Method Mix during the Contraceptive Transition

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Introduction

Measuring improvements in meeting the demand for family planning requires not only assessment of overall levels and trends in contraceptive prevalence and unmet need for family planning but also an assessment of the range of contraceptive methods used. In the ICPD Programme of Action, Governments committed themselves to ensuring that women and men have access to the widest possible range of safe and effective family planning methods. Some contraceptive methods such as the male condom, withdrawal and periodic abstinence (or rhythm) have been used by people for millennia (Hatcher et al, 2011) while other became available more recently. Different pregnancy prevention needs-stopping childbearing altogether, delaying pregnancy for a year or more, preventing pregnancy in the post-partum period, and so on-should be met with the most appropriate and effective methods. Furthermore, the pregnancy prevention needs change with changing childbearing preferences (the number of children, timing and spacing) over the course of fertility transition. Women who want to delay a birth, for a few months or a couple of years, may prefer a short-term method, one that they can start and stop on their own, over an IUD or implant, which usually requires a clinic visit to obtain the device and to have it removed. The effectiveness of methods in terms of pregnancy prevention is also factor to consider (Hatcher et al, 2011; Ali et al. 2012).

Method-specific contraceptive prevalence varies widely across the world (United Nations 2015) and the current situation is a result of past long-term trends in method prevalence that provide evidence of changing preferences, shifts in policy, changes in the healthcare system, and changes in access to various contraceptive methods. In past decade, the fast increases in contraceptive prevalence in several sub-Saharan African countries were reflected in rapid increases in the use of implants - in Burkina Faso from 3.4% in 2010 to 11.8% in 2016, in Kenya from 1.9% in 2008 to 18.1% in 2016 or Malawi from 1.3% in 2010 to 11.5% in 2016 (surveys compiled in World Contraceptive Use 2018). However, in the past different methods were dominant in the fast uptake of contraceptive use in other countries. In this paper, using World Contraceptive Use series (United Nations 2018) we investigate three aspects of contraceptive methods mix trends: 1. Current situation in contraceptive method mix with respect to traditional, short-term modern and long-term/permanent modern methods. 2. Past trends during the main stage of the contraceptive transition (the period when contraceptive prevalence increased from around 20% to above 60%) identifying methods that were driving the contraceptive prevalence increase and comparing the dominant methods over time and countries. 3. Changes in contraceptive method mix at higher levels of contraceptive prevalence.

Data and Methods

Data on contraceptive method use were sourced from the *World Contraceptive Use 2018* (UNDESA 2018) which provides country-specific family planning estimates for married women of reproductive age and is based on survey data. The dataset offers estimates of contraceptive methods across 15 categories. We created three groups of method types: *Long-acting/permanent methods* that include the methods of female sterilisation, male sterilisation, IUD and implants; *short-term methods* that include which include pill, condom, injections, vaginal barrier methods, LAM and emergency contraception and *traditional methods* that comprise withdrawal, rhythm and other traditional methods. Our final sample was 159 countries. The oldest observation is from 2005; the most recent observation from 2017.

We selected countries that have experienced a rapid increase in Contraceptive Prevalence among married women to investigate trends in method composition (see Figure 1). We looked at selected countries from three different regions; Bangladesh, India, Indonesia and Thailand in Asia Countries; Kenya and Malawi in Africa; and Guatemala and Peru in Latin America (For data see UNDESA, 2018b). To investigate the change in method mix, we used compared the most recent survey estimates available in World Contraceptive Use 2018 to the earliest available survey estimate after 1970 when contraceptive prevalence was above 10%. We kept most of the original 15 method categories in the data set, but grouped categories of female condom, vaginal barrier methods, LAM, emergency contraception and other modern methods into a single *other modern* category because of low values.

Results

Current Situation in Contraceptive Method Mix

There is a great diversity in the contraceptive methods used worldwide. Figure 2 depicts the contraceptive method composition for our 162 observations with reference to three groups of long-acting/permanent, short-term, and traditional methods. The

map is colour-coded according to the ternary plot. The base-colours of pink (long-acting/permanent), green (short-term), and blue (traditional) represent values of above 80% of a single component. The mixture of these three base-colours is in the same proportion as the contraceptive method composition. Each dot in the ternary plot represents the three-component vector of one of the country observations (for choropleth maps from ternary plots see Schöley and Willekens 2017, Kashnitsky and Schöley 2018, and Schöley 2018). Overall, short-term methods or a combination of short-term and long-acting/permanent methods contribute the largest proportion to the method mix in most countries.

Using ternary maps and triangle visualization (constructed using the *tricolore Rpackage* from Schöley, 2018; see also Schöley and Willekens, 2017), we describe four situations. First, higher prevalence of traditional methods, defined as more than 60% of the method mix, is present in few countries, but in diverse geographical places - the Democratic Republic of the Congo in Africa, Armenia and Azerbaijan in Asia, and Albania and several countries of former Yugoslavia in Europe. Second, countries where long-term/permanent methods are more than 60% of the method mix, which are China, India, Kazakhstan and Turkmenistan in Asia; Colombia, Cuba, Dominican Republic and Mexico in Latin America and the Caribbean. Third, large and diverse group of countries where short-term modern methods represent more than 60% of method mix, representing many countries in Europe, South-Eastern Asia, Africa and Latin America and the Caribbean. Fourth, the balanced mix of short-term and long-term/permanent modern methods (between 20 to below 60% of each) with a small contribution of traditional methods (less than 20%) - such as Australia, Burkina Faso, Egypt, Kenya and Malawi. Other countries have a larger contribution of traditional methods (between 20 and 40%), but no dominance of short-term and long-term/permanent modern methods- such as Bolivia, Georgia, Israel and Turkey.

This section will also present regional and global aggregates for individual contraceptive methods in terms of contraceptive prevalence and number of users and the change over time since 1990s.

Dominant Methods during Contraceptive Transitions

Different modern methods account for the increase in contraceptive prevalence in countries that experienced a rapid increase is contraceptive prevalence since the 1970s. The radar plots in Figure 3 (constructed using the *fmsp Rpackage* from Nakazawa, 2018) show the diversity across the selected countries. In Bangladesh, where the use of any method of contraception was low in the 1970s, the use of the short-term methods of injectables, and notably pill increased. In India, the one method accounting for most of the increase is female sterilisation while in Indonesia, where the pill use was already at a considerable level, this is injectables. In Thailand, several modern methods contributed to the increase. Pill use was already at 12.5% in 1972 but increased further to 35% in 2015. The rest of the increase from 26% to 78% contraceptive prevalence was mainly explained by increases in the use of injectables and female sterilisation. In the three Latin American countries, injections and female sterilisation pushed up overall contraceptive prevalence, however, to a different degree. In Colombia, female sterilisation accounts for most of the increase. In Peru this was injectable while in Guatemala both account for equal shares. In the African countries of Kenya and Malawi, injectables account for the largest amount of the increase, but the use of implant which was not observed any of the Asian or Latin American countries, also contributes considerably.

This analysis will be extended to cover contraceptive transitions of all countries, systematically documenting dominant method/s over time and across countries. Furthermore, special attention is given to changes in the method mix once the contraceptive prevalence is already high. While the changes in the method mix used are slow, we identify two distinct patterns - first, the changes from traditional to modern methods (Bulgaria, France, Hungary, Paraguay, and Sri Lanka) and second, the shifts from permanent to short-acting methods (Brazil).

Conclusion

We showed that the contraceptive transition in many countries was driven by one or two methods (pill in Morocco, injectables in Indonesia, female sterilization in India and Brazil) and compared the situation to the contraceptive transitions currently under way (e.g. injectables and implants in sub-Saharan Africa). We discuss, based on the country- or region-specific literature, how the specific method mix is related to characteristics of the family planning programmes, changing preferences and patterns of fertility transitions. We also discuss limitations related to our analysis, such as data gaps, quality of information on specific methods, and using not age-standardized indicators.

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FIG.1: **Modern contraceptive prevalence in all countries 1970-2018 (Selected transition countries highlighted)**

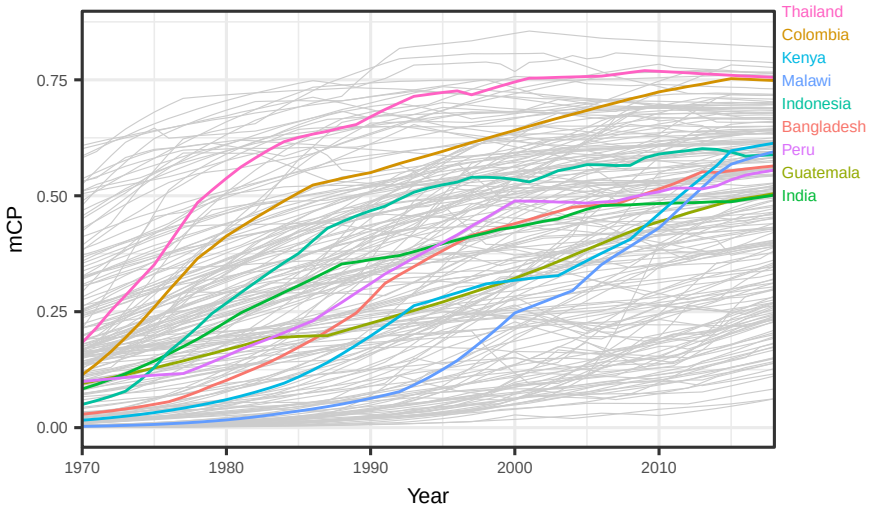

FIG.2: **Contraceptive method mix: Long-acting, short-term and traditional method use**

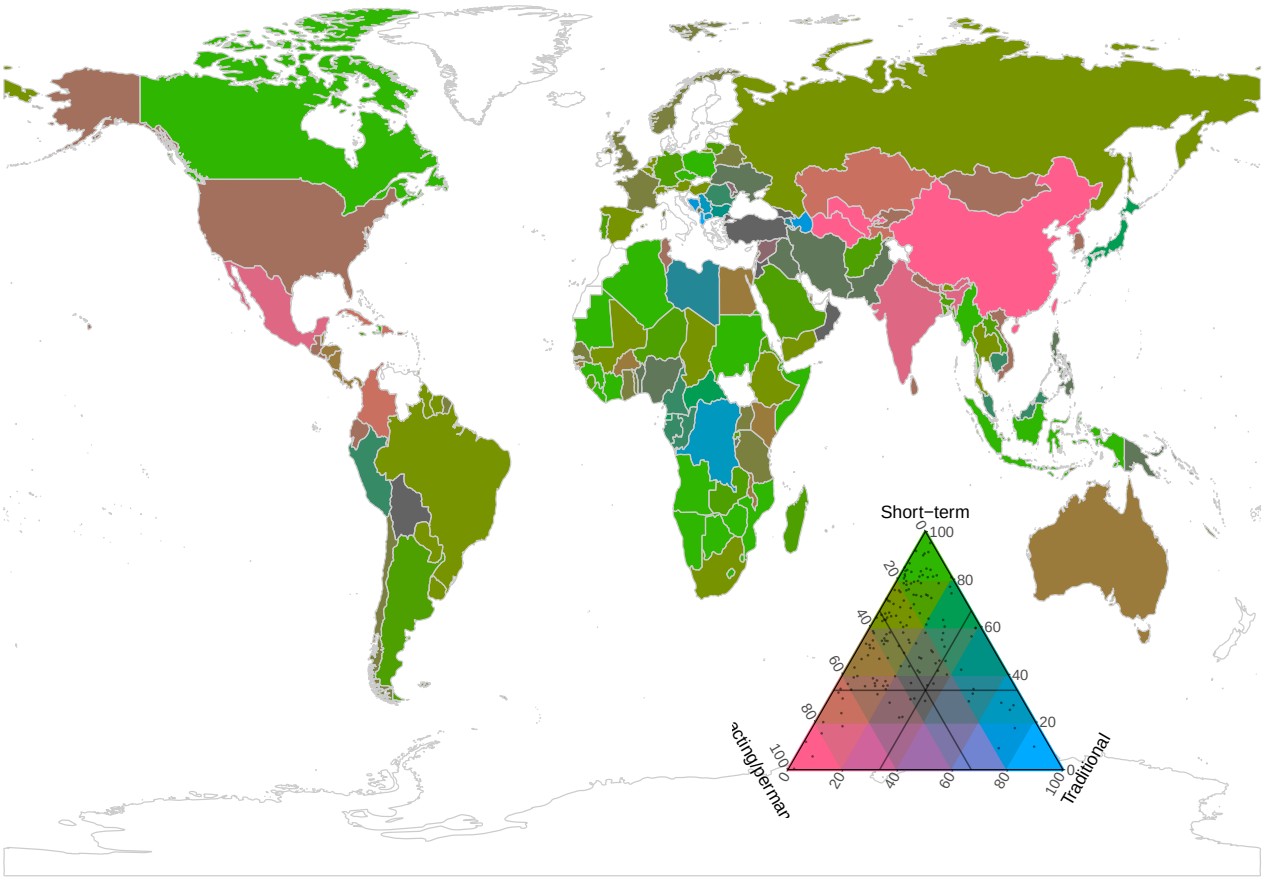

FIG.3: **Trends in contraceptive method mix in selected rapid transition countries**