

Advances in Reproductive Health Indicators in India, 1993 – 2021

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Abstract

India has experienced a revolution in reproductive behaviour that enhances the reproductive health of women, and especially young women. Using the five national surveys in India from 1992-93 through 2019-21, changes are traced for fertility declines, marriage postponements, fewer unwanted births, increased contraceptive use, and lessened unmet need for contraception. In addition, large improvements are documented for antenatal, delivery, and postnatal care. The infant, child and maternal mortality has also declined. All these advances interact with the status of women and their empowerment.

Introduction

The reproductive health of women has commanded increased attention in recent decades, with incorporation into major United Nations goals for all countries. These began with the Millennium Development Goals (MDGs) (United Nations 2015) for the period from 2000 to 2015, followed by the Sustainable Development Goals (SDGs) (United Nations 2020) that run through 2030. With the principal focus on sexual and reproductive health and rights, sub-goals include the adolescent birth rate, coverage of births by skilled personnel, maternal mortality, infant and child mortality, and the proportion of unmet need satisfied by modern contraceptive methods.

In India, official concern about the health of mothers and children has long been part of the development agenda of the country, as reflected in the Five-year Plans. In 1952 the launch of the world's first official family planning programme related to improving the health of mothers and children. Subsequently, the Government of India launched the Expanded Programme of Immunisation in 1978, the Universal Immunisation Programme in 1985, and the Child Survival and the Safe Motherhood Programme in 1992. Then in 1996 came a World Bank supported Reproductive and Child Health Programme, which subsequently became the flagship programme of the National Rural Health Mission launched in 2005. Over the years these and other departures by the government have influenced the changes traced here.

This article traces a set of indicators related to the reproductive health of women in India, as they improved markedly over the 28 years from 1993 to 2021. The indicators fall naturally into six groups - fertility; marriage; contraception, unmet need,

and desire for another child; care during pregnancy, delivery, and the postnatal period; mortality of mother and child; and measures of female empowerment. These six groups are intimately related to broadly conceived reproductive health of women, and they document a historic revolution in India in the context of both childbearing behaviour and status of women.

Methods and Data Sources

Data for the present paper come from the five rounds of the nationally representative National Family Health Survey (NFHS) in India conducted during 1992-1993; 1998-1999; 2005-2006; 2015-2016 and 2019-2021. The data collected during these surveys are available at the repository maintained by the Demographic and Health Survey (DHS) Program and are available online. The DHS STATcompiler was used to generate custom tables related to a number of reproductive health indicators. STATcompiler is a very useful online resource that permit uniform tabulations from data collected through different surveys under the DHS Programme. In addition, some information from the published reports of NFHS and from the World Health Organization (2019) has also been used to analyse trends in maternal mortality. The data and indicators, generally, are related to married/in-union women aged 15-49 years, but some indicators are related to all women aged 15-49 years, such as total fertility rate and age-specific rates.

The focus of the paper is primarily upon documenting changes over time rather than on the search for determinants, to take advantage of trends in the full 28-year survey series now extended to the present. The methods employed for the analysis are cross-tabulations and graphical presentations, to display the remarkable movement toward favourable outcomes in most indicators. For simplicity, the text and figures refer the five rounds of NFHS by their ending dates 1993, 1999, 2006, 2016, and 2021, respectively. Note that while some indicators available through NFHS are snapshots for the present, others are pooled events over 3-5 years period prior to the interview date, such as total fertility rate and age-specific rates (3 years). All indicators are, of course, subject to measurement error, but where changes are large and consistent across different rounds, they must be taken as indicative of substantial improvement in the status of women and their empowerment, working to enhance their health and wellbeing. Table 1 provides estimates of different reproductive health indicators available from different rounds of NFHS.

Fertility

A prominent demographer has called for attention to the historic gain in reproductive efficiency during the shift away from the old regime of high fertility and high mortality (Davis, 1945). Throughout most of human history, substantial reproductive wastage occurred with high proportion of pregnancies and births failing

to produce surviving adults. Moreover, a major part of the lifetime of women was occupied by their reproductive roles and responsibilities, with heavy losses from maternal morbidity and mortality. Gradually, the transition to low fertility has fundamentally released women from the previously high risks of reproductive morbidity and mortality, enhancing their own health and the health of their offspring.

In India, childbearing has been transformed, whether measured by the total fertility rate or by the age-specific fertility rates or by fewer high order births or by longer birth intervals or by longer delays since the latest birth. Changes in four of these indicators are depicted in figures 1-4 and are discussed briefly below, along with other features of fertility change.

- Over the 28 years under reference, the total fertility rate fell by 41 per cent from 3.4 to 2.0 birth per woman of reproductive age (Figure 1). The decline has been fairly regular between successive rounds of NFHS.
- Fertility also decreased in all age groups of the reproductive period (Figure 2). Specifically, fertility in the age group 15-19 years decreased by 62.9 per cent whereas it decreased by 28.6 per cent in the age group 20-24 years; 28.2 per cent in the age group 25-29 years; 48.5 per cent in the age group 30-34 years; 68.2 per cent in the age group 35-39 years; 80.0 per cent in the age group 40-44 years; and 80.2 per cent in the age group 45-49 years. Barring the first age group, the percentage decline in fertility progressively increased with the increase in the age of women.
- Higher order births have now decreased significantly (Figure 3). The decrease in the fifth and higher order births has been the sharpest, but it is also substantial in fourth order births. As a consequence, the share of first and second order births to all births has increased. The first order births increased by 44.6 per cent while second order births increased by 41.6 per cent, but third order births decreased by 13.8 per cent; fourth order births by 44.9 per cent; and fifth and higher order births by 74.7 per cent.
- With the increase in contraceptive use, some births have been postponed, so the interval from the previous birth is lengthened (Figure 4). The median birth interval rose from 31.6 months to 32.7 months over 28 years. The pattern is interesting. With all intervals adding to 100 per cent, the shares changed irregularly for birth intervals less than two years; they then declined sharply at years 3 and 4; and they then rose at 5+ years. (Note that first births are omitted, as is behaviour following the latest of the two births, when some women deliberately avoid future births, thus many births are never followed by another one. (See following topic.)

Further, the open birth interval, the time since the most recent birth, has also increased, which means that more women are deferring the next birth, either pushing it into the future or permanently avoiding it. As more women register longer birth-free times, fertility tends to decline, and the correlations are strong between longer open birth intervals and fertility declines (Ross and Bietsch, 2020). A trend toward longer

intervals can signal the increasing use of contraception, among other determinants. Data about open birth interval from the first four rounds of NFHS are available from other work (Ross and Bietsch, 2019). These data show that, over the 23 years period, the open birth intervals in India became notably longer. Birth intervals longer than 3 years increased from only 54.4 per cent of all intervals to more than 70 per cent. Intervals longer than 5 years increased from 43.7 per cent to almost 60 per cent. So, quite apart from the dynamics of closed intervals, many women are changing their fertility by lengthy postponements into a longer interval, or never ending it.

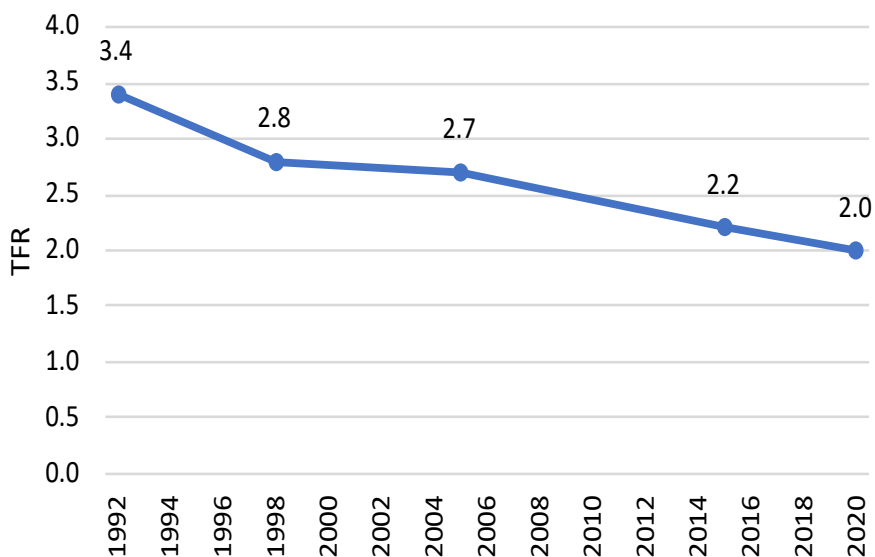


Figure 1: Trend in total fertility rate (TFR) in India.

Source: Author

Note that the period since the latest birth is equivalent to the age of the youngest living child (ignoring the mortality of a more recent birth). The older the child, especially after age 5 years or so, the more the mother freed for other roles outside the home, including labour force participation and increased personal income. This means that around 60 per cent women with open birth interval of 5 years and more tends to enhance women’s empowerment.

Birth intervals in one sense are curious. Closed birth intervals pertain to past fertility behaviour, not to what women are doing currently to avoid or seek another child. The nature of closed birth intervals is changing, reflecting interactions with the overall decline in fertility and the changing mix of parities and age. Other effects include the onset of infecundity as women age, and interrupted cohabitation as the spouse dies or is otherwise absent. Many of these effects, along with increasing contraceptive use, shape the trend in both closed and open birth intervals.

REPRODUCTIVE HEALTH INDICATORS IN INDIA

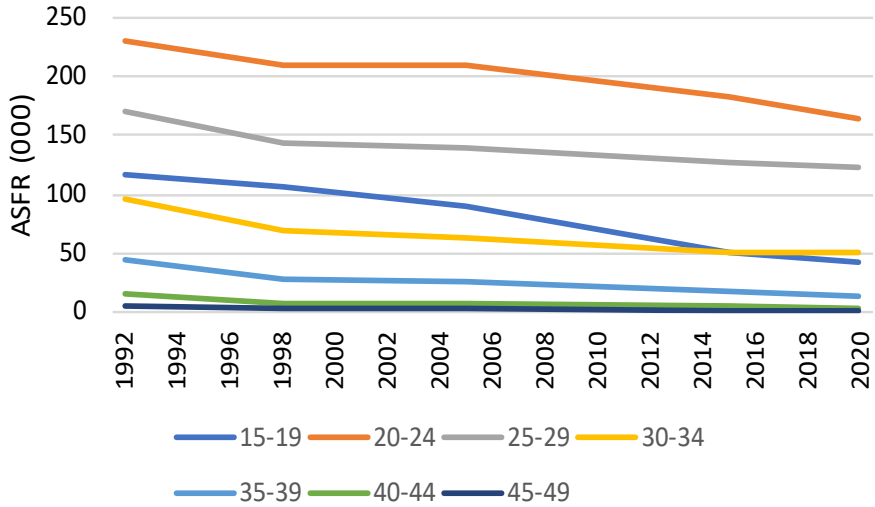


Figure 2: Trend in age-specific fertility rate (ASFR) in India
Source: Author

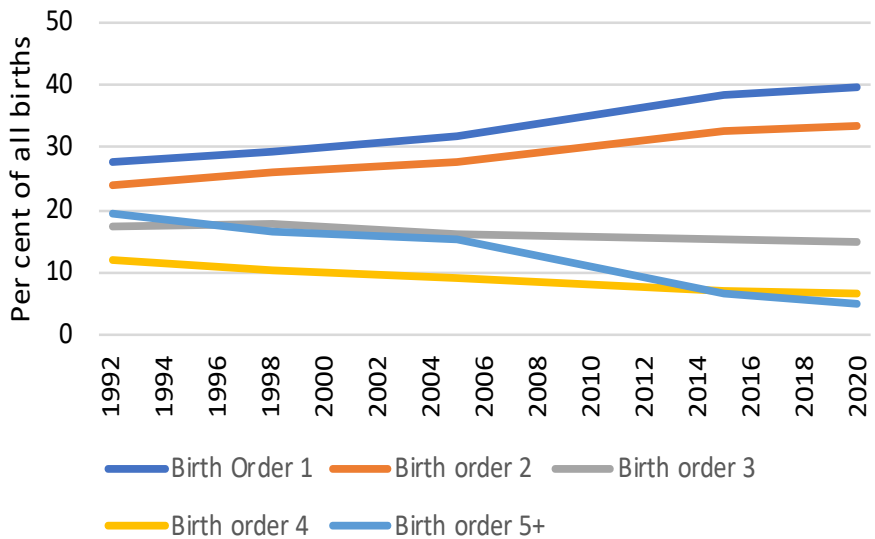


Figure 3: Distribution of births by birth order
Source: Author

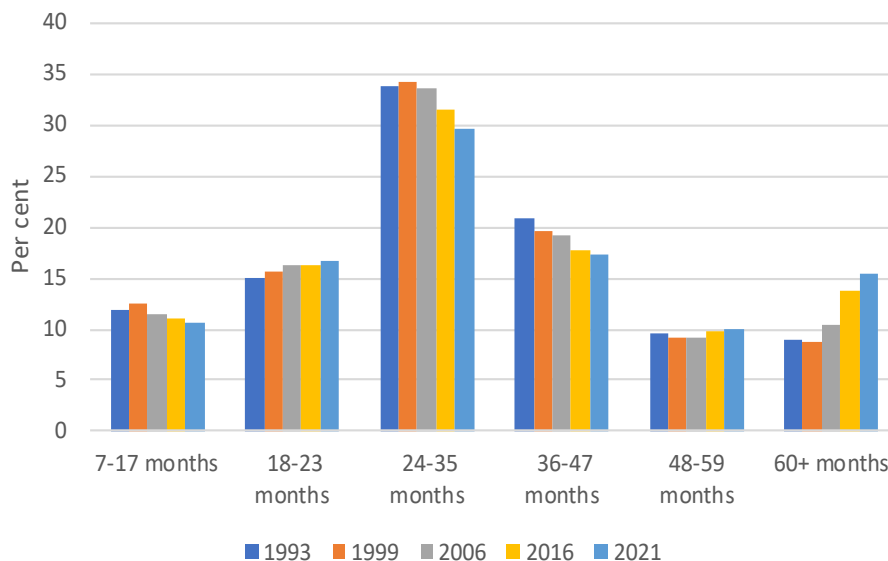


Figure 4: Distribution of births by birth interval
Source: Author

Marriage Behaviour

A marker of deep social change in marriage behaviour is the transition from very early female marriages, even earlier than 15 years of age, to females marrying in their late teens and early twenties. In India, women have married progressively later during the 28-year period (Figure 5). The female median age at marriage rose from 17.2 years to 19.8 years during this period - a 15 per cent change - as reported by women aged 25-29 years in each round of NFHS. Female marriages at a very early age, those prior to 15 years of age, have essentially disappeared in the country as the proportion of females married before 15 years of age decreased from 17.6 per cent in 1993 to a mere 0.4 per cent in 2021. Similarly, the proportion of females married before 18 years of age, the minimum legal age of female marriage in the country, fell from around 50 per cent to around 22 per cent while female marriages prior to 20 years of age fell from almost 70 per cent to around 42 per cent.

Postponement of the marriage leads to delay in the first birth. The percentage of teenage females (aged 15-19 years) who are already mothers or are pregnant with their first birth underwent a dramatic decline, from 23.2 per cent to only 6.8 per cent, as progressively more of these women were not yet married (Figure 6). An increase in contraception use and extended schooling of girls might also have contributed to this decrease.

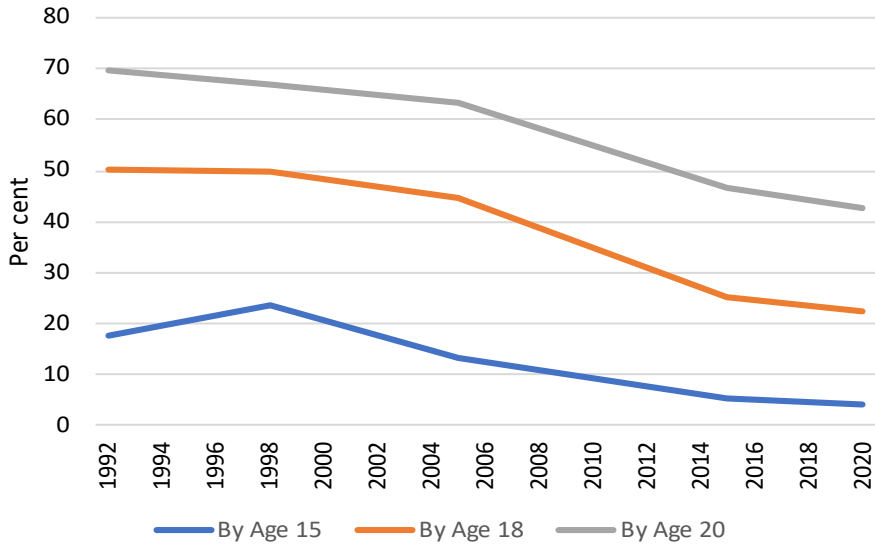


Figure 5: Percentage of women aged 20-24 years who were married by age 15 years, 18 years, and 20 years.
Source: Author

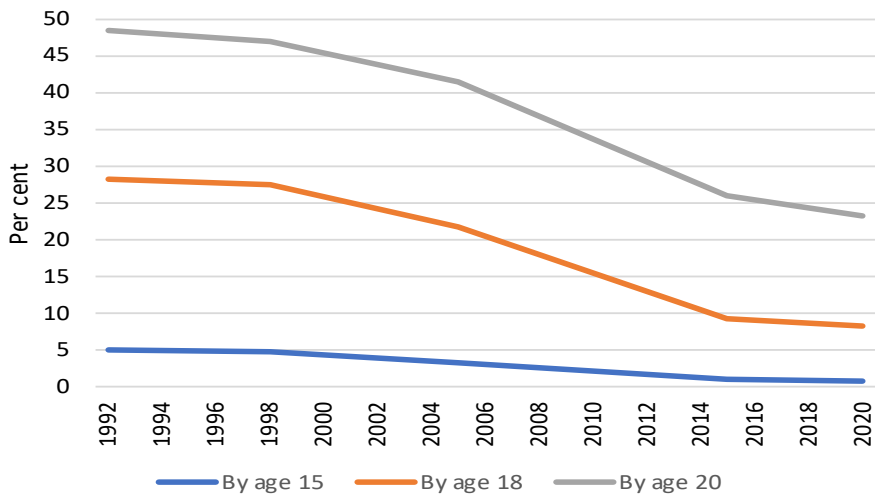


Figure 6: Percentage of women aged 20-24 years who gave first birth by age 15 years, 18 years, and 20 years.
Source: Author

A kind of mirror image exists between postponed marriages and postponed first births (Figures 5 and 6). With the increase in the female age at marriage, early childbearing fell sharply. The percentage of women giving birth before 15 years of age fell by 86 per cent, the percentage of women delivering before 18 years of age fell by 70 per cent, and those delivering by 20 years of age fell by over half. The delay in the first birth freed many young women from the health risks of early pregnancies and allowed them to seek further education and work experience outside the home.

Several indicators of reproductive behaviour are inter-related. As the ideal number of children decreases, progressively more women say that they want no more children beyond the ones they already have. Simultaneously, more women and couples take action in line with their family formation objectives, to avoid unwanted pregnancies, so that more of the births that do occur are wanted births. As the percentage of wanted births increases there is also a selectivity effect, in the sense that these births are associated with lower risks of death of the new-born during infancy, and lower risks of death of the mother during pregnancy or soon after pregnancy (Stover and Ross, 2010).

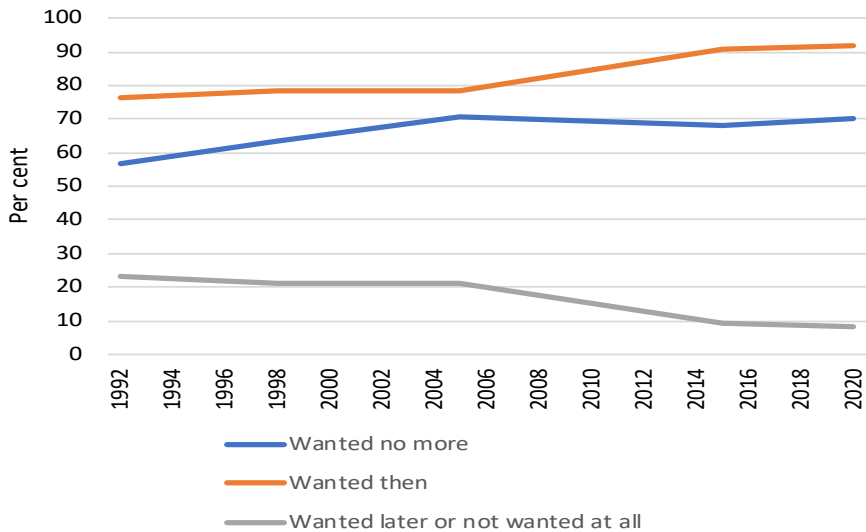


Figure 7: Trend in wantedness of births and women wanting no more children
Source: Author

In summary, the ideal number of children wanted has declined, from 2.9 to 2.2, and more women say they now want no more children, rising over a fifth, from 56.9 per cent to 70.2 per cent. More of the recent births are declared as wanted, rising by one fifth, from 76.3 per cent to 91.9 per cent, and fewer are considered unwanted or ill-timed, 23.3 per cent to 8.2 per cent (Top and bottom lines in figure 7, for births, add to 100 per cent, while the middle line is for women wanting no more children.)

Contraceptive Use and Unmet Need for Contraception

Many women declare in surveys that they are not using any contraceptive method, even though they want to defer or entirely avoid another pregnancy. That is sometimes termed “discrepant behaviour” and is regarded as the “unmet need” for contraception. Technically, unmet need is defined as the proportion of women who (1) are not pregnant and not postpartum amenorrhoeic, are considered fecund, and want to postpone their next birth for 2 or more years or stop childbearing altogether, but are not using a contraceptive method, or (2) have a mistimed or unwanted current pregnancy, or (3) are postpartum amenorrhoeic and their last birth in the last two years was mistimed or unwanted (International Institute for Population Sciences and ICF, 2021).

This section looks at the use and unmet need for modern methods only. It does not discuss use of traditional methods since use of modern methods is the focus of most action agencies and of the national family planning programme. (Modern methods include male and female sterilization, IUD, pill, injectable, condom, and other methods of very small use). Table 1 gives the trend in the use of all methods and in the use of modern methods.

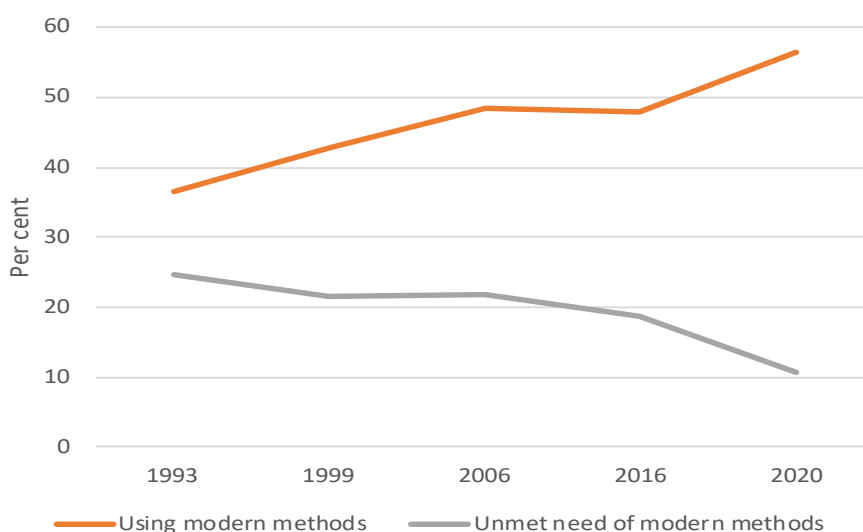


Figure 8: Trend in the use of modern methods and unmet need of modern methods
Source: Author

As contraceptive use has risen, unmet need has diminished sharply (Figure 8). The unmet need for modern methods diminished from 24.6 per cent to 10.8 per cent, or about one-tenth of the currently married women, while the use of modern methods rose from 36.5 per cent to 56.4 per cent or over half of the currently married women.

Table 1: Reproductive health indicators in India, 1993 through 2021.

Reproductive health indicator	National Family Health Survey					Change %
	1993	1999	2006	2016	2021	
Total fertility rate (TFR) (Births per woman of reproductive age)	3.4	2.8	2.7	2.2	2.0	-41.2
Age specific fertility rate (ASFR) (Births per 1000 women of age)						
15-19	116.0	107.0	90.0	51.0	43.0	-62.9
20-24	231.0	210.0	209.0	184.0	165.0	-28.6
25-29	170.0	143.0	139.0	128.0	122.0	-28.2
30-34	97.0	69.0	62.0	51.0	50.0	-48.5
35-39	44.0	28.0	25.0	17.0	14.0	-68.2
40-44	15.0	8.0	7.0	4.0	3.0	-80.0
45-49	5.0	3.0	3.0	1.0	1.0	-80.0
Birth order (Per cent distribution)						
1	27.6	29.5	31.9	38.4	39.9	44.6
2	23.8	25.9	27.8	32.8	33.7	41.6
3	17.4	17.7	16.1	15.3	15.0	-13.8
4	11.8	10.4	9.1	7.0	6.5	-44.9
5+	19.4	16.5	15.1	6.5	4.9	-74.7
Birth interval in months (Per cent distribution)						
7-17	11.8	12.5	11.4	11.1	10.7	-9.3
18-23	15.1	15.7	16.3	16.2	16.6	9.9
24-35	33.8	34.2	33.6	31.5	29.6	-12.4
36-47	20.8	19.6	19.2	17.7	17.4	-16.3
48-59	9.6	9.2	9.1	9.8	10.1	5.2
60+	9.0	8.8	10.4	13.7	15.5	72.2
Open birth interval in months (Per cent distribution)						
0-2.9	45.6	39.6	35.7	29.5		-35.3
3.0-4.9	10.7	11.5	11.4	10.6		-0.9
5.0-6.9	10.1	9.9	9.5	9.0		-10.9
7.0-8.9	8.0	7.7	8.7	8.6		7.5
9.0-10.9	6.8	6.9	7.3	7.5		10.3
11.0+	18.8	24.4	27.4	34.8		85.1
Mean ideal number of children (Number)	2.9	2.7	2.4	2.3	2.2	-24.1
Want no more children (Per cent)	56.9	63.6	70.5	68.2	70.2	23.4

Reproductive health indicator	National Family Health Survey					Change %
	1993	1999	2006	2016	2021	
Wantedness status of latest birth						
(Per cent)						
Wanted then	76.3	78.4	78.5	90.9	91.9	20.4
Ill timed, wanted later	14.5	11.9	10.7	4.9	4.8	-66.9
Not wanted	8.8	9.4	10.6	4.2	3.4	-61.4
Wanted later or not wanted at all	23.3	21.3	21.3	9.1	8.2	-64.8
Marriage by age						
(Per cent)						
15 years	17.6	23.4	13.1	5.4	4.0	-77.3
18 years	50.2	50.5	44.5	25.3	22.3	-55.6
20 years	69.8	67.1	63.3	46.8	42.5	-39.1
First birth by age						
(Per cent)						
15 years	5.1	4.9	3.4	1.0	0.7	-86.3
18 years	28.1	27.6	21.7	9.3	8.3	-70.5
20 years	48.6	47.1	41.6	26.1	23.4	-51.9
Contraceptive prevalence						
(Per cent of married women aged 15-49 years)						
All methods	40.7	48.2	56.3	53.5	66.7	63.9
Modern methods	36.5	42.8	48.5	47.8	56.4	54.5
Female sterilisation	27.4	34.1	37.3	36.0	37.9	38.3
Unmet need* for						
(Per cent of married women)						
Spacing	13.6	9.8	8.2	7.2	3.4	-75.0
Limiting	10.9	11.6	13.5	11.4	7.4	-32.1
total	24.6	21.5	21.7	18.6	10.8	-56.1
Infant and child mortality						
(Per 1000 live births)						
IMR	78.0	68.0	57.0	41.0	34.0	-56.4
U5MR	109.0	95.0	74.0	50.0	40.0	-63.3
Maternal mortality (MMR)	370.0	286.0	210.0	158.0	145.0	-60.8
(Per 100 thousand live births)						
Antenatal care						
(Per cent of married women of reproductive age)						
Doctor			50.2	58.8	62.6	24.7
Nurse/Midwife			23.0	20.4	22.5	-2.2
Birth attendant			1.1	0.3	0.4	-63.6
Others			2.8	4.0	8.4	200.0
No ANC			22.8	16.4	6.1	-73.2

Reproductive health indicator	National Family Health Survey					Change %
	1993	1999	2006	2016	2021	
Frequency of antenatal care visits (Per cent of married women of reproductive age)						
None			22.8	16.5	6.1	-73.2
1			6.0	5.7	6.6	10.0
2-3			33.5	25.8	27.5	-17.9
4+			37.0	51.2	58.4	57.8
8+			12.9	20.1	19.2	48.8
Place of delivery (Per cent)						
Public sector			18.0	52.1	61.9	243.9
Private sector			20.7	26.8	26.7	29.0
Home			61.1	20.8	11.2	-81.7
Others			0.2	0.2	0.2	0.0
Assistance at delivery (Per cent)						
Doctor			35.2	56.0	61.8	75.6
Nurse/Midwife			10.3	24.7	27.2	164.1
Birth attendant			36.5	11.0	5.9	-83.8
Relatives/Others			17.3	8.0	4.9	-71.7
None			0.5	0.3	0.3	-40.0
Time of first postnatal care (Per cent)						
Less than 4 hours			24.7	56.2	73.4	197.2
1-2 days			33.8	65.3	81.5	141.1
No postnatal care			61.9	30.3	15.0	-75.8
Postnatal care provided by (Per cent)						
Doctor/Nurse/Midwife			33.4	62.5	77.6	132.3
Others			0.4	2.8	3.9	875.0
No postnatal care within 2 days			66.2	34.7	18.5	-72.1

Source: International Institute for Population Sciences (1995); International Institute for Population Sciences and ORC Macro (2000); International Institute for Population Sciences and Macro International (2007); International Institute for Population Sciences and ICF (2017; 2021).

Remarks: The unmet need of contraception has been defined as the proportion of married women who (1) are not pregnant and are not postpartum amenorrhoeic, are considered fecund, and want either to postpone their next birth for 2 or more years or to stop childbearing altogether, but are not using any contraceptive method at the time of the survey, or (2) have a mistimed or unwanted current pregnancy, or (3) are postpartum amenorrhoeic and their last birth in the last two years was mistimed or unwanted (International Institute for Population Sciences (IIPS) and ICF, 2021).

Unmet need is usually divided into spacing versus stopping motivations, according to the expressed aim of the woman - whether she wants only to defer the next pregnancy (spacing) or to stop childbearing (limiting). By 2020, the unmet need for spacing and the unmet need for limiting were in an approximate two to one ratio in favour of limiting - more women wishing to stop childbearing (7.4 per cent versus 3.4 per cent), but equally, this means that 31 per cent of all unmet need (3.4/10.8) was for spacing between births rather than for stopping births.

Parenthetically, female sterilization has been used more than any other method. It accounted for about two-thirds of total family planning use until the latest survey, when it dropped to 56.8 per cent. However, the share of female sterilisation in the use of modern methods is still more than two-third. India is the only country in the world with such a high share of female sterilization in contraceptive use.

The year-by-year changes in the four variables appear in Table 1, along with the percentage change from the earliest to the latest survey. As the text notes, these show quite large movements with contraceptive use growing and unmet need diminishing.

The reproductive health of women is a function partly of the practice of abortion to terminate the pregnancy. The term itself has become complex due to the advent of “medical abortion,” which uses oral administration without any vaginal procedure. A careful study of abortions in India has found that 81 per cent of all abortions in India were of “medical” type (Singh et al, 2018) while most of the rest (14 per cent) were performed surgically in health facilities. Around 5 per cent of abortions are done elsewhere, probably with unsafe methods.

The incidence of abortion has averted an unknown number of unwanted births over the years. Any computation of births averted due to abortion is difficult since an abortion may avert a birth, but it may also end a pregnancy that was destined to end in a miscarriage. Moreover, the aborted pregnancy might also have ended in a stillbirth which would have used up more of the childbearing time of women. On balance, abortions have contributed to fertility decline, but both the degree and the trend are uncertain. Equally unknown currently is the proportion of women who take up, or return to, contraceptive use soon after aborting the pregnancy. Doing so can avert another conception among highly fecund women.

Antenatal, Delivery, and Postnatal care

For improved reproductive health, the most intimately related variables are the care received before, during, and after delivery. These are the “proximate variables” closest to the event of birth and are the “doorways” through which medical advances can be the most immediate and the most effective. Data for time trends are available only for the most recent three rounds of NFHS: 2005-2006, 2015-2016 and 2019-2021. For each survey, the data pertain to events over the previous five years.

Antenatal Care

- How extensive was antenatal coverage? In 2006 about three fourths (77.2 per cent) of the pregnant women received some type of care. This proportion grew to 93.9 per cent in 2021.
- Who provided antenatal care? It is increasingly being provided by doctors; their share of the total increased from 50.2 per cent to almost two-thirds (62.6 per cent) of all pregnant women. Most of the remaining women received antenatal care from nurse/midwife and this proportion has remained steady at about 22 per cent. Two or more antenatal visits grew from 70.5 per cent to 85.9 per cent of all pregnant women.
- In addition, the proportion of pregnant women receiving iron tablets or syrup grew from 65.1 per cent to 87.6 per cent while the proportion who received intestinal parasite drugs increased from a mere 3.8 per cent to 31.1 per cent.

Delivery Care

- Where did the deliveries occur? Home deliveries shrank drastically, from three-fifths (61.1 per cent) to only a tenth (11.2 per cent) of total deliveries, whereas the proportion of deliveries in health facilities grew from 38.7 per cent to 88.6 per cent. (Most of this growth was in the public sector.)
- Who attended the deliveries? Most deliveries are now attended by doctors; their share increased from 35.2 per cent to 61.8 per cent currently. Deliveries attended by nurse/midwives also rose, from 10.3 per cent to 27.2 per cent, while there has been a sharp fall in deliveries attended by traditional birth attendants, from 36.5 per cent to only 5.9 per cent. With the increase in deliveries attended by doctors, the percentage of caesarean births grew from 8.5 per cent to 21.5 per cent.

Postnatal Care

- Who provided postnatal care? Postnatal care provided by either doctor or nurse/midwife grew from 33.4 per cent to 77.6 per cent. No care at all accounted for nearly the rest of cases.

The forgoing observations indicate that there have been fundamental advances in all three stages of reproductive care over a period of 15 years.

Infant, Child, and Maternal Mortality

Over the period of 28 years the infant mortality rate (IMR) fell by more than half, from 78 to 34 infant deaths per 1000 live births, whereas the under-five mortality rate (U5MR) fell by nearly two thirds, from 109 to 40 under-five deaths for every 1000 live births. The decline in IMR is constrained partly by the neonatal component, which is less responsive to public health measures.

Maternal mortality, as measured by the number of maternal deaths per 100,000 live births, has also declined markedly based on the estimates prepared by the World Health Organization (2019), which collaborates with its sister agencies to publish estimates for each country, based upon all available information combined with modelling adjustments using Bayesian techniques (World Health Organization, 2019). These estimates show a decline of 60 per cent in maternal mortality ratio (MMR), from 370 to 145 maternal deaths per 100,000 live births over a period of 15 years. The large base of annual births in India suggests that there are around 35,000 maternal deaths in a year.

Contraceptive use reduces maternal mortality first by reducing the sheer number of pregnancies and associated births and, therefore, the number of times the women are exposed to the risks of death associated with pregnancy and delivery. In addition, contraceptive use also reduces the risk of a maternal death per birth, by changing the mix of births, with fewer proportion of higher order births at older ages, which carry a higher risk of death during pregnancy and delivery. In one study of maternal mortality (Stover and Ross, 2010) these selectivity effects were quantified using 146 DHS surveys.

Empowerment of Women

The reproductive health of women is related in numerous ways to their empowerment. Health indicators are clearly worse for women with little control over their own life circumstances. Under traditional practices, women had little say as to decisions affecting their activities, with an extreme dependence upon their husband and other family members, and with few roles other than delivering births, childrearing, and home making.

There are several indicators that suggest that the autonomy of women has increased in India over the years. For example, the proportion of women who reported that important decisions were taken jointly with husband, rather than by husband alone, increased between 2006 and 2021. More specifically,

- Who decides about the health care of the wife? The proportion of married women who reported that the decision was taken jointly with the husband increased from 35.1 per cent to 68.8 per cent while the proportion of women who reported that the decision was taken by the husband only fell from 30.1 per cent to 19.8 per cent.
- Who decides about major household purchases? The proportion of married women who reported that the decision was taken jointly increased from 44.4 per cent to 73.6 per cent while the proportion reporting that the decision was taken by husband only fell from 32.2 per cent to 14.8 per cent.
- Who decides about wife visit to her family or relatives? The proportion of married women who reported that the decision was taken jointly increased

from 49.8 per cent to 76.0 per cent while the proportion reporting that the decision was taken by husband only fell from 26.8 per cent to 12.6 per cent.

An interesting test of the autonomy of women is their full or partial ownership of their house or the land. Related data are available from the fourth (2015-2016) and the fifth (2019-2021) round of NFHS, indicating that house ownership by the wife alone or jointly with the husband grew from 37.1 per cent to 46.5 per cent. For land it increased from 28.3 per cent to 33.8 per cent.

A telling shift in the attitude of women that is evident from the NFHS is their response as to what justifies wife beating by the husband. Here are the falloffs in the percentages of women agreeing to each reason between 2006 and 2021:

If she burns the food. 20.4 per cent to 13.4 per cent.

If wife argues with the husband. 30.3 per cent to 20.6 per cent.

If wife goes out without telling husband. 29.0 per cent to 20.9 per cent.

If wife refuses to have sex with husband. 14.1 per cent to 8.4 per cent.

As a summary, 46.9 per cent of women disagreed with all of the reasons of wife beating in 2006 but this proportion increased to 67.8 per cent in 2021.

The status of women has risen over the decades in other ways also. The 28 years since 1993 saw a revolution in the education of women. Having no education at all declined from 61.5 per cent to only 22.4 per cent. By 2021, two-thirds (65.8 per cent) of the women had secondary education, and 15.7 per cent of them had more than secondary education.

About a third of the women surveyed also reported participating in the labour force and, therefore, had their own earnings. The reported trend in the percentage of currently married women who were employed during the last 12 month was, however, uneven, at 37.5 per cent, 42.8 per cent, 30.6 per cent and 38.1 per cent respectively in 1999, 2006, 2016 and 2021. On the other hand, the proportion of women who said that they decided jointly with their partner about how to use their earnings increased from 56.5 per cent to 66.3 per cent, a ten percentage points gain between 2006 and 2021. Also interesting is the trend toward equality of earnings between the woman and her partner. In 2006, 20.2 per cent of women reported that their earnings were equal or more than that of their partner, but this percentage jumped to 42.2 per cent in 2016 and to 43.8 per cent in 2021.

These changes in the reproductive health situation suggest that women in India now have greater freedom of action outside the home and have better opportunities for personal income. The transitions to better equity for women appear to have had broader effects in the society at large. As the World Bank (1995) has argued, "... gender equality is a core development objective in its own right.... but greater gender equality is also smart economics, enhancing productivity and improving other development outcomes." It urges closing of gender gaps for access to economic opportunities, earnings, and productivity.

Discussion and Conclusions

The reproductive health of women in India has improved through truly historic changes, with large advances for the status of women and for alternative roles to childbearing. Women are initiating marriage and first births later. They are having fewer children and fewer child deaths. Smaller proportions of their reproductive years are occupied by pregnancies and births, and there are probably fewer abortions as contraception has taken hold and more births are wanted.

However, challenges in meeting the reproductive health needs remain. Only 56 percent of married women are using modern methods, and female sterilization accounts for an inordinate share of modern methods use at nearly two-thirds, one of the highest shares recorded. It is difficult for any country to attain a high level of total contraceptive use when the choice of methods is severely restricted. The growing use of traditional methods may reflect that constraint, despite their high discontinuation and failures.

This paper has focused strictly upon the national picture. It does not focus upon the wide variations in reproductive health indicators across states/Union Territories and districts of the country which are known for their strength and persistence. For example, the latest round of NFHS (2019-2021) reveals that TFR varies from 3 births per woman of reproductive age in Bihar to 1.1 births per woman of reproductive age in Sikkim. Similarly, the infant mortality rate varies from 50.4 infant deaths per 1000 live births in Uttar Pradesh to just 2.9 infant deaths per 1000 live births in Puducherry while the maternal mortality ratio varies from 205 maternal deaths per 100 thousand live births in Assam to 30 maternal deaths per 100 thousand live births in Kerala (Government of India, 2022). These variations are even wider at the district level. An additional proviso is that the paths of change in some indicators have been irregular, with dissimilar changes between inter-survey pairs.

Posed against the remarkable gains for reproductive health is the built-in growth of the total population, with the attendant pressures it exerts on the welfare of individual families and the society at large. India's population will soon surpass China's, and it is projected by the Population Division of the United Nations to grow to over 1.6 billion by 2050, thirty years from now (United Nations, 2022). That growth will be due primarily to the momentum factor, in which large numbers of childbearing age women will produce large numbers of births, even with few births per woman.

However, births per woman will be responsive to the use of contraceptive methods, for which there is a substantial room for growth from the current level of only about two-thirds (67 per cent) of married women are using some method. About ten per cent of married women say they wish to avoid pregnancy but are not using a method. The wanted fertility rate of 1.6 is still below the actual TFR of 2.0, and 8.2 per cent of births are declared as unwanted or ill-timed. Some 70.2 per cent of married women say they wish to stop childbearing. Single, sexually active women and men add to the relevant population.

All this suggests that the reproductive and child health programme of the country which is the flagship programme of the National Health Mission must move more vigorously to meet the reproductive health needs of the people of India. There is also a need to enlarge the contraceptive method mix beyond female sterilization and make other contraceptive methods more available in practice to the people.

References

- Davis K (1945) The world demographic transition. *Annals of the American Academy of Political and Social Science* 237: 1-11. Cited in J Ross and A Jain see reference below.
- Government of India (2022) Special bulletin on maternal mortality in India, 2017-19. Sample Registration System. New Delhi, Ministry of Home Affairs, Office of the Registrar General.
- International Institute for Population Sciences (1995) *National Family Health Survey (MCH and Family Planning), India 1992-93*. Mumbai, India, International Institute for Population Sciences.
- International Institute for Population Sciences and ORC Macro (2000) *National Family Health Survey (NFHS-2), 1998-99: India*. Mumbai, India, International Institute for Population Sciences.
- International Institute for Population Sciences and Macro International (2007) *National Family Health Survey NFHS-3, 2005-06: India: Volume 1*. Mumbai, India, International Institute for Population Sciences.
- International Institute for Population Sciences and ICF (2017) *National Family Health Survey NFHS-4, 2015-16: India*. Mumbai, International Institute for Population Sciences.
- International Institute for Population Sciences and ICF (2021) *National Family Health Survey (NFHS-5), 2019-21: India*. Mumbai, International Institute for Population Sciences.
- Ross J, Bietsch K (2019) The open birth interval: a resource for reproductive health programs and women's empowerment. *Global Health: Science and Practice* 7(3): 355-370.
- Ross J, Bietsch K (2020) The nature of the open birth interval distribution. *Gates Open Research* 4(153): 1-22. <https://doi.org/10.12688/gatesopenres.13177.1>
- Ross J, Jain A (2020) Reproductive efficiency in the developing world. *Journal of Biosocial Science* 52(5): 776-784. doi:10.1017/S0021932020000036
- Singh S, Chander Shekhar, Acharya R, Moore AM, Stillman M, Pradhan MR, Frost JJ, Sahoo H, Alagarajan M, Hussain R, Sundaram A, Vlasoff M, Kalyanwala S,

- Browne A (2018) The incidence of abortion and unintended pregnancy in India, 2015, *The Lancet Global Health* 6(1): E111-E120.
- Stover J, Ross J (2010) How increased contraceptive use has reduced maternal mortality. *Maternal and Child Health Journal* 14: 687-695.
- United Nations (2015) *The Millennium Development Goals 2015*. New York, United Nations. <https://www.un.org/millenniumgoals/>
- United Nations (2020) *Global Sustainable Development Report 2020*. New York, United Nations, Department of Economic and Social Affairs. <https://sdgs.un.org/goals>
- United Nations (2022) *World Population Prospects 2022*, Online Edition. New York, United Nations, Department of Economic and Social Affairs, Population Division.
- World Bank (1995) *Fourth World Conference on Women in Beijing*. Washington DC, The World Bank. <https://www.un.org/en/conferences/women/beijing1995>
- World Health Organization (2019) *Trends in maternal mortality 2000 to 2017: Estimates by WHO, UNICEF, UNFPA, World Bank Group, and the United Nations Population Division*. New York, United Nations Children's Fund.