

**CURRENT STATUS OF CONTRACEPTIVES USE****Sudha Sah<sup>\*1</sup>, Anamika Jaiswal<sup>2</sup> and Pooja Paul<sup>2</sup>**

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**ABSTRACT**

Prevention of unplanned pregnancies and access to family planning services have been one of the greatest advances in healthcare in the 20<sup>th</sup> century. Family planning is an integral part of the health care of women. It also affects maternal mortality rates, population growth, and the status of women in society. Birth control, family planning, pregnancy prevention, fertility control, or contraception is the use of any practices, methods, or devices to prevent pregnancy from occurring in a sexually active woman. Contraception can occur at a number of points in the basic reproductive biological process and through a number of contraceptive product options. Contraceptive products are categorized by their hormonal content and method of action. Hormonal options include oral contraceptive pills, contraceptive patch, implants, injection, intravaginal, and intrauterine

devices. Barrier products prevent pregnancy by creating a physical obstacle to the successful fertilization of an egg by sperm. Contraceptive use and unmet need for family planning are key to understanding profound changes in fertility and to improving reproductive health worldwide. In almost all regions of the world, contraceptives are used by the majority of women in the reproductive age range (15-49 years) who are married or in a union. Worldwide in 2017, 63 per cent of these women were using some form of contraception. Contraceptive use was above 70 per cent in Europe, Latin America and the Caribbean, and Northern America, while being below 25 per cent in Middle and Western Africa. India is one of the among fastest growing economies having 59 percent contraceptive users.

**KEYWORDS:** Fertility control, contraception, contraceptive, hormonal, oral contraceptive pills.

## 1. INTRODUCTION

The practice of birth control has been around for centuries and people have relied upon their imaginations and ingenuity to avoid pregnancy. Around 1960 only a tiny fraction of couples practiced contraception, and knowledge of methods was very limited. Today's options for contraception have evolved considerably and include a variety of products ranging in mechanism, efficacy, and accessibility.<sup>[1]</sup> Contraception is known as the planned prevention of conception through the use of various devices, sexual practices, chemicals, drugs, or surgical procedures. Thus, any device or act whose purpose is to prevent a woman from becoming pregnant can be considered as a contraceptive.<sup>[2]</sup> The option of the contraceptive method, however, is influenced by a host of interdependent demographic, cultural, economic, and social factors which means that a multidimensional approach needs to be adopted for analyzing the contraceptive use pattern. Any survey based on a single indicator is unlikely to capture all the dimensions of contraceptive method choice.<sup>[3]</sup> Contraceptive awareness and education about reproductive and sexual health is significant both for general human health and for protecting the basic human rights of men and women. In the developing world, the prevalence of contraception has increased sharply over the past several decades from near zero in 1960 to around 60 percent in 2000. In contrast, contraceptive knowledge is now widespread and more than half of married women in the developing world are current users of contraception. The large majority of these users rely on modern methods, including male and female sterilization, the IUD, and the pill. Contraceptive prevalence levels among married women of reproductive age in many developing countries are approaching levels often found in the industrialized world, one might conclude that contraceptive demand is about to level off. Although future increases in contraceptive use could well occur at a slower pace than heretofore, further expansion of demand is likely for two reasons. First, the fertility transition in the developing world is not yet complete. Second, as population growth continues, the number of women of reproductive age (15–49 years) is expected to rise in most developing countries. These two factors will drive up the number of users of contraception in the developing world for the next few decades.<sup>[4]</sup>

## 2. Contraceptive Methods

### 2.1 Traditional Methods

**2.1.1 Coitus Interruptus:** Coitus Interruptus or Withdrawal Involves withdrawal of penis from the vagina just before ejaculation, thus preventing semen from entering the woman. This is perhaps the oldest contraceptive method known to man, but it depends on the cooperation of the male partner. This is not a reliable method and may fail if semen escapes before ejaculation or is left on external sex organs. Man needs good self-control, both emotionally and physically, for this method to succeed.<sup>[5,6]</sup>

**2.1.2 Lactational Amenorrhoea Method:** Nursing women secrete hormones that prevent conception for about 6 months. It prevails if there is no menses and full breast-feeding day and night is maintained. This is more a myth as, breast-feeding is irregular, 60% women start menstruating by the third month. Not reliable in instances where baby sleeps through the night, or in case of sore, cracked or inverted nipples and breast abscess. Many unsuspecting women conceive during this period before return of menstruation.<sup>[5]</sup>

**2.1.3 Rhythm Method:** This method requires predicting ovulation, the period when the woman is most fertile, by recording the menstrual pattern, or body temperature, or changes in cervical mucus, or a combination of these (symptom-thermal method). Intercourse is avoided on fertile days. Although a large number of people claim knowledge of this method, only a small proportion can actually identify the fertile period of the month. It cannot be used by women, who have irregular periods, or after childbirth, or during menopausal years. Intercourse is limited to some days of the month only. The method requires careful record keeping for calculating the safe period.<sup>[5,6]</sup>

### 2.2 Modern methods

**2.2.1 Non barrier Methods:** Several types of contraceptive products exert their effects at the levels of the ovarian-produced hormones, estrogen and progesterone. These products include oral contraceptive pills (OCPs), long-acting injections, implants, topical patches, intravaginal, and intrauterine devices (IUDs).<sup>[7]</sup>

**2.2.1.1 Oral contraceptive pills:** OCPs consist of synthetic forms of either progestin only or estrogen and progestin in combination. OCPs are the most frequently used in the United States. When used correctly, they are considered to have greater than 99% efficacy. Typically, combination OCPs are packaged as 21 active tablets in monophasic, biphasic, or

triphasic formulations followed by 7 inert tablets for daily administration. The monophasic agents consist of fixed amounts of the estrogen/progestin ingredients in all 21 active tablets. The biphasic and triphasic formulations have 2 or 3 different tablets, respectively, containing varying amounts of hormones, which more closely approximates levels experienced during a woman's menstrual cycle.<sup>[8,9]</sup> OCPs are also available in low doses of progestin-only formulations, which commonly are referred to as the "minipill." Progestin only OCPs are taken daily without interruption in active tablets and considered compatible with breast feeding in the immediate postpartum period.

**2.2.1.2 Contraceptive injection:** Medroxyprogesterone acetate is a derivative of progesterone, which has been formulated as an injectable agent indicated for the prevention of pregnancy. This product is available as a prefilled syringe containing a single 150 mg dose.<sup>[10]</sup> The dose is administered once every 3 months by a trained health care professional. The injection has the following 2 major menstrual changes and delayed return to fertility.

**2.2.1.3 Transdermal patch:** The synthetic hormones norelgestromin and ethinyl estradiol are available in a transdermal patch formulation. The transdermal system delivers 150 mg of norelgestromin and 35 mg of ethinyl estradiol per day. One patch is applied weekly for the first 3 weeks of the menstrual cycle followed by 1 patch-free week. For application of the transdermal patch, users should choose a clean, dry, intact, nonirritated location on the abdomen, back, buttock, or upper outer arm that will not be constricted or rubbed by clothing.<sup>[11]</sup>

**2.2.1.4 Subdermal implant:** Another option for long-term contraception is a subdermal implantation of a rod that releases etonogestrel. This method is considered the most effective form of contraception, with a reported 0.05% yearly failure rate. The rate of release of the hormone is controlled by an additional ethylene vinyl acetate layer that surrounds the inner core. The implant contains a total of 68 mg of progestin. Initially upon implantation, the progestin is released at a rate of 60 to 70 mg/d. By the end of the first year of use, the rate is decreased to 35 to 45 mg/d. At the end of years 2 and 3, the rate is reduced to 30 to 40 mg/d, respectively.<sup>[12]</sup> While the device must be surgically inserted by a trained health care professional, insertion of this form of contraceptive is minimally invasive, requires only local anesthesia, and can be completed in a physician's office within 5 minutes.

**2.2.1.5 Intravaginal ring:** Intravaginal devices also provide safe options of contraception for women. Etonogestrel/ethinyl estradiol vaginal ring is a nonbiodegradable, flexible, transparent, combination nonlatex contraceptive device. The ring is inserted in the vagina and left in place for 3 weeks to release on average 0.120 mg/d of etonogestrel and 0.015 mg/d of ethinyl estradiol hormones in the body for birth control.<sup>17</sup> After 3 weeks; it is removed for 1 ring-free week.<sup>[13]</sup>

**2.2.1.6 Intrauterine devices:** Intrauterine devices provide other safe options of contraception for women. These agents may contain hormones or be hormone free. The levonorgestrel-releasing intrauterine system is an option safe for latex-sensitive patients. The system consists of a T-shaped polyethylene frame (T-body) with a steroid reservoir around the vertical stem.<sup>[14]</sup> The reservoir consists of a white cylinder, made of a mixture of levonorgestrel and silicon. Two systems are available, one containing 13.5 mg of levonorgestrel, which provides contraception for 3 years, and the other contains 52 mg of levonorgestrel and provides contraception for up to 5 years.<sup>[15]</sup> Like the other progestin-only methods, the levonorgestrel-releasing intrauterine system is compatible with breastfeeding in the immediate postpartum period.

## 2.3 Barrier Products

**2.3.1 Male condoms:** The male condom is one of the most popular and affordable forms of birth control. Condoms made from latex are the best at preventing pregnancy and also protect against STIs such as HIV/AIDS and herpes if used properly. Today's male condom has evolved from being made of only latex to the availability of various nonlatex condoms.<sup>[16]</sup> Nonlatex condoms are made of polyisoprene, polyurethane, or natural lamb. Polyisoprene condoms are Food and Drug Administration (FDA) approved as an effective method of prevention of pregnancy and reduction in the spread of STIs. Lamb skin condoms are made from the intestine of lamb. They are beneficial with respect to comfort and transmit heat very well through a porous membrane. Some users may complain of a distinct smell. The most important thing to note is lambskin condoms do not protect against the transmission of STIs or HIV. They are only effective as a barrier method for contraception.<sup>[17]</sup>

**2.3.2 Female condom:** The female condom is a soft, thin sheath of synthetic latex fit loosely in the vagina. It is differently shaped than the male condom and is inserted vaginally. The condom is comprised of 2 flexible rings, one closed end inserted into the vagina and the other open end remains outside of the vagina. The condom effectively protects against STI's and

HIV transmission. The female condom can be inserted as early as 8 hours before sexual intercourse.<sup>[18]</sup>

**2.3.3 Diaphragm:** The diaphragm is a cup made of latex or silicone with a flexible rim placed against the vaginal walls. The diaphragm completely covers the cervix. It is typically used with a spermicide, therefore providing both a physical and a chemical barrier to sperm. It is more effective than male condoms and other female barrier methods. The diaphragm should remain in the vagina for at least 6 hours after intercourse but no longer than 24 hours.<sup>[19]</sup> Disadvantages of use are an increased risk of urinary tract infections (UTIs) and incomplete bladder emptying. A more serious condition is the risk of toxic shock syndrome if the diaphragm is left in vagina for more than 24 hours.

**2.3.4 Cervical cap:** The cervical cap is dome shaped and made of silicone material. The concave dome fits snugly over the cervix and held in place by the muscular walls of the vagina. The cap has a strap that stretches over the length of the dome for removal from vagina and it should be used with spermicide. This device can be inserted up to 42 hours prior to intercourse and should remain in vagina for at least 6 hours after intercourse to ensure the sperm have died.<sup>[20]</sup> The cap can be left in for 48 hours but recommended to be removed before 24 hours to avoid the development of a foul odor.

**2.3.5 Spermicidal preparations:** Spermicidal products are another form of birth control. These chemical agents kill sperm. The active ingredient is nonoxynol-9, which can be formulated as gels, creams, aerosol foam, vaginal film, and sponges. Spermicidal preparations are easy to use, but timing of initiating use is critical to effectiveness. Typically, the preparations need 10 to 15 minutes in the vagina to become effective prior to being exposed to sperm.<sup>[21]</sup> Disadvantages of spermicidal formulations are low effectiveness rate and nonoxynol-9 causing irritation to the vagina or penis.

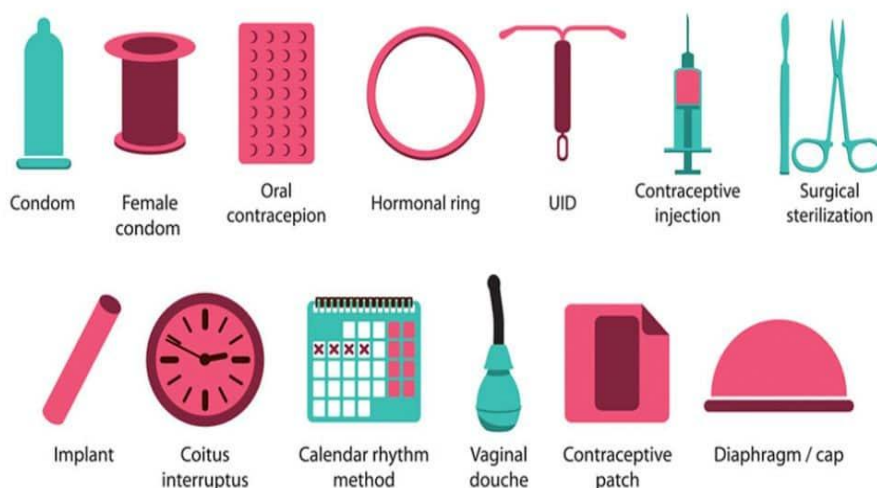
**2.3.6 Emergency contraceptive pills:** Emergency contraception offers women a last chance to prevent pregnancy after unprotected intercourse. There are three types of ECPs: combined ECPs containing both estrogen and progestin, progestin-only ECPs, and ECPs containing an antiprogestin (either mifepristone or ulipristal acetate). All three are available in the United States. Progestin-only ECPs have now largely replaced the older combined ECPs because they are more effective and cause fewer side effects. Although this therapy is commonly known as the morning-after pill, the term is misleading; ECPs may be initiated sooner than

the morning after—immediately after unprotected intercourse—or later—for at least 120 hours after unprotected intercourse.<sup>[22]</sup>

## 2.4 Permanent methods of contraception

**2.4.1 Female Sterilization (Tubectomy):** This is a permanent surgical method in which the fallopian tubes are cut and ends tied to prevent the sperms from meeting the eggs. It is a very reliable method requiring only 1 day of hospitalization and can be performed anytime, preferably after last child's birth. Rarely, the tubes may join and fertility may return. A few women tend to have heavier periods after this method. Though this is a permanent method, the operation can be reversed, though the results may not be always successful. Hence the couple should be firm about their decision before opting for this method.<sup>[2]</sup>

**2.4.2 Male Sterilization (Vasectomy):** A permanent surgical method in which, the vasa deferentia which carry the sperms from the testes to the penis, are blocked. This prevents the sperms from being released into the semen at the time of ejaculation. It is a simple and reliable method not requiring hospitalization. Contrary to popular belief, it does not affect health or sexual vigour, neither does it interfere with intercourse.<sup>[2]</sup>



**Fig. Contraceptive Methods.**

## 3. Trends in Contraceptive Use

Oral contraceptives and condoms have been predominant methods in developed countries; sterilization has been the most common in Latin America and the Caribbean and Asia; hormonal methods, in Africa. Some 222 million women in developing countries have unmet need for modern contraceptives, resulting in 2012 in an estimated 54 million unintended

pregnancies and 79,000 maternal deaths more than if they used modern methods.<sup>[23]</sup> The distributions of contraceptive users by methods used are quite distinct across regions and countries. Short-term and reversible methods, such as the pill, injectable and condom, were more commonly used than other methods in Africa and Europe whereas longer-term and permanent methods, such as sterilization, implants and the IUD, were more common in Asia and Northern America. Latin America and the Caribbean and Oceania were more balanced in the prevalence of short-term versus long-term methods. For example, the IUD was most commonly used in Asia (18 per cent) and levels were over 25 per cent in China, Democratic People's Republic of Korea, Viet Nam and four countries in Central Asia. Female sterilization was most prevalent (more than 20 per cent) in Asia, Latin America and the Caribbean and Northern America in 2011 and levels were over 25 per cent in several populous countries (i.e., Brazil, China, India and Mexico). Use of the contraceptive pill has the widest geographic distribution of any method. Other modern contraceptive methods are also popular in certain regions. In Africa, for instance, injectables as well as the pill are the most common methods used (8 per cent each). Between 1990 and 2011, all modern contraceptive methods increased in prevalence worldwide except for vasectomy and vaginal barrier methods, the former due principally to declining prevalence of vasectomy in several Asian countries, especially the two largest, China (from an estimated 8.6 per cent in 1990 to 4.5 per cent in 2011) and India (from an estimated 3.5 per cent in 1990 to 1.2 per cent in 2011). Modern methods requiring male participation are not common: only 17 per cent of married or in union women worldwide who used contraception relied on male sterilization or male condoms.<sup>[24]</sup> In the world overall, the proportion of users relying on female sterilization has increased slightly while the proportion whose partners have had vasectomies has declined by two-thirds. The proportions using long-acting reversible methods — intrauterine device (IUD), injectables and implants — have increased and oral contraceptive use has declined. There has been little overall change in the proportion of users relying on condoms or vaginal methods. Female sterilization is the predominant method of modern contraceptive use only in South Asia and in Latin America and the Caribbean. In Eastern, Central and Western used method is the IUD. Long Acting hormonal methods, primarily injectables, make up the highest proportions of users throughout Sub-Saharan Africa except in Middle Africa, as well as in Southeast Asia and Oceania. Oral contraceptives are predominant only in Northern Africa and condoms, in Middle Africa.<sup>[23]</sup>



#### 4. Prevalence of contraceptive use

In almost all regions of the world, contraceptives are used by the majority of women in the reproductive age range (15-49 years) who are married or in a union. Worldwide in 2017, 63 per cent of these women were using some form of contraception. Contraceptive use was above 70 per cent in Europe, Latin America and the Caribbean, and Northern America, while being below 25 per cent in Middle and Western Africa. Modern contraceptive methods account for most of the contraceptive use worldwide. Globally in 2017, 58 per cent of married or in-union women of reproductive age were using a modern method of family planning, comprising 92 per cent of all contraceptive users. Worldwide in 2017, among married or in-union women of reproductive age, the proportion of the demand for family planning that was satisfied by modern contraceptive methods (the proportion of women currently using a modern method among all women who have a need for family planning) was 78 per cent. Across regions in 2017, this proportion was lowest in Africa, at 56 per cent, and above 75 per cent in all other regions. The number of married or in-union women using contraception is projected to rise by 15 million globally, from 778 million in 2017 to 793 million in 2030, according to the median projection variant of the United Nations. The growth in the number of contraceptive users is projected to be especially fast in Africa and Southern Asia. Globally, the number of married or in-union women with an unmet need for family planning is projected to decline slightly, from 142 million in 2017 to 139 million in 2030.<sup>[25]</sup> There is a large amount of heterogeneity in India, with a difference of up to 55.1 percentage points (95% uncertainty interval 46.4–62.1) in modern contraceptive use in 2015 between sub regions. States such as Andhra Pradesh, with 92.7% (90.9–94.2) demand satisfied with modern methods, are performing well above the national average (71.8%, 56.7–83.6), whereas Manipur, with 26.8% (16.7–38.5) of demand satisfied, and Meghalaya, with 45.0% (40.1–50.0), consistently lag behind the rest of the country. Manipur and Meghalaya require the highest percentage increase in modern contraceptive use to achieve 75% demand satisfied with modern methods by 2030. In terms of absolute numbers, Uttar Pradesh requires the greatest increase, needing 9.2 million (5.5–12.6 million) additional users of modern contraception by 2030 to meet the target of 75%.<sup>[26]</sup>

#### 5. CONCLUSION

Achievement of the desired number and healthy timing of births has important benefits for women, families, and societies. To meet the unmet need for modern contraception, countries need to increase resources, improve access to contraceptive services and supplies, and

provide high-quality services and large-scale public education interventions to reduce social barriers.<sup>[27]</sup> Improving current methods could increase user satisfaction, better meet needs of many nonusers and contribute to reduction in unintended pregnancy. To increase the use of more effective contraceptive methods, users should be evaluated in accordance with WHO criteria and must be provided with high-quality consultation by a professional to give information facilitating the choice of an appropriate contraceptive method. Today's oral contraceptive regimens are safer and more tolerable, with equal or improved efficacy as compared to early formulations. Currently available 'LARC' (Long Acting Reversible Contraceptive) methods, such as IUDs, the intrauterine system, injectable contraceptives and implants require administration less than once per cycle or month. They are more cost effective than the combined oral contraceptive pill even at 1 year of use. Increasing the access and availability of new formulations of oral contraceptives and LARC methods will reduce the number of unintended pregnancies.<sup>[28]</sup> Contraceptive prevalence is very low among women with no surviving child and low among women with one surviving child but is quite substantial among women with at least two surviving children. In the context of universal access to family planning services, there is a need to enhance the needs effectiveness and increase the capacity efficiency of organized family planning efforts so that these efforts can address specific family planning needs of women with distinct social, economic, and personal characteristics as revealed in the present analysis. Contraceptive preferences of different groups of women are quite different.<sup>[29]</sup> Accurate and age-appropriate sexuality education must be combined with contraceptive service provision, which acknowledges the needs and preferences of adolescents, depending on their culture, age, and socioeconomic status. Contraception always needs to include the prevention of STIs as well as of pregnancy. Counseling should include all areas of risk taking behavior. Long active reversible methods such as intrauterine contraception and implants are well suited for adolescents and should be emphasized as having higher efficacy. Improved contraceptive methods do not automatically lead to reduced numbers of adolescent abortions. The prevention of unintended adolescent pregnancies requires a desire to use protection, a good contraceptive method, ability to obtain the contraceptive method, and ability to use it. All these components are important, if one is missing, contraception will fail.<sup>[30]</sup> Pharmacists can assist the patient by recommending the best product for the individual and advising the patient on proper usage. They can also educate the patients on the risk of latex exposure, alternative non latex products, HIV/AIDs, STIs, and the possibility of pregnancy. With the emergence of Medication Therapy Management settings, pharmacists have the opportunity to provide extensive education and

counseling to sexually active individuals, especially teenagers. The development of methods that provide dual protection against pregnancy and STIs is drastically needed.

### **Declaration of interest**

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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