RESEARCH ARTICLE

RETRACTED: Consumer perspectives on reproductive health after using the Jakpros smart mobile health application: A cross-sectional, qualitative study [version 1; peer review: 1 not approved]

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Retraction

The article titled “Consumer perspectives on reproductive health after using the Jakpros smart mobile health application: A cross-sectional, qualitative study” ([version 1; peer review: 1 not approved] F1000Research 2019, **8**: 396 <https://doi.org/10.12688/f1000research.17894.1>) has been retracted by F1000Research on the grounds of scientific misconduct.

On submission to F1000Research, all manuscripts undergo plagiarism checks as standard—this is detailed in our [Originality policies](#). Upon submission, authors are also required to declare that the article is not under consideration or review by another publisher. At this stage in the publication process, our plagiarism detection software did not identify any significant duplication of text. Following publication of the article, the F1000Research editorial team were notified of a high degree of similarity between this manuscript and one already published in the Institute of Physics (IOP) Conference Series: Earth and Environmental Science (B Wiweko *et al* 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **248** 012038 <https://iopscience.iop.org/article/10.1088/1755-1315/248/1/012038/pdf>). On investigation, the extent of overlap between these two publications was substantial, and this was deemed a case of duplicate publication. Duplicate publication is a major ethical issue and, as a member of the Committee on Publication Ethics (COPE) and a follower of the International Committee of Medical Journal Editors (ICMJE) recommendations, F1000Research takes such matters seriously.

In response to our concerns, corresponding author Budi Wiweko acknowledged that publication

misconduct has taken place and has been informed that, due to the extent and nature of duplication between the articles published in F1000Research and IOP, F1000Research will retract the article and publish a linked retraction notice.

In line with COPE guidelines, F1000Research has informed the Publisher of IOP Conference Series about this issue, and our final decision has been communicated to all authors and their respective institutions.

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Abstract

Background: Good reproductive health is important for individuals and also for the development of children. Knowledge plays an important role in women's reproduction health. Our study examined women's perspectives and knowledge of reproductive health after using the free Jakarta Reproduction Sehat (Jakpros) application (app) on a daily basis for two weeks.

Methods: Our study used a cross-sectional, qualitative design. The sample consisted of 12 participants from two sub-district general hospitals in Jakarta. Participants were chosen using purposive sampling and consisted of women of reproductive age who had completed previous questionnaires on their use of Jakpros. We used descriptive analytics and a qualitative method. Data were collected by direct observation in small focus group discussions.

Results: Participants said that after they used the Jakpros app, they were more aware of their reproductive health. Their knowledge increased after counselling combined with Jakpros usage. They also said that the features in the app made it easier to contact their doctor and to access their nearest hospital.

Conclusion: Jakpros is a convenient way to access reliable reproductive health information.

Keywords

Jakarta Reproduksi Sehat, Jakpros, Mobile Application, Reproductive Health, Social Media

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Approval Status

1

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Associated Retraction

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Introduction

Good reproductive health is important for individuals and also for the development of children. Reproductive health is, or should be, a serious concern for every woman. A nation's mortality and morbidity are dependent on the reproductive health of its citizens. Knowledge plays an important role in women's reproduction health. For example, it informs them on how and when to seek health services¹.

Mobile health applications (apps) are rapidly proliferating and are widely used around the world to access health information². In 2018, more than 50% of people worldwide had at least one mobile health app on their device³. There are more than 100,000 smartphone health apps available today. The main goal of internet-based health apps is ready accessibility⁴. Mobile health apps have a number of benefits: they enable fast, easy searches of almost unlimited health information²; they bring doctors and patients closer together; and they provide health information at any time⁵.

The increasing popularity of mobile health apps is due to a number of things. Firstly, people are more comfortable sharing their experiences, expressing emotions, and exchanging ideas on specific topics within a like-minded community. Secondly, people are curious and want more information about their health experiences⁶. Mobile health apps have been successful in reducing health costs. Preventive action by internet disseminated information is much more efficient than manual methods

such as brochures, leaflets or posters⁷. Technology has the potential to alleviate time management issues involved in counselling, treatment waits, and registration⁷.

One limitation of mobile health apps is that, due to the lack of quality controls on the internet, they vary widely in quality and accuracy. Providing good-quality, evidence-based health information to patients is an important goal⁶.

Due to the increasing popularity of mobile health apps, the Jakarta Reproduction Sehat (Jakpros) smart mobile app was developed in 2018 (Figure 1). This free app is specifically designed to provide women with a convenient way to improve reproductive health knowledge. Jakpros has a section that shows the nearest hospitals from patients to help them access medical care. Other features include an educational page with general information on reproductive health, which is divided into several sections (e.g. contraception, high-risk pregnancy, cancer). Furthermore, the Jakpros application has a question and answer service supported by obstetrics and gynecology doctors (Figure 2B).

Currently, the Jakpros app is used in several subdistrict hospitals in Jakarta. The aim of the present study was to examine perspectives and knowledge of reproductive health issues in women who used Jakpros as part of their daily activity. Our results will help us improve the usage and quality of the Jakpros app for women in the community.

Figure 1. (A) Jakpros log-in page; (B) Jakpros news page.

Figure 2. (A) Educational Page Feature; (B) Questions and Answers Section.

Methods

This study follows on from our past quantitative research⁸. In the previous study, participants used the Jakpros smart mobile app for 2 weeks. During this time, they read the educational page feature to enrich their knowledge (Figure 2A). They could also consult their healthcare providers about their complaints or for health information (Figure 2B). We saw an improvement in health knowledge using pre- and post-test questionnaires. In the current study, we explored participants' opinions and detailed perspectives on reproductive health and the Jakpros application. We used a qualitative method to analyze the main topic.

We explored the different perspectives and behaviors of participants in detail. We adopted phenomenology study as our basic paradigm. The goals of this paradigm are to evaluate participants' experience to be as factual as possible. Furthermore, it describes the different perspectives of the participants⁹.

Participants and study setting

Participants were recruited in May 2018. All participants had participated in a previous quantitative study of Jakpros. We recruited participants from two sub-district hospitals in Jakarta: Tanjung Priok Subdistrict Hospital and Tanah Abang Sub-district Hospital. We used purposive sampling of women with the following criteria:

- They had previously participated in our quantitative research.
- They had used the Jakpros application for 2 weeks.

- They lived in Jakarta.

They provided written informed consent to participate.

Our study method was focus group discussion and direct observation during these discussions. The study consisted of two groups of six participants interviewed on different days. Discussions were held in the hospital hall. Our research team for the discussions consisted of two obstetrics and gynecology specialists (AR and SO) and one general practitioner (IPP).

Use of Jakpros

The participants were instructed to use the Jakpros app for two weeks on a daily basis. Information on nutrition during pregnancy, contraception and family planning, cervical cancer, and high-risk pregnancy were given to participants in the Jakpros app, such as.

Data collection

The list of questions was prepared by our obstetrics and gynecology specialist from Universitas Indonesia. Each participant was interviewed within 10 minutes using a list of questions.

The reproductive section of the discussion used the same questions as our previous questionnaire⁸ by modifying the quantitative questions into qualitative questions. For this study, we were able to record participants' answers and their perspectives too. Participants were asked about their reproductive knowledge in areas such as cancer, cervical cancer, pregnancy

care, contraception, and high-risk pregnancy. We asked these questions to measure participants' knowledge after using Jakpros for 2 weeks. Next, we focused on participants' use of the Jakpros application. They shared their personal experiences of using it in their day-to-day lives. Participants were asked about obstacles and benefits of using the application.

In the discussion, we asked questions and participants took turns to answer them. We also facilitated the discussion. We emphasized that there were no wrong or right answers, we did not offer opinions and took a neutral stance to answers. We tried to make the discussion as relaxed as possible so participants would enjoy it. Each discussion lasted one hour, we audio-recorded all of the discussion and documented it with photos. For data analysis, we transcribed the data from audio-recorder into narrative document.

Results

The discussion forum was conducted with 12 participants from two sub-district hospitals in Jakarta. Most of them were homemakers, 24–38 years old with high school diplomas as their highest educational qualification. All had participated in our previous quantitative study, which included a post-test questionnaire. This current study was a qualitative study, with results obtained using focused discussion.

Cervical cancer in reproductive health

Our first question was about cancer in reproductive health, and the discussion of perspectives went into considerable depth. Early identification and treatment of cancer improves outcomes, so awareness can be life-saving. Answers were promising; participants knew about several types of cancer in women and their initial symptoms, and the etiology of cervical cancer and that it is preventable by HPV vaccination. Some of them knew about the type of examination for detection of malignancy, and treatments such as radiotherapy or hysterectomy in cervical cancer. They understood about the importance of hygiene in cervical cancer prevention, and that more sexual partners increases the risk of cervical cancer.

“Cervical cancer is cancer in the neck of uterus. I know other types of cancer in women such as ovarian cancer. For the signs, bleeding is a sign for cervical cancer and bump in breast for breast cancer. I heard food can be an etiology for cervical cancer. A blood test is for detecting cervical cancer. I heard too for cervical cancer treatment, the doctor will do cryotherapy, but I do not know what it is and doctor will do surgery too. To prevent it, we have to maintain good genital hygiene such as changing pads regularly during periods and getting HPV vaccination. I think people who are sexually active have to have further examinations for early detection and if the result is positive, the treatment will be done earlier.”

“The breast cancer shows as a bump in the breast and changes in the skin surface like an orange skin. I've heard about USG for detecting ovarian cancer and, if positive, the doctor will do radiotherapy.”

“I think bloody pee is a sign of cervical cancer, but I am not sure. It's caused by HPV virus. Causes can be genetic and a large

number of sexual partners. Detection is by pap smear examination. One of type of treatment is chemotherapy. My friend did it before, she had cervical cancer and now she has passed away. Preventable measures are good hygiene and being faithful to your sexual partner. I heard about HPV vaccine, you will do it three times and you can get hepatitis B vaccine too. If people are sexually active, they have to do routine pap smears or IVA tests at least once a year.”

“The important things for prevention are don't ever change your sexual partner, be faithful and keep good hygiene. Get your pap smear test after marriage.”

“Bleeding is an early sign of uterus neck cancer. I do not know the difference between cervical cancer or uterus neck cancer. But I know IVA is an early test to detect malignancy. If you are sexually active, you should get the test so you can be treated early if you have it.”

Anemia and nutrition in pregnancy

The second question was about anemia and nutrition in pregnancy. Anemia and nutrition are related, and this information is covered in the Jakpros education section. Most participants did not know the initial symptoms of anemia, or the main nutrition components recommended during pregnancy, but most participants knew the main symptoms of anemia. They knew about tests and treatment for anemia, but there was less understanding of the importance of iron in food. Surprisingly, just one participant noted that postpartum hemorrhage can have anemia as a complication. Their answers about nutrition showed only basic knowledge.

“Sign of anemia are dizziness and weakness. Anemia is decreased of red blood cells which can be measured through blood test. So the doctor will give blood booster supplement. If you get anemia during your pregnancy, you will need a blood transfusion after birth. I know components of nutrition are carbohydrate, calcium, iron, fat, vegetable and vitamins. Those are so important in pregnancy. Calcium for fetal bone. Protein for fetal brain, carbohydrate for fetal weight and iron for mother blood. I am not sure, but I think you have to take folic acid, iron and calcium supplement once in daily during trimester 2 and 3.”

“Anemia is decreased iron in your body. I eat meat regularly to prevent it. Bleeding after birth can cause anemia which is a serious side effect. I know folic acid important for your baby's brain.”

“If your blood is decreased you will be dizzy. The reason you feel it is because your nutrition is low. Good nutrition is important.”

“Anemia can be prevented by eating food that contains iron. A baby's weight will be low because of it.”

“Anemia is lack of blood, we need vitamins.”

“During anemia, the sign is nausea.”

Contraception and family planning

We continued the discussion by asking about contraception and family planning. Knowledge on contraception and family

planning are crucial for all couples. Although two or three participants declined to answer or participate in discussion of previous questions, most answered this question. This appeared to reflect their knowledge of or interest in these topics. They answered the question and shared their personal experience. Most participants were sexually active and knew about contraception. They knew what its main goals were, and how various contraception types functioned, and what their side effects were. They were also confident in their ability to choose contraception. In most cases, their husbands and doctors were involved in their choice of contraception. Participants felt that they knew their bodies better than other people and considered what was best for their bodies when they chose contraception.

"Type of contraception are condom, pill, IUD and injection. I have used the pill and it made me fat. Pills and injections will make you gain weight. For injections, you must have regular injections monthly or every three months. I was lazy and I choose an IUD. It can be used for five years. I had a USG check before choose the IUD and I involved my husband in my choice. Now, I use an IUD for contraception"

"The aim of contraception is to space pregnancies. I used not to use contraception. I was pregnant 1.5 years ago and I am two months pregnant right now."

"The only contraception for preventing STD is condoms. I know that side effects of the pill and injections is bleeding. I talked to my husband before I choose contraception. Our convenience is important."

"I used contraception for spacing my pregnancies. Types of contraception are the calendar method (the traditional method), pills, condoms, and surgery. Condoms can prevent STD, the pill causes bleeding. IUDs will make you bleed too, but not gain weight. If you are careless, you shouldn't use the pill or injection. I saw my doctor before I chose contraception. Now I use natural methods such as the calendar method and coitus interruptus. My husband and I can work together."

"I take a pill a day. I always remember it. It depends on your body, just you know it well."

"IUD can be used for five years. It works for me."

High-risk pregnancy

This was the last question about reproductive health. In this section, we asked about the signs of high-risk pregnancy. We wanted to see how aware participants were of its symptoms. They seemed to know early signs, but not much beyond that. They knew it affected both the fetus and themselves. For this question, participants did not describe their experiences. They offered fewer comments than for the previous question. We assumed that they had never been in that situation, or that they did not know much about this topic. But we considered it positive that they were aware of early signs of risk.

"High-risk pregnancy is if the mother has a history of asthma, untreatable nausea and bleeding. We have to take vitamins regularly and control every month to prevent it."

"If mother has diabetes, the baby will be overweight, and it is not healthy."

"Hypertension in pregnancy causes side effects such as seizure and the death of fetus. Headache is an early sign. You can check your blood pressure."

"An example of high risk is a mother with asthma. People have to have bed rest in pregnancy and not get too tired."

"Vaginal discharge is serious sign and might lead to preterm delivery."

"Diabetes in pregnancy is high risk. Be aware."

Implementation of Jakpros for daily use

Our last question asked about participants' experiences of the Jakpros application – what were benefits or obstacles for daily use. Participants shared opinions and stories. They were positive about the Jakpros application and its benefits for them, such as increased knowledge.

"I used it to get knowledge about reproductive health. My purpose was to get updated. So I routinely read the educational page. It would be better if they posted it every day or weekly, so I could be better updated."

"I checked my doctor's schedule through Jakpros. It made easier to access information, and I didn't have to call the hospital to ask. I can check my pregnancy estimate by inputting the dates of my last period. Unfortunately, it is not connected to direct registration and is not available in all Jakarta hospitals."

"Jakpros has increased my knowledge. I totally trust it because I get it from trusted sources. The question and answer section helped me a lot. Sometimes I feel too shy or lazy to go to a doctor just to ask something. Now I can access information anywhere."

"I can ask a doctor questions without hesitation and shame. I wish the doctors could be online 24 hours a day, and give faster responses."

Discussion

In this study, we explored participants' knowledge and perspectives of reproductive health and experiences of the Jakpros application after using it on a daily basis for two weeks. Firstly, they could recognize the early signs of cancer or something wrong with their bodies (e.g. bleeding, bumps in breast). Furthermore, for cancer, they knew about basic diagnostic examinations and treatment. Our results were the qualitative study from our previous quantitative study, which found that women are likely to inform themselves of signs and risk factors for cancer in reproductive systems. They were alert to its signs and risk factors¹⁰. According to another previous study, patients search the internet for further information about their symptoms and rely on this information to make decisions about their health¹¹. In our study, we found that participants understood about cervical cancer prevention. They told us that to prevent it people have to maintain good genital hygiene, not change sexual partners, and have regular HPV vaccinations. They agreed that sexually active or married people should have routine examinations routinely too for prevention and early detection. In a previous study, social media has been found to be an effective platform for increasing knowledge and awareness of cancer¹².

When we asked about contraception, we found that participants were more confident and willing to speak. They could explain what contraception was used for, and also knew about the benefits and side effects of various types of contraception. They involved their husbands and doctors in making their decisions about contraception. They perceived contraception as a way of controlling pregnancy. They told us that family planning was important and required the cooperation of their husbands and consideration of their own bodies and needs. They depended on their social networks for information in making their decisions about contraception. The participants said they were more comfortable obtaining information from their doctors after they read information in Jakpros application. However, they were also interested in further discussion on social media.

For the discussion on pregnancy, we asked participants about anemia, nutrition, and high-risk pregnancy. They knew the definition of anemia, and its early signs, examination, treatment and prevention. They agreed that anemia in pregnancy is a serious condition. Also, they said that nutrition was important in pregnancy, and they could name the nutritional components how they function in pregnancy. They were aware of early signs of high-risk pregnancy. They considered that to prevent pregnancy becoming high risk, women should have regular antenatal care visits and keep a healthy lifestyle during pregnancy. In our past study we found that pregnant women tend to use mobile health applications – for example, to network within communities of people who have the same condition as them. Pregnancy can be stressful, and women can get reassurance by sharing their experiences in online discussion groups. Women also appreciate the convenience of being able to access advice and information any time¹³.

The increasing use of digital devices impacts community expectations for accessing health information. All participants agreed that Jakpros provided a service that helped them access information. Our previous study showed that people like to get information as fast as possible and from wherever they are⁸. Most of our respondents felt that going to the doctor required too much effort to go to doctor¹³.

Previous studies have described how poor-quality information online can lead to health consumers making ill informed decisions⁶. Our study showed that patients did not hesitate to get information from Jakpros, and they felt this platform delivered reliable medical information. In particular, they appreciated the free advice from doctors about their reproductive problems.

In response to participant comments, there are a number of things we could do to improve the quality of the app. Firstly, to update the educational page more regularly. Secondly, to improve doctor responses to questions, ideally within 24 hours. Lastly, we hope to extend the information on doctor availability from a few sub-district hospitals to all hospitals in Jakarta.

In our previous quantitative study, we found that user knowledge increased after two weeks' use. This current study demonstrated users' perspectives on reproductive health after using the app. In addition to basic knowledge of reproductive

health, their level of awareness had increased, as was observed in the previous quantitative study⁸. The knowledge and awareness provided by Jakpros can help inform women's important decisions on their reproductive health.

Limitations of this study include the lack of perspective study of the consumers as the references of our qualitative and previous quantitative study of Jakpros application, and the short time allocated to the previous quantitative study.

Conclusions

Respondents felt that Jakpros was a helpful application for daily use. Future development of this application is still needed to improve its features. Our aim for Jakpros is that it will one day be a platform for women to access reliable health information that they can apply in their lives.

Ethical approval

This study was approved by the Ethics Committee of the Faculty of Medicine Universitas Indonesia Jakarta (Committee reference number: 1326/UNF.F1A/ETK/2018).

Data availability

Underlying data

Harvard Dataverse: Replication Data for: Supplementary Files for Jakpros_F1000. <https://doi.org/10.7910/DVN/KMF8BG>¹⁴

The project contains the following underlying data files:

- Transkrip Wawancara Pasien NEW – blind name: Transcripts from the focus group discussions

Extended data

Harvard Dataverse: Replication Data for: Supplementary Files for Jakpros_F1000. <https://doi.org/10.7910/DVN/KMF8BG>¹⁴

The project contains the following extended data files:

- Wawancara Kualitatif Pasien 1: Interview guidelines

Data are available under the terms of the [Creative Commons Zero "No rights reserved" data waiver](#) (CC0 1.0 Public domain dedication).

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