The Effectiveness of Health Education Using Web-Based Family Planning Information Media "Life Care" in Improving Acceptors' Knowledge

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Abstract

One approach to strengthening the quality of human resources is to ensure that individuals have access to reliable reproductive health information, particularly by improving knowledge about contraception through innovative digital platforms. This study examined the effectiveness of digital health education delivered through the "LIFE CARE" platform in enhancing reproductive health knowledge related to contraceptive methods among current contraceptive users. The observation was carried out at the Karya Wanita Community Health Centre in Pekanbaru City from January to July 2024, involving 77 participants selected purposively from a total of 220 contraceptive users. A one-group pretest–posttest design was applied, and knowledge scores were analyzed using the Wilcoxon test with SPSS version 25 software. Results demonstrated a significant increase in knowledge after the intervention, with median scores rising from 75 (SD = 14.27) before the intervention to 95 (SD = 6.10) post-intervention ($p < 0.001$). These findings confirm that web-based educational interventions are effective in enhancing contraceptive knowledge and highlight their potential to strengthen family planning services and digital health education strategies at the primary healthcare level

Keywords: Digital Health Promotion, Web-Based Education, Family Planning, Contraceptive Knowledge, Reproductive Health

INTRODUCTION

Indonesia is one of the countries with the highest population in the world. According to Law Number 52 of 2009 on Population and Family Development, the high growth rate is attributed to the persistently high birth rate and rapid death rate. To address these issues, one of the Indonesian government's population policies is the Family Planning program (Muaya et al., 2021). The general objective of the Family Planning (FP) program is to control the country's population growth in accordance with the Small, Happy, Prosperous Family Norm, namely controlling the number of children born (O'Brien et al., 2023; Rosyadi et al., 2020).

Despite these efforts, challenges remain in achieving the expected outcomes of family planning programs, as reflected in national contraceptive prevalence targets and their realization at the provincial level (Kwete et al., 2018; Schwandt et al., 2018). This indicates the need to explore not only service availability but also the knowledge and decision-making capacity of family planning acceptors (Osuafor et al., 2018; Yirgu et al., 2020). According to the SDGs (Sustainable Development Goals), the contraceptive use rate in 2020 had a target Contraceptive Prevalence Rate (CPR) of 63.4% in 2020. According to the results of the 2022

family data collection by the Indonesian National Population and Family Planning Board (*Badan Kependudukan dan Keluarga Berencana Nasional/BKBN)*, the prevalence rate of family planning participants in Indonesia in 2022 was 59.9%. Based on provincial distribution, the highest prevalence rates of family planning use are in South Kalimantan (71.1 %), Bangka Belitung Islands (67.4%), and Bengkulu (66.8%), while the provinces with the lowest prevalence are Papua (10.9%), West Papua (28.6%), and Maluku (34.2%). Riau Province has a prevalence of 56.7% for family planning use (Kemenkes RI, 2022).

According to Wajhillah & Yulianti (2017), a very common problem faced by fertile couples when using contraception is the difficulty in choosing an effective type of contraception to use according to their condition. Many choose contraception simply by trial and error or by following recommendations from others who do not know much about contraception, resulting in the use of contraception being very ineffective, both in terms of material and time spent.

Knowledge of family planning acceptors is closely related to their choice of contraceptives; having a thorough understanding of specific contraceptive methods can change an acceptor's perspective, enabling them to select the most appropriate and effective option. This increased understanding makes family planning users more comfortable with their chosen contraception and helps prevent mistakes in selecting the best method for their needs. With increased respondent knowledge, awareness of using long-term contraceptives also increases (Alomair et al., 2023; Debpuur et al., 2002; Mahmudah, 2016).

Lack of knowledge about various contraceptive methods, their side effects, and cultural norms influences the choice of contraceptives. Providing accurate information to family planning users in choosing a contraceptive method is crucial (Dingeta et al., 2021; Shumet et al., 2024; Sukatin et al., 2022). Therefore, providing health education to convey information using media is increasingly relevant for increasing family planning users' knowledge, including using web-based media.

The web is a collection of pages containing information, text, still or moving images, animations, sounds, and a combination of all of these. Web-based information media is a part of an information system that is connected to other computers through a network. *Web*-based information systems are used not only by users of information and communication technology organizations but also by individuals who interact with this technology to assist with various tasks, such as providing health information, including information related to family planning (Kassa et al., 2014; Ritonga & Effiyaldi, 2023; Tafese et al., 2013).

Despite widespread digitalization, the use of web-based educational media in reproductive health remains underutilized in Indonesia, particularly at the community health center level. Most existing initiatives have focused on maternal and child health or infectious disease prevention, while family planning education has received comparatively little digital innovation. Previous studies have rarely assessed interactive, web-based platforms tailored for local family planning/FP users (FP refers to the use of contraception to prevent pregnancy), creating a gap in evidence for their effectiveness in improving contraceptive knowledge. At the global level, WHO and UNFPA emphasize that digital health interventions can expand access to reproductive health services, reduce inequalities, and improve informed decision-making (UNFPA, 2022; WHO, 2021). However, there is still a lack of country-level empirical evidence demonstrating how such recommendations can be translated into practical, community-based interventions in Indonesia.

Theoretically, digital health promotion can be understood through behavior change communication models, such as the Health Belief Model and Diffusion of Innovation Theory, which explain how individuals adopt health behaviors when supported by accessible, credible, and user-friendly information systems (Glanz, 2015). In line with these ideas, digital platforms have the potential to strengthen people's understanding of contraceptive methods. Even so, their practical relevance needs to be examined within local settings, as each community carries its own social and cultural dynamics that may shape how new information is received and interpreted.

In Indonesia, the use of digital platforms as educational tools remains limited, especially in relation to contraceptive information. The government has introduced web-based resources, including the SATUSEHAT system under the Ministry of Health and the online counseling service provided by BKKBN. However, regular efforts to spread knowledge and information haven't fully integrated these systems yet. Currently, the established platforms largely serve administrative or informational purposes, not as interactive media designed for direct engagement with contraceptive users. This limited adoption is acknowledged in official government policies and public statements from both the Ministry of Health (Kemenkes RI, 2023) and the National Population and Family Planning Board (BKKBN, 2023). Many health centers still rely on conventional face-to-face counseling, which limits outreach to younger and more digitally active populations. Thus, there is a clear gap between national policies for digital health and their translation into effective, community-level educational practices. Addressing these gaps through locally developed, user-oriented web-based platforms, such as the "LIFE CARE" system, is therefore both timely and necessary.

Karya Wanita Health Center of Pekanbaru is one of the community health centers in Pekanbaru City. In 2023, the Family Planning Clinic recorded 120 injectable contraceptive users, 36 implant users, 32 pill users, and 22 condom users, with the least use of IUD contraception among 10 people. In this community health center in particular, many acceptors do not know which contraceptives are suitable for them due to a lack of knowledge. This phenomenon reflects the broader national challenge of low contraceptive literacy and limited decision-making autonomy among acceptors, despite the availability of contraceptive services. This issue emphasizes the need to quickly develop innovative digital health education strategies. Therefore, health education using the web-based "LIFE CARE" family planning resource is necessary to increase family planning acceptors' knowledge about contraception, making it easier to choose the right type of contraception for use.

The purpose of this study is to determine the effectiveness of health education using “LIFE CARE” web-based family planning information media in increasing the contraceptive knowledge of acceptors at the Karya Wanita Health Center of Pekanbaru.

METHODS

This study employed a quantitative approach with a quasi-experimental design using a one-group pretest–posttest. This design aimed to determine differences in knowledge before and after health education was provided through the web-based family planning information media “LIFE CARE.” The study was conducted at the Karya Wanita Health Center in Pekanbaru City. The population consisted of 220 family planning acceptors, from which a sample of 77 respondents was drawn. Participants were selected using purposive sampling, with inclusion criteria: (1) currently registered as family planning acceptors at the Karya Wanita Health Center, (2) aged 18–45 years, (3) able to read and access web-based media, and (4) willing to participate by signing informed consent. Individuals were excluded from the study if they presented with cognitive or communication impairments severe enough to obstruct their ability to complete the research questionnaire.

The study followed a pretest–posttest format to observe changes before and after the intervention. A structured questionnaire consisting of 20 multiple-choice questions served as the primary tool for data collection. The items covered key topics related to contraception, such as its definition, the types of methods available, how each method works, and common benefits, drawbacks, and side effects. The content of the questionnaire was adapted from educational materials issued by the National Population and Family Planning Board (BKKBN). To ensure that the questions were appropriate and clearly understood, two public health specialists and

one midwifery expert reviewed the instrument. A pilot test involving 30 respondents outside the main sample was then conducted to assess reliability, yielding a Cronbach's Alpha value of 0.87. Knowledge scores were classified into three groups: 0–50 (low), 51–75 (moderate), and 76–100 (good).

The intervention used the "LIFE CARE" web-based family planning information media (Fig. 1). The media was developed independently by the research team as part of this project, without institutional or external collaboration. The development process included content adaptation from BKKBN materials, user interface design, and web deployment. The platform is accessible at: https://familyas.github.io/. The operational content of "LIFE CARE" was structured according to the most common demographic and contraceptive characteristics of family planning acceptors at the study site. The media contained: (1) a general introduction to family planning and its objectives; (2) detailed explanations of the most widely used contraceptive methods: injectables, implants, and pills - including mechanisms of action, effectiveness, advantages, disadvantages, and side effects; (3) additional information on other methods such as IUDs and condoms, which were used by fewer respondents; and (4) visual illustrations, infographics, and FAQ sections designed for respondents with predominantly secondary-level education and limited health literacy. A summary of the "LIFE CARE" content is provided in Table 1.

Table 1. Summary of "LIFE CARE" Web-Based Media Content

Section	Content	Format
Introduction	Definition and purpose of family planning	Text + infographic
Contraceptive methods	Injectables, implants, pills (detailed)	Illustrated modules
Other methods	IUDs, condoms, brief overview	Short text + images
Mechanism of action	How each method works	Animated diagrams
Advantages & disadvantages	Comparative tables	Visual charts
Side effects	Common and rare side effects	FAQ format
Benefits of family planning	Maternal–child health, economic, social	Infographic

Data analysis followed three main steps. First, descriptive statistics (frequency, percentage, median, minimum–maximum, and standard deviation) were used to summarize respondent characteristics and knowledge scores. Second, the Kolmogorov–Smirnov test was conducted to determine data normality. The results indicated that both pretest and posttest knowledge scores were abnormally distributed ($p < 0.05$). Consequently, non-parametric analysis was utilized. Third, the Wilcoxon signed-rank test was employed to analyze variations in knowledge scores pre- and post-intervention, and the effect size (r) was computed to evaluate the extent.

All statistical analyses were conducted using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). A 95% confidence interval (CI) and a significance level of $p < 0.05$ were applied for hypothesis testing.

Figure 1: Web-based Family Planning Information Media "LIFE CARE"

This research was declared ethically appropriate by the Health Research Ethics Committee of Institut Kesehatan Payung Negeri Pekanbaru, under Ethical Exemption Certificate No. 057/IKES PN/KEPK/V/2024, issued on May 08, 2024.

RESULT

Table 2. Frequency Distribution of Characteristics of Family Planning Acceptors at Karya Wanita Health Center of Pekanbaru

No	Characteristics	Frequency	Percentage
1	Age (years)		
	< 20 years old	3	3.9
	20–35 years old	50	64.9
	> 35 years old	24	31.2
	Total	**77**	**100**
2	Education		
	Primary education	11	14.3
	Secondary education	50	64.9
	Higher education	16	20.8
	Total	**77**	**100**
3	Employed Status		
	Unemployed	53	68.8
	Employed	24	31.2
	Total	**77**	**100**

Table 2 shows that among the 77 respondents, the majority were aged 20–35 years (65%), had secondary education (64.9%), and were unemployed (68.8%).

Table 3. Frequency Distribution of Contraceptive Devices Used at Karya Wanita Health Center of Pekanbaru

Contraception	Frequency	Percentage

IUD	4	5.2
Implant	21	27.3
Injectables	34	44.2
Pill	14	18.2
Condom	4	5.2
Tubectomy	0	0
Vasectomy	0	0
Total	**77**	**100**

As presented in Table 3, the most frequently used contraceptives were injectables (44.2%), followed by implants (27.3%) and pills (18.2%). Only 5.2% used IUDs, and no respondents reported tubectomy or vasectomy.

Table 4. Knowledge Scores of Family Planning Acceptors Before and After Health Education Using Web-Based Media "LIFE CARE"

Treatment	N	Median	Min-Max	SD	SE
Pre Test	77	75	45 – 100	14.266	1.626
Post Test	77	95	75 – 100	6.101	0.695

Table 4 displays the distribution of knowledge scores. Before the intervention, the median knowledge score was 75 (range 45–100, SD=14.266), indicating that most respondents had sufficient knowledge. After receiving education through the "LIFE CARE" media, the median score increased to 95 (range 75–100, SD = 6.101), reflecting good knowledge.

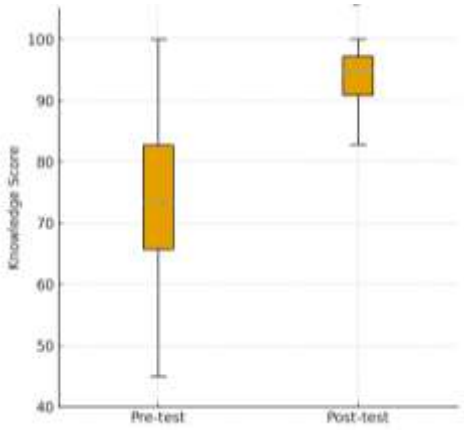

Figure 2. Knowledge scores of family planning acceptors before and after health education using the "LIFE CARE" web-based media at Karya Wanita Health Center, Pekanbaru.

Figure 2 provides a visual comparison of knowledge scores before and after the intervention. The boxplot shows a substantial upward shift in the median, a narrower spread in post-test scores, and the absence of lower outliers after the intervention, indicating both improvement and more consistent knowledge levels among respondents.

Table 5. Normality Test Results (Kolmogorov-Smirnov)

Treatment	N	Statistics	Df	Sig.
Pre Test	77	0.144	77	0.000
Post Test	77	0.233	77	0.000

Based on Table 5, the results obtained before health education using the web-based family planning information media "LIFE CARE" had a sig. value of 0.000 $p < 0.05$ and a sig. value after 0.000 $p < 0.05$. Both pre-test and post-test data were not normally distributed ($p < 0.05$), so the Wilcoxon signed-rank test was used.

Table 6. Effectiveness of Health Education Using "LIFE CARE" Web-Based Media on Contraceptive Knowledge

Treatment	N	Median	Mean rank/Sum of rank	SD	P – *Value*	Significance
Pre Test	77	75	36.50/2628.00	14.266	0.000	Significant
Post Test	77	95	0.00	6.101	0.000	Significant

Based on Table 6, the median knowledge score increased by 20 points after the intervention. The Wilcoxon signed-rank test showed a significant difference ($p < 0.001$), confirming the effectiveness of the "LIFE CARE" media in improving contraceptive knowledge. In the Wilcoxon test, the mean rank represents the average position of differences in scores between pre-test and post-test. The higher mean rank on the positive side reflects an overall rise in knowledge, as most respondents scored better on the post-test than on the pre-test. A few respondents showed the same score on both tests; these ties indicate that their level of knowledge did not change. Even so, the general pattern still showed improvements for most participants, which led to a statistically significant result. The size of this improvement was explored through Wilcoxon's effect size (r), computed from the Z value and the total number of observations ($r = Z / \sqrt{N}$). The calculation produced an effect size of $r = 0.62$, a value commonly interpreted as large. This suggests that the "LIFE CARE" intervention made a substantial contribution to improving respondents' knowledge.

DISCUSSION

Based on the research results, the median value of knowledge before receiving health education using the web-based "LIFE CARE" family planning resource was 75. This means that the majority of respondents had sufficient knowledge. Adequate knowledge among acceptors was still perceived as insufficient to maintain their continued use of contraception. The acceptor's sufficient knowledge was due to their educational level, with the majority having secondary education (50 respondents, 64.9%). Education is necessary to obtain supporting health information, including contraceptive use. Education levels influence knowledge, so respondents with low education levels correlate with a lack of awareness of prevention (Susiloningtyas et al., 2023). This situation is also supported by the majority of unemployed acceptors, 53 respondents (68.85%). Employment will help someone expand their knowledge and obtain more information to help them choose effective and efficient

contraception (Agustina et al., 2022). However, the majority of acceptors were aged >20 years. Age >20 years is considered optimal for understanding and decision-making, so acceptors have a high likelihood of improving their knowledge (Susiloningtyas et al., 2023).

After being given health education using the web-based family planning information media "LIFE CARE" the median result was 95. Based on the results of statistical tests with the Wilcoxon test , the p-value shows = 0.000 where the p-value <0.05, which means there is a difference in knowledge before and after receiving health education using the web-based "LIFE CARE" family planning resource, so H_0 is rejected. Therefore, it can be concluded that health education using web-based family planning information media "LIFE CARE" is effective in increasing contraceptive knowledge of acceptors at the Karya Wanita Health Center of Pekanbaru.

The increase observed in this study can be explained by several factors. First, "LIFE CARE" provided structured, comprehensive, and visually supported content, which made contraceptive information easier to understand and remember. Second, the use of interactive and user-friendly web-based media increased engagement compared to conventional counseling methods. Third, respondents were predominantly within the productive age group (20–35 years), a population more accustomed to digital platforms, making them more receptive to online health education. These contextual factors collectively contributed to the significant improvement in knowledge scores.

The effectiveness of the intervention is also consistent with behavioral change communication theories. According to the Health Belief Model, individuals are more likely to adopt health-related knowledge and behaviors when they perceive the benefits to outweigh the barriers and have access to clear cues to action (Glanz, 2015). The "LIFE CARE" platform provided such cues by offering accessible, accurate, and credible contraceptive information. Furthermore, from the perspective of the Diffusion of Innovation Theory, digital platforms act as innovative channels that accelerate knowledge transfer and adoption of health behaviors within a community (Rogers, 2003). In this study, the innovation lay in translating family planning education into an interactive digital format, which facilitated more efficient knowledge acquisition.

The knowledge of family planning acceptors is closely related to their choice of contraceptives; having a good understanding of certain contraceptive methods can change an acceptor's perspective, enabling them to select the most appropriate and effective contraceptive. This increased knowledge makes family planning users more comfortable with

their chosen method and helps them avoid mistakes in selecting the best contraceptive for themselves (Mahmudah, 2016).

The results of this study are in line with previous research conducted by Fitri & Fitriani (2019). Based on the T-Dependent test, where there was a difference in respondents' knowledge before and after being given education through audio-visual media, with mean and median values before being 10.34 and 10, and mean and median values after being 10.65 and 10, with a significance value of 0.001 ($p < 0.005$). The results of this study are also in line with previous research conducted by Witantri (2022). Based on the Wilcoxon test, the results of the study showed the influence of providing health education with the KlikKB application media on the interest of IUD acceptors at community health centers in Pemalang Regency, with the results of Asymp Sig < α (0.000 <0.05).

The results of this study are in line with previous research conducted by Wardani (2020), Based on the results of the Wilcoxon test analysis, a significant P value of 0.014 was obtained, which means that there is an influence of health education with audio-visual media on intuitive decision-making for long-term contraceptive methods. The results of this study are in line with previous research conducted by Shofa et al., (2023). Based on the results of the Wilcoxon test analysis, the results obtained were that the level of knowledge before being given counseling media was in the poor category, and after being given counseling media, it was in the satisfactory category. IUD counseling with animated video media was effective in increasing knowledge in fertile couples in Pucung Village, Pekalongan Regency.

Health education using the web-based "LIFE CARE" family planning resource is effective in increasing acceptor knowledge. In this case, health education through web-based family planning information media stimulates acceptor views regarding the contraceptive method that prospective acceptors should choose. The web-based family planning information media "LIFE CARE" conveys information on the various advantages, disadvantages, how it works, and effectiveness and efficiency of each contraceptive method, thus creating confidence in choosing a contraceptive method according to the needs of family planning acceptors. The “LIFE Care” digital platform is relevant for enhancing education on contraception and family planning within primary care (Puskesmas/public health settings). Through this website, information can be disseminated more rapidly and accurately, enabling communities to obtain the knowledge they need with greater ease. In turn, this contributes to sustainable human resource development, especially concerning public health outcomes and overall community welfare.

In addition, “LIFE Care” has the potential to be integrated with other national health platforms, such as KlikKB, Posyandu Digital, and PeduliLindungi. If the platforms are connected, the material provided through LIFE Care would be easier for many communities to access and could naturally fit into the public-health activities currently implemented at the national level (Kemenkes RI, 2023). This approach may further strengthen Germas (Gerakan Masyarakat Hidup Sehat) and the National Family Planning Program (BKKBN) by expanding public access to reliable contraceptive information, thereby helping individuals make well-informed reproductive health decisions.

The limitations of this study can be seen in several aspects. The observed population was relatively small and drawn from only one primary healthcare area, which restricts the extent to which the findings can be generalized. The use of self-administered questionnaires may also have introduced response bias. In addition, the short duration of observation was insufficient to capture meaningful changes in community behavior. Later studies should look at participants for a longer time to see if the effects last, and they should include more locations so the findings are not limited to one area. Comparative analyses with other national or international platforms could also provide useful insights for strengthening the credibility and further development of the platform

CONCLUSION

The results of this study show that the LIFE CARE digital platform helped raise participants’ understanding of contraception and family planning, as reflected in the clear increase in scores from before to after the intervention ($p < 0.05$). This suggests that web-based tools can function as a useful medium for sharing contraceptive information in a way that is accessible and tailored to individual needs. Public health workers are encouraged to introduce and promote the LIFE CARE platform so that community members who seek information on reproductive health can reach it easily. Bringing this platform into routine national health services may also help broaden the impact of technology-supported education and contribute to better overall public health outcomes.

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