



**DEVELOPMENT OF ANDROID-BASED EDUCATIONAL APPLICATION
"ASTUTIK-APP" AS STUNTING SCREENING MEDIA IN NORTH SUMATRA**

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ABSTRACT

Stunting is a serious nutritional problem that is still high in Indonesia, including in North Sumatra Province. Based on SSGI data (2022), the prevalence of stunting in Indonesia reached 21.6%. The government targets a reduction in this prevalence to 14% by 2024, with an annual decrease of 3.8%. However, in North Sumatra, despite a decrease from 25.8% in 2021 to 21.1% in 2022, several areas such as Langkat (39.4%), Samosir (30.8%), and Tanjung Balai City (26.9%) still have a high prevalence of stunting. Objective: "ASTUTIK-APP" aims to provide information and education to parents about stunting in a complete, accurate and reliable manner. Not only complete, the ASTUTIK application also carries an up-to-date concept so that all users can find out the latest information related to stunting such as educational videos related to stunting. Results: The results of the feasibility study of the "ASTUTIK" APP Application from the completeness of features, Effectiveness and Accessibility are very high compared to the existing Stunting Application. Conclusions: The results of the feasibility study of the "ASTUTIK" APP Application from the completeness of features, Effectiveness and Accessibility are very high compared to the existing Stunting Application.

Keywords: intervention sensitive; knowledge; stunting

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INTRODUCTION

Stunting is a serious nutritional problem that is still a big challenge in Indonesia, especially in toddlers. The latest data from the 2022 Indonesian Nutrition Status Survey (SSGI) shows that the prevalence of stunting in Indonesia reaches 21.6% (Budiono et al., 2024). This puts Indonesia in the category of countries with significant nutritional problems. In an effort to overcome this problem, the government has set a target to reduce the prevalence of stunting to 14% by 2024, which requires a consistent annual decrease of 3.8%. Despite efforts to achieve this target, conditions on the ground show that there is still a lot of work to be done (Rochmatun Hasanah et al., 2023). In North Sumatra Province, the prevalence of stunting also shows alarming numbers. Based on SSGI data, the prevalence of stunting in this province has decreased from 25.8% in 2021 to 21.1% in 2022, but the decline rate is only 3.3% (Puspitasari, 2022). This indicates that the efforts made are still not effective enough. Several areas in North Sumatra, such as Samosir Regency (26.6%), Langkat Regency (18.9%), and Tanjung Balai City (26.9%), have a stunting prevalence that is still higher than the provincial average. This shows the need for a more focused and innovative approach to address this problem (Hidayat & Syamsiyah, 2021).

The causes of stunting are multifactorial and cannot be underestimated (Purwanto & Wibisono, 2023). One of the main factors contributing to the high stunting rate is the lack of

family knowledge about the importance of early detection of child growth and development problems (Miko & Al-Rahmad, 2017). Low knowledge about nutrition and children's health can cause parents to be unable to provide the right intake and the care needed (Pusparina et al., 2022). Therefore, increasing parental knowledge is one of the important steps in efforts to overcome stunting (Rohmah, 2021). In this context, the stunting control program implemented by the government is grouped into two categories, namely sensitive interventions and specific interventions (Zulfikar et al., 2023). The study will focus on sensitive interventions, which aim to provide education and skills to parents (Putri et al., 2020). Through this intervention, it is hoped that parents can understand the importance of good parenting, early childhood stimulation, and monitoring children's growth and development as an effort to prevent stunting (Yuliana & Sopacua S.Sos, 2022).

Realizing the importance of this knowledge, a system is needed that can help parents in detecting early problems with children's growth and development (FITRIAMI & Galaresa, 2021). Therefore, this research aims to develop an application called "ASTUTIK-APP" (Healthy Children Free of Stunting Indonesia Strong). This application is designed to provide complete and accurate educational information about stunting, as well as to help parents understand the early signs of stunting in children (Widiany et al., 2022). "ASTUTIK-APP" is part of artificial intelligence technology designed to address cognitive problems related to parental knowledge. This application will process stunting-related data automatically and efficiently, and provide relevant information to users. In this way, the process of early detection of stunting becomes more effective and efficient compared to conventional methods that are often time-consuming and costly (Winowatan et al., 2017).

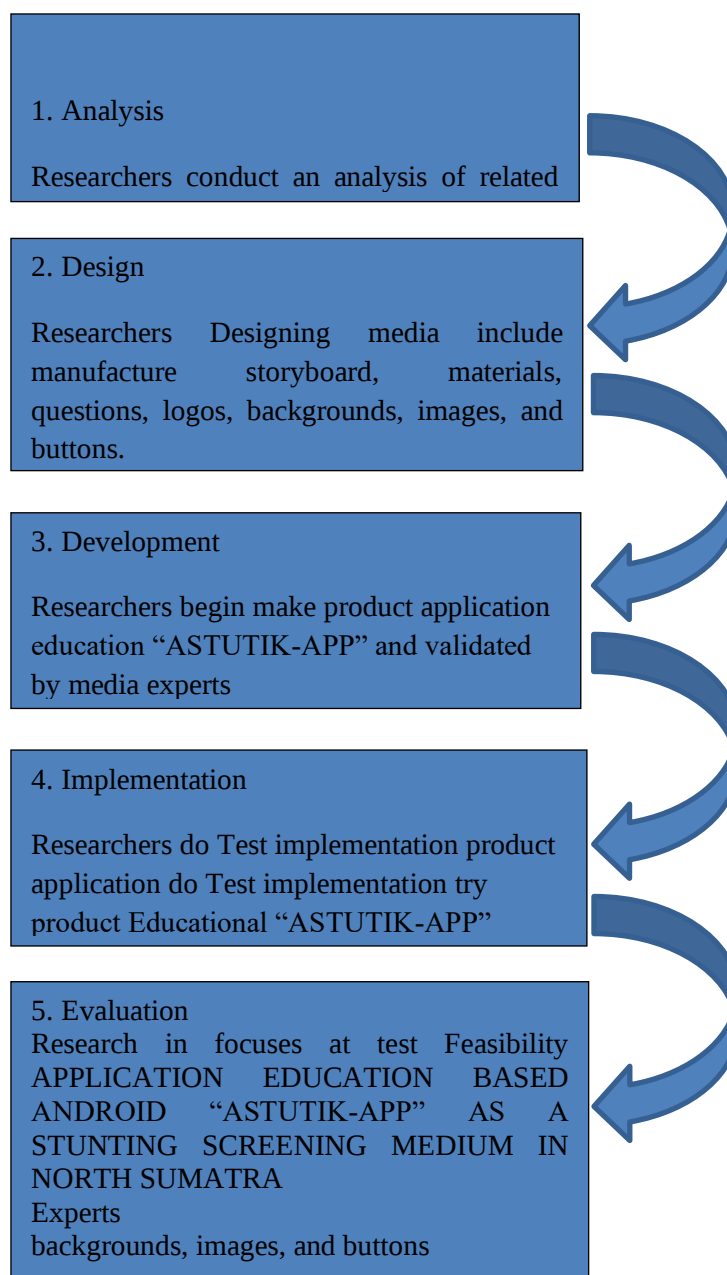
In the era of Industry 5.0, where the use of the internet is increasingly widespread, people in both urban and rural areas are no strangers to smartphone technology (Rusana et al., 2023). This opens up great opportunities for the application of "ASTUTIK-APP" among the community. Thus, it is hoped that this application can be widely accessed, so that the entire community, especially in North Sumatra, can contribute to efforts to detect stunting early (Rolando, 2022). Based on this background, this study aims to develop an Android-based educational application "ASTUTIK-APP" as a stunting screening media in North Sumatra. This research is expected to provide concrete solutions in overcoming the problem of stunting, as well as increasing parents' knowledge and awareness about children's health and nutrition (Tampake et al., 2022). and The feasibility of the Android-based educational application "ASTUTIK-APP" as a stunting screening medium

METHOD

The procedure for implementing development according to Wina Sanjaya with the SDLC WATER FALL ADDIE model can be explained as follows: At this stage, the main activities are to analyze the need for the development of new learning models/methods and analyze the feasibility and conditions for the development of new learning models/methods. This activity is a systematic process that starts from setting learning objectives, designing teaching and learning scenarios and activities, designing learning tools, designing learning materials, and learning outcome evaluation tools. Development in the ADDIE model contains product design realization activities. At this stage, the designs and methods that have been developed are implemented in real situations, namely in the family.

Evaluation is carried out in two forms, namely formative and summative evaluation.

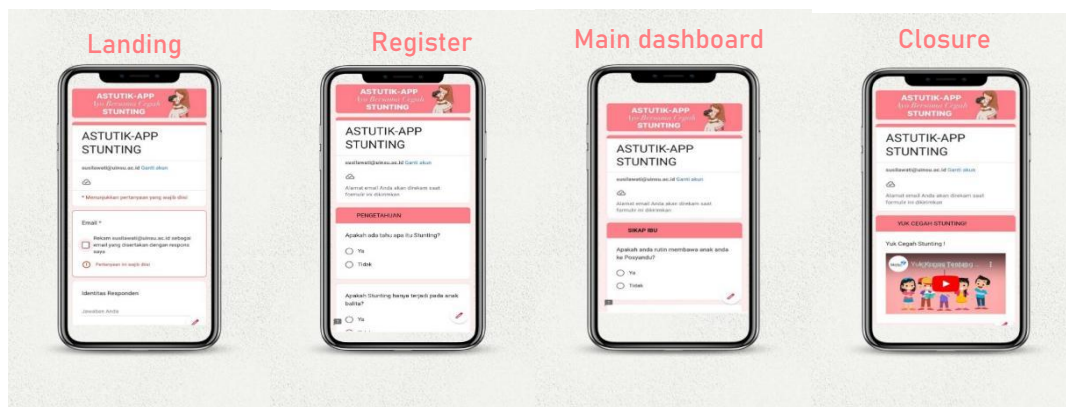
Research Outline



RESULT

Creation of the 'ASTUTI"-APP Application to provide information and education about Stunting Screening in a complete, accurate and reliable manner. The Educational Screening Model contained in the "ASTUTIK-APP" Application is made easy and understandable for users, especially for mothers who have toddlers. ASTUTIK-APP Application Link <https://forms.gle/wiqVkUeCNcMbUGWg8>

The Working Mechanism of the ASTUTIK-APP Application is



Steps to access the "ASTUTIK-APP" Application

Landing

The landing contains the homepage of the "ASTUTIK-APP" application equipped with a portal to access the registration equipped with the application User's email information.

Registration

Registration is carried out after accessing the Application Link, in the list menu there are several items that must be filled in, including Respondent Identity, Name, Mother's Age, Address, Occupation, Last Education, Number of Children, Age of Toddler, Gender of Toddler

Main dashboard

The Main dashboard can be accessed after the registration is completed, in the Main dashboard will be displayed in measuring:

a. Knowledge

Knowledge contains about stunting, knowledge about child growth and development, knowledge about nutritional intake, breastfeeding, sanitation, immunization

b. Mother's Attitude

Mother's attitude contains about Posyandu, Child feeding, exclusive breastfeeding, Nutritional intake

c. Socio-Economic

Socio-economic content contains family income in meeting nutritional intake, havin insurance, and assistance obtained by the government

d. Socio-Cultural

ocio-Cultural contains about extended family support in exclusive breastfeeding, the tradition of feeding newborns (before breastfeeding), beliefs/traditions of feeding patter

e. Utilization of Health Facilities

The use of health facilities contains how often to use posyandu health facilities. Get nutrition counseling, attend classes for pregnant women, have a KMS card.

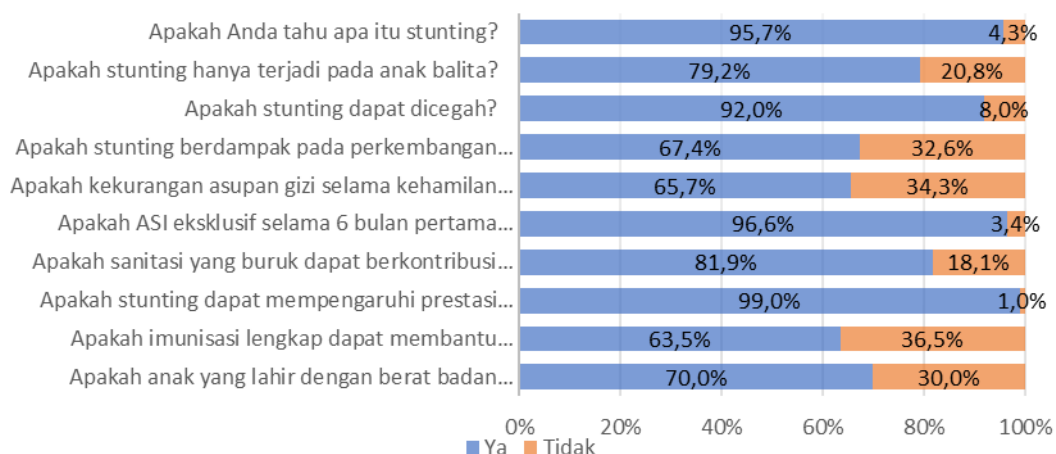
Clousur

Clousure contains an interactive video of stunting prevention efforts with a duration of 2:17 seconds.

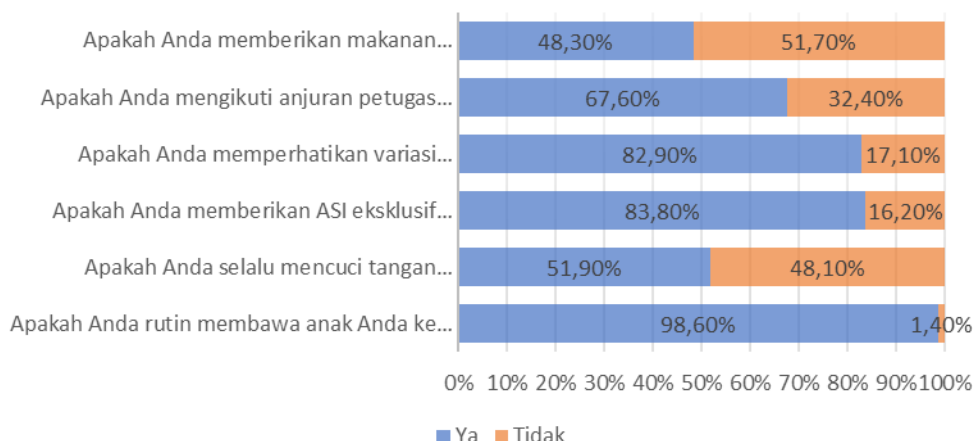
Family assessment with the existence of an android-based educational application "ASTUTIKAPP" as a stunting screening medium in North Sumatra

From the results of the assessment of the use of the "ASTUTIK-APP" Application in 3 Regencies and Cities in North Sumatra, namely Langkat Regency, Samosir Regency and Tanjung Balai City which are targeted and users of the ASTUTIK-APP Application for mothers who have toddlers and health cadres as shown in the following table:

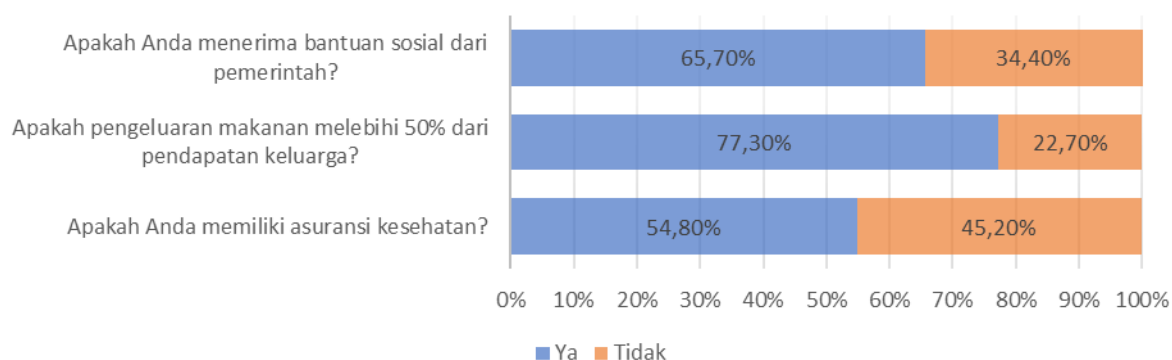
Knowledge



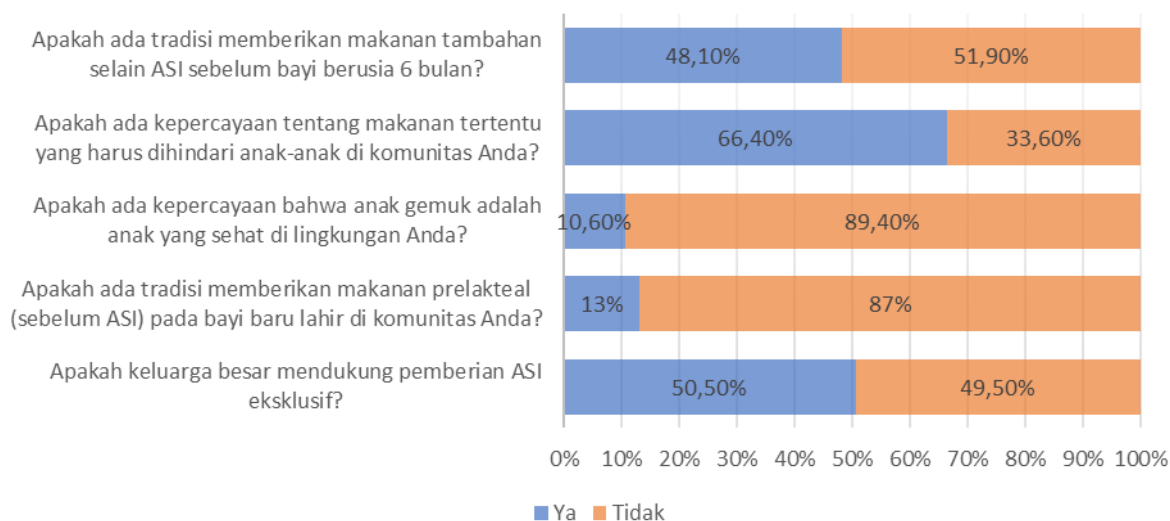
Mother's Attitude



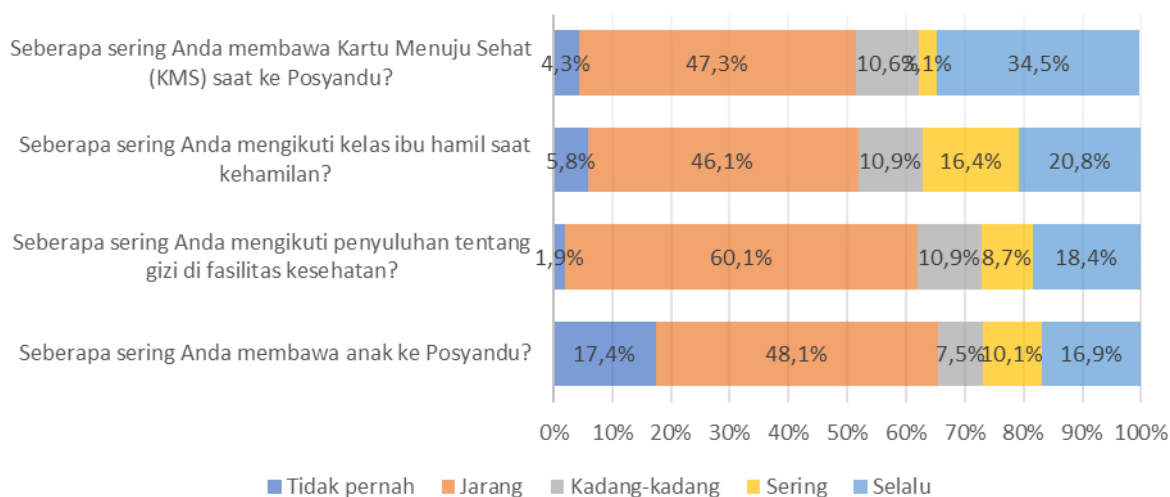
Socio-Economic



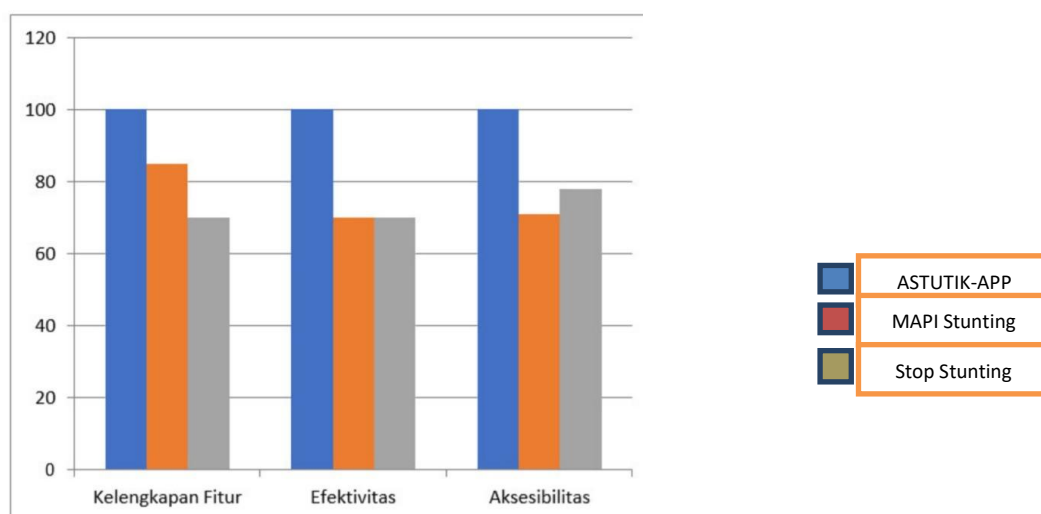
Socio-cultural



Utilization of health facilities



The feasibility of the android-based education application "ASTUTIK-APP" as a stunting screening medium



DISCUSSION

With increasing awareness regarding children's health, especially toddlers, the issue of stunting has become a major focus in various countries, including Indonesia. Stunting, caused by chronic malnutrition, can affect a child's quality of life in the long term. Therefore, one way to do this is to develop a technology-based application to provide information and education about the stunting screening process in a comprehensive, accurate and reliable manner. The "ASTUTIK-APP" application was created to fulfill these needs. The development of the "ASTUTIK-APP" application aims to provide comprehensive information and education about stunting screening, especially for mothers with toddlers. The app is designed with the user's level of understanding in mind, so the interface is simple and accessible. The information presented in the application covers various important aspects related to stunting, such as knowledge about child growth and development, nutritional intake, and breastfeeding practices. Thus, it is hoped that this application can be an accurate and reliable source of information for families in an effort to prevent stunting.

The working mechanism of the "ASTUTIK-APP" application starts from the first step, which is a landing page that provides access for registration. Users are required to fill in the required information, such as identity, age, address, and number of children. This registration process is important to ensure that the data obtained is valid and can be used for further analysis purposes. After registration, users will be redirected to the main dashboard, where they can access various information and features provided by the application. In the main dashboard, there are several categories that can be measured, including knowledge, maternal attitudes, socio-economic, socio-cultural, and the use of health facilities. The knowledge category includes important information about stunting, child growth and development, and nutritional intake (Ananda Frasetya et al., 2023). By providing comprehensive information in this category, the app aims to increase parents' understanding of the importance of balanced nutrition and good child care. This will have a positive impact on parents' attitudes and actions in providing the right intake for their children (Putra et al., 2022).

The attitude of mothers is also the focus of this application, which includes understanding Posyandu, child feeding, and exclusive breastfeeding. By increasing positive attitudes towards children's health and nutrition, it is hoped that mothers will be more active in taking measures to prevent stunting (Arum Nurcahyanti & Rahmansyah, 2023). In addition, the app also explores the socioeconomic aspects, which include family income and access to insurance and government assistance (Mitra et al., 2022). This information is important to understand the economic context of the family in meeting children's nutritional needs (Citakesumasari et al., 2023). Furthermore, the application also pays attention to socio-cultural aspects that can affect feeding toddlers. In this category, users can find information regarding family support, feeding traditions, and diet-related beliefs (Nabilah et al., 2022). Understanding these socio-cultural factors is important to design appropriate strategies in handling stunting, so that the approach taken can be accepted by the local community (Setyawan et al., 2024).

Finally, the health facility utilization feature in the "ASTUTIK-APP" application provides information on how often families use health services, including posyandu. By educating users about the importance of nutrition counseling and classes for pregnant women, this application encourages parents to be more active in taking advantage of available health services. The closing of the application contains an interactive video with a duration of 2 minutes and 17 seconds, which explains stunting prevention efforts visually and attractively. This is expected to increase parents' awareness and understanding of stunting prevention. From the results of the assessment of the use of the "ASTUTIK-APP" application

in three districts and cities in North Sumatra, namely Langkat Regency, Samosir Regency, and Tanjung Balai City, information was obtained regarding knowledge, attitudes, socio-economic, socio-cultural, and the use of health facilities. These results show an increase in knowledge and positive attitudes among mothers who use the application, which has the potential to reduce stunting rates in the area. This analysis provides an overview of the effectiveness of the app in raising parental awareness and encourages them to take the necessary action.

Overall, the feasibility of the Android-based educational application "ASTUTIK-APP" as a stunting screening medium is very good. This application not only provides relevant and reliable information, but is also designed with a user-friendly interface, making it easily accessible to the wider public. By utilizing information technology, this application is an effective tool in efforts to detect and prevent stunting in North Sumatra. The implementation of this application is expected to contribute significantly to reducing stunting rates and improving the quality of children's health in Indonesia (Aisy et al., 2022).

CONCLUSION

The development of the Android-based ASTUTIK-APP Application as a Stunting Screening media in Regencies/Cities in North Sumatra shows that the Application makes it easier for the community, especially mothers who have children under five to access stunting information and education from the level of knowledge, maternal attitudes, socio-economic, socio-cultural and the use of health facilities, so that the monitoring of children's growth and development in the community can be monitored regularly and continuously. The results of the feasibility study of the "ASTUTIK" APP Application from the completeness of features, Effectiveness and Accessibility are very high compared to the existing Stunting Application

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