

Research Article

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Adverse childhood experiences, emotional distress and dissatisfaction with motherhood among first-time mothers: Mediations and child differences

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Abstract

Despite the challenges associated with motherhood, studies have not consistently identified factors contributing to first-time mothers' dissatisfaction with motherhood in resource-limited regions. To fill this research gap, this study investigates how adverse childhood experiences (ACEs) result in first-time mothers' dissatisfaction with motherhood through emotional distress in Nigeria. Results from the partial least square structural equation model suggests that ACEs are associated with dissatisfaction with motherhood ($\beta = 0.092$; $p < 0.01$) and emotional distress ($\beta = 0.367$; $p < 0.001$). There is also a significant association between emotional distress and dissatisfaction with motherhood ($\beta = 0.728$; $p < 0.001$). Indirect path from first-time mothers' ACEs to dissatisfaction with motherhood through emotional distress shows significance ($\beta = 0.267$; 95% CI (0.213, 0.323); $p < 0.001$). In addition, the indirect path from first-time mothers' ACEs to dissatisfaction with motherhood through child emotional closeness showed significant dampening effects ($\beta = 0.044$; 95% CI (0.025, 0.066); $p < 0.001$). No serial impact of emotional distress and child emotional closeness was found in the study. The findings based on child gender indicated that only among first-time mothers of female children are ACEs predictors of dissatisfaction with motherhood. Trauma-informed interventions should be introduced in primary care settings to screen for ACEs and emotional dysfunctions among first-time mothers.

Impact statement

Transitioning to motherhood can be stressful for first-time mothers, causing psychological problems such as emotional distress and dissatisfaction. Aside from being an abusive, neglectful and other traumatic experiences disrupting life outcomes, adverse childhood experiences (ACEs) are often a significant catalyst for emotional distress and dissatisfaction with motherhood. Providing support for first-time mothers in resource-limited populations requires understanding the intersection between ACEs and dissatisfaction with motherhood. This study provided empirically supported evidence that ACEs can cause emotional distress in first time mothers in low socioeconomic settings such as Nigeria. The effects of ACEs on dissatisfaction with motherhood are not independent but function through emotional distress. Moreover, early episodes of ACEs may affect mother-child emotional attachments (i.e., mothers' emotional closeness to their children) and, in turn, contribute to first-time mothers' dissatisfaction with motherhood. Therefore, trauma-informed interventions are essential for first-time mothers to navigate motherhood in Nigeria. Furthermore, consideration should be given to the gender of children, as mothers may feel dissatisfaction with motherhood differently depending on their children's gender as a result of their ACEs.

Introduction

The process of becoming a mother can be challenging and introduce psychological, behavioral and developmental problems for first-time mothers. Becoming a mother involves moving from a familiar, known world to an unfamiliar, unknown world, where a mother develops a new identity, which includes navigating pregnancy, assuming a new role, bonding with the new child and learning how to be a mother (Mercer, 2004, 2006). Numerous psychosocial and health vulnerabilities prevalent during these periods include postpartum depression, preterm birth, pregnancy complications and poor infant development (Spinelli et al., 2016). In addition, socioeconomic strains, problematic emotional adjustments, caring for a child, lack of social support and



insufficient health services could contribute to this challenging transition and promote dissatisfaction with motherhood (Erfina *et al.*, 2019). Consequently, these cumulative and proximal disadvantages could cause new mothers to become dissatisfied with their role. Dissatisfaction with motherhood involves frustration, difficulties and overwhelming feelings of inadequacy to function as a mother (Cronin-Fisher and Parcell, 2019).

There is growing research aiming to address the complexities associated with dissatisfaction with motherhood to facilitate a safe and effective process of motherhood (e.g., Wu and MacNeill, 2002; Mott *et al.*, 2011; De Genna *et al.*, 2015; Akbarian *et al.*, 2018). However, many aspects of distal factors, such as the developmental trajectory of first-time mothers, that is, adverse childhood experiences (ACEs), remain poorly understood among mothers in under-resourced regions such as Nigeria. As a consequence of parental, caregiver, family or community members' actions and attitudes, children under 18 are exposed to ACEs such as neglect, physical abuse, sexual abuse, psychological abuse, criminality and violence (Dube *et al.*, 2003; Akintunde *et al.*, 2023). Research on these complex ACEs among first-time mothers in Nigeria is rare, which warrants further study. It is also imperative that the difficulties associated with dissatisfaction with their motherhood experiences are further investigated to support global evidence, particularly in highly diverse cultures like Nigeria.

Research into ACE prevalence among women in Nigeria is limited. However, evidence indicates that about 31.2% of Nigerians have experienced two or more types of ACEs and that most of these ACEs are associated with mental health difficulties (Oladeji *et al.*, 2010). There are also similarities based on the gender experience of ACEs in Nigeria's young population aged 10–24 (Olusimbo *et al.*, 2012). Nigeria's regressing socioeconomic situation and stagnant economic growth have made it one of the world's poverty hubs (Isangha *et al.*, 2023a). Issues like socioeconomic and family limitations in Nigeria pose significant risks to the prevalence of ACEs. Nigeria lacks an adequate child protection framework, contributing to children's exposure to adversity and necessitating urgent policy intervention (Isangha *et al.*, 2023b). Recent reports from the Centers for Disease Control and Prevention suggest socioeconomic conditions catalyze ACE exposures (CDC, 2019, 2022). Socioeconomic disadvantages have been linked to both dysfunctional behavior within families (Bhatti, 2011; Pereira *et al.*, 2015) as well as violent behavior caused by frustrations (Wight *et al.*, 2006). The socioeconomic constraints within Nigerian families may further expose girl-children to ACEs capable of disrupting their later life experiences. Accordingly, first-time mothers from socioeconomically disadvantaged families in Nigeria may be exposed to ACEs and later experience emotional and behavioral problems channelling dissatisfaction with motherhood.

In addition, global research indicates that ACEs could promote psychological problems in adulthood, necessitating further investigation of their influence on first-time mothers (Anastas *et al.*, 2021; Shin *et al.*, 2022). It is also unclear whether child gender plays a role in dissatisfaction with motherhood. To fill this research gap, this study examined among first-time mothers utilizing primary healthcare services in Nigeria how ACEs may be associated with emotional distress, child emotional closeness and dissatisfaction with motherhood. Further, the study examined whether emotional distress and child emotional closeness have a sequential mediation effect on the association between ACEs and dissatisfaction with motherhood.

ACEs and dissatisfaction with motherhood

Developmental trauma theory emphasizes the lifelong effects of complex and traumatic experiences on individuals' life outcomes (Nurius *et al.*, 2015). These traumatic experiences can occur in relationships and distort the formation of new ones (Yoder *et al.*, 2019). Negative developmental experiences such as ACEs may disrupt and impair many aspects of life outcomes, including role attainment and maternal competence needed to excel in a new role (Bailey *et al.*, 2012; Muzik *et al.*, 2013). The process of acquiring competence and integrating maternal behavior is particularly challenging for mothers who have a history of ACEs (Ochoa *et al.*, 2022). In addition, traumatic experiences pose challenges to developing self-identity for motherhood, making first-time mothers face difficulties adapting and approaching their new role with trepidation (Mercer, 2004, 2006). Self-efficacy theories reinforce these perspectives by emphasizing the importance of self-identity for fulfilling specific roles and responsibilities in motherhood (Coleman *et al.*, 2000). Mothers are expected to develop efficacy and competence in fulfilling expected obligations and performing maternal roles (Darvill *et al.*, 2010). Traumatic childhood may hinder the development of motherhood identities among first-time mothers (Mercer, 2004). Thus, ACEs may adversely affect first-time mothers' self-efficacy and increase their dissatisfaction with motherhood.

ACEs and emotional distress

Life course theory describes the risk of developing emotional and behavioral difficulties as an adult as a consequence of trauma experienced during childhood (Chapman *et al.*, 2004; Akintunde *et al.*, 2023). Studies have consistently demonstrated a link between ACEs and psychological problems in mothers (Chapman *et al.*, 2004; Strine *et al.*, 2012). Scholarships on life course examines the pathways and mechanisms involved in human development, experiences and processes (Elder and Shanahan, 2007; Mayer, 2009). These empirical arguments are based on how personal and social backgrounds, family context influences life course outcomes (Elder, 1998; Mayer, 2009). For instance, early childhood experiences may influence how individuals develop relationships, adopt and adapt to new roles (Macmillan, 2005). Individuals raised in dysfunctional, abusive or neglectful environments are likely to experience chronic stress as part of their transition process, resulting in emotional difficulties (McLaughlin *et al.*, 2019). When ACE-affected children become parents, they may experience emotional problems (Cooke *et al.*, 2019; Grasso *et al.*, 2020).

Furthermore, problematic attachments during childhood may influence later-life attachments in relationship types, such as mother–child relationships (Moe *et al.*, 2019; Karakaş *et al.*, 2021). According to attachment theories, a child's relationship with their caregiver (i.e., parents) shapes their emotional patterns and may influence their ability to develop emotional stability later in life (Karakaş *et al.*, 2021), including positive emotions as mothers. However, when these mothers' childhood experiences are marked by adversity, positive attachments are impaired, resulting in psychological instability that may persist into motherhood (Khan and Renk, 2019). First-time mothers may experience emotional instability due to the complex process of coping with childhood adversity, mainly if they are unable to recover from their negative childhood attachments. Consequently, mothers with ACE histories

may experience emotional distress during and after becoming mothers.

Emotional distress and dissatisfaction with motherhood

Becoming a mother is multifaceted and involves several separate yet interconnected adjustments necessary for a successful transition. Many empirical studies have documented how pregnancy periods channel emotional problems (Darvill et al., 2010; Abdollahi et al., 2016; Costa et al., 2020; Reuveni et al., 2021). Postpartum theory supports psychological problems associated with becoming a mother, suggesting that some psychosocial and biological factors may increase the risk of developing emotional difficulties during pregnancy and following childbirth (Stewart and Vigod, 2019). The process of becoming a mother is made more challenging by factors such as sleep deprivation, stress, hormone changes and the recovery processes associated with childbirth (Mott et al., 2011). Unresolved emotional problems may exacerbate incompetence and dissatisfaction with motherhood.

Three aspects of becoming a mother reflect the experiences of first-time mothers: adult experiences, child experiences and emotional closeness to their child. In contrast to “emotional closeness” to a child, which reflects a more positive attitude toward becoming a mother, the experiences of first-time mothers with their child and as adults reflect problematic or negative experiences, that is, dissatisfaction. Social expectations may compound the emotional burden and transitional process associated with motherhood (Schmidt et al., 2023). Specifically, social expectations raise concerns regarding unrealistic social demands, judgment and pressure to perform in a role, contributing to feelings of inadequacy and incompetence (Correll and Ridgeway, 2006). Moreover, societal norms and expectations may not correspond with individual circumstances and preferences, leading to pressure to excel as mothers, which can make fulfilling multiple roles overwhelming and exhausting. In response to these pressures, some mothers may develop mental imbalances where they doubt their ability to be mothers. Thus, emotional distress may negate the process of becoming a mother.

Indirect pathways from ACEs to dissatisfaction with motherhood

First-time mothers’ emotional distress may act as a bridge between ACEs and their dissatisfaction with motherhood based on the formation of psychopathologies. According to cumulative trauma theories, multiple typologies of negative childhood incidences may lead to future cognitive impairments and deficits in executive function, that is, motherhood roles (Martin et al., 2013). There is a risk that first-time mothers may experience emotional distress as a result of ACEs, which may lead to life-long maladaptive emotions (Garofalo et al., 2023). When accumulated trauma results in maladaptive emotions (Leite Ongilio et al., 2022), it can contribute to dissatisfaction with maternal roles due to the inability to effectively manage motherhood emotional demands.

Studies investigating the pathway from ACEs to dissatisfaction with motherhood are limited and mainly focus on Western contexts (Cronin-Fisher and Parcell, 2019; Goebel et al., 2020). In response to ACEs, first-time mothers may experience difficulty transitioning from these experiences and develop serious mental health issues. The presence of ACEs is associated with a higher risk of perinatal mental health problems (Alvarez-Segura et al., 2014), and these issues may persist into motherhood periods when not addressed. Moreover, ACEs can influence individuals’ sensitivity to stressful situations, impair emotional regulation and adversely

affect first-time mothers (Trinidad, 2021; Rassart et al., 2022). First-time mothers may experience mental problems associated with ACEs, impairing their perceptions of their competence and readiness for motherhood.

However, adversity response perspectives suggest that individuals may respond differently to adversity based on their level of emotional resources (Pomerantz and Rudolph, 2003; Muldoon et al., 2019). These perspectives are reflected in trauma and coping scholarship, suggesting that people who have experienced adversity may adopt unhealthy coping mechanisms by overcompensating emotional burden from childhood manifesting as emotional distress and subsequently affect relational responses (Bloom, 1999; Nurius et al., 2015). Alternatively, individuals may learn and adopt effective coping strategies to deal with the emotional consequences of childhood experiences (Jenzer et al., 2020). The ability to successfully manage childhood trauma could contribute to the development of a healthy relationship between mother and child i.e., child emotional closeness (Hampton-Anderson et al., 2021), which may help protective psychosocial resources to help alleviate the dissatisfaction associated with motherhood for first-time mothers. Some first-time mothers could develop an emotional connection with their child, positively influencing their transitioning process. Nevertheless, these perspectives have not yet been empirically supported among first-time mothers in Nigeria. This study examined the indirect pathways from ACEs to dissatisfaction with motherhood through emotional distress and child emotional closeness using data from first-time mothers in Nigeria.

Current study

The study contributes to the understanding of how ACEs directly relate to emotional distress and dissatisfaction with motherhood among first-time mothers. Further, the study examined indirect pathways from ACEs to dissatisfaction with motherhood through emotional distress and child emotional closeness. The study also examined whether there are any differences in outcomes based on the gender of children of first-time mothers to provide population-specific interventions.

There is extensive discussion in traditional gender theories regarding the role that gender plays in decision-making and behavior across cultures and nationalities, particularly in Africa (Olatunji, 2013; Olonade et al., 2021). Patriarchal norms and gender roles perpetuated by patriarchal institutions favor male children (Sylvia, 1989; Church et al., 2023; Ibrahim et al., 2023). A high priority is given to continuing a family lineage through male children in Nigeria (Church et al., 2023). Women have traditionally been assigned the role of household and caregiving (Ibrahim et al., 2023), while men have traditionally been assigned the role of breadwinner (Mensah, 2023). Consequently, it is believed that having a male child will ensure the family’s economic stability and support, especially if the male child is expected to care for their aging parents and sustain family lineage.

Additionally, filial piety and male dominance perspectives emphasize the importance of sons fulfilling their filial responsibilities, including caring for their aging parents (Yeh and Bedford, 2003). It is common for families to view their son as a symbol of honor, prestige and reputation. The fulfillment of filial duties by sons is also considered positive for the family and its status within society. First-time mothers may be better prepared to approach motherhood if they expect their firstborn to be male (Chappell and Kusch, 2007). Due to these expectations, emotional connections may develop, which may help buffer the effects of ACEs on

motherhood. Therefore, the model examined whether there are differences in outcomes based on child gender.

Methods

Study design, population and data collection

This study adopted a cross-sectional research design to recruit first-time mothers attending primary healthcare centers across two states in Nigeria (i.e., Oyo and Akwa Ibom). First-time mothers utilize primary healthcare centers for prenatal and postnatal consultations and treatments. Trained research assistants implemented the research survey between July 1 and August 30, 2022. Data were collected during scheduled immunization in partnership with the primary healthcare centers. The survey personnel partnered with primary healthcare center workers to administer the questionnaires during scheduled immunization and wellness visits. All research participants were invited for voluntary participation and further screened for eligibility. A total of 445 first-time mothers were recruited to participate in the survey. To be eligible for participation, mothers must be first-time mothers, have visited the primary healthcare centers for wellness and immunization consultation for a child, and be the child's biological mother.

Measures

Outcome variables

Dissatisfaction with motherhood: The measure of dissatisfaction with motherhood was developed by Matthey (2011) from the Becoming a Mother scale, which includes 13 items. However, 11 items from these questions examined negative child experiences and adult experiences. The child and adult experiences were captured negatively to indicate adverse experiences of dissatisfaction with motherhood. The **adult experiences** include six items questions such as "I have felt isolated/lonely", "I have felt bored", "I have felt unsupported", "I have missed the life I had before I became pregnant." which were fitted on a five-point Likert Scales (1. Strongly Disagree – 5. Strongly Agree). **Child experiences** question include five items that address feelings toward a child, such as "I have felt guilty", "I have felt nervous or uneasy around my baby, I am not as good as other mothers, I have found it hard to cope with my baby" also fitted on a five-point Likert scale (1. Strongly Disagree – 5. Strongly Agree). Both adult and child experiences were explicitly captured as problematic processes reflecting "dissatisfaction with motherhood." Adults and child experiences were scored independently and fitted into the structural model as latent variables. Information on the reliability and validity is detailed in Tables 4 and 5.

Child emotional closeness: Child emotional closeness reflects mothers' emotional connection with the child, showing a positive motherhood experience (Matthey, 2011). First-time mothers' child emotional closeness was captured on a two-item, five-point Likert scale (1. Strongly Disagree – 5. Strongly Agree) to reflect a positive aspect of becoming a mother. These two questions were asked thus, "I have felt confident about looking after my baby" and "I have felt close to my baby. Information relating to the reliability and validity of the measuring instruments are shown in Tables 4 and 5.

Predictors

ACEs: First-time mothers' ACEs comprise questions relating to mothers' historical experiences of adversity. Questions that were asked mothers focused on their experiences before they were

Table 1. Descriptive statistics

Variables	Child gender		
	Total	Male	Female
	Freq. 445 (%)	Freq. (n = 258) (%)	Freq. (n = 187) (%)
Maternal age			
15–19	18(24)	9 (3.5)	9(4.8)
20–24	120(27)	68(26.4)	52(27.8)
25–29	203(45.6)	128(49.6)	75(40.1)
30–34	77(17.3)	40(15.5)	37(19.8)
35–39	22(4.9)	12(4.7)	10(5.3)
40–44	4(0.9)	1(0.4)	3(1.6)
45>	1(0.3)	–	1(0.5)
Education attainment			
Illiterate	7(1.6)	3(1.2)	4(2.1)
Primary school certificate	16(3.6)	8(3.1)	8(4.3)
Junior secondary school certificate	22(4.9)	12(4.7)	10(5.3)
Senior secondary school certificate	151(33.9)	91(35.3)	60(32.1)
Intermediate or post-senior secondary school diploma	98(22)	65(25.2)	33(17.6)
Graduate or postgraduate	96(21.6)	52(20.2)	44(23.5)
Professional degree	55(12.4)	27(10.5)	28(15.0)
Child age (in years)			
≤1	7(1.6)	2(0.8)	5(2.7)
2	115(25.8)	58(22.5)	57(30.5)
3	149(33.5)	96(37.2)	53(28.3)
4	81(18.2)	45(17.4)	36(19.3)
≤5	93(20.9)	57(22.1)	36(19.3)
Occupation			
Unemployed	41(9.2)	24(9.3)	17(9.1)
Unskilled worker	23(5.2)	14(5.4)	9(4.8)
Semiskilled worker	39(8.8)	22(8.5)	17(9.1)
Skilled worker	155(34.8)	95(36.8)	60(32.1)
Clerical/ shop owner/farm	112(25.2)	64(24.8)	48(25.7)
Semiprofessional	35(7.9)	19(7.4)	16(8.6)
Professional (white collar)	40(9)	20(7.8)	20(10.7)
Income			
<50\$	117(26.3)	57(22.1)	60(32.1)
50\$–100\$	158(35.5)	106(41.1)	52(27.8)
101\$–150\$	85(19.1)	50(19.4)	35(18.7)
151\$–200\$	42(9.4)	21(8.1)	21(11.2)
201\$–250\$	22(4.9)	12(4.7)	10(5.3)
251\$–300\$	12(2.7)	8(3.1)	4(2.1)
301\$ +	9(2)	4(1.6)	5(2.7)

Table 2. ACEs prevalence by number of exposures

ACE prevalence	Freq. (%)
No ACEs	72 (16.2)
1–3 ACEs	191(42.9)
≥ 4 ACEs	182 (40.9)

18 years old. The internationally revised inventory guided the validated ACE scale (Finkelhor et al., 2015). This study adopted 13-item adversity questions probed on past incidences of emotional neglect, sexual violation, violent treatment, an intergenerational manifestation of mental illness, family member substance abuse and other indicators. Item 14 was omitted from the analysis due to non-response among the participants (item 14 addressed issues around government financial support for low-income families). A higher score value is an indication of an adverse experience. These questions were dichotomous, with 0 = No and 1 = Yes. ACEs were treated as an observed variable by scoring the item questions, which showed good reliability (0.75). Information relating to the reliability and validity of the measuring instruments are shown in Tables 4 and 5.

Mediating variables

Emotional Distress: Emotional distress examined multiple facets of psychological problems in first-time mothers, such as somatization, depression and anxiety. These subscales of emotional distress were captured from brief symptom inventory 18 (BSI-18) (Franke et al., 2017; Li et al., 2018). **Depression subscale** includes six items

measured on a five-point Likert scale from 1 (not at all) to 5 (very much) to questions examining feeling no interest in things, feeling blue, feeling worthless, feeling hopeless about the future and suicidal thoughts. **Somatization subscale** measured psychopathological symptoms containing six items on a five-point Likert scale from 1 (not at all) to 5 (very much), examining symptoms such as nausea, pains in chest, trouble breathing, numbness and feeling weak. **Anxiety subscale** six items on a five-point Likert scale from 1 (not at all) to 5 (very much) that ask questions relating to “feeling fearful”, “spells of panic”, “suddenly scared” and “feeling tensed”. The reliability and validity of the emotional distress are shown in Tables 4 and 5.

Control variables

First-time mothers’ sociodemographic variables, such as age, income and child’s age, were controlled for in the analysis based on the ability to attain desire factor loading to maximize the output of the path analysis. Details of the control variables are shown in Table 4.

Analysis plan

Descriptive analysis of the study population was performed using SPSS ver. 25. Partial least-square (PLS) method of structural equation modeling (SEM) was applied to evaluate the interrelationships among variables and paths (Hair Jr et al., 2017). Indicators such as Cronbach alpha (α), average variance explained (AVE), variance inflated factors (VIFs) and composite reliability (dos Santos and Cirillo, 2023; Furr and Bacharach, 2014; Hair Jr et al., 2017), were used to determine whether all instruments were valid and reliable.

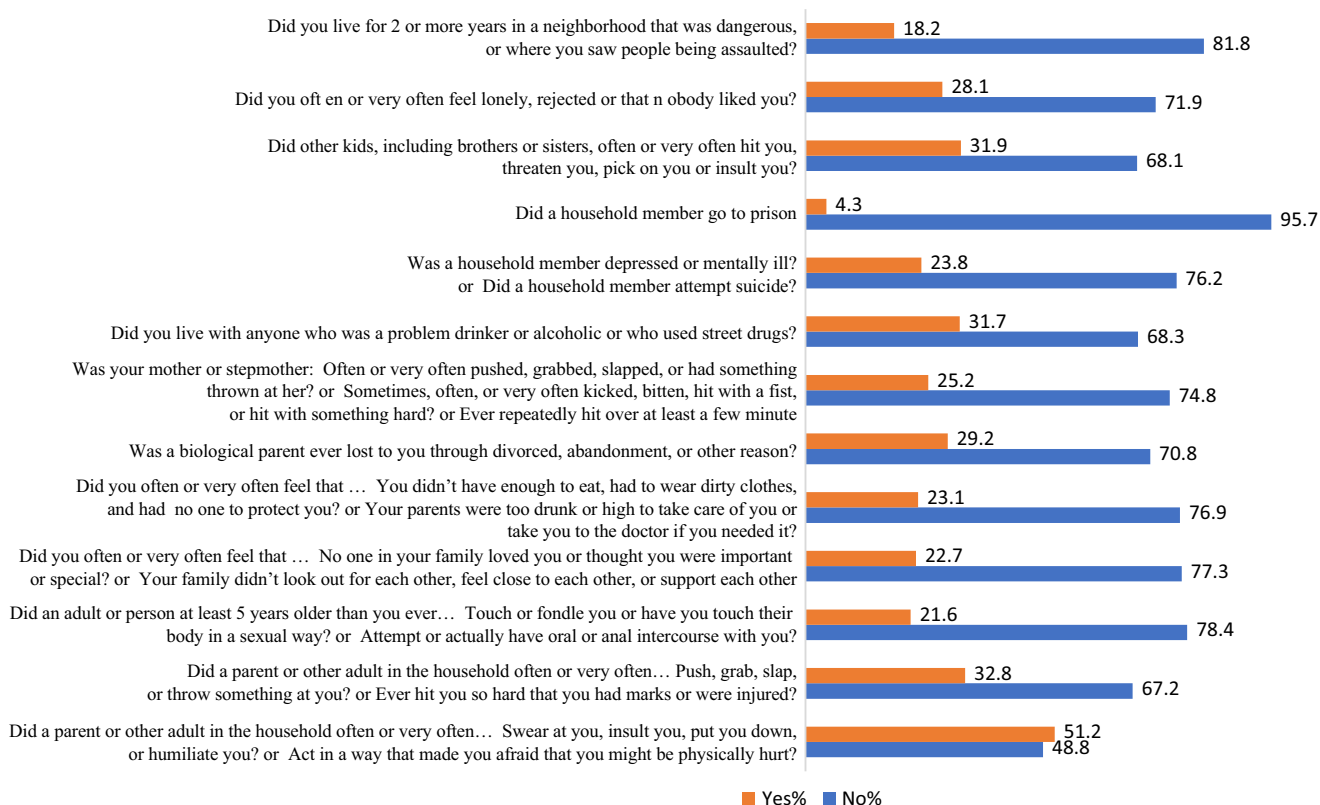


Figure 1. Adverse childhood experiences (ACEs) by items.

Table 3. Psychometric properties based on child gender

	Total		Male		Female		t	Sig. (two-tailed) $p < 0.05$
	Mean	SD	Mean	SD	Mean	SD		
Dissatisfaction with motherhood	21.19	6.94	20.85	7.10	21.66	6.69	-1.229	0.220
Emotional closeness	7.81	1.75	7.71	1.89	7.94	1.51	-1.382	0.168
Emotional distress	45.06	13.21	44.21	13.80	46.23	12.29	-1.599	0.111
ACEs	3.44	3.09	3.37	2.96	3.53	3.29	-0.528	0.598

Table 4. Factor loadings, composite reliability, VIF and average variance extracted

Variables	Factor loadings	α	CR (rho_c)	AVE	VIF
ACEs	1.000	0.750	–	–	–
Dissatisfaction with motherhood	0.843	0.927	0.864		
Adult experiences	0.932				2.130
Child experiences	0.927				2.130
Emotional closeness	0.653	0.850	0.740		
Mtrans1	0.894				1.307
Mtrans2	0.825				1.307
Emotional distress	0.922	0.950	0.865		
Anxiety	0.920				3.133
Somatization	0.939				3.910
Depression	0.931				3.417
Sociodemographic	0.521	0.734	0.484		
Child age	0.810				1.054
Income	0.593				1.256
Mothers age	0.666				1.303

Abbreviations: AVE, average variance extracted; CR, composite reliability; VIF, variance inflated factors.

Table 5. Discriminant validity – eterotrait-monotrait (HTMT) ratio – matrix

Latent variables	1	2	3	4	5
1. Dissatisfaction with motherhood	–				
2. Control variables	0.165	–			
3. ACEs	0.437	0.177	–		
4. Emotional closeness	0.352	0.430	0.407	–	
5. Emotional distress	0.883	0.148	0.382	0.178	–

Table 4 contains information on composite reliability, factor loadings and AVE. Factor loading analysis evaluates the reliability of the corresponding construct for each item (Van Voorhees *et al.*, 2018). Based on the recommendation, factor loadings should be accepted if ≥ 0.5 and loadings less than 0.5 were deleted (Hu and Bentler, 1999; Dash and Paul, 2021). Further, the ratio between between-trait and within-trait correlations was examined (Hair *et al.*, 2013), to test the discriminant validity and the heterotrait-monotrait (HTMT) ratio. The HTMT for each construct is lower than 0.90,

indicating the predictors have no multicollinearity. The constructs were generally robust and reliable due to the absence of VIFs greater than five, as shown in Table 5, which indicates the variables are discriminatory (Hsieh *et al.*, 2003; Marcoulides and Raykov, 2019). Multigroup analysis was conducted based on child gender by analyzing invariance between male and female children of first-time mothers. Multigroup analyses (MGA) allow examination of whether pre-defined data groups differ significantly in their group-specific parameter estimates (e.g., outer weights, outer loadings and path coefficients) (Chin, 1998; Vinzi *et al.*, 2010). Smart PLS 4.0 was used to analyze the measurements and structural model. Further, a bootstrapping approach was employed to examine the indirect pathways by resampling the data using 5,000 random samples to assess the statistical significance of indirect effects (Dziak *et al.*, 2014; Abu-Bader and Jones, 2021).

Result

Sociodemographic and sociodemographic attributes of mother-child dyads ($n = 445$) are reported in Table 1. The age of children reported in years ranges between ≤ 1 and 5, with 58% males and 42% females.

ACEs by items and prevalence

Table 2 provides information on the prevalence of ACEs in the population of first-time mothers by number of exposures. The findings show that 16.2% had no history of ACEs. However, 42.9% had experienced one to three typologies of ACEs. In addition, 40.9% of the population had experienced ≥ 4 types of ACEs.

Figure 1 provides information on item response based on ACEs among the recruited population. The lowers forms of ACEs are those relating to the experiences of criminality in the family (item 10).

The psychometric properties of the variables are presented in Table 3 based on the gender of the children and the total population. Results indicate that the constructs are not significantly different by child gender.

Factor loadings, composite reliability, VIF and average variance extracted

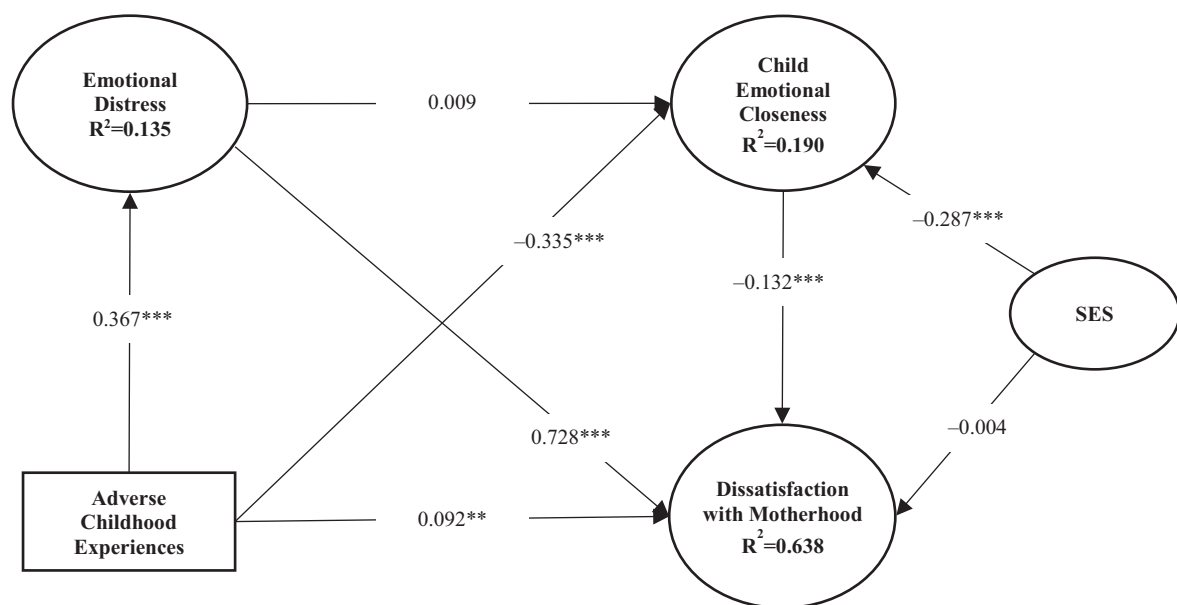
The factor loadings, composite reliability, VIF (multicollinearity analysis) and average variance extracted are reported in Table 4. The factor loadings range from 0.593 to 0.939 and are within the threshold for accepting that the items reflect the variables intended to be measured. The Cronbach alpha estimation was also robust for accepting the reliability of the variables. Composite reliability of the latent variables was ensured through the value of rho_c, as shown in Table 4. None of the average variance extracted is less than the 0.5 thresholds except for the sociodemographic attributes controlled

Table 6. Path analysis

Paths	β	SD	t-value	p values
ACEs → Dissatisfaction with motherhood	0.092	0.037	2.479	**
ACEs → Emotional closeness	-0.335	0.042	7.965	***
ACEs → Emotional distress	0.367	0.043	8.558	***
Emotional distress → Dissatisfaction with motherhood	0.728	0.026	27.726	***
Emotional distress → Emotional closeness	0.009	0.047	0.189	0.425
Emotional closeness → Dissatisfaction with motherhood	-0.132	0.031	4.205	***
SES → Dissatisfaction with motherhood	-0.004	0.034	0.117	0.454
SES → Emotional closeness	-0.287	0.048	6.010	***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Abbreviations: SD, standard deviation; SES, socioeconomic status.

**Figure 2.** Path analysis.**Table 7.** Indirect path analysis

Mediations	5,000 Bootstrapping		
	β	95% CI	p-value
(i) ACEs → Emotional closeness → Dissatisfaction with motherhood	0.044	(0.025–0.066)	***
(ii) ACEs → Emotional distress → Becoming a mother	0.267	(0.213–0.323)	***
(iii) ACEs → Emotional distress → Emotional closeness → Dissatisfaction with motherhood	0.000	(-0.005–0.003)	0.428

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

for in the SEM. The analysis verifying the absence of multicollinearity (VIF) indicated that the variables did not violate associated assumptions. Consequently, all criteria were met to compute the structural equation models to examine the hypothesis presented in the study.

The HTMT ratio in Table 5 examined the ratio of between-trait correlation, which requires that all correlations should be less than 0.90 before accepting that there is distinctiveness across all the variables examined.

The hypothesis was tested, and the result is shown in the path analysis in Table 6 and Figure 2. ACEs are positive predictors of dissatisfaction with motherhood ($\beta = 0.092$; $p < 0.01$) and emotional distress ($\beta = 0.367$; $p < 0.001$). In addition, there is an inverse association between ACEs and child emotional closeness ($\beta = -0.335$; $p < 0.001$). First-time mothers' emotional distress is a positive predictor of dissatisfaction with motherhood ($\beta = 0.728$; $p < 0.001$). Child emotional closeness has an inverse association with dissatisfaction with motherhood ($\beta = -0.132$; $p < 0.001$). First-time mothers'

Table 8. Child gender outcome

Paths	Child gender	
	Girl	Boy
	β	β
ACEs → Dissatisfaction with motherhood	0.159**	0.054
ACEs → Emotional closeness	-0.272***	-0.391***
ACEs → Emotional distress	0.396***	0.352***
Emotional distress → Dissatisfaction with motherhood	0.606***	0.801***
Emotional closeness → Dissatisfaction with motherhood	-0.194***	-0.095**
Emotional distress → Emotional closeness	0.047	-0.008
SES → Dissatisfaction with motherhood	-0.014	0.004
SES → Emotional closeness	-0.238**	-0.314***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

socioeconomic attributes are negatively associated with child emotional closeness ($\beta = -0.287$; $p < 0.001$). Based on the model, the explanatory power of the model in explaining the emotional distress = 13.5%, child emotional closeness = 19% and dissatisfaction with motherhood = 63.8%.

Table 7 presents the result of the indirect path analysis on how ACEs can indirectly influence dissatisfaction with motherhood through emotional distress and emotional closeness. As an extension, the result highlights if there is a serial effect of emotional distress and child emotional closeness in the association between ACEs and dissatisfaction with motherhood, that is, (i) the indirect pathway from ACEs to dissatisfaction with motherhood through child emotional closeness is significant ($\beta = 0.044$; 95% CI (0.025, 0.066); $p < 0.001$); (ii) the indirect pathway from ACEs to dissatisfaction with motherhood through emotional distress is significant ($\beta = 0.267$; 95% CI (0.213, 0.323); $p < 0.001$). However, (iii) the serial pathway from ACEs to dissatisfaction with motherhood through emotional distress and child emotional closeness is insignificant ($\beta = 0.000$; 95% CI (-0.005, 0.003); $p = 0.428$).

Child gender outcomes

According to the child gender analysis in Table 8, ACEs are significant predictors of dissatisfaction with motherhood among first-time mothers of girls ($\beta = 0.159$; $p < 0.01$). However, this association is not significant for first-time mothers of boys. The findings further should show some notable differences in effect size between males and females. There is an inverse relationship between ACEs and child emotional closeness for girl children ($\beta = -0.272$; $p < 0.001$) and male children ($\beta = -0.391$; $p < 0.001$). Similarly, ACEs are positive predictors for mothers of male ($\beta = 0.352$; $p < 0.001$) and female children ($\beta = 0.396$; $p < 0.001$). Child emotional closeness has an inverse effect on dissatisfaction with motherhood of girls ($\beta = -0.194$; $p < 0.001$) and boy children ($\beta = -0.095$; $p < 0.01$). The distinct difference in child gender analysis is the effects of ACEs on dissatisfaction with motherhood based on child gender.

Discussion

This study examined how ACEs may be associated with emotional distress, child emotional closeness and dissatisfaction with

motherhood among first-time mothers utilizing primary healthcare services in Nigeria. The study also examined the serial mediation effects of emotional distress and emotional closeness on ACEs and dissatisfaction with motherhood. Extending empirical evidence on the association of ACEs, emotional distress and motherhood dissatisfaction among first-time mothers in Nigeria is imperative to support the transition to motherhood in the region. Given that there is no clear evidence of gender prevalence and specific adverse later-life outcomes of first-time mothers in Nigeria, this study becomes timely and relevant to support first-time mothers (Olusimbo et al., 2012). Existing studies of ACEs in Nigeria highlight their fatalistic mental health effects among different sub-populations but failed to examine these issues among first-time mothers (Oladeji et al., 2010; Olusimbo et al., 2012). Moreover, the socioeconomic limitations of Nigeria highlight vital problems that must be addressed to provide tailored support to young women to support their process of becoming mothers (CDC, 2019, 2022; Isangha et al., 2023a).

This study findings suggests that first-time mothers' ACEs are associated with dissatisfaction with motherhood. According to previous research, women who have experienced negative developmental experiences may experience disruptions in their self-identity, self-efficacy and competence as mothers, as well as doubts concerning their ability to fulfill their role as new mothers (Bailey et al., 2012; Muzik et al., 2013). Evidence from this study supports those from Germany that mothers who receive less recalled care from their own mothers are more likely to report being dissatisfied with motherhood (Goebel et al., 2020). Further findings in this study suggest that first-time mothers' ACEs are inversely associated with emotional closeness to their children. This finding indicates that first-time mothers' early traumatic events may prevent them from having meaningful emotional connection with their children. Further, a positive association was observed between first-time mothers' ACEs and emotional distress. Based on existing evidence, mothers with ACE histories might experience emotional dysfunction as adults and mothers (Costa et al., 2020). Moreover, this finding is similar among mothers with low socioeconomic backgrounds in the United States (Garofalo et al., 2023). On a more positive note, this study finds that mothers who are emotionally connected to their children are less likely to be dissatisfied with motherhood.

The study indicates that emotional distress is a significant factor in dissatisfaction with motherhood among first-time mothers. This finding is consistent with research evidence showing that psychological burdens could make the motherhood process more challenging, resulting in feelings of incompetence (Mott et al., 2011; Schmied et al., 2013). Nevertheless, according to the study findings, the direct path from emotional distress to child emotional closeness among these first-time mothers is not significant, suggesting that mental burden does not significantly affect the emotional connection between these first-time mothers and their children. Moreover, first-time mothers who experienced greater emotional closeness to their children were less likely to be dissatisfied with motherhood. First-time mothers' emotional closeness to their children was negatively affected by ACEs. According to these findings, socioeconomic limitations may adversely affect first-time mothers' emotional closeness to their children.

Through emotional distress mechanisms, ACEs are indirectly linked to dissatisfaction with motherhood. Based on these findings, the study confirmed that first-time mothers' ACEs significantly contributed to emotional distress, which in turn contributed to increased dissatisfaction with motherhood among first-time mothers. Several factors can cause psychological deficits during

motherhood, including cumulative trauma from childhood (Martin et al., 2013). Some first-time mothers may experience adverse mental responses to ACEs, resulting in problems developing competence for their new maternal role (Pomerantz and Rudolph, 2003; Muldoon et al., 2019). The evidence indicates that trauma and coping perspectives are reinforced, suggesting individuals who have been subjected to adversity may adopt unhealthy coping mechanisms that manifest in emotional distress and adversely affect their ability to build motherhood competences (Bloom, 1999).

An indirect relationship was found between first-time mother ACEs and dissatisfaction with motherhood, mediated by child emotional connection, which channeled the dampening effect of ACEs on dissatisfaction with motherhood. This evidence supports the understanding that despite the positive attributes of the emotional closeness of first-time mothers to their children, this closeness may not be protective to cushion the negative effect of childhood adversity and subsequently lead to dissatisfaction with motherhood. This study reinforces the detrimental impact of ACEs on mother–child bonding and emotional connection.

In addition, there was no support for a serial mediating effect of first-time mothers' emotional distress and child emotional closeness on ACEs and dissatisfaction with motherhood. First-time mothers' emotional closeness to their children did not cushion the emotional distress caused by ACEs, which in turn did not influence dissatisfaction with motherhood. Research interventions are needed to examine other psychosocial factors that may cause a chain effect to eliminate dissatisfaction with motherhood among first-time mothers. Given this evidence, the model explained 13.5% of the variance in first-time mothers' emotional distress and 19% in emotional closeness. Approximately 63.8% of the variance in dissatisfaction with motherhood of first-time mothers was explained in this study, which indicated that support for these groups of mothers should pay attention to these indicators.

Based on the study assumptions that child gender may influence the effects of ACEs on the study outcomes, only one path differs significantly in the outcome based on child gender. There is a significant difference in the path from first-time mothers' ACEs to dissatisfaction with motherhood between male and female children. According to the study, ACEs are a significant predictor of dissatisfaction with motherhood for first-time mothers of female children. Conversely, there was no association between first-time mothers of male children's ACEs and dissatisfaction with motherhood. The evidence demonstrates the importance of gender in first-time mothers' behavior in Nigeria, which reinforces perspectives on patriarchal institutions and a preference for male children (Sylvia, 1989; Olatunji, 2013). Therefore, having a male child indicates that first-time mothers may not experience dissatisfaction with motherhood regardless of their ACEs history. This evidence supports filial piety perspectives emphasizing male-child preference based on family responsibility in the future (Yeh and Bedford, 2003). The motivation that a male child would bring honor to the mother and family may explain why mothers' ACEs may not be associated with dissatisfaction with motherhood (Chappell and Kusch, 2007). Accordingly, this evidence emphasizes the disadvantages of girl children in Nigeria since their mothers are more likely to suffer from dissatisfaction with motherhood resulting from ACEs and create a negative cycle of adversity.

Despite the significance and empirical contribution of this study, there are limitations to the study. When adopting the findings of this study, we draw readers' attention to the fact that data were collected among mothers attending PHCs in Nigeria, and

caution should be applied to interpretation. The sample size used in this study is relatively small. We suggest that future studies consider conducting a nationwide survey among first-time mothers that could guarantee a large sample size. Additionally, a cross-sectional design may prevent interpretations of the results as causal factors. Future research should, therefore, recruit first-time mothers in Nigeria for a longitudinal analysis. However, the study extends empirical evidence on the influences of ACEs on becoming a mother among first-time mothers in a developing region like Nigeria and the mechanisms that channel dissatisfaction with motherhood by considering child gender in the analysis. In addition, while the Cronbach α value of 0.60 is considered acceptable (Ursachi et al., 2015), caution must be applied when interpreting the influence of emotional closeness in the study findings.

Research and theoretical implications

This study has significant empirical and theoretical significance in understanding the associations of ACEs, emotional distress and dissatisfaction with motherhood among first-time mothers in Nigeria. Developmental and life course trajectories significantly influence first-time mothers' psychological health and motherhood satisfaction. Additionally, first-time mothers must embrace their identity as mothers to promote self-efficacy to fulfill their motherhood responsibilities. Similarly, mothers who develop negative attachment styles as a result of ACEs may experience psychological problems later in life. Most importantly, first-time mothers who have experienced ACEs require urgent mental health support and services to cushion emotional distress during motherhood.

In addition, the motherhood process of first-time mothers may be impacted by ACEs and emotional distress together. First-time mothers suffering from ACEs, for example, must also deal with postpartum emotional difficulties and societal expectations that may their readiness to become mothers. Attempting to conform to societal standards of motherhood can put significant pressure on these first-time mothers, draining them mentally. A combination of these factors may lead to a deficit in motherhood capabilities. Consequently, cumulative disadvantages may result in emotional distress that could lead to dissatisfaction with motherhood. Moreover, these negative factors, such as ACEs, can negatively affect mother's child's emotional closeness, ultimately leading to dissatisfaction with motherhood satisfaction.

ACEs have a direct effect on the dissatisfaction with motherhood of mothers who have girl children. This group should receive tailored support to address these issues. Mothers should be enlightened about this possibility and ensure that they raise their girl child from a trauma-informed perspective. First-time mothers should be screened for ACEs and emotional distress in primary healthcare settings throughout Nigeria as part of parenting education. Finally, based on the findings of this study, it is imperative to examine the unique effects of specific traumas, such as those relating to emotional abuse/neglect. In addition, future studies should consider examining the influences of ACEs, like sexual trauma, in the process of becoming a mother that could promote dissatisfaction with motherhood.

Conclusion

In this study, ACEs are associated with dissatisfaction with motherhood and emotional distress, and emotional distress predicts dissatisfaction with motherhood. Dissatisfaction with motherhood is

indirectly associated with first-time mothers' ACEs through their emotional distress. In addition, the effects of ACEs on dissatisfaction with motherhood for first-time mothers ACEs could not be cushioned by child emotional closeness to the child. The study found no serial impact of emotional distress and child emotional closeness in the association between ACEs and dissatisfaction with motherhood. As indicated by the results by child gender, ACEs are only associated with dissatisfaction with motherhood among first-time mothers of female children. As part of reducing dissatisfaction with motherhood, particularly ACEs and emotional dysfunction, first-time mothers require person-centered and trauma-informed support.

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Data availability statement. Data will be made available upon request from the corresponding authors.

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