it hard to access health care, such economic and geographic issues. Black et al. (2013) & Victora et al. (2021) both said that to deal with mother and child undernutrition in low- and middle-income countries, both structural and individual factors need to be looked at.

Conclusion

This research shows an interesting but important contradiction in the quality of life of pregnant women in Kampar District, Riau, who don't have adequate energy. Most individuals (73%) still thought their quality of life was great, even if their actual circumstances were terrible (mean WHOQOL-BREF scores of 57.3 ± 8.9). The four primary features that explain this difference are social support (β=0.432, $p<0.001$), psychological resilience (β=0.387, $p<0.001$), healthcare access (β=0.256, $p<0.05$), and health literacy (β=0.198, $p<0.05$). The idea of quality of life, which suggests that quality of life is more about what you've gone through than what you want.

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Conflicts of Interest

The authors declare no conflict of interest.

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