Parenting Stress and Quality of Life among Mothers of Children with Asthma in Iraq: A Cross-Sectional Study

Abstract

Aims: Childhood asthma is a common chronic disease associated with caregivers' psychological well-being and quality of life, particularly mothers who often serve as primary caregivers. This study aimed to examine parenting stress, quality of life, and their relationship among mothers of children with asthma in Iraq.

Methods: This cross-sectional study included 250 mothers of children aged 5–15 years with physician-diagnosed asthma who attended two teaching hospitals in Baquba, Iraq, between February and October 2024. Data were collected using a sociodemographic and clinical questionnaire, the Parental Stress Scale, and the Pediatric Asthma Caregiver's Quality of Life Questionnaire. Data were analyzed using descriptive statistics, independent-samples t-tests, one-way analysis of variance, Pearson's correlation, and multiple linear regression.

Findings: The mean±SD parenting stress score was 52.16±5.71, and the mean±SD quality-of-life score was 4.61±1.10. Parenting stress was significantly and negatively correlated with overall quality of life ($r=-0.346$, $P<0.001$), emotional function ($r=-0.311$, $P<0.001$), and activity limitation ($r=-0.366$, $P<0.001$). In multivariable analyses, marital status, paternal educational level, and birth order were significant predictors of maternal quality of life, whereas marital status was the only significant predictor of parenting stress.

Conclusion: Higher parenting stress was associated with poorer quality of life among mothers of children with asthma. Family-related factors, particularly marital status and paternal educational level, may influence maternal psychosocial well-being. Family-centered asthma care should therefore incorporate assessment and support of caregiver psychological well-being.

Keywords: Asthma, Child, Mothers, Parenting Stress, Quality of Life.

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Introduction

Asthma is one of the most common chronic respiratory diseases in children and remains an important public health concern worldwide [1-3]. Caring for a child with asthma may be associated with increased caregiver burden, psychological distress, and reduced QoL, particularly when asthma is severe or poorly controlled [4-6]. Higher parenting stress has also been associated with poorer QoL among caregivers of children with chronic conditions [4,7]. However, the strength and nature of these associations differs according to cultural, socioeconomic, and healthcare contexts.

Understanding caregiver psychological health is particularly important in Middle Eastern countries, where caregiving experiences are strongly influenced by sociocultural norms, family structures, and the availability of healthcare and social support services. Iraq represents a unique context in this regard. Decades of armed conflict, political instability, and economic challenges have substantially affected the country's healthcare infrastructure and the accessibility of healthcare services, creating additional burdens for families caring for children with chronic illnesses [8]. Childhood asthma also remains a significant public health concern in Iraq and across the Eastern Mediterranean Region, where relatively high prevalence rates have been reported and environmental factors, including dust storms and air pollution, contribute substantially to respiratory morbidity [9]. In this setting, mothers typically assume primary responsibility for daily asthma management, and cultural expectations regarding parental roles may further intensify caregiving responsibilities and their associated psychological burden [10].

However, evidence concerning parenting stress and caregiver QoL among Iraqi mothers of children with asthma remains limited. Most existing evidence has been generated in Western or East Asian populations, and relatively few studies have examined parenting stress and caregiver QoL simultaneously while considering demographic and clinical characteristics. Therefore, this study aimed to examine parenting stress, QoL, and their relationship among mothers of children with asthma in Iraq. It also investigated demographic and clinical factors associated with parenting stress and QoL.

Method

Design, setting, and sample

This cross-sectional study was conducted among mothers of children with asthma in Baquba, Iraq. The study was conducted at Baquba Teaching Hospital and Al-Batoul Teaching Hospital which provide pediatric services to children from both urban and rural areas. A minimum sample size of 250 participants was calculated using Cochran's formula with a 95% confidence level and a 5% margin of error. Participants were recruited using convenience sampling during routine clinic visits.

Mothers were eligible if they were the primary caregivers of children aged 5–15 years who had physician-diagnosed asthma for at least 6 months and were receiving care at one of the study hospitals. Mothers were required to be directly involved in the child's daily asthma care, have no visual, hearing, or cognitive impairment that could interfere with questionnaire completion, and provide written informed consent. Mothers were excluded if they declined participation or returned incomplete questionnaires, if they had another child with a chronic disease or their child had another major chronic disease or disability in addition to asthma.

Study instruments

A structured questionnaire was developed to collect demographic and clinical information related to both parents and their children. Maternal variables included age, educational level, and marital status. Paternal variables included age and educational level. Child-related variables included age, sex, age at asthma diagnosis, birth order, and asthma severity. Asthma severity was classified according to the Global Initiative for Asthma (2025) guidelines as mild, moderate, or severe [11].

The Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ), developed by [12], was used to assess caregiver QoL. The 13-item instrument comprises emotional function (9 items) and activity limitation (4 items), with responses scored on a 7-point Likert scale; higher scores indicate better QoL. The Arabic version validated by Shaikhan and Makhlouf (2020) was used and demonstrated good internal consistency in the present study (Cronbach's α=0.87) [13].

Parenting stress was measured using the Parental Stress Scale (PSS) developed by [14]. The psychometric properties of this scale have also been examined among families of children with chronic health conditions [15]. The scale consists of 18 items rated on a 5-point Likert scale ranging from strongly disagree to strongly agree. Total scores range from 18 to 90, with higher scores

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indicating greater parenting stress. The instrument was translated into Arabic using a forward–backward translation procedure. The translated version was reviewed by a panel of experts to establish content validity and ensure cultural appropriateness. The present adaptation followed established cross-cultural guidelines, and the strong internal consistency observed (Cronbach's α=0.90) supports its reliability in this sample.

Study procedure

Data were collected between February and October 2024 using a convenience sampling method. The researcher visited the pediatric wards of Baquba Teaching Hospital and Al-Batoul Teaching Hospital during both morning and afternoon shifts on different days of the week to recruit eligible participants. A total of 250 mothers of children with asthma who met the inclusion criteria were enrolled in the study. Before data collection, the researcher introduced herself, explained the purpose and procedures of the study, and obtained written informed consent from all participants. The mothers were assured that participation was voluntary, all questionnaires were anonymous, and the findings would be reported in aggregate form without revealing any personal identifiers. Data were collected using a demographic and clinical characteristics questionnaire, PACQLQ, and PSS. Participants completed the questionnaires at a time convenient for them, which required approximately 15–20 minutes. The researcher remained available throughout the process to answer participants' questions and reviewed each completed questionnaire to ensure that no items were left unanswered. For mothers who were unable to read or write, the researcher read each question aloud, recorded their responses, and completed the questionnaires on their behalf.

Data analysis

Data were analyzed using SPSS version 26. Continuous variables are presented as means and standard deviations (SD), and categorical variables as frequencies and percentages. Independent-samples t-tests and one-way analysis of variance were used to compare QoL and parenting stress across demographic and clinical characteristics. Pearson's correlation was used to assess associations between parenting stress and QoL. Two multiple linear regression models were constructed to identify predictors of QoL and parenting stress. Variables significantly associated with the outcomes in bivariate analyses ($P<0.05$) were entered into the corresponding regression models. Regression coefficients (B), standardized coefficients (β), and P values were reported. Statistical significance was set at $P<0.05$.

Results

Participant Characteristics

A total of 250 mothers of children with asthma participated in this study. The mean age of mothers was 32.0±6.41 years, while the mean age of fathers was 37.13±7.74 years. Most mothers were aged 30–39 years (47.6%), whereas nearly half of the fathers (46.0%) were in the same age group. 80.0% of the participants were married. Regarding educational level, 30.8% of mothers and 24.0% of fathers had completed college education. Slightly more than half of the children were boys (52.4%), and the mean age of the children was 9.8±3.4 years. The mean age at asthma diagnosis was 6.81±3.01 years. Severe asthma was reported in 38.0% of the children, while 34.4% and 27.6% had mild and moderate asthma, respectively (Table 1).

Correlation between Demographic Characteristics and QoL and Parenting Stress

Table 1 presents the associations between demographic and clinical characteristics and maternal QoL and parenting stress. Maternal QoL was significantly associated with mothers' age ($r=-0.205$, $P=0.001$), fathers' age ($r=-0.210$, $P=0.001$), fathers' educational level ($P<0.001$), marital status ($P=0.020$), and birth order ($P<0.001$). In contrast, mothers' educational level, child's sex, child's age, age at asthma diagnosis, and asthma severity were not significantly associated with QoL ($P>0.05$).

Parenting stress was significantly associated with mothers' age ($P=0.037$), fathers' age ($P=0.037$), fathers' educational level ($P=0.040$), marital status ($P<0.001$), age at asthma diagnosis ($P=0.040$), birth order ($P=0.027$), and asthma severity ($P=0.021$). No significant associations were observed between parenting stress and mothers' educational level, child's sex, or child's age ($P>0.05$).

Multiple linear regression

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Multiple linear regression analysis was performed to identify predictors of maternal QoL (Table 2). The overall model explained 19.8% of the variance in QoL (R^2=0.198, adjusted R^2=0.161). After adjustment for potential confounders, marital status, fathers' educational level, and birth order remained significant predictors of maternal QoL. Married mothers reported significantly higher QoL than divorced mothers (β=0.132, P=0.033). Compared with fathers who had a college education, having a father with a high school education (β=−0.192, P=0.007) or diploma education (β=−0.147, P=0.020) was associated with lower maternal QoL. In addition, mothers of third-born children had significantly higher QoL than mothers of fifth-born children (β=0.272, P=0.041). Maternal age and fathers' age were not associated with QoL after adjustment.

Multiple linear regression analysis was also conducted to determine predictors of parenting stress (Table 2). The model explained 22.2% of the variance in parenting stress (R^2=0.222, adjusted R^2=0.179). After controlling for other variables, only marital status remained a significant predictor of parenting stress. Married mothers reported significantly lower parenting stress than divorced mothers (β=−0.355, P<0.001). Fathers' educational level, birth order, age at diagnosis, asthma severity, and maternal age were not associated with parenting stress in the final model.

Correlation Between Parenting Stress and QoL

The mean score for the emotional function domain of QoL was 4.68±1.16, while the mean score for activity limitation was 4.43±1.16. The mean overall QoL score was 4.61±1.10, indicating a moderate level of QoL based on the scoring system of the PACQLQ. The mean parenting stress score among mothers was 52.16±5.71, suggesting a relatively elevated level of parenting stress (Table 3).

Pearson correlation analysis demonstrated significant negative correlations between parenting stress and all QoL measures. Parenting stress was negatively correlated with emotional functioning (r=−0.311, P<0.001) and activity limitation (r=−0.366, P<0.001). Similarly, a significant inverse relationship was observed between parenting stress and overall QoL (r=−0.346, P<0.001). These findings indicate that higher levels of parenting stress were associated with poorer QoL among mothers of children with asthma (Table 3).

Discussion

This study examined parenting stress and QoL among mothers of children with asthma in Iraq. The findings showed moderate parenting stress and moderate impairment in maternal QoL, with a significant inverse association between parenting stress and QoL. In the multivariable analyses, marital status, paternal educational level, and birth order were significant predictors of maternal QoL, whereas marital status was the only significant predictor of parenting stress. These findings indicate that the psychosocial impact of childhood asthma extends beyond the child and may substantially affect caregiver well-being.

Mothers in this study reported moderate impairment in QoL, with activity limitation more affected than emotional functioning. This finding is consistent with previous studies showing reduced caregiver QoL among parents of children with asthma [5, 12]. The demands of continuous asthma management, including symptom monitoring, medication administration, healthcare visits, and concerns about disease control, may contribute to limitations in caregivers' daily activities and emotional well-being [5]. Similarly, mothers reported moderate levels of parenting stress, consistent with previous evidence that caring for a child with asthma can impose considerable psychological burden on caregivers [4,5]. Anxiety, fear, guilt, disruption of family routines, and uncertainty about exacerbations may further increase caregiver distress [16,17]. However, [18] reported relatively low parenting stress among caregivers of children with asthma, suggesting that disease characteristics, cultural expectations, coping strategies, and available social support may influence caregivers' stress responses.

The most important finding was the significant inverse relationship between parenting stress and maternal QoL. Mothers experiencing greater parenting stress reported poorer overall QoL, emotional functioning, and activity limitation. This finding is consistent with research among caregivers of children with asthma and other chronic conditions, which has demonstrated that greater caregiving stress is associated with poorer caregiver QoL [4,7]. Persistent caregiving demands may reduce emotional resources, restrict participation in daily and social activities, and make it more difficult for caregivers to cope with the ongoing requirements of disease management. The observed association highlights the importance of considering caregiver psychological well-being alongside the child's clinical management.

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Maternal age and paternal age were associated with QoL and parenting stress in the bivariate analyses, but these associations did not remain significant after adjustment. Older maternal age was associated with poorer QoL, which may reflect the cumulative demands of caregiving and other family responsibilities. However, this finding differs from studies that did not identify maternal age as a significant determinant of caregiver QoL [13,4]. Differences in study populations, healthcare systems, and sociocultural contexts may partly explain these findings. The loss of significance for paternal age in the multivariable models suggests that its bivariate association may have reflected other family characteristics.

Maternal educational level was not significantly associated with QoL or parenting stress. This may indicate that formal education alone does not adequately capture caregivers' ability to manage childhood asthma. Previous research suggests that health literacy and disease-management knowledge may be more relevant than educational attainment alone. Lower parental health literacy has been associated with poorer disease-related knowledge and less effective management of chronic conditions in children [19], while higher electronic health literacy has been associated with greater confidence in disease management among parents of children with chronic disease [20]. In contrast, paternal educational level was a significant predictor of maternal QoL. Mothers whose husbands had lower educational attainment reported poorer QoL than those whose husbands had college education. Fathers' asthma knowledge, involvement, and management skills may contribute to family asthma management and parental QoL [10]. Nevertheless, because paternal involvement and asthma knowledge were not directly measured in the present study, this interpretation should be considered cautiously.

Birth order was also a significant predictor of maternal QoL. Mothers of third-born children reported better QoL than mothers of fifth-born children. Evidence specifically addressing birth order in childhood asthma is limited; however, previous research has suggested that larger family size may be associated with poorer caregiver QoL because of greater caregiving responsibilities, financial demands, and competition for parental attention [21]. The relatively small number of mothers of fifth-born children in the present sample also warrants caution when interpreting this finding.

Marital status was significantly associated with both maternal QoL and parenting stress and remained an independent predictor in both multivariable models. Married mothers reported better QoL and lower parenting stress than divorced mothers. This finding is consistent with studies suggesting that partner and family support may reduce caregiver burden and improve psychosocial well-being [22,23]. The availability of practical and emotional support may help mothers manage the demands of childhood asthma, whereas the absence of a partner may increase caregiving responsibilities. However, social support and family functioning were not directly assessed in this study, so the mechanisms underlying this association cannot be established.

Asthma severity and age at diagnosis were associated with parenting stress in the bivariate analyses but were not independent predictors in the final regression model. Mothers of children with moderate or severe asthma reported higher stress than those caring for children with mild asthma, consistent with previous research linking greater asthma severity with increased caregiver burden [6,24]. More severe asthma may require closer symptom monitoring, more intensive treatment, and greater healthcare utilization, potentially increasing caregiver concerns about disease control [17]. The loss of significance after adjustment suggests that family and demographic characteristics may account for part of this association. Similarly, the association between age at diagnosis and parenting stress did not remain significant after adjustment. Although the diagnostic period may involve uncertainty and anxiety for families, the present cross-sectional findings do not establish an independent effect of age at diagnosis on parenting stress [24,25].

Overall, these findings support a family-centered approach to childhood asthma management. Assessment of caregiver stress and QoL may help healthcare professionals identify mothers experiencing substantial psychosocial burden. Interventions that provide asthma-management education, strengthen coping skills, and connect families with appropriate psychosocial support may be particularly relevant for mothers with limited family support. Future longitudinal and multicenter studies should examine whether changes in asthma control, family support, and caregiver stress are associated with subsequent changes in caregiver QoL.

This study has several notable strengths. First, it examined parenting stress and QoL among mothers of children with asthma at two major teaching hospitals in Baquba, Iraq, incorporating a relatively large sample of 250 mothers, which enhanced the robustness of the findings. Second, the use of well-established and psychometrically sound instruments, PACQLQ and PSS, strengthened the reliability

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and validity of the measurements. Third, by focusing on both QoL and parenting stress simultaneously, we provide a broader perspective on the psychosocial challenges experienced by mothers caring for children with asthma and offers evidence that may inform family-centered healthcare interventions. Finally, the use of multivariable regression analyses enabled the identification of demographic predictors of parenting stress and QoL, thereby extending previous research that has primarily focused on bivariate associations.

Several limitations should also be acknowledged. First, the cross-sectional design precludes conclusions regarding causality between parenting stress and QoL. Although significant correlations were identified, the direction of these relationships cannot be determined. Second, we did not assess all variables potentially influencing parenting stress and QoL, such as social support, household income, and access to healthcare services, which may have confounded the observed correlations. Third, we relied on self-reported questionnaires, which may be subject to recall bias and social desirability bias

Conclusion

Parenting stress was significantly associated with poorer QoL among mothers of children with asthma in Iraq. Marital status was associated with both parenting stress and QoL, while paternal educational level and birth order were additional predictors of maternal QoL. These findings highlight the importance of incorporating caregiver psychosocial assessment into family-centered asthma care. Nurses and healthcare providers should assess parenting stress and caregiver QoL and provide appropriate education, counseling, and psychosocial support to mothers experiencing substantial caregiving burden.

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