

#### How to Cite

Sari, R. I., Syarif, S., Arsyad, M. A., Usman, A. N., & Ramadany, S. (2021). Android-based application of women's reproductive health to parent knowledge as a learning media. *International Journal of Health & Medical Sciences*, 4(2), 196-201. <https://doi.org/10.31295/ijhms.v4n2.1691>

## Android-Based Application of Women's Reproductive Health to Parent Knowledge as a Learning Media

#### Rina Inda Sari

Department of Midwifery, Graduate School, Hasanuddin University, Indonesia

Corresponding author email: [sariri19p@student.unhas.ac.id](mailto:sariri19p@student.unhas.ac.id)

#### Syafuruddin Syarif

Department of Electrical Engineering, Faculty of Engineering, Hasanuddin University, Indonesia

Email: [ssyariftuh376@gmail.com](mailto:ssyariftuh376@gmail.com)

#### M. Ariyadi Arsyad

Department of Community Medicine, Faculty of Medicine, Hasanuddin University, Indonesia

Email: [aryadi.arsyad@gmail.com](mailto:aryadi.arsyad@gmail.com)

#### Andi Nilawati Usman

Department of Midwifery, Graduate School, Hasanuddin University, Indonesia

Email: [andinilawati@pasca.unhas.ac.id](mailto:andinilawati@pasca.unhas.ac.id)

#### Sri Ramadany

Department of Community Medicine, Faculty of Medicine, Hasanuddin University, Indonesia

Email: [sriramadanifk@gmail.com](mailto:sriramadanifk@gmail.com)

**Abstract**---This study aimed to determine the effect of this application usage on parental knowledge improvement, and the differences in knowledge based on parents' education and occupation background using this application. This research was carried out in the working area of the Wolio Health Center, Baubau City, during March - April 2021, by a combination of Research and Development (R&D) and Quasi-experimental methods with one group pretest-posttest design. About 95 parents who have adolescent daughters (aged 10-20 years) were involved. The intervention was given on the same day by first being given a pretest and then being given an intervention using the KESPRO PEDIA educational application for  $\pm 30$  minutes, continued by a posttest. Data analysis used the Wilcoxon Signed Ranks Test. This study indicated that the use of android-based women's reproductive health applications could increase parental knowledge by 89.5% ( $P < 0.01$ ). There was an increase in parental knowledge about women's reproductive health at every level of education, especially high school/vocational education, by 51.6% ( $P < 0.01$ ). Meanwhile, it also increased the parental knowledge about women's reproductive health at each occupational status, dominated by parents who did not work, by 68.4% ( $P < 0.01$ ).

**Keywords**---android-based, knowledge, learning media, women's reproductive health application.

### Introduction

Adolescence is defined as a transition from childhood to adulthood, including biological, psychological, emotional, and social changes. Children usually always want to try new things at this stage, and various emotional upheavals arise and often cause many problems both within themselves, their families, and their social environment (Febriana, 2016). The role of parents in the family is needed by children, especially in providing an understanding of women's reproductive health and how to respond to the changes that occur at puberty (Grossman et al., 2018; Maina et al.,

2020). However, parents tend to be late in providing reproductive health information to their adolescent children, providing incomplete information and not providing information due to lack of knowledge (Chandra-Mouli & Patel, 2017; Shams et al., 2017). Due to the lack of parental roles and attention, adolescents seek information through friends or social media that can spread wrong information, choose not to ask questions or discuss with parents. In the end, teenagers cannot overcome their reproductive health problems (Kusheta et al., 2019; Titiloye & Ajuwon, 2017; Zakaria et al., 2019). In the research of Noe et al. (2018), only 2.7% of young women had discussions with their mothers about sexual reproductive health with limited discussion topics. Most respondents had negative responses about communicating sexual reproductive health issues. In addition, in their research, Ziapour et al. (2020), also found 88% of the absence of family communication related to personal hygiene practices for reproductive health in children.

Innovative educational media facilities are needed by utilizing technological advances to overcome parental roles and knowledge in providing information about women's reproductive health in millennial-era teenagers. One of which is an Android-based application that can be a choice for parents to learn independently (Sheen et al., 2015; Tedeschi & Benedetto, 2017; Intaravanne & Sumriddetchkajorn, 2015). Based on the interviews with 10 mothers who have teenage daughters in the working area of the Wolio Health Center, Baubau City, about 9 mothers perceive that the discussion of adolescent reproductive health is a taboo, shameful, and unnecessary thing to discuss. For example, the problem of menstruation which is a normal and natural issue for adolescent girls. Parents also assume that if a teenager has had menstruation, they can be considered adults and overcome their reproductive health problems because they have received much information at school. Only 1 mother continued to explain to her child related to women's reproductive health problems even though the information provided was still very limited. This study aimed to determine the level of ease in operating the android-based reproductive health applications by parents as a learning medium and determine its effect on parental knowledge improvement according to the parental education level and occupation after using these women's reproductive health applications (Malterud, 2001; Zheng et al., 2010; Ekawati et al., 2017).

## Materials and Methods

### *Site and design*

This research was carried out in the working area of the Wolio Public Health Center, Baubau City, Southeast Sulawesi, mainly Batulo and Wangkanapi villages, from March to April 2021. This study used the Combine Research and Development (R&D) method, a development model that Borg and Gall have simplified, and a quasi-experimental method with a one-group of pretest-posttest design.

### *Population and sample*

In this study, the population in this study were all parents (mothers) who had adolescent daughters in the work area of the Wolio Health Center, Baubau City, in 2020, about 1738 people. The sample in this study was 95 people with purposive sampling technique taking into account the inclusion criteria, including willing to be respondents, mothers who have adolescent daughters (aged 10-20 years), residing in the work area of Wolio Health Center, and have a smartphone capable of accessing android applications (Choi & Baek, 2011; Zhang et al., 2015). Meanwhile, exclusion criteria included ill mothers, had a health major educational background, and smartphones were damaged or lost.

### *Method of collecting data*

The instruments used in this study were informed consent sheets, android-based applications, and women's reproductive health knowledge questionnaires. To find out the difference in the increase in parental knowledge before and after using women's reproductive health applications. Firstly, a pretest on women's reproductive health materials was carried out for  $\pm 15$  minutes, continued by intervention using an Android-based educational application  $\pm 30$  minutes. A posttest was carried out to measure parents' level of knowledge after using women's reproductive health applications for  $\pm 20$  minutes.

*Data analysis*

Data analysis used the Wilcoxon Signed Ranks Test to measure the knowledge value of respondents before and after using the application with the help of the Statistical Package for the Social Science (SPSS) 25 program.

**Results**

Table 1  
Distribution of parental knowledge before and after given applications for women's reproductive health

Category	Pre Test		Post Test		P-Value
	f	%	f	%	
Good	16	16.8	85	89.5	0.000
Enough	48	50.5	10	10.5	
Less	31	32.6	0	0	
Total	95	100	95	100	

Table 1 shows that during the pretest, the majority of respondents' knowledge was in the good category of 50.5% then after being given an intervention (posttest) using an android-based application, the knowledge of the respondents experienced a significant increase in the good category of 89.5% ( $P < 0.01$ ).

Table 2  
Characteristics of respondents' knowledge before and after giving android-based applications based on the education level

Level of education	Knowledge level					P-Value
	Category	Pre-Test		Post Test		
		n	%	n	%	
Elementary school and Junior High School	Good	2	2.1	20	21.1	0.000
	Enough	14	14.7	6	6.3	
	Less	10	10.5	0	0	
Senior High School	Good	5	5.3	49	51.6	0.000
	Enough	28	29.5	3	3.2	
	Less	19	20.0	0	0	
University	Good	9	9.5	16	16.8	0.000
	Enough	6	6.3	1	1.1	
	Less	2	2.1	0	0	
Total		95	100	95	100	

Table 2 shows that during the pretest, the respondents' knowledge of education level <senior/vocational high school (<SMA/SMK) and equal to senior/vocational high school (SMA/SMK) was a majority in the good category (14.7% and 29.5%). Meanwhile, higher education was in a good category (9.5%). After being given an intervention using an android-based application (posttest), there was a significant increase in knowledge at every level of education, especially senior high school/vocational high school education (51.6%), with a P-value <0.01.

Table 3  
Characteristics of respondents' knowledge before and after giving android-based applications based on employment status

Job-status	Knowledge level					P-Value
	Category	Pre-Test		Post Test		
		f	%	f	%	
Work	Good	7	7.4	20	21.1	0.000
	Enough	13	13.7	3	3.2	

Does not work	Less	3	3.2	0	0	0.000
	Good	9	9.5	65	68.4	
	Enough	35	36.8	7	7.4	
	Less	28	29.5	0	0	
Total		95	100	95	100	

Table 3 shows that the respondents' overall knowledge based on their employment status was in a good category (working 13.7% and not working 36.8%). After being given an intervention using an android-based application (posttest), there was a significant increase in knowledge in each job status, dominated by unemployed respondents 68.4% ( $P < 0.01$ ).

## Discussion

### *The effect of women's reproductive health applications on parents' knowledge*

Based on the description of Table 4, it shows that when the pretest parental knowledge was in a good category (50.5%) and after being given an intervention using an android-based application, there was a very significant increase in knowledge with a good category (89.5%) and  $p$ -value  $< 0.01$ . The increase in parental knowledge after being given an android-based application intervention was probably due to the absence of parental involvement in women's reproductive health education but only focusing on teenagers (Beal, 1999; Mumtaz & Salway, 2009; Bell et al., 2007). In addition, because the education level of the majority of parents was <senior/vocational high school (<SMA/SMK) and equal to senior/vocational high school (SMA/SMK), they might have never received any material on women's reproductive health. So the material is something new for parents. With this android-based application media provision, parents can obtain new information or knowledge about women's reproductive health. According to Arsyad (2011) in research, Ariputri et al. (2015), state that applying media in learning activities can clarify the clarity of material and information and provide a pleasant learning experience. This study is in line with the findings of Dinengsih & Hakim (2020), in their findings that the knowledge of adolescents who were given an android application was better (mean rank: 40.28) than the lecture method (mean rank: 20.72). Furthermore, Nazmi (2020), revealed an increase in the knowledge of mothers under five about stunting after being given the application media ( $P < 0.01$ ).

### *Knowledge improvement based on the education level*

Based on the description of Table 5, initially, the respondents' knowledge of education level <senior/vocational high school (<SMA/SMK) and equal to senior/vocational high school (SMA/SMK) was in a good category (14.7% and 29.5%) while higher education was in a good category (9.5%). After being given an intervention using an android-based application, there was an increase in knowledge with a good category at all levels of education, with the majority of senior/vocational high school (SMA/SMK) education being 51.6% ( $P < 0.01$ ). Parents' knowledge of higher education levels was always in the good category, possibly because parents with higher education have broad knowledge insights, and the majority interact with educated people. On the other hand, for parents with an education level of <senior/vocational high school (<SMA/SMK) and equal to senior/vocational high school (SMA/SMK), there was a change from the moderate to a good category, possibly because they did not know anything about women's reproductive health before. The results of this study are in line with the research of Sari (2010), which states that there is no significant relationship between education and level of knowledge ( $P > 0.05$ ). However, Verawati's found a strong and mutually influencing relationship between education on behavior and knowledge about vulvar hygiene.

### *Knowledge improvement based on employment status*

Table 6 shows that the respondents' overall knowledge based on their employment status was very good (working 13.7% and not working 36.8%). After being given an intervention using an android-based application (posttest), there was a significant increase in knowledge with a good category, but an increase was more dominant in respondents who did not work (68.4%) ( $P < 0.01$ ). Parents who do not work (housewives) had much time to look for information through social media and interact with the surrounding environment, which could be because there was an exchange of information. Likewise, if parents are working, they will be busier and only focused on work. The results of this study are in line with the research of Sari (2010), which was quoted in the research, which said that the

work of the majority of housewives (not working) had good knowledge compared to working mothers. This is because mothers who do not work (housewives) have much time to find information.

## Conclusion

The use of android-based women's reproductive health applications can increase parental knowledge, as seen in the significant difference in knowledge increase before and after being given an android-based application ( $P < 0.01$ ). There was an increase in parents' knowledge at all levels of education after using women's reproductive health applications. However, the increase in knowledge mainly was in high school/vocational education. There was an increase in knowledge on all parental employment statuses after using this android-based application, especially for mothers who did not work or were housewives.

## Acknowledgments

I would like to express my gratitude and show my deep appreciation to my primary supervisor Prof. Syafruddin and dr. Ariyadi guided me throughout this project. I would also like to thank my family and friends who supported my insight into the study.

## References

- Ariputri, G. P., Suprpto, E., & Suradi, T. (2015). Pengembangan Aplikasi Android Untuk Mendukung Pembelajaran Listening Bahasa Inggris Kelas XI SMA. *Didaktikum*, 16(4).
- Arsyad, A. (2011). Media pembelajaran.
- Beal, M. W. (1999). Acupuncture and acupressure: applications to women's reproductive health care. *Journal of Nurse-Midwifery*, 44(3), 217-230. [https://doi.org/10.1016/S0091-2182\(99\)00054-3](https://doi.org/10.1016/S0091-2182(99)00054-3)
- Bell, E., Mthembu, P., O'Sullivan, S., Moody, K., & International Community of Women Living with HIV/AIDS. (2007). Sexual and reproductive health services and HIV testing: perspectives and experiences of women and men living with HIV and AIDS. *Reproductive Health Matters*, 15(29), 113-135. [https://doi.org/10.1016/S0968-8080\(07\)29029-9](https://doi.org/10.1016/S0968-8080(07)29029-9)
- Chandra-Mouli, V., & Patel, S. V. (2020). Mapping the knowledge and understanding of menarche, menstrual hygiene and menstrual health among adolescent girls in low-and middle-income countries. *The Palgrave handbook of critical menstruation studies*, 609-636.
- Choi, B., & Baek, Y. (2011). Exploring factors of media characteristic influencing flow in learning through virtual worlds. *Computers & Education*, 57(4), 2382-2394. <https://doi.org/10.1016/j.compedu.2011.06.019>
- Dinengsih, S., & Hakim, N. (2020). Pengaruh Metode Ceramah Dan Metode Aplikasi Berbasis Android Terhadap Pengetahuan Kesehatan Reproduksi Remaja. *JKM (Jurnal Kebidanan Malahayati)*, 6(4), 515-522.
- Ekawati, C., Adiputra, N., Sudewi, R., & Duarsa, D. P. P. (2017). The effect of health education towards knowledge and teenager attitudes in consuming liquor, Kupang City in 2016. *International Research Journal of Engineering, IT & Scientific Research*, 3 (4), 20, 26.
- Febriana, F. E. (2016). Peran Orang Tua dalam Pencegahan Kenakalan Remaja (Studi Deskriptif di Kelurahan Antirogo Kecamatan Sumbersari Kabupaten Jember).
- Grossman, J. M., Jenkins, L. J., & Richer, A. M. (2018). Parents' perspectives on family sexuality communication from middle school to high school. *International Journal of Environmental Research and Public Health*, 15(1), 107.
- Intaravanne, Y., & Sumriddetchkajorn, S. (2015). Android-based rice leaf color analyzer for estimating the needed amount of nitrogen fertilizer. *Computers and Electronics in Agriculture*, 116, 228-233. <https://doi.org/10.1016/j.compag.2015.07.005>
- Kusheta, S., Bancha, B., Habtu, Y., Helamo, D., & Yohannes, S. (2019). Adolescent-parent communication on sexual and reproductive health issues and its factors among secondary and preparatory school students in Hadiya Zone, Southern Ethiopia: institution based cross sectional study. *BMC pediatrics*, 19(1), 1-11.
- Maina, B. W., Ushie, B. A., & Kabiru, C. W. (2020). Parent-child sexual and reproductive health communication among very young adolescents in Korogocho informal settlement in Nairobi, Kenya. *Reproductive Health*, 17, 1-14.
- Malterud, K. (2001). The art and science of clinical knowledge: evidence beyond measures and numbers. *The Lancet*, 358(9279), 397-400. [https://doi.org/10.1016/S0140-6736\(01\)05548-9](https://doi.org/10.1016/S0140-6736(01)05548-9)

- Mumtaz, Z., & Salway, S. (2009). Understanding gendered influences on women's reproductive health in Pakistan: moving beyond the autonomy paradigm. *Social science & medicine*, 68(7), 1349-1356. <https://doi.org/10.1016/j.socscimed.2009.01.025>
- Nazmi, A.Y.F.R.A.N. (2020). Pengaruh aplikasi sidimes berbasis android terhadap pengetahuan ibu balita tentang stunting. *J. Keperawatan* 12, 859–868.
- Noe, M. T. N., Saw, Y. M., Soe, P. P., Khaing, M., Saw, T. N., Hamajima, N., & Win, H. H. (2018). Barriers between mothers and their adolescent daughters with regards to sexual and reproductive health communication in Taunggyi Township, Myanmar: What factors play important roles?. *PloS one*, 13(12), e0208849.
- Sari, R. E. P. (2010). Hubungan Antara Tingkat Pendidikan dengan Pengetahuan Wanita Tentang Faktor Risiko Kanker Payudara di Rw. 02 Kompleks Taman rempoa Indah. Tahun 2010.
- Shams, M., Mousavizadeh, A., & Majdpour, M. (2017). Mothers' views about sexual health education for their adolescent daughters: a qualitative study. *Reproductive health*, 14(1), 1-6.
- Sheen, S., Anitha, R., & Natarajan, V. (2015). Android based malware detection using a multifeature collaborative decision fusion approach. *Neurocomputing*, 151, 905-912. <https://doi.org/10.1016/j.neucom.2014.10.004>
- Tedeschi, A., & Benedetto, F. (2017). A real-time automatic pavement crack and pothole recognition system for mobile Android-based devices. *Advanced Engineering Informatics*, 32, 11-25. <https://doi.org/10.1016/j.aei.2016.12.004>
- Titiloye, M. A., & Ajuwon, A. J. (2017). Knowledge and quality of adolescents reproductive health communication between parents and their adolescents children in Ibadan, Nigeria. *Journal of public health in Africa*, 8(1).
- Zakaria, M., Xu, J., Karim, F., & Cheng, F. (2019). Reproductive health communication between mother and adolescent daughter in Bangladesh: a cross-sectional study. *Reproductive health*, 16(1), 1-12.
- Zhang, X., Gao, Y., Yan, X., de Pablos, P. O., Sun, Y., & Cao, X. (2015). From e-learning to social-learning: Mapping development of studies on social media-supported knowledge management. *Computers in Human Behavior*, 51, 803-811. <https://doi.org/10.1016/j.chb.2014.11.084>
- Zheng, W., Yang, B., & McLean, G. N. (2010). Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management. *Journal of Business research*, 63(7), 763-771. <https://doi.org/10.1016/j.jbusres.2009.06.005>
- Ziapour, A., Sharma, M., NeJhaddadgar, N., Mardi, A., & Tavafian, S. S. (2020). Educational needs assessment among 10–14-year-old girls about puberty adolescent health of Ardebil. *Archives of Public Health*, 78(1), 1-6.