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

A Focus on Burundi

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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In Burundi, fertility has gradually declined from 6.9 children per woman in 1987 to 5.5 in 2016-17. About 1 in 4 (23%) married women age 15-49 use a modern method, a gradual improvement from 18% in 2010. Similarly, the demand for family planning has modestly increased from 54% in 2010 to 58% in 2016-17. The modern contraceptive method mix is dominated by injectables (49%) and implants (26%).

Which data were included in the study?

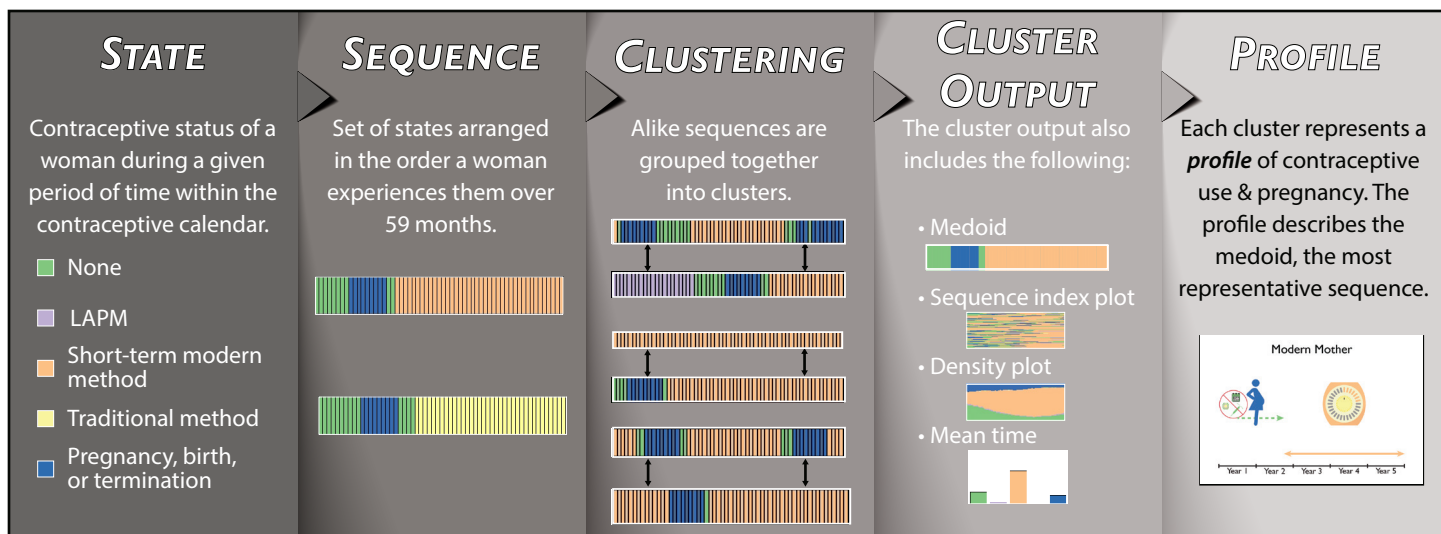
The study analyzes contraceptive calendar data from the **2016-17 Burundi DHS** and **2016 Nepal DHS**. The **contraceptive calendar** records a retrospective, longitudinal history of more than five years in monthly episodes of events in a woman's reproductive life. These events or states describe contraceptive 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 13,293 weighted cases in Burundi for women age 15-44.

This brief highlights results from the 2016-17 Burundi 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?

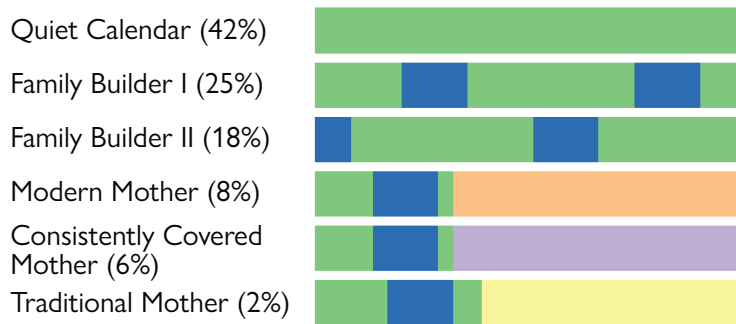
This study used the TraMineR and WeightedCluster packages in R. Optimal Matching calculated distances in a dissimilarity matrix, which allows for insertions and deletions as well as substitutions in computing distances between sequences. A constant cost matrix measured pairwise distances between sequences 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 Burundi were identified that reflect the most representative sequences' key features and characteristics. The most common profile is the Quiet Calendar (42%), followed by Family Builder I (25%) and Family Builder II (18%). Less than 10% fall into the remaining profiles—Modern Mother (8%), Consistently Covered Mother (6%), and Traditional Mother (2%). To learn more about the contraceptive profiles, see page 4.

Contraceptive Profiles in Burundi

Proportion in each profile



Legend for Contraceptive Profiles in Burundi

- None
- LAPM include implant, IUD, female sterilization, or male sterilization
- Short-term modern methods include the pill, injectables, male condom, female condom, lactational amenorrhea method, emergency contraception, or standard days method
- Traditional methods include rhythm, withdrawal, or other
- Pregnancy, birth, or termination
- Consistent use
- Periodic use






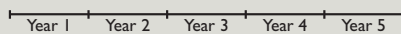







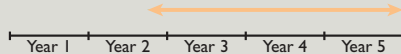







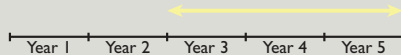
How should these methods and results be used?

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 Burundi Contraceptive Profiles

Profile Name	Characteristics
<p>Quiet Calendar</p>  	<p>Women who do not experience pregnancy or use any methods.</p> <ul style="list-style-type: none"> • Women spend an average 56 months in the non-use state. • This profile is highly prevalent among women age 15-19 at the start of the calendar sequence and among women age 40-44. • The majority have no need (85%), while 12% have unmet need. • At the end of their sequence, just 3% use contraception, mainly short-term, modern methods.
<p>Family Builder I</p>    	<p>Women who do not use any method and experience 2 pregnancies, beginning at Year 2 and the end of Year 4.</p> <ul style="list-style-type: none"> • Women spend 37 months on average not using contraception and 16.5 months pregnant. Contraceptive use is uncommon. • Family Builder I is the most common profile among women age 20-29. • About one-third have an unmet need for family planning and 29% met need. • Overall, 29% use contraception at the end of their sequence; injectables are the most common.
<p>Family Builder II</p>    	<p>Women who do not use any method and experience 2 pregnancies, beginning in Year 1 and at the end of Year 3.</p> <ul style="list-style-type: none"> • Women spend 42 months on average not using contraception and 14 months pregnant. Contraceptive use is uncommon. • Family Builder II is most common among women age 25-29. • Nearly half (45%) have unmet need, the highest among all profiles. • Just 15% use contraception at the end of their sequence; injectables are the most common.
<p>Modern Mother</p>    	<p>Women who adopt a short-term modern method toward the end of Year 2 after a period of non-use and 1 pregnancy.</p> <ul style="list-style-type: none"> • Women spend an average 36 months using short-term, modern methods but also experience episodes of non-use and pregnancy. • Modern Mother is more prevalent among women age 30-34 (10%). • 7 in 10 have met need, 19% have no need, and 11% have unmet need. • This profile relies on injectables (72%) and the pill (11%).
<p>Consistently Covered Mother</p>    	<p>Women who adopt LAPM after a period of non-use and 1 pregnancy.</p> <ul style="list-style-type: none"> • Women spend an average 38 months using LAPM but also experience 11 months of non-use and 7 months in pregnancy. • This profile is more common among women age 30-34 (7%). • The majority have a met need for family planning and 8% have unmet need. • Implants (65%) are the most commonly used method, followed by IUDs (13%).
<p>Traditional Mother</p>    	<p>Women who adopt traditional methods at the end of Year 2 after a period of non-use and 1 pregnancy.</p> <ul style="list-style-type: none"> • Women spend an average 34 months using traditional methods in addition to 13.5 months of non-use and 10 months in pregnancy. • This profile is less prevalent among women age 15-19 and more common among women age 30-34. • Nearly 80% have met need for family planning, while 10% with unmet need. • Withdrawal and periodic abstinence are the most common methods (48% each).