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The effectiveness of the UNJA CANTIK application in improving attitudes and behaviours for stunting prevention: An analysis of health technology adoption in Jambi city

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Abstract

Background: Stunting in Jambi Province recorded a significant increase to 17.1% (2024), exceeding the national trend. This chronic nutritional problem requires interventions focused on changing parental attitudes and behaviours, supported by health information technology (e-Health). **Objective**: This study aimed to analyse the effectiveness of the CANTIK UNJA (Prevent Child Stunting with UNJA Health Information Technology) application in improving attitudes and behaviours for stunting prevention, as well as to test the adoption of this digital application. **Methods:** This quasi- experimental study, with a One-Group pretest-posttest design, involved 60 parents of toddlers (0-24 months) at the Jambi City Community Health Centre (Puskesmas). The intervention involved using the CANTIK UNJA application for eight weeks. Effectiveness was measured using the Growth Monitoring Attitudes and Behaviour Questionnaire (pre-post), while adoption was measured using the Acceptance and Usefulness Questionnaire (TAM). Analysis used the Wilcoxon test. **Results:** The results showed a significant increase in mean scores in Attitudes ($p<0.001$) and Behaviour ($p=0.004$) after the intervention. Technology acceptance was very high, with 87.5% of respondents rating it as highly useful and 92.1% rating it as highly easy to use. **Conclusion:** The CANTIK UNJA app has proven effective in improving attitudes and behaviours. It is highly accepted by users, making it a potential e-Health model for integrated stunting management in Jambi.

Keywords: Stunting, health information technology, CANTIK UNJA app, attitudes, behaviour

Cite This Article

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INTRODUCTION

Stunting is a chronic nutritional problem that impacts children's physical and cognitive growth [1]. Although the 2024 Indonesian Nutritional Status Survey (SSGI) recorded a national downward trend, Jambi Province actually recorded a significant increase in stunting prevalence to 17.1% [2,3]. This surge in cases indicates that conventional interventions may be less effective in addressing the root causes of parental behaviour.

Stunting prevention relies heavily on changing parental behaviours related to infant and young child feeding (PMBA) practices, sanitation, and growth and development monitoring [4, 5]. However, the delivery of conventional information and education is often hampered by the limited time of health workers [6]. In this context, the integration of health information technology (e-Health) is a strategic solution [7]. Mobile-based applications allow parents to receive personalised information, reminders, and flexible self-monitoring [8, 9].

Based on this urgency, researchers at the University of Jambi developed the CANTIK UNJA (Prevent Child Stunting with UNJA Health Information Technology) application. This application is designed to provide structured education, digital growth monitoring, and PMBA reminders appropriate to the child's age [10]. Therefore, this study was conducted to analyse the effectiveness of the CANTIK UNJA application in changing attitudes into positive behaviours for stunting prevention in parents [11], while also testing the level of acceptance and usability (adoption) of the application through the Technology Acceptance Model (TAM) framework [12, 13]. The results of this initial study are crucial as an academic foundation for implementing a broader e-Health program to combat stunting in Jambi City [14].

METHODS

Study design and setting

This study used a Quasi-Experimental design with a One-Group pretest-posttest design [15]. A cross-sectional evaluation of technology acceptance was conducted at the end of the intervention period.

Location and Sample Population

The study was conducted in Jambi City, focusing on the Rawasari Community Health Centre (Puskesmas) working area [16]. The target population was parents of toddlers aged 0-24 months. The sampling technique used was purposive sampling, with 60 parents who owned and used smartphones as respondents [17].

Instruments and criteria

The intervention involved the use of the CANTIK UNJA application for an eight-week (two- month) period. Respondents accessed educational modules, PMBA checklists, and reminders [6]. The research instruments consisted of three structured questionnaires:

1. Attitude Questionnaire Toward Stunting Prevention (20 items, Likert Scale) [18].
2. Child Growth and Development Monitoring Behaviour Questionnaire (15 items, Guttman Scale) [21].
3. UNJA CANTIK Application Acceptance and Usability Questionnaire (10 items, Likert Scale), adapted from TAM [19, 20].

Statistical analysis

Univariate analysis was used to describe respondent characteristics and technology adoption. Bivariate analysis used the non-parametric Wilcoxon Signed-Rank test to

compare mean Attitude and Behaviour scores before and after the intervention. The statistical significance level was set at $p<0.05$ [21].

RESULTS

The following are measurements of the variables: Stunting Prevention Attitude, Growth and Development Monitoring Behaviour.

Table 1. Attitudes and behaviours regarding stunting

Variables	Pre-Test Average (Score 0-100)	Post-Test Average (Score 0-100)	Average Difference (%)	Wilcoxon test (p-value)	Information
Stunting Prevention Attitudes	68,5 (± 5,2)	83,2 (± 4,8)	+21,5%	**< 0,001**	Very Significant Improvement
Growth and Development Monitoring Behaviour	72,1 (± 6,5)	81,0 (± 5,9)	+12,3%	**0,004**	Significant Improvement

Table 2. Acceptance and use of the CANTIK UNJA application (n=60).

Variables	Pre-Test Average (Score 0-100)	Post-Test Average (Score 0-100)	Average Difference (%)	Wilcoxon test (p-value)	Information
Stunting Prevention Attitudes	68,5 (± 5,2)	83,2 (± 4,8)	+21,5%	**< 0,001**	Very Significant Improvement
Growth and Development Monitoring Behaviour	72,1 (± 6,5)	81,0 (± 5,9)	+12,3%	**0,004**	Significant Improvement

DISCUSSION

The research results clearly demonstrate that the CANTIK UNJA application intervention significantly improved the attitudes and behaviours of parents of toddlers toward stunting prevention [22, 23]. The highly significant improvement in attitudes ($p<0.001$) indicates that consistent, real-time education through the application's features can change parents' views and beliefs [24, 25]. This positive attitude is a crucial prerequisite, in accordance with the Health Belief Model and the Theory of Planned Behaviour [26]. A significant increase in the Child Growth Monitoring Behaviour score ($p=0.004$) indicates that the change in attitudes was successfully translated into concrete actions. The reminder supports this, and digital growth chart features in CANTIK UNJA, which function as behavioural reinforcement mechanisms [27].

The high level of acceptance (above 87% for usability and ease of use) indicates that CANTIK UNJA meets the Health Technology Adoption (TAM) criteria [28, 29]. The Perceived Ease of Use (PERCEIVED Ease of Use) rating of 92.1% is crucial for the program's sustainability, ensuring that the application can be used by the community regardless of their digital literacy level [30].

Given the high prevalence of stunting in Jambi, CANTIK UNJA offers a scalable and efficient intervention model that can be integrated into community health centre programs. This application empowers parents and supports government efforts to achieve stunting reduction targets. A limitation of this study is the one-group design, which cannot eliminate confounding factors. Furthermore, the relatively short intervention duration only allows for measurement of proximal variables (attitudes and behaviours), not distal variables (changes in nutritional status/anthropometry). Further research with a randomised control trial (RCT) design is needed.

CONCLUSIONS

The CANTIK UNJA application has proven effective in significantly improving the attitudes and behaviours of parents of toddlers towards stunting prevention practices in Jambi City. This digital innovation demonstrated high levels of user acceptance and usability, making it a feasible e-Health model with potential for widespread adoption. Local governments and health workers are advised to consider integrating CANTIK UNJA as a key component in stunting reduction strategies.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

This study used artificial intelligence (AI) tools and methodologies in the following capacities Manuscript writing support: AI-based language models, such as [for example, ChatGPT, Quillbot], were/was employed to: Language refinement (improving the grammar, sentence structure, and readability of the manuscript).

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