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THE MOTHERHOOD GUIDE APPLICATION: AI-BASED ANALYSIS OF INFANT CRYING FOR INTELLIGENT MATERNAL SUPPORT

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Background: New mothers, particularly in the early postpartum weeks, face significant challenges in understanding their infants' needs. Crying is the primary means of communication for infants, yet it is often a source of anxiety, stress, and psychological exhaustion for mothers. The inability to interpret the reasons behind crying can lead to frustration, diminished confidence, and negatively impact mother–infant bonding. While digital health applications have emerged as potential solutions, many lack the scientific accuracy required for real-time interpretation. This study highlights the “Motherhood Guide” application as an innovative AI-based solution addressing this gap.

Objectives: This study aimed to investigate the capability of artificial intelligence (AI) in accurately identifying the underlying causes of infant crying through audio signal analysis. It also sought to develop and evaluate a system that provides real-time, evidence-informed caregiving guidance to enhance maternal confidence and early caregiving outcomes.

Methods: A developmental methodology was employed to build a machine-learning model trained on diverse infant vocal datasets. The application was designed to record, analyze, and categorize infant cries (e.g., hunger, pain, sleepiness). Following its launch, a quantitative analysis assessed user acquisition and global engagement as indicators of the system’s effectiveness and relevance.

Results: The “Motherhood Guide” application demonstrated strong technical performance and user adoption. The AI system achieved a classification accuracy of up to 93%. Within 10 days of launch, the application acquired 5,000 users and has since surpassed 10,000 users globally. User feedback indicated improved maternal confidence and reduced psychological stress.

Conclusion: “Motherhood Guide” represents a significant advancement in digital child health. Its rapid adoption underscores a growing demand for AI-supported parenting tools. By providing evidence-informed insights into infant behavior, the application supports more effective caregiving, reduces postpartum stress, and contributes to improved infant well-being.

Keywords: Artificial Intelligence, Infant crying, Maternal support, Digital health, Machine learning.