

## GYNECOLOGY

# Mobile application for information on reversible contraception: a randomized controlled trial

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**OBJECTIVE:** Due to time constraints that limit physician's ability to deliver detailed contraception counseling, patients increasingly require supplemental education opportunities. Applications for smartphones and tablets are being designed to educate patients about contraceptive methods and simplify communication between patient and provider. We designed a mobile application entitled *Plan A Birth Control* to provide targeted information about the 10 most common, nonpermanent contraceptive methods with emphasis on long-acting reversible methods.

**STUDY DESIGN:** We developed a mobile application designed to provide tailored information about the 10 most common non-permanent contraceptive methods. After pilot testing with 40 volunteers from the clinic, 120 participants were recruited for a randomized controlled trial. (ClinicalTrials.gov identifier: NCT02234271) Participants were assigned by simple randomization to contraception counseling via tablet or health educator. We compared participants' contraceptive choice between the 2 groups. Secondary outcomes

included knowledge of the method of choice and satisfaction with counseling.

**RESULTS:** Of the 120 participants in the primary study, 65 chose long-acting reversible methods. The uptake of long-acting reversible contraceptives was similar between the groups (34 received health educator counseling and 31 received mobile application counseling). Both groups were demographically similar in age and educational status. Knowledge of long-acting methods did not differ significantly between the groups ( $P = .30$ ).

**CONCLUSION:** Results from our study suggest that *Plan A Birth Control* did not adversely affect highly effective birth control uptake in our study population. This can save time for physicians and health educators if used as an adjunct to contraception counseling in waiting room settings.

**Key words:** mobile application, patient education, reversible contraception

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Approximately half of unintended pregnancies in the United States are due to contraceptive failure from inconsistent or improper use.<sup>1</sup> Availability and quality of counseling have been shown to significantly impact

individuals' contraceptive selection and the effectiveness of their contraceptives use.<sup>2,3</sup> Clinicians have limited time for detailed contraception counseling, creating a need for supplemental patient education opportunities. In response to this need, applications for smartphones and tablets can be designed to educate patients about contraceptive methods and simplify communication between patient and provider. These applications may increase the quality and efficiency of contraceptive counseling.<sup>4</sup>

A number of mobile health applications related to contraception and family planning already exist.<sup>5</sup> These applications offer to help women track menstrual cycles (identify the fertile days of the menstrual cycles)<sup>6</sup>; remind women about birth control pills, patch, or ring usage; and offer information about general sexual and reproductive health topics and/or locations of family planning centers.<sup>6,7</sup>

The primary objective of our study was to design a comprehensive and medically accurate contraception counseling application and evaluate the effects of this contraception counseling application on the contraceptive methods that patients selected and their knowledge of that method.

## MATERIALS AND METHODS

### Application development

A custom, English-language mobile health application entitled *Plan A Birth Control* was built with the help of a professional application development team (Figure 1). The mobile application was designed to be accessed from electronic tablets (specifically iPads; Apple Inc., Cupertino, CA). The application displays information to users about the non-permanent birth control methods most commonly recommended and requested at the University of California, Los

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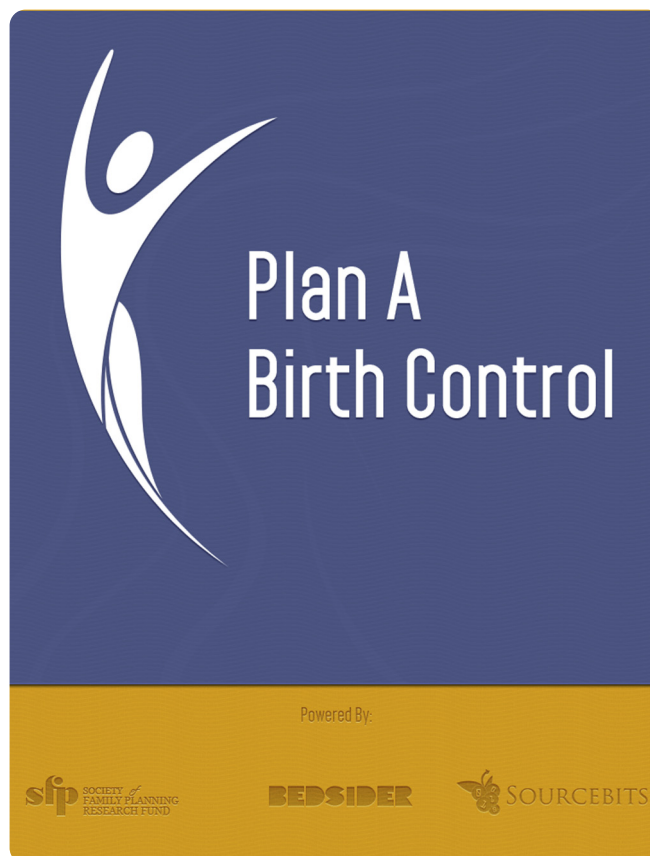
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Angeles (UCLA), Obstetrics and Gynecology Clinic, an outpatient clinic that is part of the UCLA Health System and located in Los Angeles (Figure 2). Birth control methods described in the mobile application include the copper intrauterine device, hormonal intrauterine device, contraceptive implant, birth control shot, birth control pills, birth control ring, birth control patch, male condom, female condom, and diaphragm.

To create the content for the *Plan A Birth Control* application, we adapted material from 3 of the most commonly used patient information resources in our clinic: the California Family Planning, Access, Care, and Treatment (Family PACT) birth control education materials,<sup>8</sup> the California Family Health Council fundamentals of family planning,<sup>9</sup> and the *bedsider* World Wide Web site developed by the National Teen Pregnancy Prevention Campaign.<sup>10</sup> From this we developed a script that was reviewed for accuracy by family planning division faculty at UCLA. The script was transformed into 2 separate documents: one for standard counseling by health educators and one for incorporating into the *Plan A Birth Control* mobile application. Both scripts had an estimated 6th-grade reading level (Flesch-Kincaid). The mobile application was built with introduction screens to emphasize the importance of overall health, preconception care, protection against sexually transmitted infections, and tips to choose birth control methods based on reproductive and life goals. The mobile application was also developed in such a way that very effective methods were presented first followed by the less effective methods. The application includes simple questions to screen patients for medical eligibility for birth control methods and has a built-in warning if the patient has any medical contraindication to the usage of method chosen. The built-in warning suggests that the patient should inform her health care provider about the medical condition in question prior to choosing a birth control method. Information about each birth control method was systematically placed under 7 headings: “what is it,” “how does it work,” “how to use it,”

FIGURE 1

### Plan A Birth Control—mobile application's flash screen



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“how well it works,” “what are the benefits,” “side effects,” and “warning signs.”

We conducted a pilot test of this application with 40 volunteers who were patients at our obstetrics and gynecology clinic. Participants reviewed the application on iPads and then rated the appearance of the application, how easy it was to navigate, and the clarity and effectiveness of its content using scales of 1-10 (where 1 meant very poor and 10 meant excellent). Participants also had the opportunity to offer suggestions for improvement and were asked to include specific comments about 2 birth control methods they reviewed.

### Study design and setting

We conducted a randomized controlled trial at the UCLA Obstetrics and Gynecology Clinic from October 2012 through May 2013. The UCLA

Institutional Review Board approved the study. Participants were randomly assigned to receive contraception information from either a health educator or the *Plan A Birth Control* application. The study was conducted prior to the evaluation of participants by a physician. Eligible participants were 18-45 years of age, literate in English, not at that time using a contraceptive method or willing to switch to a new reversible contraceptive method, currently sexually active with a male partner, and intending to avoid pregnancy for at least 1 year. Women not at risk for unintended pregnancy—those who were pregnant, seeking pregnancy within the next 12 months, who had a history of surgical sterilization or a current partner who had had a vasectomy, using long-acting reversible birth control method, or who reported that they were going through or

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