Brief Research Article

Trajectories of method dissatisfaction among Kenyan women using modern, reversible contraception: A prospective cohort study ☆,☆☆

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ABSTRACT

Objectives: Evidence on method dissatisfaction among current contraceptive users is sparse. Group-based trajectory modeling presents a novel approach to describing method dissatisfaction.
Study design: In a cohort of Kenyan women using modern contraception, we identified group-based trajectories of method dissatisfaction over 24 weeks since clinic visit.
Results: Among 947 women, four trajectories were identified: consistent satisfaction (71%), increasing dissatisfaction (18%), decreasing dissatisfaction (8%), and consistent dissatisfaction (3%).
Discussion: Method dissatisfaction was common in a cohort of Kenyan women. Group-based trajectory models describe distinct and changing experiences of contraceptive use. Deeper understanding of trajectories of contraceptive experience may be useful for advancing person-centered family planning care that addresses users' changing preferences and challenges.

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1. Introduction

Adverse experiences using contraception, such as unwanted side effects or problems with method use, are a major driver of contraceptive discontinuation globally [1,2]. Several recent studies have found many women continue using contraception despite being dissatisfied with their selected method [3,4]. However, few studies have described dynamic patterns of method dissatisfaction among current contraceptive users [4,5]. As a result, little is known about distinct patterns of method dissatisfaction throughout an episode of contraceptive use. Improved understanding of

method dissatisfaction is essential for advancing person-centered family planning technologies, counseling, and care.

With new investments in longitudinal family planning data [6], the field will have increased opportunity to apply longitudinal methods such as trajectory modeling to contraceptive dynamics research. Using data from a 2018 prospective cohort study of female modern contraceptive users in Western Kenya, we illustrate how trajectory modelling can be applied to identify distinct trajectories in women's experiences of contraceptive method dissatisfaction over a 24-week-long period.

2. Materials and methods

2.1. Study population and data collection

We utilized data collected as part of a prospective cohort study of women using modern contraception conducted in Western Kenya in 2018. Study procedures have been described previously [4]. Women were recruited at public family planning (FP) or maternal and child health clinics and eligible to participate if they were ≥18 years old or ≥14 with a prior pregnancy, using a modern, reversible contraceptive method [7] at enrollment, had

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daily mobile phone access and a Safaricom SIM card, and could read and respond to short message service (SMS) messages in English, Swahili, Luo, or Kisii themselves or with assistance. Participants were administered an in-person questionnaire at enrollment and SMS-based questionnaires weekly for 24 weeks, in which they self-reported current contraceptive use, method switching and discontinuation, and method satisfaction. Overall satisfaction with the current method was assessed weekly via a single question with a five-point Likert scale response (very satisfied, satisfied, neutral, dissatisfied, or very dissatisfied). For this analysis, we included women with at least one complete observation of method satisfaction over follow-up.

2.2. Statistical analysis

Method dissatisfaction was defined dichotomously as any method dissatisfaction ("very dissatisfied" or "dissatisfied") reported in each four-week-long period of follow-up to account for missing data at the week-level (4989/18,989 [26%] weekly surveys had missing information on method satisfaction). Method dissatisfaction for each interval was defined as missing if all weekly observations were missing (due to loss to follow-up, refusal, or if the participant discontinued modern contraceptive use).

We identified distinct group-based trajectories of method dissatisfaction by fitting discrete logistic mixture models accounting for non-random attrition [8]. We modeled attrition based on the dissatisfaction response observed in the prior four-week period. We selected a preferred group-based trajectory model (GBTM) by fitting all models with one to four groups with each possible combination of linear, quadratic, or cubic functional forms for each group and identifying the best fit model based on the Bayesian Information Criterion. We assessed adequacy of model fit by visualizing models graphically, assessing model convergence, and calculating average model-based posterior probabilities of group membership with a minimum threshold of 0.70 [9]. We conducted several sensitivity analyses in which we adjusted the primary model by FP user type at enrollment (contraceptive initiator, method switcher, or prevalent method user) and contraceptive method type at enrollment (categorized as long-term reversible method [implant or intrauterine device], injectable, or other modern methods due to small sample sizes among specific method types). In addition, we repeated the procedure described above to identify distinct group-based trajectories using a model adjusted by contraceptive use outcome, which was dichotomized as switching/discontinuing versus continuing the method used at enrollment over the study observation period.

3. Results

Of 1212 enrolled participants, 947 (78%) had at least one complete observation of method satisfaction over follow-up and were included in the analysis. Two percent (21/1212) of participants who discontinued modern contraception in the first week of follow-up were excluded because method satisfaction was not assessed.

The selected model identified 4 distinct trajectories of method dissatisfaction: 71% of participants (n = 667/947) were characterized by consistent satisfaction. The remaining three trajectories were characterized by varying levels of method dissatisfaction, with 18% (n = 181/947) experiencing increasing and 8% (n = 71/947) decreasing levels of dissatisfaction, while 3% (n = 28/947) were consistently dissatisfied (Fig. 1). The selected model identified a linear functional form for all groups except the consistently satisfied group (which takes a quadratic functional form). Average posterior probabilities of group membership exceeded the 0.70 threshold indicating adequate model fit for all but
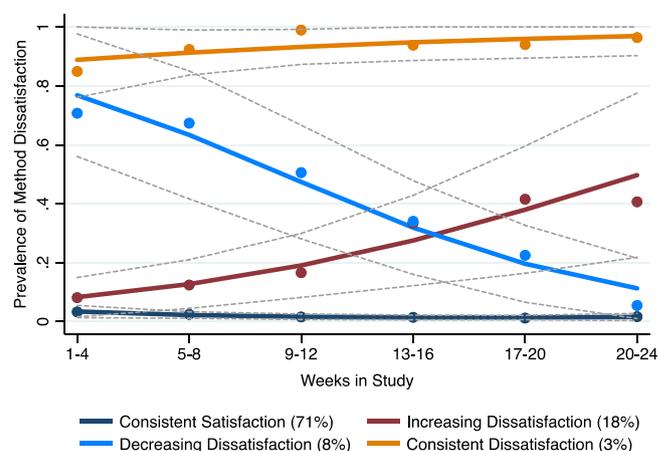

Fig. 1. Group-based trajectories of dissatisfaction with current modern contraceptive method, Kenya (2018). Notes: Trajectories were generated using a discrete mixture model with a Bernoulli (logistic) distribution (N = 947). The optimal model identified using BIC values identified a linear functional form for all groups except the consistently satisfied group (which takes a quadratic functional form). Method dissatisfaction is defined as reporting overall satisfaction with the current contraceptive method as "dissatisfied" or "very dissatisfied" via weekly survey. Dotted lines indicate 95% confidence intervals. BIC, Bayesian Information Criterion.

the group characterized by increasing dissatisfaction (mean posterior probability of 0.698). The primary GBTM was relatively robust to adjustment by FP user type (Supplemental Material, Fig. S1). Adjustment for contraceptive use outcome resulted in a selected model that identified 3 rather than 4 distinct trajectories: 62% of participants were characterized by consistent satisfaction, 32% by a moderate level of dissatisfaction, and 7% by high but decreasing dissatisfaction (Supplemental Material, Fig. S2).

4. Discussion

Method dissatisfaction was prevalent in a cohort of Kenyan women using modern, reversible contraception: in the primary selected model, nearly 30% experienced trajectories defined by some level of dissatisfaction with their current contraceptive method, and over one-fifth experienced either consistent or increasing dissatisfaction over 24 weeks. These findings build upon recent evidence suggesting that adverse contraceptive experiences are common, even among continuing contraceptive users [3,4]. The GBTM methodology allows for unique insight into dynamic contraceptive experiences, identifying groups of users with increasing and decreasing probability of dissatisfaction who likely have unique needs for ongoing contraceptive care and support.

Our study has several strengths, including a prospective cohort design and high-frequency data collection using participant-reported SMS questionnaires; these features minimize measurement error due to recall bias. Our study is also subject to limitations. There is no existing, validated measure of method dissatisfaction; we used a single question to assess dissatisfaction, which may inadequately capture nuanced experiences of method use. We modeled attrition based on dissatisfaction reported in the previous interval; however, model misspecification is possible. The average posterior probability for the increasing dissatisfaction group did not meet the 0.70 threshold, indicating inadequacy of model fit for this group. Small sample size resulted in relatively imprecise estimates with wide standard errors. Confirmation of these distinct trajectories in larger samples of contraceptive users, ideally sampled at initiation of contraceptive use, is needed to describe trajectories within and between key groups of users defined by their sociodemographic characteristics, contraceptive method type, contraceptive use history and quality of care of services re-

ceived, and their contraceptive use outcomes. Finally, our models did not incorporate 21 women who discontinued in the first week of follow-up, resulting in possible underestimation of method dissatisfaction.

The long-held assumption that contraceptive continuation is indicative of user satisfaction is flawed. Understanding and meeting the needs of dissatisfied contraceptive users should be a priority for the global sexual and reproductive health agenda. Statistical methods such as GBTM can be used to generate nuanced evidence on the changing needs of people using contraception. In addition, trajectories identified using statistical methods such as GBTM could be useful as novel outcome measures for the monitoring and evaluation of person-centered contraceptive programs.

Acknowledgments

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.contraception.2022.09.125.

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