Contraception xxx (2018) xxx–xxx

Contents lists available at ScienceDirect

Contraception

journal homepage: www.elsevier.com/locate/con

Original research article

# Predictors of DMPA-SC continuation among urban Nigerian women: the influence of counseling quality and side effects☆,☆☆

Jenny Liu [a,*], Jennifer Shen [b], Nadia Diamond-Smith [c]

[a] Institute for Health and Aging, Department of Social and Behavioral Sciences, School of Nursing, University of California, San Francisco, 3333 California Street, Suite 340, San Francisco, CA 94118, USA
[b] Institute for Health Policy Studies, School of Medicine, University of California, San Francisco, 3333 California Street, Suite 266D, San Francisco, CA 94101, USA
[c] Global Health Sciences, Department of Epidemiology and Biostatistics, School of Medicine, University of California, San Francisco, 550 16th Street Mission Hall, San Francisco, CA 94158, USA

ARTICLE INFO

*Article history:*
Received 18 December 2017
Received in revised form 18 April 2018
Accepted 20 April 2018
Available online xxxx

*Keywords:*
Depot medroxyprogesterone acetate (DMPA)
Subcutaneous injection
Contraception
User experience
Side effects
Continuation

ABSTRACT

*Objectives:* In 2015, private healthcare providers in Nigeria introduced DMPA-SC (depot medroxyprogesterone acetate administered subcutaneously) into the method mix. We aimed to [1] examine the sociodemographic predictors of continued DMPA-SC use after 3 months, and [2] characterize the additional influences of contraceptive counseling quality and experiences of side effects on continuation.

*Study design:* From March to August, 2016, we conducted phone interviews with a convenience sample of women obtaining DMPA-SC from selected providers to survey them about their experience obtaining an initial dose of DMPA-SC. Study coordinators contacted women again about 3 months later after when they were due for reinjection. We used logistic regressions to examine the likelihood of having obtained a subsequent dose of DMPA-SC at follow-up as predicted by sociodemographic characteristics, a quality of counseling indicator based on responses to a 14-item scale, and reports of side effects experienced.

*Results:* Of the 541 DMPA-SC users who completed the first survey, 311 were reached again via phone after 3 months to conduct a second survey. Multivariate results for sociodemographic predictors of continued DMPA-SC use show that those with some college education or more (OR=2.79; 95% CI: 1.09–7.14), and those with four or more children (OR=2.89; 95% CI: 1.09 0 7.67) were more likely to obtain another dose. Our summary quality measure showed that women overall rated the quality of their initial counseling session high. Logistic regressions indicated that higher quality during the initial counseling session is related to the likelihood of getting another dose of DMPA-SC (OR=2.04; 95% CI: 1.12–3.47) whereas experiencing more bleeding reduced the likelihood of continuation after 3 months (OR=0.15; 95% CI: 0.07–0.34).

*Conclusions:* Among urban Nigerian women, both counseling quality and experiencing side effects were important factors in predicting continued use of DMPA-SC after 3 months. These findings are consistent with previous studies of DMPA and injectable contraception continuation.

*Implications:* New contraceptive methods that are designed for increased access and ease of use, combined with high quality provision, have potential to increase contraceptive use in settings with low levels of contraceptive prevalence. Higher quality counseling can help encourage women's continuation of a new injectable contraceptive method at 3 months.



## 1. Introduction

Effective family planning requires contraceptive adherence. However, due to a variety of factors—cost, convenience, method dissatisfaction, experiences of side effects, partner disapproval, and limited method options—many women discontinue contraception, which contributes to high rates of unwanted fertility and overall fertility [1–4]. Researchers and family planning practitioners alike believe quality of contraceptive counseling and care is critically important for method continuation [5]. High quality providers may be better equipped to give contraceptive counseling, and may be more effective at informing women of potential side effects, thereby increasing the likelihood that women manage or tolerate these experiences and continue with their method.

Although many studies have explored the relationship between quality of care and rates of discontinuation, the empirical evidence supporting this hypothesis remains inconclusive. A study across 15 countries showed that between 7 and 27% of women discontinued contraception because of poor service quality [6]. Improvements in the quality of care at health centers, either engendered through policy

☆ Key message: Higher quality service provision has the potential to increase injectable contraceptive continuation.
☆☆ Conflicts of interest: The authors declare no conflict of interest.
* Corresponding author.
*E-mail addresses:* Jenny.Liu2@ucsf.edu, (J. Liu), Jennifer.Shen@ucsf.edu, (J. Shen), Nadia.Diamond-Smith@ucsf.edu (N. Diamond-Smith).

https://doi.org/10.1016/j.contraception.2018.04.015

changes, as seen in Senegal [7], or through health worker training programs incorporating special emphases on contraceptive counseling, such as in Kenya [8], have led to increased contraceptive continuation among women. Such improvements may have influenced clients' perceptions of quality of care, which is associated with continued contraceptive use, as found in Bangladesh [9]. However, in Peru, no significant differences in continuation rates were found between a cohort that received family planning counseling from providers trained on a jobs-aid assisted counseling strategy and a control cohort [10]. Similarly, in the Philippines, a longitudinal family planning provider program was implemented but did not lead to any significant effects on family planning outcomes [11].

Furthermore, each contraceptive method has unique features which also influence the likelihood of method and contraceptive continuation. Ali et al. report method-specific discontinuation probabilities across 19 Demographic and Health Survey (DHS) countries, and find 12-month discontinuations rates of 50.4% for condoms, 43.5% for the pill, 40.6% for injectables, and 13.1% for IUDs amid an overall rate of 37.7% [3]. In both developed and developing country contexts, IUDs have the highest continuation rates compared to other methods, possibly due to higher costs of removal associated with the method [12–15].

Since 2014, a new, easy-to-administer, all-in-one, 3-month DMPA-subcutaneous (DMPA-SC; i.e., Sayana Press® formulation for depot medroxyprogesterone acetate) contraceptive injectable has been introduced in more than 14 countries, including Nigeria. DMPA-SC is a low-dose formulation of DMPA (104-mg/0.65 mL), with slower rate of absorption and equivalent efficacy, as well as high patient satisfaction [16]. Many hypothesized that DMPA-SC would be a 'game changer' [17] for increasing access to contraception in low resource settings because of its potential for home- and self-injection and ease of use [18], with cohort studies in Senegal showing the feasibility of self-injection [18]. Recent studies show that discontinuation rates of self-administered DMPA-SC were not different and even reduced compared to provider-administered DMPA-IM (i.e., DMPA-intramuscular; e.g., Depo Provera) [19–21]. Yet, little is known about other predictors of adherence to DMPA-SC, including quality of care and experiences of side effects.

Compared to IUDs and other long-term methods, continuation of injectable contraceptives is more difficult to maintain. Even as injectable contraceptives are gaining popularity in low-resource settings [22–24], especially for young women [25], continuation on injectable contraception is low in many settings [26,27]; discontinuation typically occurs within one year with estimated rates of up to 77%, and particularly high rates of drop-off observed after the first and second injections [3,26,28,29]. In one study in Nigeria, more than 50% of sampled women using DMPA-IM did not continue within one year [30]. The most frequently cited reasons for discontinuation were incompatibility with using a specific method, side effects, and desire for pregnancy [3,27]. For DMPA-SC, emerging evidence shows that reasons for discontinuation include late reinjection, access challenges/stockouts, partner disapproval, irregular bleeding and weight changes [20,31]. However, from studies in the U.S., China, Mexico, and South Africa, women who received more intensive structured counseling, including discussion about side effects, were more likely to continue DMPA use [26,32–34], suggesting that the inclusion of side effects within contraceptive counseling can be one way to encourage method continuation.

In the current study, we use data collected during the introduction of DMPA-SC in Nigeria to examine DMPA-SC users' decision to continue on the method. DMPA-SC was introduced into the market in Nigeria in 2015 as part of larger efforts to increase method offerings and overall access to contraception. Although modern contraceptive use among all women in Nigeria is extremely low (11% in 2013), after condoms, injectables are the most popular method among current users, accounting for 23% of modern methods used. [35]. For the purposes of monitoring and evaluation of the DMPA-SC introductory program in Nigeria, we collected data on DMPA-SC users obtaining the product from selected private sector providers in seven South West states where the program was first introduced. Private providers included for-profit clinics, maternity homes, pharmacies, patent and proprietary medicine vendors, and individually practicing clinicians (e.g., physicians, nurses/midwives). The overall findings and lessons learned from this effort, including detailed accounting of data collection methods, are reported elsewhere [36].

In this study, we examined users' responses to two phone surveys conducted 3–5 months apart to [1] assess the sociodemographic predictors of continued DMPA-SC use at 3 months, and [2] characterize the additional influences of contraceptive counseling quality and experiences of side effects on continued DMPA-SC use. Although our convenience sample of women is primarily from urban areas, this is the first study to empirically assess whether socioeconomic and demographic backgrounds, as well as quality of family planning counseling, are predictors of DMPA-SC continuation among consumers at large obtaining the product from an array of private sector providers that dominate the provision of contraceptive products in Nigeria [31]. Since this study was not conducted in a controlled setting, our results may help inform how future scaled DMPA-SC programs may better serve their broad base of clients under real world conditions.

## 2. Materials and methods

### 2.1. Data collection

Between March and June 2016, we recruited healthcare providers across seven South West states (Ekiti, Kwara, Lagos, Ogun, Ondo, Osun, Oyo). The product's distributor, a contraceptive social marketing firm primarily supplying private sector providers, generated a list of 358 providers that had purchased DMPA-SC, including hospitals/clinics, retail drug outlets, and licensed Community Health Extension Workers (CHEWs) hired and trained to conduct proactive community-based distribution. After an initial cleaning of the provider list and eliminating providers with missing or incorrect data, we attempted to contact 316 providers for participation. Provider participation was entirely voluntary, and providers who consented were offered 1000 Naira (~US$5.00) in mobile phone credits in return for participation. In total, 205 providers consented to participate, of which 50% were from Lagos and 21% from Oyo; by profession, over 40% were nurses or midwives, and about 30% were CHEWs. Participating providers were asked to assist in the recruitment of DMPA-SC users by recording the names and phone numbers of customers who purchased an injectable contraceptive (of any type) and identifying customers who agreed to be contacted for a phone survey.

Of 1423 women listed in providers' registers, 1179 purchased DMPA-SC. We called all DMPA-SC customers who consented to be contacted (N=994) to complete an initial survey administered by a trained, bilingual (in Yoruba, the dominant local language) interviewer over the phone, lasting 15–20 min, and compensated with 200 Naira (~US$0.57) of mobile phone credits. Of the 944 women called, 541 women completed the initial phone survey about their recent experience obtaining a dose of DMPA-SC; 374 women were not able to be reached after up to five attempts, 33 refused to participate, 22 were not eligible, and 24 phone numbers were incorrect. About half (N=266; 49.6%) were contacted within one month of their injection, 32.6% (N=175) were contacted within 2 months, 16.0% (N=86) within 3 months, and 1.7% (N=9) within 4–5 months.[1] About 3 months later, timed for after respondents were due for a reinjection (range 2.2–5.6 months; median 4.7 months), all 541 respondents who verbally consented to be contacted again during the initial phone survey were called to complete a second phone survey about care-seeking for a subsequent dose of DMPA-SC. During the follow-up call, women were again verbally consented to participate before conducting the survey (about 5–10 min) and compensated with 100 Naira (~US$0.29) of mobile phone credits. Of the 342 women completing a second follow-up phone survey, the 311 women who

[1] An additional five women did not respond to the question of how long ago they received their injection.

Please cite this article as: Liu J, et al, Predictors of DMPA-SC continuation among urban Nigerian women: the influence of counseling quality and side effects, Contraception (2018), https://doi.org/10.1016/j.contraception.2018.04.015