INTERNASIONAL CONFERENCE ON
MULTIDISCIPLINARY APPROACHES IN HEALTH SCIENCE
VOLUME 1 TAHUN 2023, ISSN 3032-4408 (Online)
https://ejournal.poltekkes-denpasar.ac.id/index.php/icmahs

ASTU (Acupressure Stunting): Digitalihzation of Acupressure Education as an Effort to Prevent Stunting in Toddlers

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Article history
Posted : 2023-10-10
Reviewed : 2023-10-24
Received : 2024-01-14

ABSTRACT

Background: According to the Global Nutrition Report 2018, there are 150.8 million (22.2%) children under five in the world are stunting, 55% from Asia. Indonesia ranks 17th out of 117 countries, with a stunting prevalence of 21.6% in 2022. Although, an innovation is still needed to solve the existing cases and prevent the new cases. The innovation is "ASTU (Acupressure Stunting): as the Digitization of Acupressure Education as an Effort to Prevent Stunting in Toddlers," which provides information about stunting and complementary therapy with acupressure techniques. **Method:** In this study using non-probability sampling with a variation of quota sampling requiring a sample of 25 respondents. Identification of 25 respondents's level of knowledge about stunting and acupressure before and after using the ASTU Application was carried out by providing questions through Google Forms. **Result:** The results of obtaining pre-test scores from 25 respondents, the average is 46.8, and after being given a pre-test, respondents were given an ASTU application to understand stunting and acupressure. Then respondents given a posttest, and the average is 89.6. The paired T-test shows that there is a significant difference between respondents' knowledge levels before and after using the application. The mean value of 42,800 indicates that there is a trend of increasing knowledge. The average is 4.04. **Conclusion:** So, it can be concluded that the ASTU application is feasible received by the public to be used as one of the educational applications in increasing the appetite of toddlers to prevent stunting.

Keywords: Stunting, Digitalization of Acupressure, Toddler

INTRODUCTION

Stunting is a condition of chronic malnutrition that can be seen based on length or height for age that is less than -2 standard deviations (SD) on the World Health Organization or (WHO) growth curve. This occurs due to irreversible conditions due to inadequate nutritional intake and experiencing repeated or chronic infections that occur in the first 1000 days of life (WHO, 2021). Stunting causes developmental delays in all aspects of children that can affect cognitive and physical development, decreased productivity, poor health, and the risk of degenerative diseases. In addition, stunting can also lead to increased morbidity and mortality (Budiono, et al., 2021).

Stunting is influenced by several factors, namely age, body length at birth, macronutrient adequacy (protein and carbohydrates) and micronutrients namely (calcium, vitamin A, iron, and zinc). The main factor causing this is the level of protein adequacy (Pur, et al., 2020). Research conducted by Sutriyawan and Nadhira in 2020 stated that the factors that influence the incidence of stunting or shortness are maternal knowledge, exclusive breastfeeding and basic sanitation. The incidence of stunting is one of the nutritional problems experienced by toddlers in the world. The prevalence of stunting in the world has experienced a dramatic increase. WHO estimates the prevalence of stunted children worldwide at 22% or 149.2 million in 2020.

The prevalence of stunting collected by WHO, Indonesia is included in the third country with the highest prevalence in the Southeast Asia region (Ministry of Health, 2018). Meanwhile, according to (Riskesdas, 2018) Indonesia ranks 17th out of 117 countries with a stunting prevalence of 21.6% in 2022. Meanwhile, the prevalence of stunting in Bali is 9.28%. Although the prevalence of stunting in Bali is not too high, it still requires a new breakthrough in order to reduce the stunting rate. Various efforts have been made by the government in reducing the prevalence of stunting in Indonesia, namely by 1) providing blood supplement tablets for adolescent girls, 2) Conducting examinations and providing additional food to pregnant women to fulfill the nutritional content and iron in pregnant women, and 3) providing animal protein to children aged 6-24 months (Ministry of Health, 2022).

Prevention can be done during the first 1000 days of life. Children who have passed 1000 HPK by being given adequate nutrition and nutrition and maintaining good sanitation can reduce the risk of stunting. Malnutrition occurs when the body does not receive adequate nutrition due to a decrease in the toddler's appetite. If this is ignored, it will cause serious health problems because malnutrition is closely related to child development (Hidayati, et al., 2014). So, it is very necessary to increase the appetite of toddlers by stimulating the toddler's hunger center point using acupressure techniques.

Acupressure is a technique of strong stimulation of certain meridian points with the emphasis of the strength of the fingers. Stimulation of the meridians will stimulate the outer and inner tissues of the body, where the occurrence of disease can be manifested from the meridian pathways associated with the organ system itself. There is a need for media that provides information about the emphasis

on several meridian points related to increasing the appetite of toddlers so that they do not experience malnutrition which leads to stunting. This problem requires a fast and precise solution. Application development is an alternative solution that can be used in overcoming stunting problems. Applications are a form of adaptation to the digitalization era. All the necessary information can be available on one platform and access to the information becomes easier.

Based on existing problems and research results, it is necessary to realize that appetite is one of the triggering factors for stunting. Therefore, researchers are interested in increasing the appetite of toddlers with complementary therapy in the form of acupressure as a preventive effort against stunting in toddlers packaged in an android-based application through research entitled **"ASTU (Acupressure Stunting): Digitalization of Acupressure Education as an Effort to Prevent Stunting in Toddlers".**

METHOD

A. Spesification

ASTU (Acupressure Stunting) is an educational application that provides information about stunting and information about conventional efforts to overcome stunting in toddlers through complementary therapy with acupressure techniques, as well as providing videos of acupressure practice at certain meridian points that can stimulate the appetite of toddlers. This application is designed with the aim of increasing appetite as an effort to prevent stunting in toddlers. Application details :

a. Version : 1.0.1
b. Prototype Release : 21st May 2023
c. Size : 100-115 MB
d. Operation System : Android 10 (Q)
e. RAM Memory : 2 GB

B. Design

The ASTU (Acupressure Stunting) application was designed as an answer to the current needs of the community in overcoming health problems, namely stunting in toddlers. This application provides information related to stunting and acupressure, and provides acupressure video tutorials in an effort to increase appetite in toddlers. All content is packaged in an android-based application.

In the initial menu of the ASTU application, the main menu option will appear, then a brief description of the ASTU application is displayed. Then, several information hotline features about stunting, acupressure and acupressure video tutorials, and creator profiles will appear. If you click on one of these features, it will display material content according to the title of the feature listed. In this ASTU application, there is also a contact person who can be contacted if you have questions or difficulties in using the application. This ASTU application can be used by

Figure 1. *Initial Design of ASTU (Acupressure Stunting) Application*

android smartphone users for free or offline without any tariff.

C. Implementation

The high prevalence of stunting in Indonesia today certainly requires an innovation in overcoming the problem of stunting, it requires a change in habits and an increase in public knowledge about stunting. Moreover, the general public is still unfamiliar with stunting, so innovation and creation are needed to facilitate access to information about stunting for the community. The ASTU (Accupresure Stunting) application is an educational application that provides information about stunting and conventional efforts to overcome stunting in toddlers through complementary therapy with acupressure techniques, as well as providing videos of acupressure practice at certain meridian points that can increase appetite as an effort to prevent stunting in toddlers.

The procedure for using the ASTU (Acupressure Stunting) application are ; a) Scan the QR Code that has been sent using an android smartphone, b) After the QR Code is successfully scanned, it will automatically connect to Google Drive. Then, download the ASTU application file that is available on the drive, c) After the file has been successfully downloaded, then install the ASTU application so that it can be used, d) If the

ASTU application is successfully installed, the application can be used on an android smartphone. In this study using a type of sampling technique, namely non-probability sampling with a variation of quota sampling based on the proportion of certain characteristics to avoid bias, or in other words, this sampling depends on several predetermined standards, in this study requiring a sample of 25 respondents. The criteria of respondent are; a) mothers who have children under three years of age in the Batumadeg Village area, Nusa Penida District, Klungkung Regency, b) mothers who can read writing, and c) willing to be sampled.

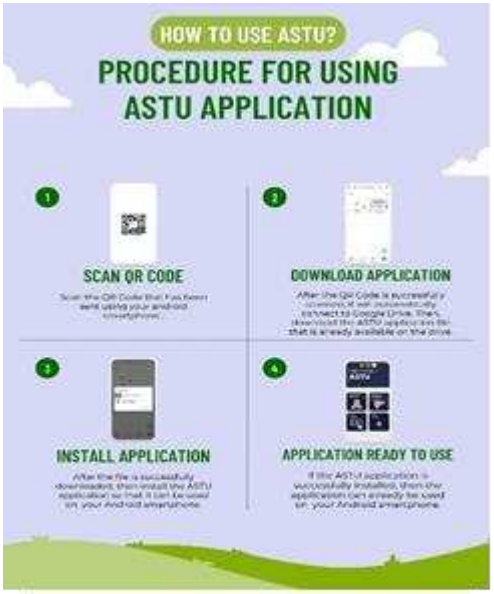


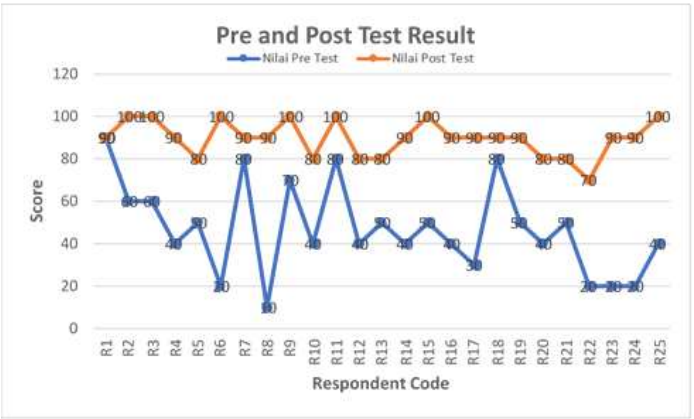
Figure 2 *Procedure for Using the ASTU (Acupressure Stunting)*

DISCUSSION

A. Application Testing Results

a) Results of Identification of Respondents' Knowledge Level Regarding Stunting and Acupressure Before and After Use the ASTU Application

Figure 3. *Pre and Post Test Results of Respondents' Knowledge Level on Stunting and Acupressure*



A survey or test conducted by giving 10 questions through google forms to 25 respondents. Based on the results of the survey to determine the level of respondents' knowledge of stunting and acupressure was

of respondents' knowledge level related to stunting and acupressure before and after using the ASTU application, the results obtained are as presented in Figure 3.

The pre-test was conducted before 25 respondents were given the ASTU application which provides information or material about stunting and acupressure. The results of the acquisition of pre-test scores from 25 respondents, the majority of which were below the score of 60, namely (10, 20, 30, 40, 50). After being given a pre-test, then 25 respondents were given the ASTU application to understand about stunting and acupressure. Then 25 respondents were again given the same questions in the form of a posttest to analyze statistically to find out whether there was a difference in the level of knowledge between before and after using the ASTU application. The results of the posttest scores of 25 respondents after being given the ASTU application turned out to have increased, the majority of respondents scored above 70, namely (80, 90, 100). Visually graph There has been an increase in respondents' knowledge of stunting and acupressure. Then, the values of the pre and posttest results were tested again with statistics using the paired T-test test to find out accurately whether there was an increase in respondents' knowledge from the pre and posttest results. The paired T-test results are presented in Figure 4.

Figure 4. Paired T-test Results for 25

Paired Samples Test

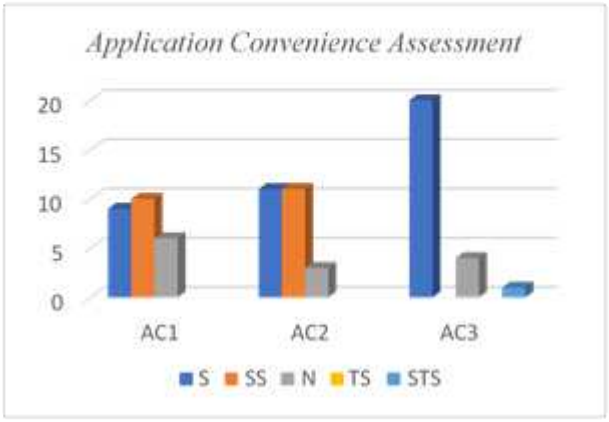
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Nilai Pretest - Nilai Posttest	-42.800	20.720	4.144	-51.353	-34.247	-10.328	24	.000

The paired T-test with a 95% confidence interval obtained a significance of 0.000 ($p<0.05$). This shows that there is a significant difference between the level of knowledge of respondents before and after using the ASTU application. The mean value of -42.800 shows that there is a tendency to increase knowledge with an average increase of 42.800.

b) ASTU Application Feasibility Level Identification

- ***Application Convenience Assessment of the ASTU Application***

Figure 5. *Application Convenience Assessment Test Results for 25 Respondents*

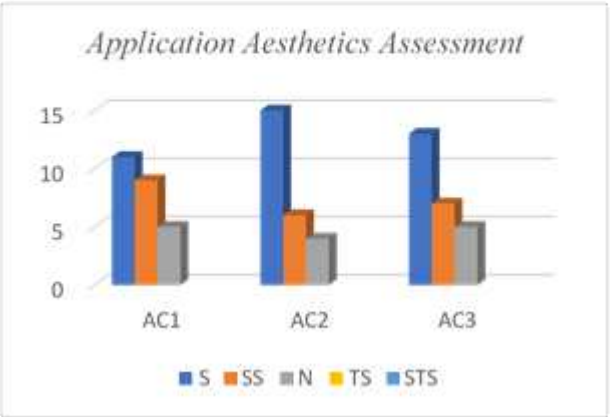


- ***Assessment Information Quality of the Aplikasi ASTU***

Figure 6. *Test Results of Information Quality Assessment of 25 Respondents*

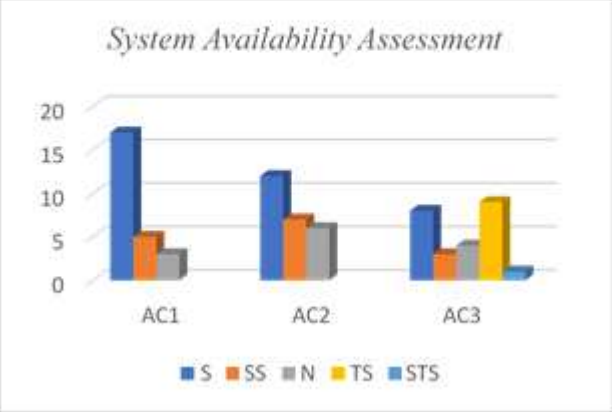
- ***Assessment Application Aestethics of the ASTU Application***

Figure 7. *Application Aesthetics Assessment Test Results for 25 Respondents*



- ***Assessment System Availability of the ASTU***

Figure 8. *System Availability Assessment Test Results for 25 Respondents*



- ***Assessment Customer Satifacation of the ASTU***

Figure 9. *Test Results of Customer Satifacation Assessment of 25 Respondents*

- ***Assessment Customer Loyalty of the ASTU***

Figure 10. *Test Results of Customer Loyalty Assessment of 25 Respondents*

The test of the feasibility level of the ASTU application was carried out by asking questions using google forms to 25 respondents after using the ASTU application on the respondent's android smartphone. There are 6 indicators of questions, each indicator has 3 questions with a rating scale, namely (SS: Strongly Agree, S: Agree, N: Neutral, TS: Disagree, and STS: Strongly Disagree). If you choose strongly agree, you get a score of (5 points), agree (4 points), neutral (3 points), disagree (2 points), and strongly disagree (1 point).

The results of respondents on the first indicator, namely (application convenience) can be seen in Figure 5, presented 3 questions that assess whether the application is practical to use or not. So, based on the results of respondents on indicator 1 obtained (SS: 21, S: 40, N: 13, STS: 1), thus obtaining an average of 4.06. The second indicator, namely (information quality) which assesses whether the application provides accurate, relevant and reliable information for its users, can be seen in Figure 5. So, based on the results of respondents on indicator 2 obtained (SS: 30, S: 42, N: 3), thus obtaining an average of 4.36. The 3rd indicator, namely (application aestethics), which refers to the visual aspects of an application, such as user interface design, layout, colors, and icons, can be seen in Figure 6. So, based on the results of respondents on indicator 3 obtained (SS: 22, S: 39, N: 14), thus obtaining an average of 3.97. The 4th indicator, namely (system availability), which refers to the ability of an information system to be available and function properly when needed by users, can be seen in Figure 5. So, based on the results of respondents on indicator 4 obtained (SS: 15, S: 37, N: 13, TS: 9, STS: 1), thus obtaining an average of 3.74. The 5th indicator, namely (customer satifacation), which refers to the level of user satisfaction with the quality and performance of the application they use, can be seen in Figure 7.

After getting the average score of each indicator, it is then accumulated to get an overall average score to determine the respondent's assessment of the feasibility of this ASTU application. The range of average assessment scores used as a reference is (0-1: strongly disagree, 1-2: disagree, 2-3: neutral, 3-4: agree, 4-5: strongly agree). Based on the results of the assessment related to the ASTU application by 25 respondents through 6 question indicators with a total of 18 questions, an average of 4.04 was obtained. So, when viewed from the average score range, the assessment results agree with the feasibility of the ASTU application in increasing parents' knowledge about stunting and acupressure in toddlers. So, it can be concluded that the ASTU application is feasible and well received by the community, especially 25 respondents to be used as one of the educational applications in increasing toddler appetite to reduce the prevalence of stunting in Indonesia today.

CONCLUSION

Based on the analysis of the previous discussion, it can be concluded as follows.The acquisition of pre-test scores from 25 respondents, the majority of which are below the score of 60, namely (10, 20, 30, 40, 50).

A. The results of the posttest scores of 25 respondents after being given the ASTU application, namely the majority of respondents scored above 70, namely (80, 90, 100).
B. The paired T-test results of the pre-test and posttest scores of 25 respondents show that there is a significant difference between the level of knowledge of respondents before and after using the ASTU application. The mean value of -42.800 shows that there is a tendency to increase knowledge with an average increase of 42.800.
C. The feasibility test of using the ASTU application was carried out by giving 6 indicators of questions to 25 respondents. The overall average indicator is 4.04, which means that respondents agree that the ASTU application is feasible to use as one of the educational applications in increasing toddler appetite to reduce the prevalence of stunting in Indonesia.

CONFLICT OF INTEREST

There are no potential conflicts of interest reported by the authors.

ACKNOLEDGEMENT

Praise my gratitude to God almighty because for his blessings and grace I can complete the preparation of an innovative product script entitled "ASTU (Acupressure Stunting) : Digitalization of Acupressure Education as an Effort to Prevent Stunting in Toddlers". This innovative product script was created as information about acupressure techniques in increasing appetite as an effort to prevent stunting in toddlers. On this occasion, I would like to thank:

A. Lecturers of the Nursing Department of the Health Polytechnic of Denpasar who have guided me during the research process.
B. The Nursing Department Student Association of Health Polytechnic of Denpasar which has provided both moral and material support, so that the making of this script can run smoothly according to my expectations.

I realize that this script is far from perfect. Therefore, all criticisms and suggestions are highly expected for the development of this innovative product in the future.

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