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Women's Contraceptive Profiles throughout the Life Course in Burundi and Nepal (AS72)

A Focus on Nepal

Why develop contraceptive profiles from calendar data?

Reproductive health and family planning service providers serve women of all ages, from a wide range of circumstances with a variety of health needs. Understanding clients' needs over the reproductive life course is key to serving them well. Often, research inadequately captures the nuances of a woman's reproductive health and family planning journey across her lifetime. This study identifies patterns in women's contraceptive and pregnancy experience, not using typical cross-sectional measures but, instead, the more dynamic experiences captured in retrospective, longitudinal data found in DHS contraceptive calendars.



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Fertility in Nepal has steadily declined from 4.6 children per woman in 1996 to 2.3 in 2016. Modern method use has increased from 26% to 43% during the same time period, but has not changed since 2006. One explanation is the level of male migration for labor in Nepal. The demand from family planning gradually increased from 61% in 1996 to 76% in 2016. The modern contraceptive method mix is dominated by female sterilization (35%) and injectables (21%).

Which data were included in the study?

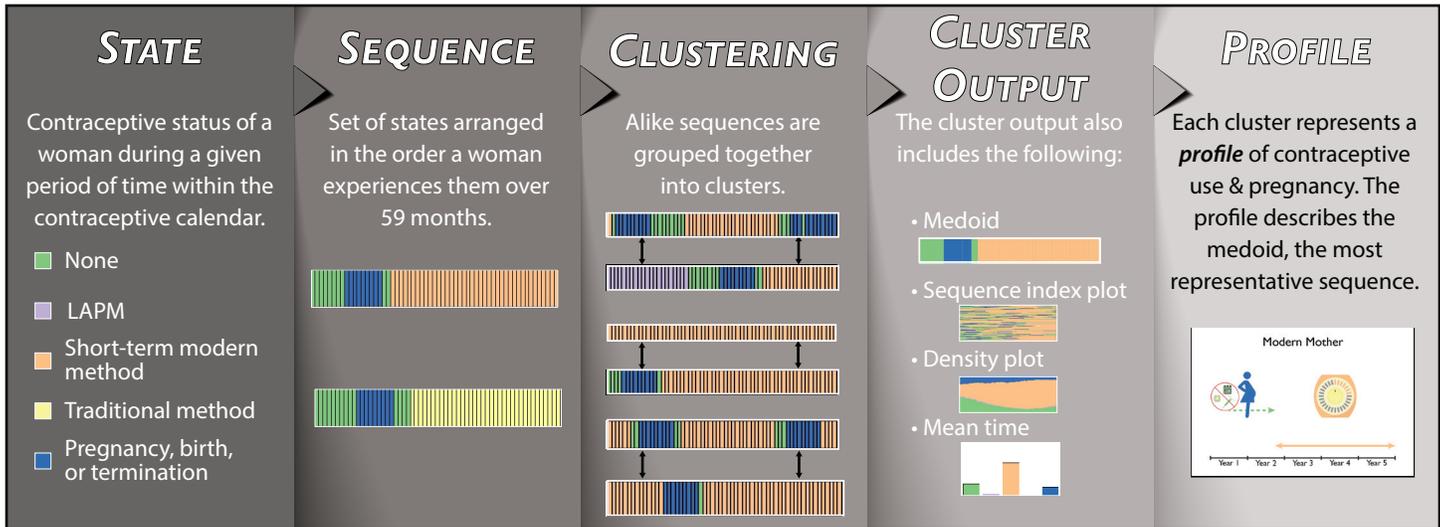
The study analyzes contraceptive calendar data from the **2016-17 Burundi DHS** and **2016 Nepal DHS**. The **contraceptive calendar** records a retrospective, longitudinal history of more than five years in monthly episodes of events in a woman's reproductive life. These events or states describe contraceptive method use plus non-use, birth, pregnancy, or termination. Typically, calendar data reveal 22 or more states available. For this study, five states are analyzed—non-use, long-acting or permanent method (LAPM), short-term modern method, traditional method, or pregnancy, birth, or termination. The sample includes 10,187 weighted cases in Nepal for women age 15-44.

This brief highlights results from the 2016 Nepal DHS.

This brief summarizes The DHS Program's Analytical Study by Kerry L.D. MacQuarrie, Christina Juan, Courtney Allen, Sally Zweimueller, and Alison Gemmill with funding from The United States Agency for International Development through The DHS Program. The full report is available at: <https://dhsprogram.com/publications/publication-as72-analytical-studies.cfm>.

What methods were used to conduct this analysis?

This study applied **sequence and cluster analysis** of longitudinal data to identify discrete profiles that describe women's contraceptive and pregnancy behaviors in the five years before the survey. This is the first application of these methods to nationally representative longitudinal contraceptive calendar data.



Data from the five **states** are arranged into calendar **sequences** over the 59 month period. Sequence analysis was used to understand features of these sequences, including how similar each woman's calendar sequence is to those of all other women. Using cluster analysis, alike sequences were grouped together in **clusters**. In both Burundi and Nepal, six clusters of women were identified. The study used **cluster outputs**—medoid, sequence index plot, density plot, and mean time—to characterize the contraceptive use and pregnancy experience of women within each **profile**.

- The medoid is the most representative sequence of a cluster.
- A sequence index plot depicts all sequences in a cluster and shows the range in women's contraceptive and pregnancy experience.
- The density plots for a cluster show the proportion of time spent in each of the states across the calendar sequence is.
- Another plot shows the mean time a woman in each cluster spends in each of the five states.

What are the technical details?

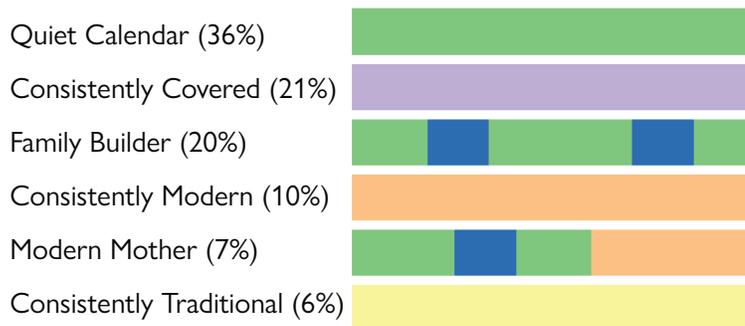
This study used the TraMineR and WeightedCluster packages in R. Optimal Matching calculated distances in a dissimilarity matrix, which allows for insertions and deletions as well as substitutions in computing distances between sequences. A constant cost matrix measured pairwise distances between sequences that assumes uniform costs for all substitutions, insertions, or deletions. Finally, a k-medoid (partitioning around medoids) clustering algorithm grouped women's sequences. A series of quality metrics (ASWw, HC, HG, PBC, pseudo R2, and pseudo R2-squared) were used to establish these parameters as well as the optimal number of clusters.

What are the key results?

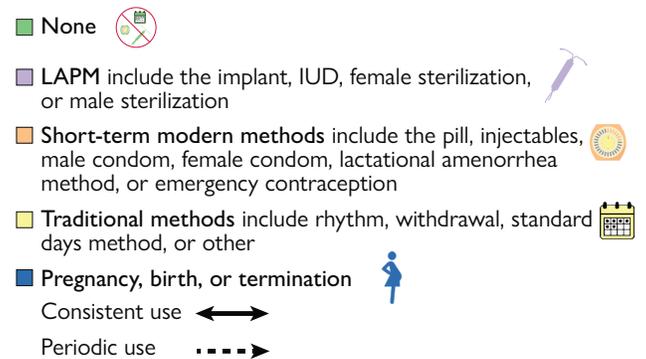
Six contraceptive profiles for Nepal were identified that reflect the most representative sequences' key features and characteristics. The most common profile is the Quiet Calendar (36%), followed by Consistently Covered (21%) and Family Builder (20%). The remaining profiles represent 10% or less—Consistently Modern (10%), Modern Mother (7%), and Consistently Traditional (6%). To learn more about the contraceptive profiles, see page 4.

Contraceptive Profiles in Nepal

Proportion of each profile



Legend for Contraceptive Profiles in Nepal



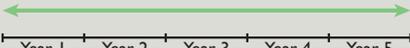
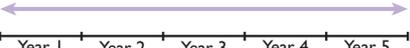
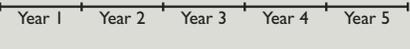
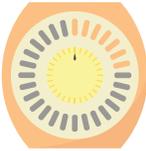
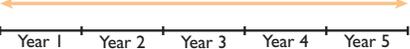
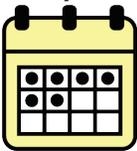
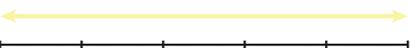
How should these methods and results be used?

An experienced R user can repeat the sequence and cluster analysis with any DHS survey that included the contraceptive calendar. After identifying the clusters of women based on their calendar sequences, use the statistical program of your choice to look to data in other parts of DHS datasets to build multi-dimensional profiles of these women. For example, this study used Stata to analyzed the six identified profiles across the life course and the sociodemographic characteristics and unmet need status of women in each profile. DHS data on decision making, knowledge, attitudes, and interactions with health services can also be analyzed for these profiles.



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6 Nepal Contraceptive Profiles

Profile Name	Characteristics
<p>Quiet Calendar</p>  	<p><i>Women who do not experience pregnancy or use any methods.</i></p> <ul style="list-style-type: none"> • Women spend an average 55 months in the non-use state. • The profile is highly prevalent among women age 15-19 at the start of the calendar sequence and among women age 40-44. • Nearly two-thirds (65%) have no need, while 26% have an unmet need. • Just 9% use contraception at the end of their sequence, mainly short-term, modern methods.
<p>Consistently Covered</p>  	<p><i>Women who exclusively use LAPM for the entire five-year period.</i></p> <ul style="list-style-type: none"> • Women spend 56 months on average using LAPM methods. • This profile is less prevalent among women age 15-19 (1%) and highest among women age 40-44 (44%). • Nearly all (99%) of Consistently Covered women have a met need. • Female sterilization (64%) and male sterilization (24%) are the most common methods. High levels of LAPM use do not appear in any other profile.
<p>Family Builder</p>  	<p><i>Women who do not use any method and experience 2 pregnancies, beginning at the end of Year 1 and within Year 4.</i></p> <ul style="list-style-type: none"> • Women spend 39 months on average not using contraception and 12 months pregnant. Contraceptive use is uncommon. • Family Builder profile is more common among women age 15-19 and 20-24. • Unmet need is highest among Family Builders; 40% have an unmet need. • Among Family Builders, 35% use contraception at the end of their sequence. Withdrawal and injectables are the most common methods.
<p>Consistently Modern</p>  	<p><i>Women who consistently use short-term, modern methods and avoid pregnancy.</i></p> <ul style="list-style-type: none"> • Women spend an average 51 months using short-term, modern methods with 5 months of non-use. • The prevalence of the Consistently Modern profile increases with age. • For women in this profile, 80% have met need and 13% have an unmet need. • Injectables (41%), the pill (23%), and male condoms (21%) are the most commonly used methods.
<p>Modern Mother</p>  	<p><i>Women who adopt a short-term, modern method toward the end of Year 3 after a long time period of non-use and 1 pregnancy.</i></p> <ul style="list-style-type: none"> • Women spend an average 24 months using short-term, modern methods but also experience 23 months of non-use and 8.5 months in pregnancy. • This profile is more common among women age 15-19 and 20-24. • The majority have a met need (74%), while 18% have an unmet need. • Modern Mothers most commonly use injectables (42%), the pill (18%), and male condoms (18%).
<p>Consistently Traditional</p>  	<p><i>Women who consistently use traditional methods over the five-year period.</i></p> <ul style="list-style-type: none"> • Women spend an average 51 months using traditional methods followed by 4 months of non-use. • The prevalence of this profile increases with age. • The majority (86%) have a met need, while 8% have an unmet need. • Withdrawal is the dominant method (82%) of the Consistently Traditional.