

THE EFFECTIVENESS OF MOBILE APPLICATION AS EDUCATIONAL INTERVENTION TO PREVENT STUNTING: A SYSTEMATIC REVIEW

Naenda Stasya¹⁾, Wahyu Sulistiadi²⁾

¹⁾Masters Program of Hospital Administration, Faculty of Public Health, Universitas Indonesia

²⁾ Faculty of Public Health, Universitas Indonesia

ABSTRACT

Background: Stunting is a global issue that, including Indonesia, has not been resolved until now. The Sustainable Development Goals are targeted for 2030 so that the problem of stunting can be fully resolved. In order to reduce the incidence of stunting, interventions through education to increase knowledge and behavior change have been shown to be successful. In order to prevent stunting through mobile applications, communication technology development is expected to be more effective than interpersonal campaigns. This study aimed to analyze the effectiveness of mobile application as educational intervention to prevent stunting.

Subjects and Methods: This was a systematic review study. Articles were obtained from Scopus, ProQuest, and Google Scholar through a search using Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA). The articles taken were published in 2019-2020.

Results: Of the total of 11 articles, interpersonal educational interventions on health issues have been shown to have significant effects and results. However, there was no study that simultaneously discusses the comparison in one study of the effectiveness of interpersonal education intervention and mobile application. The advantages of intervention through mobile applications were 1) many people in different socio-cultures can accept mobile phones that have been widely used, 2) cost-effective, 3) people can access information easily whenever necessary, and 4) get stronger engagement because monitoring can be carried out continuously.

Conclusion: Innovative educational interventions can be carried out through mobile applications with the development of communication technology and health promotion research, which have the advantage of being stronger, easier for the public to accept, stronger engagement, and cost-effectiveness.

Keywords: mobile application, health promotion, stunting

Correspondence:

Naenda Stasya. Masters Program of Hospital Administration, Faculty of Public Health, Universitas Indonesia. Email: naenda.stasya@gmail.com. Mobile: 082121280037

BACKGROUND

According to the World Health Organization (WHO), the United Nations International Children's Emergency Fund (UNICEF), and the World Bank, 5.6 million children under the age of five die each year, with malnutrition accounting for 45% of these deaths (Khan et al., 2020).

Since the experience of mothers and caregivers is the most important factor in

supplying healthy food to children, educational strategies are needed to improve knowledge and change conduct (Khan et al., 2020). Similarly, teachers' role in schools is to provide education to students, which has a positive impact on changing healthy behavior and helping students develop good eating habits (Antwi et al., 2020)

The main determinants of infant and child feeding are cultural factors, beliefs,

and knowledge of mothers, caregivers, and people involved in childcare, so, the role of communication as an intervention to change community behavior has a strong influence. An effective communication strategy is required (Hazarika and Baruah, 2020).

Every family now has at least one cell-phone at home, and most health services have cell phone access, educational interventions via mobile applications are a viable option that is being investigated further (Khan et al., 2020).

SUBJECTS AND METHOD

1. Study Design

This was a systematic review study using PRISMA guide (Preferred Reporting Item for Systematic Reviews and Meta-analysis). The articles were collected systematically through 3 databases namely ProQuest, Scopus, and

Google Scholar. The study was conducted for 7 days from 6-12 September 2020.

The keywords in the initial search were “social media and effective and health promotion and stunting” and found 158 articles. Then we put out documents that carried out studies that were not about health promotion. Our final screening step is to read the abstracts from articles that support this study.

2. Inclusion and Exclusion Criteria

The search fields included stunting, social media effectiveness, and health promotion. The articles were limited by English-language journals, published in the last 12 months, i.e., 2019-2020, were journal articles which are available in full text.

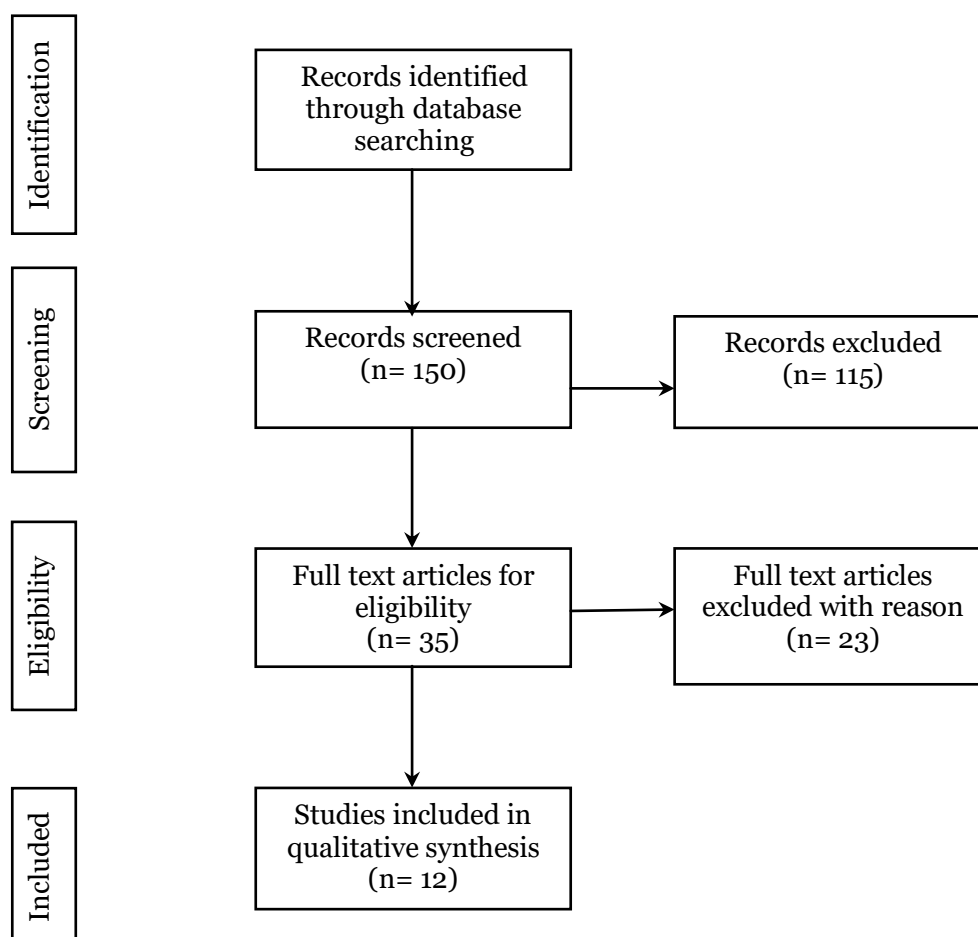


Figure 1. PRISMA Flow Diagram

3. Article Extraction

The authors had assessed titles, abstracts and discussions in many journals and then selected them in a structured manner to serve as references.

RESULTS

From the search results through 3 databases, a total of 158 articles were found. After being identified 123 articles were issued. Of the 35 articles assessed for eligibility, 11 articles were assessed. The review assessed the effectiveness of providing educational interventions in increasing knowledge and changing attitudes to be better than the group that did not receive educational interventions.

Educational interventions through mobile applications are thought to be able to optimize outcomes because of their high penetration and are easily accepted by the wider community. However, there were no studies that compared interpersonal education interventions with mobile applications in one study.

DISCUSSION

Stunting is a global problem that is continuously being addressed. Even the standard development goals (SDGs) have targeted that the problem of stunting can be resolved by 2030.

It is necessary to promote health through various interventions because cultural factors, trust and knowledge are the main components that influence public health behavior. A health promotion strategy with a creative publicity model is needed (Yuning-sih and Suherman, 2020).

In this study, all journals stated that interpersonal educational interventions gave significantly positive results. For this reason, it is necessary to continue to promote educational interventions on all health problems including stunting.

Recent technological developments have shown that at least one household has one cellphone with a good network. Several studies have evaluated the effectiveness of using mobile applications as an educational intervention. So that intervention education innovations through mobile applications need to be considered because of several other benefits such as easy access so that it can reach global education interventions, is cost-effective, and can be a business opportunity for certain cases (Utari and Zebua, 2020).

Unfortunately, the limitation of this study is that it does not find studies that directly compare interpersonal educational interventions with educational interventions via mobile applications in one study.

Educational interventions that are carried out simultaneously, namely the provision of interpersonal educational interventions and followed by follow-up via mobile applications will produce optimal outcomes (Jerin et al., 2020).

Stakeholders are expected to promote educational intervention efforts through mobile applications to overcome health problems in general, prevention. stunting in particular considering the increasing use of cellphones in Indonesia (Starkweather et al., 2020).

Keywords: (1) Social Media, (2) Effective (3) Health Promotion (4) Stunting

Table 1. Articles for systematic review analysis

No	Author (Year)	Title	Country	Result	Conclusion
1	Khan et al., 2020	Use of Mobile Health in Infant and Young Child Nutrition: A Formative Study in Rural Maharashtra	India	Formative research in Maharashtra, India found that each household has one cell phone with good network connectivity. The use of email for counseling can be accepted by the community as long as the advice given is affordable, in accordance with culture, social status, and economy.	Innovative interventions like these can help monitor the progress of mothers and babies, thus giving us pragmatic results and providing us with a cost-effective method to improve the health status of children under 5 years of age.
2	Jerin et al., 2020	Mobile phone support to sustain exclusive breastfeeding in the community after hospital delivery and counseling: a quasi- experimental study	Bangladesh	at the Center for Woman and Child Health between groups providing routine education at the hospital and the group providing routine education at the hospital plus follow-up via mobile phone found that there was no statistically significant difference in nutritional status in the two groups. However, the rate of exclusive breastfeeding was higher in the intervention group with mobile phone follow-up than in those without.	Educational intervention in hospital coupled with follow-up via mobile phone provides a higher success rate on the success of exclusive breastfeeding.
3	Antwi et al., 2020	Primary school-based nutrition education intervention on nutrition knowledge, attitude and practices among school-age children in Ghana,	Ghana	Study on nutrition education interventions for six weeks of teachers and caregivers. It was found that the intervention group had significantly improved nutritional knowledge than the control group.	Educational interventions Nutrition education in children has a positive impact on knowledge, attitudes, and the development of healthy behaviors for improving nutritional status

4	Baruah and Hazarika, 2020	Use of Media tools for effective social and behavior change communication in	India	paper that describes the important aspects of promotion health is to change a person's behavior. Interventions carried out through communication. A viable communication strategy is needed. India has succeeded in changing people's behavior to use the toilet instead of using open space for defecation through mass communication.	This study shows that social media is a communication tool that has a strong influence on people's attitudes and behavior.
5	Yuningsih and Suherman, 2020	Creative publicity in health promotion for urban communities	Indonesia	This case study is to determine the creativity and strategy of utilizing hospital publicity on public health literacy. It was found that hospital publicity had a significant effect in building urban public health literacy, not significant for coastal or mountainous communities.	The publicity media used by the hospital is not optimal and is not creative. A strategy is needed to use creative publicity models such as creative content and creative packaging issues through online and conventional media.
6	Utari and Zebua, 2020	Health communication through online media, the using of digital pregnancy application as an alternative informative informasion source for the millennial mother in Indonesia.	Indonesia	A qualitative study with a phenomenological study approach to pregnant women using a pregnancy application via a mobile application. It was found that the use of mobile applications provides positive experiences such as being able to add information and knowledge about pregnancy, reduce anxiety during pregnancy, as a reminder of control schedules and others. The negative experiences obtained are not very significant. Mobile application is an alternative strategy in health promotion.	Mobile applications can be used as alternative information related to medical personnel. The use of this mobile application is an intersection between a profitable business for providers and being able to change the standard of life of the community through changes in behavior towards their own health conditions.
7	Navarro-Pérez et al., 2020	Effectiveness of a mobile app intervention to prevent dating violence in recidential child care.	Spain	This study implements and evaluates the effectiveness of a psycho-educational intervention which consists of monitoring via a mobile application in the game "Liad @ s" format with adolescents in child care.	Psychoeducation interventions were considered effective in reducing adolescent sexism and increasing prosocial attitudes towards dating adolescents in

all key variables.

8	Adam et al., 2020	Design Preferences for Global Scale: A Mixed-Methods study of “globalization” of and Animated, Video - Based Health Communication Intervention.	South Africa	This study applies a mixed methodology, namely a quantitative preference survey followed by in-depth interviews to design a global scale health communication intervention through video animation. It was found that the video communication design prototype that could be accepted on a global scale was a video with a free design from cultural identifiers and localized through language translation.	Designing health communication interventions from the start with potential on a global scale can be an ethical and practical approach to improving health communication worldwide.
9	Starkweather et al., 2020	An Interpersonal Nutrition Campaign and Maternal Knowledge and Childhood Feeding Practice: A Case Study from Mothers in Rural Indonesia	Indonesia	In this cross-sectional study it is known that interpersonal communication interventions increase knowledge and change behavior in feeding in children under two years of age in rural Indonesia has a significant effect.	The effect of interpersonal communication interventions has a significant effect. It is necessary to think about interpersonal intervention through social media, which is increasingly used in Indonesia.
10	Abiyu and Belachew, 2020	Effect of Complementary Feeding Behavior Change Communication Delivered Through Community Level Actors on the Dietary Adequacy of Infants in Rural Communities of West Gojjam Zone, Northwest Ethiopia, A Cluster Randomized Control Trial	Ethiopian	Studies test control randomized cluster discovered that in the intervention group with providing educational communication on behavior changes on complementary feeding for 9 months gave statistically significant results compared to the control group.	This study shows the potential effectiveness of educational communication for behavior change in complementary feeding and the adequacy of nutrition given to infants.

11	Shapu et al., 2020	Systematic Review: Effect of Health Education Intervention on Improving Knowledge, Attitudes and Practices of Adolescents on Malnutrition	Malaysia	Health education interventions in adolescents have significantly increased their knowledge, attitudes and practices.	Health education interventions are effective for increasing knowledge and significantly positive behavior change.
12	Dorado et al., 2020	Assessing School-Lunch Feeding and Nutrition Education Strategy for Healthier Kids in Selected Philippine Public School	Philippines	This quasi-experimental study shows that the mean score of increasing children's knowledge, attitudes and behavior in the intervention group increased significantly.	Efforts should be made to implement effective nutrition education interventions in primary schools to be adopted officially to increase knowledge, attitudes and better behavior so as to significantly increase children's nutritional status.

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