

RESEARCH STUDY

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Effect of Using the "Tentang Anak" Application on Mothers' Knowledge, Attitudes, and Behavior in Monitoring the Nutritional Status of Under-two Children

Pengaruh Penggunaan Aplikasi "Tentang Anak" terhadap Pengetahuan, Sikap, dan Perilaku Ibu dalam Memantau Status Gizi Baduta

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ABSTRACT

Background: In Indonesia, malnutrition among under-two children is currently still relatively high. On the other hand, many nutrition applications are available on smartphones. One of the popular applications used by mothers of under-two is "Tentang Anak", which makes it easy to monitor the children's nutritional status and growth.

Objectives: This study aimed to analyze the effect of using the "Tentang Anak" application on mothers' knowledge, attitudes, and behavior in monitoring the nutritional status of under-two children.

Methods: This study used a cross-sectional design. The data were collected purposively with self-administered questionnaires in the form of a validated Google Form. The data were collected using the official WhatsApp Group of the "Tentang Anak" user community, and 103 respondents of mothers of under-two in Indonesia were selected. The variables analyzed were socio-demographic characteristics, duration of application use, knowledge, attitudes, and behaviors about monitoring the nutritional status of under-two children. The simple linear regression test was used to measure the effect of application use on knowledge, attitudes, and behavior.

Results: The scores of respondents' knowledge, attitudes, and behaviors regarding monitoring the nutritional status of under-two were above 75 (good category). The duration of use of all application features had a significant effect ($p < 0.05$) on knowledge, attitudes, and behavior, although the strength of the relationship was weak ($R^2 < 0.33$). The duration of use of the "growth" and "recipe" features also had a weak significant effect on knowledge and attitudes. The effect of the "ask an expert" feature was not analyzed because it was limited in answering user questions.

Conclusions: "Tentang Anak" app could be a good literacy channel for users, reflected in the good knowledge, attitudes, and behavior scores. However, the duration of application use had a weak effect on improving knowledge and attitudes and had no significant effect on behavior.

INTRODUCTION

The under-two period is a time when children have rapid physical and mental growth; thereby, this period is known as the golden period where physical growth and intellectual and emotional development of children occur at this age¹. Growth and development in this period require attention and proper nutrition so that the children's growth and development become optimal². Children are considered healthy if they grow and develop adequately, which is determined by measuring the ideal height and weight for age. Looking at some of the nutrition problems that often occurred in under-five children based on the data from the 2021 Indonesian Nutritional Status Survey (INSS) related to trends in the nutritional status of Indonesian toddlers,

49.9% of under-fives still had malnutrition, i.e., stunting (21.6%), wasting (7.7%), underweight (17.1%), and overweight (3.5%)³.

Children's nutrition problems are still relatively high, and most of the problems are related to the lack of parents' understanding⁴. On the other hand, many nutrition applications (apps) are available on smartphones⁵. Nutrition and health applications are expected to provide a convenient way for users to monitor children's nutritional and health status and achieve health-related goals⁶. Several studies have shown that using technology in health can quickly improve people's knowledge of health information⁷. Recent studies have shown that using health apps can positively influence user behavior, leading to improved

health⁸.

The use of smartphones and the internet among the general public has become a trend in this modern era, reflected in the number of internet users that continues to grow annually. Internet users in Indonesia reached 212.9 million in January 2023, 3.85% higher than in the same period the previous year. Besides that, 98.3% of internet users in Indonesia use smartphones⁹. In addition, Indonesians' average internet usage time is 7 hours 42 minutes per day. The average duration spent by Indonesians using smartphones in 2022 was 5.7 hours per day¹⁰. The use of apps is an effort to meet the needs that are considered very practical, efficient, and economical, thereby making the apps increasingly popular among the wider community¹¹.

The rapid technology development is also now affecting various fields and is utilized in all aspects of life, including the health sector¹². Current technological developments open up the possibility of digitizing health services¹³. One of the examples of technology in the health sector engaged in public education is the health application¹⁴. One of the popular apps on social media with 500,000 users is "Tentang Anak", which can make it easier to monitor children's nutritional status and growth and development. The "Tentang Anak" application is a holistic parenting application to monitor pregnancy and the child's growth and development. It contains education, nutrition, stimulation, and evaluation from experts about children that can be downloaded using a smartphone on Google Play Store or App Store.

This application helps parents monitor children's growth and development at home¹⁵. In this case, parents with children are expected to increase their knowledge by accessing the latest information about their children's health and using child health apps to detect children's early growth and development¹⁶. Improving parents' health digital literacy, especially regarding children's nutritional status, is one of the many benefits of using the child nutrition status monitoring application mentioned above. Therefore, this study should be conducted with the following objectives: determining the characteristics of mothers who used the "Tentang Anak" application, knowing the duration of use and features of the "Tentang Anak" application, and analyzing the effect of using the "Tentang Anak" application on mothers' knowledge, attitudes, and behavior in monitoring the nutritional status of under-two children. This study hypothesized that using the "Tentang Anak" application was expected to affect the mothers' knowledge, attitudes, and behavior in monitoring the nutritional status of under-two children.

METHODS

This study used a cross-sectional design. It was conducted online using digital platforms (i.e., WhatsApp and Zoom). This study was conducted in Indonesia. Primary data collection was performed from June to July 2023. The research subjects were 103 mothers of under-two children who were active users of the "Tentang Anak" application, which was determined by purposive non-probability sampling technique. The subject inclusion criteria were mothers with children under 2 years, mothers who had smartphones, and mothers who

were active users of the "Tentang Anak" application, meaning they used the application for ≥ 6 months. The subject exclusion criteria were mothers with children over the age of 2 years, mothers who did not own a smartphone, and mothers who were not active users of the "Tentang Anak" application, meaning they used the application for ≤ 6 months. The primary data were collected through interviews and filling out questionnaires. The questionnaire had been tested for validity to mothers of under-two children (i.e., 10% of the total number of minimum samples outside the total research respondents), and 30 questions in the questionnaire were valid $\{r \text{ count} > r \text{ table} (0.476)\}$. The questionnaire in a Google Form was distributed in the official WhatsApp Group of the "Tentang Anak" user community. Prior to this study, the subjects were asked to commit to participating in the study by filling out informed consent.

Primary data collected were: (1) subjects' socio-demographic characteristics, i.e., age of the mothers and under-two children, education level, types of occupation, family income and expenditure, and area of residence; (2) data on the use of the "Tentang Anak" application, i.e., the features of the "Tentang Anak" application (Growth, Recipes, Development, Ask the Experts, Articles, Shopping, Vaccines, Games, Screening, Complaints, Events, Directory of Pediatricians) that were often used;

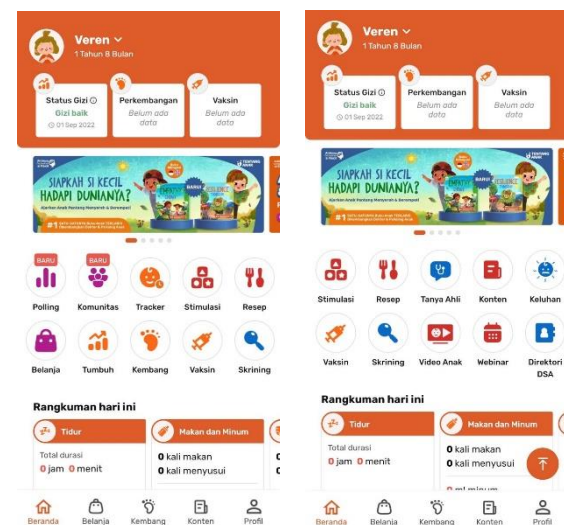


Figure 1. Features of the Tentang Anak application

(3) the duration of use of the "Tentang Anak" application was obtained by multiplying the duration of use in minutes/day by the frequency of use per week so that the data analyzed were in the total duration of minutes/week; (4) data regarding knowledge, attitudes, and behavior of each mother collected from 10 questions (30 questions in total) in the questionnaire, related to how to monitor nutritional status and z-score, choice of nutritious recipes, and feeding according to schedule, ingredients, and processing. The knowledge level scores were categorized into good ($\geq 75\%$), moderate (56-74%), and low ($\leq 55\%$)¹⁷. Attitude scores were categorized into positive attitude ($\geq 50\%$) and negative attitude ($< 50\%$)¹⁸. Behavior scores were categorized into good behavior ($\geq 50\%$) and bad behavior ($< 50\%$)¹⁹. Data were processed

and analyzed using the 2019 Microsoft Excel program and SPSS version 27.0 for Windows. Descriptive analysis was performed to calculate the proportions and mean. Simple linear regression was performed to assess the effect on several variables. This study had received ethical approval with No.10.141.B/KEPK-FKMUMJ/VI/2023.

RESULTS AND DISCUSSION

Socio-Demographic Characteristics

The under-two period is a time when children have rapid physical growth and intellectual and emotional development at their age. Growth and

development in this period require proper nutrition to optimize the child's growth and development by always monitoring the child's growth, development, and health. The nutrition and health applications are expected to provide a convenient way for users to monitor children's nutritional and health status and achieve health-related goals. This study involved 103 mothers of under-two children who were active users of the "Tentang Anak" application, which meant that the mothers participating as the respondents used the application for ≥6 months in Indonesia.

Table 1. Proportion of subjects based on subjects' characteristics

Subjects' Characteristics	n	%
Area of Residence		
Rural area	18	17.5
Urban area	85	82.5
Mother's Age		
19-29 years	74	71.8
30-49 years	29	28.2
Education Level		
Elementary school	0	0.0
Junior high school	0	0.0
Senior high school/vocational high school	8	7.8
University	95	92.2
Child's Age		
0-6 months	13	12.6
7-12 months	26	25.2
13-23 months	64	62.1
Type of Occupation		
Housewife	31	30.1
Trader/entrepreneur	8	7.8
State/Civil Servant	19	18.4
Private Employee	36	35.0
Health Workers	8	7.8
Student	0	0.0
Others: Freelancer	1	1.0
Household Income		
< IDR 1,000,000	3	2.9
IDR 1,000,001 - 2,000,000	1	1.0
IDR 2,000,001 - 3,000,000	16	15.5
IDR 3,000,001 - 4,000,000	38	36.9
IDR 4,000,001 - 5,000,000	18	17.5
> IDR 5,000,000	27	26.2
Amount of Expenditure		
< IDR 500,000	1	1.0
IDR 500,000 - 1,000,000	20	19.4
IDR 1,000,001 - 2,000,000	37	35.9
IDR 2,000,001 - 3,000,000	11	10.7
IDR 3,000,001 - 5,000,000	19	18.4
> IDR 5,000,001	15	14.6
Total	103	100.0

Table 1 shows that the characteristics of subjects who mostly used the "Tentang Anak" application are as follows: 71.8% are of young adult age (19-29 years), have children aged 13-23 months (62.1%), 82.5% live in urban areas, and 92.2% have high education level (3-yr associate degree, 4-yr associate degree/bachelor degree, master degree, doctoral degree). A total of 35.0% of the subjects were mothers working as private employees, 36.2% had an average monthly household income of IDR

3,000,001 - 4,000,000, and 35.2% had an average monthly family expenditure of IDR 1,000,001 - 2,000,000.

The Application Use

Table 2 shows that subjects who have used the "Tentang Anak" application for 6-10 months have a greater proportion than those who have used the application for >10 months. Subjects who had been using the application for >10 months felt bored with the

information or appearance of the features they often accessed. It happened due to the lack of updates on the information they got from these features. One of them was the recipe feature, which rarely had the latest food recipe updates for each child's age category. Besides that,

another factor that caused a decline in the intensity of the use of the application was the internal factor. Subjects usually paid less attention to their children when they reached the age of 2.

Table 2. Proportion of subjects based on length of use of the "Tentang Anak" application

Features	Length of App Use								
			6 – 10 months			> 10 months			Total
	n	%	Mean ± SD		n	%	Mean ± SD		Mean ± SD
Recipe									
Yes	78	75.7	143.3 ± 115.3		15	14.5	102.4 ± 86.4		245.7 ± 201.7
No	8	7.7			2	1.9			
Growing									
Yes	84	81.5	10.6 ± 23.9		17	16.5	8.6 ± 9.7		19.2 ± 33.6
No	2	1.9			0	0.0			
All features									
Yes	86	83.5	45.7 ± 30.9		17	16.5	39.7 ± 27.4		85.4 ± 58.3
No	0	0.0			0	0.0			

The average duration of using all features on the "Tentang Anak" app was 85.4 minutes/week. The average duration of accessing the recipe feature on the "Tentang Anak" app was 245.7 minutes/week. The average duration of accessing the growing feature on the

"Tentang Anak" application was 19.2 minutes/week. The higher the intensity of the application use, the higher the users' consumptive behavior of users, and conversely, the lower the intensity of the application use, the lower the users' consumptive behavior²⁰.

Table 3. Frequently accessed features of the "Tentang Anak" application

Use of the "Tentang Anak" Application	n	%
Frequently Accessed Features		
Grow	101	98.1
Recipe	93	90.3
Flower	90	87.4
Ask the Expert	84	81.6
Article	81	78.6
Shop	72	69.9
Vaccines	20	19.4
The Game	18	17.5
Screening	12	11.7
Complaint	10	9.7
Event	9	8.7
Directory of Pediatricians	2	1.9
Purpose of Using the "Tentang Anak" Application		
Search for Information on Child Development, Nutrition, and Health	103	100.0
Record Food Recipes and Find Out the Nutritional Content of Food	88	85.4
Consultation with Experts about Children	88	85.4
Shopping for Children's Needs	72	69.9
Looking for Fun Game Ideas for Kids	27	26.2
Looking for Event/Webinar Information	21	20.4

Table 3 shows that >80% of the application features frequently accessed by the subjects were growth, recipe, development, and Ask the Expert features. The main purposes of the subjects using the "Tentang Anak" application were to find information about the growth and development, nutrition, and health of under-two children, record food recipes, find out the nutritional content of under-two children's food in a day, and consult with the experts about the health and nutrition of under-twos with a percentage of >85%.

Furthermore, the development feature was not analyzed because it contained information about children's motor and sensory development, focusing on their psychological condition. Meanwhile, the Ask an Expert feature was less interactive or less responsive in answering the subjects' questions about the nutrition and health issues of under-two children. Some of the subjects' recommendations related to the ask an expert feature can be seen in Table 4.

Table 4. Subjects' opinions on the "Ask an Expert" feature

Respondents'	Opinion on the "Ask an Expert" Feature
1	"Ask the expert is still very unresponsive, especially those that are not paid. The paid ones are also lacking, like other online counseling facilities. Provide an SOP (consultation procedure) so that it can be clearer and more organized until the explanation of the solution."
2	"Not all questions are answered on the as the expert feature."
3	"Not all questions are answered by the Ask the Expert feature. Suggestion: the maximum number of daily questions should be limited, and the question detected to be the same as another question is not accepted but can be shown that this question is the same as that question and the solution."
4	"Ask the expert question should answer all questions."
5	"Improve the expert question feature. There are still many unanswered questions."

Mothers' Knowledge, Attitudes, and Behavior in Monitoring the Nutritional Status of Under-two Children

Based on the research results, the mean score of mothers' knowledge in monitoring the nutritional status of under-two children using the "Tentang Anak" application was 92.2 ± 15.0 SD (Table 5). Based on this mean value, the mothers' knowledge fell in the good category because most subjects had high education levels and used the application quite intensely (Tables 1 and 2). This result is in line with other studies that have

concluded that the time (in years) spent studying positively affects health, which means that the study duration can develop the ability to lead a productive life and will ultimately affect health²¹. The higher the person's education, the easier it is for a person to obtain information. The more information received, the more health knowledge received. Besides that, other studies have mentioned that the higher the intensity of using informative media, the more knowledge is received²². This condition will certainly affect a person's knowledge.

Table 5. Mean and standard deviation of subject knowledge, attitude, and behaviour scores

	Score (1-100)	Mean \pm SD
Knowledge		92.2 ± 15.0
Attitude		91.0 ± 13.3
Behaviour		79.2 ± 13.3

The study results showed that the mean score of mothers' attitudes in monitoring the nutritional status of under-two children using the "Tentang Anak" application was 91.0 ± 13.3 SD (Table 5). Based on the mean value and standard deviation, the mothers' attitudes fell in the positive category because most subjects had good knowledge from a higher education background (Table 1). The higher a person's education, the easier it is for a person to acquire knowledge. Another study concluded that knowledge strongly affected a person's attitude²³. The higher one's knowledge will produce the proper attitude.²⁴ The results showed that the mean score of mothers' behavior in monitoring the nutritional status of under-two children using the "Tentang Anak" application was 79.2 ± 13.3 SD. Based on the mean value and standard deviation, the score fell in the good category because most subjects had good knowledge. In general, receiving information through various media may have good effects in the form of increasing knowledge, changing attitudes, driving behavior, or attracting our attention.

children, as seen from the simple linear regression model in Figure 1. The increased scores in the regression model did not increase sharply as the duration of the use of the application increased.

The recipe feature in this study also had no effect on behavior. In general, the behavior score (<80) in the simple linear regression model was the lowest compared to knowledge and attitude scores (Figure 1). A person's behavior is not only affected by one factor. This study had limitations in exploring other factors that might determine behavior. Predisposing, enabling, and reinforcing factors are three factors that determine behavior. Predisposing factors are factors that enable a person to perform a behavior. Some of these factors are education, socioeconomic aspects, and the value system adopted by society. Looking at the characteristics of the subjects, most of them are working mothers²⁵.

Mothers' occupations may affect their behavior in feeding their children²⁶, and it may be a factor related to the absence of a significant association between the duration of using the recipe feature and the mother's behavior in monitoring the nutritional status of the under-two children. In addition, there was also supporting information when researchers interviewed mothers of under-two children related to the "Tentang Anak" application, i.e., the mothers suggested that the menus in the recipe feature were made from local food ingredients and suitable for each child's condition. A systematic review study that analyzed 11 nutrition education programs using smartphone applications and websites showed that digital-application-based nutrition education programs could reach a wide audience, but the interactive involvement of the expert/counselor was a key factor in achieving program effectiveness. Therefore,

Effect of the Use of the Application on Knowledge, Attitudes, and Behavior

Based on Figure 1, the duration of use of all features of the "Tentang Anak" application and growing feature significantly affect the users' knowledge, attitudes, and behavior ($p \leq 0.05$). In contrast, the recipe feature only has a significant effect on knowledge and attitudes but has no effect on users' behavior. However, the strength of the effect of all features was weak ($R^2 < 0.33$) because the majority of respondents already had good knowledge, attitude, and behavior scores (>75) in monitoring the nutritional status of under-two

digital nutrition promotion requires a combination of credentials, interactivity, personalization, and appropriate feedback²⁷.

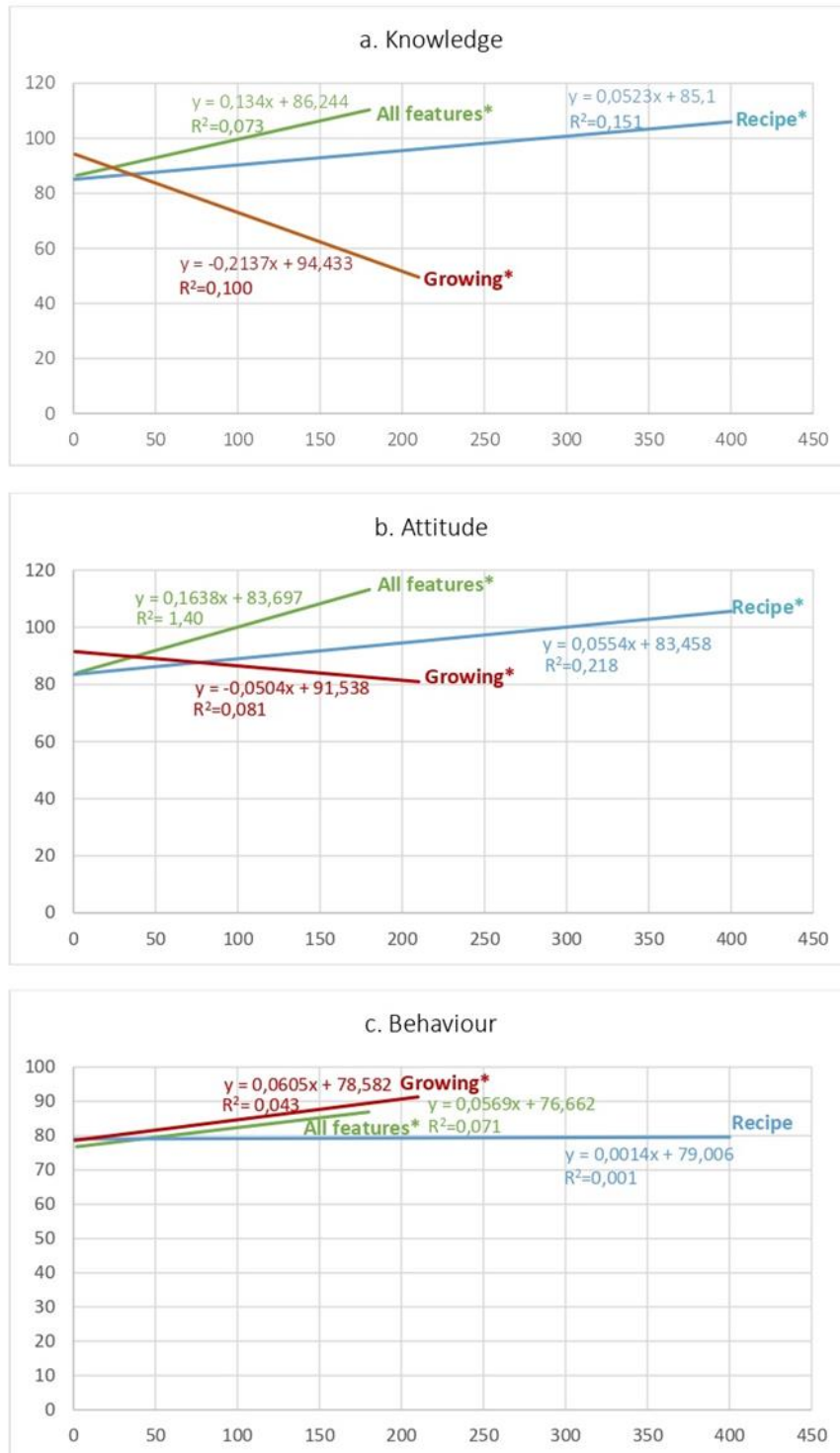


Figure 2. Simple linear regression graph of the effect of application use on knowledge, attitudes, and behavior

¹R² = R Square (coefficient of determination)

R²: Strong (≥0.67); Moderate (≥0.33 but ≤0.67); and Weak (≥0.19 but ≤0.33)

²(*) significance value ≤0.05 (p value ≤0.05)

The effect of duration of using all features, growth features, and recipe features in more detail is shown in Figure 1a. The simple linear regression test

results showed that the use of the "Tentang Anak" application had a significant effect on mothers' knowledge in monitoring the nutritional status of under-

two children. The relationship between X_1 (overall duration of using all features of the "Tentang Anak" application in a week) and Y_1 (mothers' knowledge in monitoring the nutritional status of under-two children) showed a strong relationship ($R = 0.270$) and a positive pattern, meaning that every additional minute of duration using all features of the "Tentang Anak" application in a week increased the score of mothers' knowledge in monitoring the nutritional status of under-two children by 0.134. The coefficient value with a determination of 0.073 ($R^2 < 0.33$) meant that the mother's knowledge in monitoring the nutritional status of infants (Y_1) was weakly affected by 7.3% by the duration of respondents using all features of the application "Tentang Anak" in a week (X_1). The statistical test results showed that there was a significant effect of X_1 (duration of using the "Tentang Anak" application in a week) on mothers' knowledge in monitoring the nutritional status of under-two children ($p = 0.006 \leq 0.05$). The association between X_2 (duration of accessing the recipe feature in a week) and Y_1 (mothers' knowledge in monitoring the nutritional status of under-two children) showed a strong relationship ($R = 0.389$) and a positive pattern, meaning that every additional minute of duration of accessing the recipe feature in a week increased the score of mothers' knowledge in monitoring the nutritional status of under-five children by 0.052. The coefficient value with a determination of 0.151 ($R^2 < 0.33$) meant that the mother's knowledge in monitoring the nutritional status of under-two children (Y_1) was weakly affected by 15.1% by the duration of accessing the recipe feature in a week (X_2). The statistical test results showed that there was a significant effect of X_2 (duration of accessing the recipe feature in a week) on the mother's knowledge in monitoring the nutritional status of under-two children ($p = 0.001 \leq 0.05$).

The association between X_3 (duration of accessing the growing feature in a week) and Y_1 (mother's knowledge in monitoring the nutritional status of under-two children) showed a strong relationship ($R = -0.316$) and a negative pattern, meaning that every additional minute of duration of accessing the growing feature in a week decreased the score of mother's knowledge in monitoring the nutritional status of under-two children by 0.214. The coefficient value with a determination of 0.100 ($R^2 < 0.33$) meant that the mother's knowledge in monitoring the nutritional status of under-five children (Y_1) was weakly affected by 10.0% by the duration of accessing the growing feature in a week (X_3). The statistical test results showed that there was a significant effect of X_3 (duration of accessing the growing feature in a week) on the mother's knowledge in monitoring the nutritional status of under-two children ($p = 0.001 \leq 0.05$).

These study results align with other studies that have shown that smartphones are effective in health services because they are widely used, easy to carry, and can present information personally for communication, good information, and increase the users' knowledge²⁸. This study is also in line with Khasanah's research, which has shown that the parents' role in monitoring children's nutritional status is essential. Parents' knowledge is closely related to child growth and development. Parents

with children can increase their knowledge by using the child health application to learn about children's health and find early signs of child growth and development. It can be concluded that the use of the application "Tentang Anak" has a weak significant effect on mothers' knowledge in monitoring the nutritional status of under-two children.

Figure 1b shows that the use of the "Tentang Anak" application has a significant effect on the mothers' attitudes in monitoring the nutritional status of under-two children. The relationship between X_1 and Y_2 (mothers' attitudes in monitoring the nutritional status of under-two children) showed a strong ($R = 0.374$) and a positive trend, meaning that every additional minute of using all features of the "Tentang Anak" application in a week increased the mothers' attitude scores in monitoring the nutritional status of under-five children by 0.164. The R^2 value was 0.140 ($R^2 < 0.33$), meaning that mothers' attitudes in monitoring the nutritional status of under-two children were weakly affected by 14.0% by the duration of respondents using all features of the "Tentang Anak" application in a week (X_1). The statistical test results showed that there was a significant effect of the time of using all application features in a week on the mothers' attitudes in monitoring the nutritional status of under-two children ($p = 0.001 \leq 0.05$).

The relationship between X_2 and Y_2 also showed a strong ($R = 0.467$) and a positive relationship trend, meaning that every additional minute of time using the recipe feature on the "Tentang Anak" application in a week increased the mother's attitude scores in monitoring the nutritional status of under-two children by 0.055. The R^2 value was 0.218 ($R^2 < 0.33$), meaning that mothers' attitudes in monitoring the nutritional status of under-two children were weakly affected by 21.8% by the duration of accessing the recipe feature in a week (X_2). The statistical test results showed that there was a significant effect of the time of using the recipe feature in a week on the mother's attitudes in monitoring the nutritional status of under-two children ($p = 0.001 \leq 0.05$).

The relationship between X_3 and Y_2 similarly showed a strong ($R = 0.284$) and a positive relationship trend, meaning that every additional minute of time using the growing feature on the "Tentang Anak" application in a week increased the mothers' attitude scores in monitoring the nutritional status of under-two children by 0.050. The R^2 value was 0.081 ($R^2 < 0.33$), meaning that the mother's attitude in monitoring the nutritional status of infants was weakly affected by 8.1% by the duration of accessing the growth feature in a week (X_3). The statistical test results showed a significant effect of the time of using the growing feature in a week on the mother's attitudes in monitoring the nutritional status of under-two children ($p = 0.007 \leq 0.05$).

These results align with a study that has shown that using health applications can significantly improve mothers' knowledge and attitudes in monitoring children's growth and consumption²⁹. This study is also in line with the research explaining that the use of health applications significantly increases mother's knowledge and attitudes. The use of applications is also an effective way to educate mothers in monitoring their children's growth and development³⁰. Another study has proven

that smartphone application is an effective teaching method³¹. It can be concluded that the use of the "Tentang Anak" application has a significant weak effect on the mothers' attitudes in monitoring the nutritional status of under-two children.

Figure 1c shows that the use of the "Tentang Anak" application has a significant effect on the mothers' behavior in monitoring the nutritional status of under-two children. The association between X_1 and Y_3 (mothers' behavior in monitoring the nutritional status of under-two children) showed a close relationship ($R = 0.266$) and a positive trend, meaning that every minute of increased time using all features in the "Tentang Anak" application for a week increased the score of mothers' behavior in monitoring the nutritional status of under-two children by 0.057. The R^2 value of 0.071 ($R^2 < 0.33$) meant that the mother's behavior in monitoring her child's nutritional status was weakly affected by 7.1% by the duration of respondents using all features on the "Tentang Anak" application in a week (X_1). The statistical test results showed that there was an apparent effect of the time of using all application features in a week on the mother's behavior in monitoring the nutritional status of under-two children ($p = 0.007 \leq 0.05$).

The association between X_2 and Y_3 showed a close relationship ($R = 0.025$) and had a positive trend, meaning that every minute of increased time using the recipe feature on the "Tentang Anak" application in a week increased the mothers' behavior score in monitoring the nutritional status of under-two children by 0.001. R value² of 0.001 ($R^2 < 0.33$) meant that the mothers' behavior in monitoring their children's nutritional status was weakly affected by 0.1% by the duration of respondents using the recipe feature on the "Tentang Anak" application in a week (X_2). The statistical test results showed that there was no significant effect of the time of using the recipe feature in a week on the mothers' behavior in monitoring the nutritional status of under-two children ($p = 0.802 \geq 0.05$).

The association between X_3 and Y_3 also showed a close relationship ($R = 0.207$) and had a positive trend, meaning that every minute of increased time using the growth feature in the "Tentang Anak" application for a week increased the score of mothers' behavior in monitoring the nutritional status of under-two children by 0.060. The R value² of 0.043 ($R^2 < 0.33$) meant that the mother's behavior in monitoring the nutritional status of her child was weakly affected by 4.3% by the duration of respondents using the growing feature on the "Tentang Anak" application in a week (X_3). The statistical test results showed that there was a significant effect of the time of using the growth feature in a week on the mothers' behavior in monitoring the nutritional status of under-two children ($p = 0.036 \leq 0.05$).

The results of this study showed that the recipe feature did not affect behavior, and the behavior score (<80) in the simple linear regression model was the lowest compared to knowledge and attitude scores. A person's behavior is not only affected by one factor. This study had limitations in exploring other factors that might determine behavior. Based on the behavior concept, three factors determine behavior, i.e., predisposing, enabling, and reinforcing factors³². Predisposing factors

are factors that enable a person to perform a behavior. These factors are education, socioeconomic aspects, and the value system adopted by society. Looking at the subjects' characteristics, most of them are working mothers. According to some studies, a mother's occupation can affect her behavior in child feeding³³.

The mother's employment status will affect her social relationships with many people outside the family, allowing her to obtain many positive and negative information from the outside social environment. It may be a factor related to the absence of a significant effect of the duration of using the recipe feature on the mothers' behavior in monitoring the nutritional status of the under-two children. In addition, supporting information was obtained when researchers interviewed mothers of under-two children related to the "Tentang Anak" application, i.e., they suggested that the recipes should be made using local food ingredients and suitable for the condition of each subject.

CONCLUSIONS

In general, the "Tentang Anak" application can be a good literacy medium for monitoring the nutritional status of respondents who work, have higher education, and live in urban areas. This is in line with the knowledge, attitude, and behavior scores related to the monitoring of the majority of respondents as application users, which are categorized as good. The results of this study showed that the duration of use of all application features has a significant effect on knowledge, attitudes, and behaviors although it was weak. Meanwhile, the duration of the use of the growth and prescription features also had a weak significant effect on knowledge and attitudes. Most of the features in this application are still one-way communication. The "Ask Expert" feature in this application is still limited in answering user questions. In order to have a strong effect on improving the knowledge, attitudes and behavior of respondents, it is hoped that the available features, especially "Ask an Expert", can be more responsive. Interactive features can provide feedback for discussion to answer the need for more personalized information and solutions for users, especially about monitoring nutritional status and growth and development problems of under-two children; thereby, it has the potential to encourage changes towards better nutritional behavior in a sustainable manner.

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Author Contributions

RS: conceptualisation, research, methodology, writing-original draft, and editing; WH: conceptualisation, supervision, methodology, formal analysis, final writing and editing.

REFERENCES

- Kusumawati, D. E., Latipa, L. & Hafid, F. Status Gizi Baduta dan Grafik Pertumbuhan Anak Usia 0-23 Bulan di Wilayah Kerja Puskesmas Pantoloan. *Poltekita J. Ilmu Kesehat.* **14**, 104–110 (2020).
- Setiyowati, E. Hubungan Antara Kejadian Penyakit Infeksi, Asi Eksklusif Dan Pola Pemberian Makan Dengan Status Gizi Baduta Di Kelurahan Rejomulyo Kota Madiun. (*Stikes Bhakti Husada Mulia Madiun*, 2018).
- SSGI. Hasil Survei Status Gizi Indonesia. *Kementeri. Kesehat. Republik Indonesia.* (2023).
- Shodikin, A. A., Mutalazimah, M., Muwahhidah, M. & Mardiyati, N. L. Tingkat Pendidikan Ibu Dan Pola Asuh Gizi Hubungannya Dengan Kejadian Stunting Pada Balita Usia 24-59 Bulan. *J. Nutr. Coll.* **12**, 33–41 (2023).
- Baxter, C., Carroll, J. A., Keogh, B. & Vandelandotte, C. Assessment of mobile health apps using built-in smartphone sensors for diagnosis and treatment: Systematic survey of apps listed in international curated health app libraries. *JMIR mHealth uHealth* **8**, (2020).
- Rahmawati, R. N., Setyonugroho, W. & Kurniawati, H. F. Scoping Review Tentang Penggunaan Mobile App Dalam Pemantauan Kesehatan Anak Balita. *Jakayah J. Ilm. Umum dan Kesehatan.* *Aisyiyah* **6**, 119–131 (2022).
- Yani, A. Utilization of Technology in the Health of Community Health. *Promot. J. Kesehatan Masy.* **8**, 97 (2018).
- West, J. H. *et al.* Controlling your “app”etite: How diet and nutrition-related mobile apps lead to behavior change. *JMIR mHealth uHealth* **5**, 1–10 (2017).
- Ananda, R. F. & Siregar, E. S. Pengaruh Diskon Harga Dan Endorsment Terhadap Keputusan Pembelian Di Tiktok (Studi Pada Mahasiswa Fakultas Ekonomi Dan Bisnis Islam UIN STS Jambi). *Journal Sains Student Research* **1**, 144–158 (2023).
- Aresti, N. G., Lukmantoro, T. & Ulfa, N. S. Pengaruh Tingkat Fear of Missing Out (FoMO) dan Tingkat Pengawasan Orang Tua terhadap Tingkat Kecanduan Penggunaan Tiktok pada Remaja. *Interaksi Online* **11**, 272-284. (2023).
- Indrayani, H. PENERAPAN TEKNOLOGI INFORMASI DALAM PENINGKATAN EFEKTIVITAS, EFISIENSI DAN PRODUKTIVITAS PERUSAHAAN Oleh : Henni Indrayani Abstraksi. *J. El-Riyasah* **3**, 48–56 (2017).
- Kusmayadi, E. Dasar-Dasar Teknologi Informasi dan Komunikasi. *Univ. Terbuka* 278–300 (2015).
- Wijayanti, I. T. *et al.* *Judul Pengantar Kesehatan Ibu dan Anak.* (PT. Sada Kurnia Pustaka, 2023).
- Meylani, E., Waleleng, G. J. & Kalangi, J. S. Pengaruh Penggunaan Aplikasi Halodoc terhadap Pemenuhan Kebutuhan Informasi Kesehatan di Kelurahan Paniki Bawah Kecamatan Mapanget Kota Manado. *Acta Diurna Komun.* **3**, 1–8 (2021).
- Nisa Karima, Nur Ayu Virginia Irawati, Giska Tri Putri, S. M. Optimalisasi Aplikasi Deteksi Tumbuh Kembang Berbasis Android Di Puskesmas Simpung Bandar Lampung Pada Masa Pandemi COVID-19. *J. Pengabd. Masy. Ruwa Jurai.* **6**, 103-106. (2021).
- Khasanah, N. N., Wuriningsih, A. Y. & Sari, D. W. P. Optimalisasi Pemantauan Tumbuh Kembang Balita Melalui Kelompok Kader Mandiri-kreaTif-dAn-Peduli Stunting (Man-TAPS) di Posyandu Manggis 4 Kelurahan Karangroto. *Prosiding Seminar Nasional Unimus.* **2**, 55–63 (2019).
- Mail, N. A., Berek, P. A. L. & Besin, V. Gambaran Tingkat Pengetahuan Remaja Tentang Kesehatan Reproduksi Di Smpn Haliwen. *J. Sahabat Keperawatan* **2**, 1–6 (2020).
- Adhikari, D., Khatri, R. B., Paudel, Y. R. & Poudyal, A. K. Factors Associated with Underweight among Under-Five Children in Eastern Nepal: Community-Based Cross-sectional Study. *Frontiers in Public Health* **5**, 1–9 (2017).
- Handayani, S. T. Hubungan Pengetahuan, Sikap Dengan Perilaku Konsumen Generasi Milenial Dalam Pembelian Kosmetik Dan Obat Herbal Melalui Pembelian Online Di Indonesia. (*Doctoral dissertation, Universitas Islam Sultan Agung Semarang*, 2022).
- Pangestu, R. M., Meiyuntariningsih, T., Aristawati, A. R. & Psikologi, F. Hubungan Intensitas Penggunaan Aplikasi Tiktok Dengan Perilaku Konsumtif. (*Doctoral dissertation, Universitas 17 Agustus 1945 Surabaya*, 2022).
- Intan, K. ; Pratiwi, G., Kalimantan, J. & Jember, J. T. The Effect Of ‘Status Gizi Balita’ Android Application On mother’s knowledge In Nutritional Status Monitoring of Ages 12-24 Months ". *Jurnal kebidanan Akademi Kebidanan Jember* **2**, 8–14 (2018).
- Yuliana, Y. Pengaruh Pendidikan Asrama Dan Pembentukan Karakter Terhadap Hasil Belajar Sosiologi Siswa PPLP Sumatera Barat Kelas XI IPS SMA N 5 Padang. (*Univ. PGRI Sumatera Barat*, 2017).
- Sari, A. N. Hubungan Pengetahuan Dengan Sikap Mengenai Perilaku Seksual Remaja Di SMK Kesehatan Donohudan Boyolali. *Jurnal Kebidanan Indonesia* **7**, 119–128 (2016).
- Darsini, Fahrurrozi & Cahyono, E. A. Pengetahuan; Artikel Review. *J. Keperawatan.* **12**, 97 (2019).
- Ayu Indah Rachmawati, Ratna Dewi Puspitasari, E. C. Faktor-faktor yang Memengaruhi Kunjungan Antenatal Care (ANC) Ibu Hamil Factors Affecting The Antenatal Care (ANC) Visits on Pregnant Women. *Med. J. Lampung Univ.* **7**, 72–76 (2017).
- Lestiarini, S. & Sulistyorini, Y. Perilaku Ibu pada Pemberian Makanan Pendamping ASI (MPASI) di Kelurahan Pegirian. *J. PROMKES* **8**, 1 (2020).
- Zarnowiecki, D. *et al.* A systematic evaluation of digital nutrition promotion websites and apps for

- supporting parents to influence children's nutrition. *Int. J. Behav. Nutr. Phys. Act.* **17**, 1–19 (2020).
28. Izah, N., Bakhar, M. & Andari, I. D. Pengaruh Penggunaan Aplikasi Stimulasi Tumbuh Kembang Terhadap Pengetahuan Ibu Dan Pertumbuhan Balita Umur 9 – 24 Bulan. *Siklus J. Res. Midwifery Politek. Tegal* **7**, 328 (2018).
29. Amaliah, N. Pemakaian Aplikasi Mobile 'Balita Sehat' Meningkatkan Pengetahuan dan Sikap Ibu dalam Memantau Pertumbuhan dan Perkembangan Balita. *Bul. Penelit. Kesehat.* **46**, 155–168 (2018).
30. Husna, I. A., & Rokhaidah. Pengetahuan Ibu Mengenai Aplikasi Pemantauan Kesehatan Anak. *Indonesian Journal of Health Development* **3**, 216–221 (2021).
31. Bonabi, M., Mohebbi, S. Z., Martinez-Mier, E. A., Thyvalikakath, T. P. & Khami, M. R. Effectiveness of smart phone application use as continuing medical education method in pediatric oral health care: A randomized trial. *BMC Med. Educ.* **19**, 1–7 (2019).
32. Ngurah, A. A. K. Faktor-Faktor yang Mempengaruhi Perilaku Kunjungan Masyarakat Terhadap Pemanfaatan Pelayanan Posyandu di Desa Pemecutan Kelod Kecamatan Denpasar Barat. *J. Dunia Kesehat.* **5**, 29–39 (2016).
33. Mustika, T. D. & Wahini, M. Pola Asuh Makan Antara Ibu Bekerja dan Tidak Bekerja dan Faktor Yang Mempengaruhi Status Gizi Anak Usia Sekolah Dasar. *E-Journal* **4**, 162–166 (2019).