O-187 Smartphone application improves fertility treatment-related literacy: A large-scale surveillance and randomized controlled trial in Japan

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Study question: Can providing quality-assured fertility-related information via a smartphone application improve fertility- and treatment-related literacy among smartphone application users?

Summary answer: Provision of quality-assured fertility-related information via a smartphone application contributed to enhancing fertility- and treatment-related literacy among the smartphone application users.

What is known already: For infertility patients, the interpretation of examination results may be overly complicated and complex, and patients may have difficulty in making sense of their own fertility problems. Accessing and learning about fertility-related information using the Internet via smartphone is reasonable; however, the information does not always reflect evidence-based recommendations and low-quality information may lead to adverse effects on users; thus, innovative methods to provide both accessible and high-quality information are desired.

Study design, size, duration: We performed a randomized control-group pretest posttest study and 4,137 smartphone application users were invited to participate between June 18 and 25, 2020. Participants' fertility treatment-related literacy were assessed with a pretest that comprised of 28 questions and participants were allocated with stratified randomization to either intervention or control group. The intervention comprised a one-week smartphone application-based provision of information on fertility- and treatment-related information and the control group received general information about women's healthcare.

Participants/materials, setting, methods: The 3,765 participants (91.0 %) who responded were randomly allocated into either the intervention group (N=1883) or the control group (N=1882). Characteristics of participants appeared similar between the groups reflecting that the randomization was successful in producing a balance in baseline characteristics. Effectiveness of intervention was assessed using pretest-posttest analysis. Ethical approval was obtained from the Institutional Review Board of the National Center for Child Health and Development of Japan (approval number: 2019-184).

Main results and the role of chance: The posttest was completed by 659 participants (17.5%), and finally 207 participants in the intervention group and 222 participants in the control group were available for pretest-posttest analysis. Demographic characteristics of these participants appeared similar between the groups. In comparing the demographic characteristics of participants who did and did not complete the posttest, there were significant differences between the two groups in age, overall test score, proportion living with a partner, and action for pregnancy. For the posttest, the overall mean test scores were significantly higher in the intervention group compared to the control group (P = 0.0082). Interestingly, we also observed that posttest scores were significantly improved compared to pretest scores in both the intervention group and control group (P<0.001). When examining by specific test question, the proportion answering correctly appeared to generally increase at posttest compared to pretest for intervention (P<0.001) and control (P<0.001) groups. There was over 10% improvement in 7 questions, and particularly, over 20% improvement for a question about clinical significance of anti-Müllerian hormone. Furthermore, directly comparing the difference in posttest versus pretest scores between the two groups showed, on average, greater improvements in the intervention group than the control group (P<0.001).

Limitations, reasons for caution: As the intervention was educational material, it was not possible to blind participants to intervention group assignment. We were not able to monitor the participants when completing the tests; thus, whether they accessed other resources could not be addressed.

Wider implications of the findings: Providing information through a smartphone application can be considered acceptable since retrieving information through a smartphone application is in line with the current modern day lifestyle. A smartphone application may offer alternatives such as chatbots and movie-based learning, and they have the potential to increase the effectiveness.

Trial registration number: UMIN Clinical Trials Registry number UMIN000040721.