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Relationship between parental involvement and infant bonding among families of Barangay Tambacan, Tubod, and Santiago, Iligan City

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Abstract

Background and Aim: This study explores and assesses the extent of parental involvement and its relationship to infant bonding. It aims to determine how varying levels of engagement from parents influence the development of a strong bond with their infants.

Design: We employed a descriptive correlational design and utilized questionnaires to collect data from 150 families living in Iligan City. Respondents were specifically from squatter areas of Iligan City.

Results: The findings of this study reveal that fathers tend to show indirect care that happens monthly, which relates to the infant's soothing level. Mothers generally understand their infants' basic mental states well but show less interest in exploring further complexities.

Conclusion: Our findings suggest a weak association between parental involvement, indicating the significance of the different roles performed by each parent in an infant's growth and development.

Keywords: Parental involvement, infants, infant bonding, parental extent

Introduction

Parent-infant bonding is the development of a parent's emotional, behavioral, cognitive, and neurological attachment to their child from birth through infancy. This ongoing, passionate process evolves with the lives of both the parent and the child (Radoš 2023) [26].

Bonding begins when a mother feels a strong attachment to her baby, experiencing great love, joy, and protectiveness. The concept of "bonding," introduced by Klaus & Kennell in 1982, has gained much attention, emphasizing the importance of the early post-birth period. Adequate mother-infant bonding is crucial for the child's positive socio-emotional development. Father-infant bonding is also essential, with higher mother-infant bonding levels linked to higher father-infant bonding levels (Schaber *et al.* 2021) [32]. Several studies provide a comprehensive review of literature on parental involvement and infant bonding, encompassing factors that influence Mother and child attachment, partner involvement in infant bonding, maternal-infant bonding effect on child development, and infant bonding.

Fathers often bond deeply with their babies through physical contact, such as holding and providing care, and this bond strengthens when they can see and hear their unborn child during prenatal ultrasounds (Scism *et al.* 2017) [34]. Despite the focus on mother-infant bonding, father-infant bonding significantly influences child outcomes, like improved executive functioning and reduced behavioral issues (De Cock *et al.* 2017) [11]. More research is needed on factors that affect father-child bonding (Fuchs *et al.* 2016) [13].

Results of hierarchical regression analysis revealed links between longer maternal depression, postnatal depression, anxiety, difficult infant temperament, and poorer mother-infant bonding (Tolja *et al.* 2020) [39]. Additionally, a birth cohort study in Japan revealed that poor mother-infant bonding is linked to postnatal maternal distress (Tokuda *et al.* 2023) [38]. Early mother-child bonding is a greater predictor of bonding at 12 months than maternal mental health or substance use (Rossen *et al.* 2019) [29]. A UK study found that while maternal bonding in the first week temporarily affects temperament, the temperament established several weeks postpartum is more influential. Furthermore, breastfeeding enhances maternal attachment (Clark *et al.* 2019) [7].

Improving maternal mentalization during addiction treatment benefits both maternal parenting and child attachment (Suchman *et al.* 2018) [36]. Mother-infant bonding was linked to various factors such as maternal age, education, residence, family size, income, delivery type, feeding method, baby's health, care received, and pregnancy planning (Gauthier *et al.* 2004) [15]. Having a partner and partner's support through income and relationship status during pregnancy reduces the likelihood of alcohol and drug use (Cohen *et al.* 2018) [8]. Similarly, reducing depression and improving co-parenting can help fathers bond better with infants.

Fathers' positive engagement, even in indirect forms, contributes to better emotional regulation in children (Cabrera *et al.* 2018) [4]. Similarly, paternal involvement,

particularly in play and caregiving, positively influences infants' emotional and social development. A mother's healthy bond to her infant may influence her child's social and emotional development (Le Bas *et al.* 2022) ^[20]. A Higher postnatal maternal bonding according to (Le Bas *et al.* 2022) ^[20] directly predicted infant social-emotional development at 12 months.

Negative parenting before adolescence may indirectly affect perinatal maternal-infant bonding through anxiety and depression. These mental health issues can disrupt the bonding process between mothers and their infants (Fukui *et al.* 2021) ^[14].

The postpartum period is crucial for mothers, involving significant social, emotional, and physical changes. Fathers' and partners' support during this time is vital for maternal well-being (Salo 2019) ^[30].

Parental attachment representations may mediate the relationship between childhood maltreatment and mental health (Dauner *et al.* 2023) ^[10]. Regarding fathers' involvement in the postpartum period and its effects on mother well-being, there is a noticeable lack of information in the literature, especially when it comes to Iligan City, Lanao Del Norte, Philippines.

Several issues in the literature prompted this study. Firstly, there is a significant knowledge gap regarding fathers' involvement during the postpartum period and its impact on maternal well-being, with limited detailed studies on this topic (Cabrera *et al.* 2018) ^[4]. Secondly, most research focuses on North America and Europe, leaving a gap in understanding these dynamics in regions like Mindanao, Iligan City. Diverse geographic representation is needed to understand cultural and regional differences in parental involvement and maternal well-being (Reynolds *et al.* 2020) ^[27]. This study addressed two key gaps: the first is a knowledge gap regarding fathers' involvement in the postpartum period and the factors influencing mothers' well-being. The second gap pertains to the study's population, which is more commonly researched in other regions like North America and Europe, with limited research, particularly in Mindanao, Iligan City. The research questions were:

1. What is the extent of paternal involvement in infant bonding among the respondents in Iligan City?
2. What is the extent of maternal involvement in infant bonding among the respondents in Iligan City?
3. What are the patterns of infant behavior during the postpartum period?
4. Is there a significant relationship between paternal and maternal involvement?

Does paternal and maternal involvement significantly relate to infant bonding?

Methods

Research Design

This study used a descriptive correlational design to methodically look into the relationships between infant bonding behaviours and parental involvement. This research design is particularly useful when the goal is to identify patterns and associations without implying causation (Polit *et al.* 2022) ^[24]. By using this approach, the study aimed to describe the extent and nature of fathers' and mothers'

involvement with their infants and explore how these different types of involvement correlate with various infant behaviours such as sleeping, playing, soothing, feeding, and bathing/dressing.

Meanwhile, the correlational component helps in identifying whether certain parental behaviours are associated with specific infant outcomes, which is essential for understanding the dynamics of parent-infant bonding. This method is beneficial in contexts, such as influencing parental behaviour to observe changes in infant bonding (Creswell *et al.* 2018) ^[9].

Population and Sample

The study's population are families, residing in squatter areas of Iligan City, Philippines. The purposive sampling consisted of 150 families consisting of a mother and father, regardless if married or not, as long as directly caring their infant ages 6-12 months, residing in squatter areas of Iligan City, Philippines were relevant to the study.

Instrumentation/Tools

Questionnaires were used to collect information from the participants. The Paternal Involvement with Infant Scale (PIWIS) questionnaire (Cronbach's alpha = 0.89) assessed paternal involvement in infant bonding through self-report, rating the frequency of activities (Belsky *et al.* 2019) ^[1]. The Parental Reflective Functioning Questionnaire (PRFQ) (Cronbach's alpha = 0.89) assessed mother's capacity to understand and reflect on their own and their child's mental states, emotions, and behaviors, indicating the depth of maternal involvement in infant care (Luyten *et al.* 2017) ^[21]. The Infant Behavior Questionnaire-Revised Very Short Form (IBQ-R VSF) (Cronbach's alpha = 0.73-0.89) assessed infant temperament and behavior, including sleeping, feeding, and soothing behaviors (Putnam *et al.* 2014) ^[25].

Ethical Considerations

Ethical standards were upheld by obtaining informed consent from participants. Confidentiality and anonymity of participants were maintained, and the collected data were used solely for research purposes overseen by the Dean of the School of Nursing, Research Coordinator, and Research Adviser at Adventist Medical Center College to ensure compliance with institutional ethical standards. The study secured clearance from the Adventist Medical Center College's Ethics Review Committee.

Data Gathering Procedure

The following were the steps taken to gather data from the respondents:

The data gathering began with obtaining informed consent from participants, followed by identifying the area for the study to be conducted. Questionnaires, including the PIWIS, PRFQ, and IBQ-R VSF, were then distributed through house to house procedure, and participants were given time to complete them with assistance provided as needed. Upon completion, the questionnaires were collected, ensuring all were fully answered. Finally, collected data were prepared for analysis by checking for completeness and readiness.

Data Analysis

The study analyzed Parental Involvement and infant using SPSS version 25. After cleaning the data in Excel, researchers checked for the normal distribution of continuous variables. Means and standard deviations were used to analyze the patterns of Infant behaviors and the extent of parental involvement. Kendall’s correlational analysis explored relationships between parental involvement and infant bonding.

Results

The respondents in the study were families having a 6-12 months old infant living in a squatter area of Iligan City, Philippines. A total of 150 families were gathered based on specific criteria relevant to the study.

Table 1 provides a breakdown of infant age and the corresponding frequency of infants in each age group. This data illustrates the distribution of infants across different age brackets, providing valuable insights into the age composition of the observed infant population.

Table 1: Frequency of Infants by Age

Infant Age	Frequency
11 months	3
6 months	9
8 months	14
12 months	14
10 months	15
7 months	39
9 months	56
Total	150

Table 2 shows the parental involvement of the respondents with their infants. As shown, most fathers exhibit warmth and attunement roughly once a day. Control and process responsibility behaviors, as well as experiences of frustration, are typically reported a few times a week. Indirect care behaviors occur less frequently, around a few times a month. Positive engagement behaviors, meanwhile, are reported to happen a few times a week.

Table 2: Mean and Standard Deviation of Respondents’ Extent of Paternal Involvement with Infants (n =150)

Subscales	Mean ±SD	Description
Warm and attunement subscale	5.86 ±1.29	About once a day
Control and Process Responsibility	4.80 ±1.46	Few times a week
Frustration	4.45 ±1.67	Few times a week
Indirect Care	3.53 ±1.60	Few times a month
Positive Engagement	4.90 ±1.38	Few times a week

Note: 1.0-1.84 (Not at all), 1.85-2.69 (Rarely), 2.70-3.54 (Once or twice a month), 3.55- 4.39 (A few times a month), 4.40-5.24 (A few times a week), 5.25-6.09 (About once a day), 6.10-7.0 (More than once a day)

Table 3 shows the involvement of mothers with their infants, based on average scores, and shows varying levels of engagement across three mental states. Mothers express strong agreement with pre-mentalizing modes, indicating high confidence. For certainty about mental states, they take

a neutral stance. Conversely, mothers show strong disagreement with interest and curiosity about mental states, indicating a low level of engagement in exploring their infants' mental states further. These findings suggest that while mothers are confident in their basic understanding of mental states, they are less curious and interested in exploring their infants' mental states further.

Table 3: Mean and standard deviation of extent of mothers’ involvement with Infants (n =150)

	Mean ± SD	Description
Pre-mentalizing modes of Mental state	5.37±0.83	Strongly Agree
Certainty about Mental States	4.63±1.05	Neutral
Interest and Curiosity Mental States	2.87±0.82	Strongly Disagree

Note: 1.0-1.84 (Not at all), 1.85-2.69 (Strongly disagree), 2.70-3.54 (Disagree), 3.55- 4.39 (Neither/ Nor agree), 4.40-5.24 (Agree), 5.25-6.09 (Strongly agree)

Table 4 shows the categorized mean of the Infant Behavior Questionnaire indicates that babies frequently sleep and get bathed or dressed, as these activities have high mean scores. Eating also occurs often, happening more than half the time. Play and soothing occur regularly, though not as frequently as sleeping, bathing/dressing, or feeding. All behaviors are observed at least occasionally, with none falling into the "Never" or "Rarely" categories on the scale.

Table 4: Mean and Standard Deviation of Infant Behavior (n =150)

Infant Behavior	Mean ±SD	Description
Sleeping	5.33±1.16	Always
Play	4.74±0.76	About half the Time
Soothing	4.59±0.54	About half the Time
feeding	5.17±1.85	More than half the Time
Bathing & Dressing	5.38±1.12	Always

Note: 1.0-1.84 (Never), 1.85-2.69 (Rarely), 2.70-3.54 (Less than half the Time), 3.55- 4.39 (About half the Time), 4.40-5.24 (More than half the Time), 5.25-6.09 (Always), 6.10-7.0 (NA)

Table 5 shows the correlations between various aspects of father involvement and mothers' mental state engagement with their infants are generally weak and not significant. For warmth and attunement, the correlations range from slightly positive to slightly negative, as do those for control and process responsibility, frustration, indirect care, and positive engagement. None of these correlations reach statistical significance, indicating that there are no meaningful relationships between fathers' involvement and mothers' engagement with their infants' mental states.

Table 6 shows the study reveals correlations between father and mother involvement and infant behaviors. Notably, paternal indirect care negatively correlates with infant soothing, indicating that higher levels are associated with increased soothing behavior in infants. Mother involvement, categorized into pre-mentalizing modes, certainty about mental states, and interest and curiosity about mental states, also shows varying correlations. Certainty about mental states positively correlates with infant soothing, suggesting increased soothing behaviors when mothers are more certain about their infants' mental states.

Table 5: Relationship between paternal and maternal involvement

Father Involvement	Mother Involvement		
	Pre- mentalizing modes of Mental state <i>r</i> (<i>p</i>)	Certainty about Mental States <i>r</i> (<i>p</i>)	Interest and Curiosity Mental States <i>r</i> (<i>p</i>)
Warmth and Attunement	.032 (.584)	.006 (.916)	-.052 (.368)
Control and Process Responsibility	-.013 (.824)	.070 (.224)	-.080 (.162)
Frustration	-.039 (.505)	-.034 (.567)	.028 (.632)
	.505	.567	.632
Indirect Care	.080 (.172)	.039 (.506)	-.058 (.317)
Positive Engagement	.020 (.734)	.027 (.643)	.017 (.773)

Note: Warm and Attunement (WAS), Control and Process Responsibility (CPR), Frustrations (FRUS), Indirect Care (IC), Positive Engagement (PE), Pre Mentalizing-Mental Status (PMS), Certainty about Mental Status (CMS), Interest and Curiosity (ICM)

Table 6: Relationship between parental involvement and infant bonding

		Infant Behavior				
		Sleeping <i>r</i> (<i>p</i>)	Playing <i>r</i> (<i>p</i>)	Soothing <i>r</i> (<i>p</i>)	Feeding <i>r</i> (<i>p</i>)	Bathing & Dressing <i>r</i> (<i>p</i>)
Father involvement	WAS	.012 (.84)	.054 (.34)	-.048 (.41)	.109 (.079)	-.009(.87)
	CPR	.032 (.58)	.099 (.08)	.044 (.44)	.061 (.316)	.024(.68)
	FRUS	-.113 (.05)	.034 (.55)	.033 (.57)	-.041 (.505)	.011(.84)
	IC	.024 (.68)	-.040 (.49)	-.154** (.00)	-.017 (.188)	-.096(.10)
	PE	.009 (.87)	.053 (.35)	-.085 (.14)	-.057 (.353)	.006(.91)
Mother Involvement	PMS	-.060 (.31)	-.092 (.11)	-.037 (.52)	-.060 (.335)	-.086(.15)
	CMS	-.056 (.33)	-.025 (.66)	.154** (.09)	.070 (.266)	-.054(.36)
	ICM	.013 (.82)	-.054 (.34)	-.053 (.35)	.024 (.701)	.069(.24)

Note: Warm and Attunement (WAS), Control and Process Responsibility (CPR), Frustrations (FRUS), Indirect Care (IC), Positive Engagement (PE), Pre Mentalizing Mental Status (PMS), Certainty about Mental Status (CMS), Interest and Curiosity (ICM), Cohen’s Effect, 0.2-0.4 (small), 0.5-0.7 (medium), 0.8-1.30 (Large).

Discussion

This study explores the dynamics of parenting behavior and parental involvement in relation to infant bonding in Iligan City. It reveals that fathers tend to provide indirect care monthly, which correlates with the infant’s soothing level. Mothers generally understand their infants’ basic mental states well but show less interest in exploring further complexities. A weak association between paternal and maternal involvement indicates that they operate somewhat independently in their caregiving roles. Paternal involvement positively affects infant soothing, and maternal involvement correlates with increased soothing behaviors when mothers better understand their infants’ mental states. Fathers’ infrequent indirect care significantly enhances infants’ soothing levels, aligning with recent research emphasizing paternal involvement (Pailhé *et al.* 2019; Torres *et al.* 2016; Roeters *et al.* 2020) [23, 40, 28]. Socio-economic and environmental factors, including economic pressures, educational attainment, urban living conditions, and cultural norms, influence the frequency and type of paternal involvement (Lamb *et al.* 2015; Yucel *et al.* 2021) [19, 43].

Mothers’ understanding of their infants’ basic mental states but less interest in deeper complexities reflects varied levels of engagement influenced by socio-economic and environmental factors. Higher educational attainment and employment status play significant roles in mothers’ ability to engage deeply in their infants’ psychological development (Bridges *et al.* 2018; Han *et al.* 2020) [3, 16]. Cultural norms and extended family support also shape maternal involvement (Imada *et al.* 2018; Santos *et al.* 2021) [17, 31].

The findings have clinical relevance, particularly for nursing students in pediatric and family health settings. Healthcare providers should promote paternal care involvement, as fathers’ indirect care enhances infants’ comfort (Shorey *et al.*

2019) [35]. Educational programs should encourage mothers to explore their children’s emotional and psychological development more deeply, potentially fostering more comprehensive emotional support.

The weak association between parental involvements suggests parents often operate independently in caregiving roles, which healthcare recommendations and interventions should consider. Personalized and context-sensitive care plans are crucial, emphasizing positive and consistent caregiving behaviors from both parents.

The study’s strength lies in its quantitative, descriptive correlational approach, providing insights into the connections between infant outcomes and parental involvement in Iligan City. However, limitations include its focus on families in squatter areas, excluding other potential caregivers and qualitative nuances of parental-infant bonding. Future research should include a broader range of socio-economic backgrounds and qualitative designs to understand parenting and child development comprehensively (Salo *et al.*, 2019) [30].

This study highlights the distinct and complementary roles of mothers and fathers in infant bonding in Iligan City. Fathers’ indirect care significantly enhances infants’ soothing levels, while mothers’ understanding of basic mental states is influenced by socio-economic and cultural factors. The findings underscore the need for tailored educational programs to enhance parental engagement and promote holistic child development, providing crucial insights for healthcare practitioners, particularly nursing students, to support balanced and context-sensitive caregiving practices.

Conflict of Interest

Not available

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