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## Review Article

# From Ancient Practices to Modern Pills: An Overview of Contraceptive Methods

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### ABSTRACT

In ancient days people especially in developing countries where facing challenges which include overpopulation, disease outbreak skyrocketing, poverty fluctuating, escalation of unemployment rates, extinction of natural resources due to increase in demand as a result of failure to control population growth. In other parts of the world particularly Africa continent being able to have multiple children was highly regarded and symbolized. The number of children they have would be regarded as source of wealth and labour. However as time passed scientist worldwide where able to come up with measure to minimize such difficulties through the introduction of family planning methods and contraception methods. In modern day societies around the globe it is mandatory to maintain and manage well the population to avoid over exploitation of both natural resources as well as man made resources. Medical practitioners in different parts of the wide are being urged to willingly supply products, services and pharmacy facilities in excess which are acceptable and satisfy the citizens. This will strategically assists in eradicating the complicated issues such as abortions, homeless pandemic, gender and intimate partner violence, overcrowding and escalation of untimely, unplanned pregnancies in extra marital relationships. In order for the health organizations to lure individuals in engaging in this drastically transforming operation to lower the above mentioned difficulties they should achieve this through educational campaigns, reassuring them about the efficacy and safety profile.

### INTRODUCTION

Birth control encompasses any type of device, medicine or variety of methods people engage in using for the prevention of unintended pregnancies when utilized correctly and consistently. There are

variety of contraceptive methods either traditional methods, ancient methods and recently advanced contraceptives used to avoid women from conceiving. Conceive is when a women gets pregnant after the fertilization of an egg and sperm in the fallopian tube. The fertilized egg then

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undergoes a series of division processes before it gets implanted in the endometrium wall approximately after 6 to 10 days after fertilization. The implanted zygote is nourished until it develop into a fetus and then expelled out through the vagina in a process termed parturition which occurs after 9months (38-40 weeks) after conception. According to World Health Organization (WHO) the basic fundamental right of men, couples and women is to freely agree the number of children they want to raise and how they prefer to space them depending on numerous numbers of personal factors and laws where the people reside such as choice, income source, religious believes, culture and norms [1,2]. The importance of increasing child spacing offers an opportunity for offsprings to be raised in an optimal environment of good nutrition, care, health, recognition and education [3]. WHO has put in place robust measures to assist couples, men and women in overcoming the listed challenges through implementation of family planning methods, utilization of modern contraceptive methods and counseling [4,5]. This has proven to be an effective way to gradually monitor and manage the population, they should be free access of contraception and family planning facilities to every citizen despite their status, religion, race, appearance, economic, political and social differences [6,7]. These methods are not only limited to prevention of untimely pregnancy but also to the minimization of spreading of sexually transmitted infections such as human immunodeficiency virus (HIV), cervical gonorrhoea and chlamydia hence serves as a dual merit [8,9]. Health professionals are recommended to check eligibility, educate properly before handling any contraception plan to the clients so that they can make sound decisions by themselves on how to use, apply, store, merits and demerits [10,11]. Contraceptives are available in the market in various forms, methods and types which include

barrier method, hormonal method, emergency method, intrauterine method and sterilization.

This article serves to provide an overview on the modern contraceptives methods which are effectively applicable to both genders with minimum failures, rapid outcomes which are favorable and clinically proven. Prior to the explanation of different types of traditional contraceptive and recently advanced contraceptive methods, it is essential to have an overview on the mechanism of action of spermatogenesis, oogenesis and menstrual cycle.

## **MATERIALS AND METHODS**

This review article was prepared through an extensive literature search and analysis of published information related to contraceptive methods. Relevant data were collected from peer-reviewed online journals, review articles, textbooks, reference books, and reports from recognized health organizations. Electronic databases such as PubMed, Google Scholar, ScienceDirect, and other academic sources.

## **RESULTS AND DISCUSSION**

### **Biology of reproduction**

#### ***Spermatogenesis***

It is regarded as gametogenesis, where male gametes known as sperms are produced in male gonads. It involves the division of diploid cells(2n) into haploid cells(n) through meiosis. The process of male gametes formation begins from cells known as spermatogonium(2n). The process occurs in the seminiferous tubules of the testis where a spermatogonium cell produce four spermatozoa cells which then nourished by Sertoli cells and stored in the epididymis.

#### ***Process of spermatozoa formation***



It is a continuous process that begins at puberty, continues throughout life and takes place in the seminiferous tubules of the testes in males. The germinal epithelial lining of seminiferous tubules produces spermatogonium which is a diploid stem cell. The spermatogonium is then transformed into a primary spermatocyte after undergoing cell division process called mitosis. First meiosis cell division occurs on the primary spermatocyte thereby converting it into two secondary spermatocyte cells. The two formed secondary spermatocyte cells then undergo second meiosis cell division and produce two spermatids which then matures to form spermatozoa (sperms).

### ***Oogenesis***

It is an essential process that begins before birth, pauses and continues at puberty involving releasing of one matured ovum per month until menopause and it occurs in the ovary. It is regarded as a gametogenesis process where female gamete known as ovum produced in the female gonads. The gametogenesis begins from the oogonium(2n) resulting in the formation of a haploid(n) ovum which the stored in the ovary.

### ***Process of ovum formation***

The germinal epithelium lining of ovary secretes the oogonium. Oogonium then undergoes mitosis cell division and differentiates into a primary oocyte. The primary oocyte then undergoes first meiosis cell division which pauses at the diplotene stage in childhood. At puberty stage there will be formation of secondary oocyte and one polar body from the diploid primary oocyte. The secondary oocyte then undergoes through second meiosis cell division and pauses at the metaphase stage forms ootid. When this ootid senses the fertilization process it forms instantly, the non-motile which is a large and spherical ovum and secondary polar body eventually degenerates.

### ***Menstrual cycle***

It is a continuous change in hormones in woman that occurs in a cyclical manner that prepares a female body for pregnancy from puberty to menopause. It is typically 28 days long and divided into four phases which include menstruation, follicular phase, ovulation and luteal phase. The changes are essential in the preparation of the womb for the implant of the zygote in case of conception.

Puberty is the transformation in the adult hood from boys or girls resulting in the development of sexual secondary characteristics triggered by the hormones testosterone and estrogen respectively. Menstruation is the shedding of the uterus lining due to the absence of implanted zygote in form of blood through the vagina. The first period after reaching puberty in females is called the menarche. Menopause is when a woman is no longer ovulating and it occurs around age 45-55 years.

The contraceptives are broadly classified into two main categories which are traditional (natural) contraceptive methods and modern contraceptive methods. There is a diminishing level in the usage of traditional contraceptives compared to the recently advanced methods due to improved metabolic profile, accurate dose, effectiveness, availability of known duration of action of drug, adverse drug effect, contraindications, side effects, on set of action, clinically proven and improved acceptability.

### ***Traditional contraceptive methods***

Their usage has drastically declined due to the introduction of the modern contraceptive methods globally but some developing countries are still using them despite their failures. The natural methods used are also regarded as the fertility



awareness methods which include basal body temperature which is regarded as a way to track woman's ovulation timing. A thermometer is used to record the body temperature every morning just after waking up. It is believed that the basal body temperature elevates less than one-half of degree after ovulation and once the temperature typically rises, one can engage in an unprotected sex without getting pregnancy [12]. Rhythm method which is also known as calendar involves tracking the ovulation so as to be aware of the fertility days when one is most likely to get pregnancy and avoid engaged in unprotected sexual activities during this period. It is effective when performed correctly and accurately with maximum discipline, has no side effects and economical birth control method. Cervical mucus method involves closely monitoring the vaginal discharge to determine when one is most fertile. Cervical mucus is checked using a finger or by just physically observing on the underwear and if its slippery, clear and contain the texture of an egg white suggest that one is in fertile phase. When the cervical mucus is thick, pasty indicates one in not fertile and can engage in unprotected sex without getting pregnancy [13]. Another commonly employed traditional method is abstinence due to its 100% effectiveness compared to others. It has a twin advantage of protecting one from getting pregnancy and from deadly sexual transmitted diseases. Withdrawal method is regarded as the risky method which requires maximum discipline as it involves the male to pull out the penis before ejaculating semen inside female reproductive gonad [14,15].

### ***Ancient contraceptive methods***

Family planning that has been practiced long back despite some societies being dominated by social, political or religious believes which allows people to be fruitful and multiply. These natural methods,

herbs, procedures and practices used to possess spermicidal action, anti-spermatogenic effect, anti-ovulatory effect, anti-implantation action, anti-estrogenic and abortifacient activity which have successfully reduced the population growth rate. Ayurveda, siddha, unani traditional systems of Indian medicine and compound formulations claimed to inhibit female and male fertility. Women were advised by magicians to wear the testicles of a weasel on their thighs or hang its amputated foot around their necks during copulation to prevent unintended pregnancy. They were also encouraged to walk around three times the spot where a pregnant wolf had urinated to prevent conception leading to pregnancy. Pomegranate seeds and papaya seeds herbs were used as oral contraceptive. Women used to eat papaya every day to prevent pregnancy due to the presence of papain enzyme in the fruit which then interact with the hormone progesterone to prevent pregnancy. Penile sheaths which act as physical barriers were made from animal intestines, linen and silk to protect from sexually transmitted diseases and pregnancy. Sponges, beeswax and balls of opium used as diaphragms to block sperms from reaching the egg and absorb semen and sponges usually moistened with olive oil to weaken the sperm. For thousands of year spermicides which were used include honey, crocodile dung, ghee, palasha tree seeds, water, elephant dung, remedies such as oil of cedar and mixture of acacia tips, bitter apple and dates bound together with honey used to be placed in the vulva [16–18]. Permanent sterilization methods such as tubal ligation and vasectomy were performed in individuals with mental illness or hereditary diseases to prevent genetic transmission of diseases and conditions. Other ancient methods practiced include abstinence, mutual pleasuring without intercourse, withdrawal, predicting fertility through calendar method or examining cervical mucus and prolonged breast feeding



which postponed ovulation and menstruation thereby preventing and spacing pregnancy [19–21].

### **Modern contraceptive methods**

The recent advanced methods have emerged and spreads rapidly around the world due to their tangible results when done correctly and consistently. They are further categorized into different categories based on their duration of action and mechanism of action namely permanent sterilization methods, barrier methods, hormonal methods, non-hormonal and long reversible contraceptive methods.

#### ***Non hormonal method***

##### ***Intra uterine device***

Intrauterine device is T shaped device which is inserted by a trained health care providers only in female uterus through her vagina and cervix [22,23]. It is a copper bearing intrauterine device which is small in size and flexible plastic frame with copper wire or sleeves which is effective due to its toxic effects of copper on spermatozoa and creation of sterile inflammatory conditions in the uterus. There are various types of IUDs depending on their size, patient age and the content of copper [24,25]. It is regarded as one of the most effective methods and long lasting since once inserted it can provide protection up to 12 years and one is recommended to remove it when need and only a health care provider can remove it. It is highly suggested and preferably to women who have already given birth since there is a higher risk of expulsion in those who have not given birth due to factors such as uterine abnormalities, young age and complete push due to menorrhagia, which is abnormally heavy and prolonged menstrual bleeding in women [26–28]. IUD side effects include menorrhagia and dysmenorrhea, which is

painful menstrual cycle associated with cramps in lower abdomen, fatigue, nausea, headache and back pain. Its contraindications include endometrial cavity distortion resulting in expulsion of IUD since it will not be able to fit properly in the uterus, Wilson disease- which is a genetic disorder where the body is failing to expel excess copper leading to toxicity due to accumulation and presence of untreated pelvic inflammatory infections such as chlamydia and gonorrhea [29]. This method is highly recommended to women who cannot use the hormonal methods such as those who have survived breast cancer. IUD example is TCU 380A which is a T shaped device with 380mm copper surface in its two arms.

##### ***Barrier methods***

It is a nonhormonal method which does not interfere with other methods. Condoms are of two types which include the female condom and the male condom. These two they differ in structure and appearance [30–32]. Condoms are made up of different materials such as latex, polyurethane, polyisoprene, nitrile and lambskin. It is advisable for health professionals to verify whether the client is allergic or sensitive to latex before dispensing latex condoms. The effectiveness of condoms can be successfully obtained when condoms are combined with the spermicides (such as nonoxynol-9), diaphragms, cervical caps and vaginal sponges [33,34].

##### ***Female condoms***

These are internal condoms made up of various materials such as latex, nitrile and polyurethane. They are sheath or lings which loosely fits inside the vagina of a women. They are thin, transparent and soft in texture. They pose flexible rings at both ends. The primary function of ring at the closed end is to help in inserting the condom in the vagina



and the ring at the open end holds part of the condom outside the vagina [35]. It works by preventing sperms out of the vagina which is vital in preventing pregnancy and the transmission of sexually transmitted infections such as HIV. They are preferred due to their ability to protect against pregnancy and sexually transmitted infections. They are initiated by woman, have soft, moist texture that feels more natural than external male condoms during copulation. The outer ring on female condoms adds sexual stimulation and can be used without consulting a health care provider. They can be inserted in the vagina eight hours ahead of time so do not interrupt sex. They do not dull the sensation of sex like male external condoms and they do not have to be removed immediately after ejaculation.

According to world health organization the basic steps of using an internal are as follows:

Firstly, properly rinse your hands with mild soap and with clean water before inserting and check the condom package if its sealed or not, do not use if torn or damaged. People are advised to avoid using a condom past the expiration date and for the most protection insert the condom before the penis comes in contact with vagina. The female condom can be inserted up to eight hours before copulation and choose a position that is suitable, comfortable for insertion either squat, raise one leg, lie down or sit. Rub the sides of the female condom together to spread the lubricant evenly, grasp the ring at the closed end and squeeze it so it becomes long and narrow and with the other hand separate the outer lip (labia) and locate the opening of vagina. Gently push the inner ring into the vagina as far up as it will go, insert a finger into the condom to push it into place and at 2-3cm of the condom and the outer ring remain outside the vagina [36]. The man or woman should carefully guide the tip of the penis inside the condom not between the condom

and the vagina wall. If the penis goes outside the condom withdraw immediately and retry. If the condom is accidentally pulled out of the vagina or the outer ring is pushed into it during sex, carefully put the condom in place. The female condom does not need to be removed immediately after sex but should be removed before standing to avoid spilling of semen. If the couple wishes to have sex, they need to use another new condom. The used one is wrapped in its package and put it in the rubbish bin or latrine. It is not advisable to put the condom in a flush toilet as it can cause problems with the drainage. The used condom is safely discarded and after the man withdraws his penis, gently hold the outer ring of the condom twist carefully to seal in fluids and pull it out of the vagina. It is mandatory to ensure that the penis enter the condom and stays inside the condom before and throughout the intercourse.

### ***Male condoms***

External condoms are the sheath or the covering that correctly fit over a male's erect penis before copulation. They work by forming a physical barrier that prevent sperms from interacting with ova released from the ovary during ovulation [37]. This is crucial in protection against pregnancy and STIs by preventing the infections in the semen, on the penis or in the vagina from transmitted to another partner [38,39]. The male condom provides multiple merits which are the elimination of hormonal side effects, necessary as a regular, temporary or back up method. They provide dual advantage against pregnancy and the sexually transmitted infections. They are economical, they are over the counter contraceptive barriers, sold in multiple, easily accessed and lengthen the duration of sexual intercourse

Note: External and internal condoms should not be used together as they can effortlessly burst, tear or slip due to friction of the condoms.



### ***Hormonal methods***

Contraceptive pills they are all hormonal and a specific procedure it done to check the eligibility of the client before dispensing the pills [40]. Contraceptive pills include emergency contraceptive pills (ECP), progestin only pill (POP) and combined oral contraceptive (COC). They can be administrated using various routes such as intramuscularly, intranasally, intravaginally, orally, subcutaneously and transdermal. The transdermal route is crucial in delivering contraceptive steroids via spray, gel or contraceptive patch. It is mandatory for healthcare providers to examine the blood pressure of the client before dispensing the contraceptive pills which contain estrogen such as combined oral contraceptives, patch and vaginal ring, to prevent chances of hypertension, stroke, thromboembolism (blood clots) and myocardial infarction (heart attack) using a sphygmomanometer and stethoscope [41].

### ***Emergency contraceptive pills***

They are usually considered as backup options when contraceptive fails or is not used and lowers the rates of voluntary abortions. They are taken after having an unprotected sex within 5days which is 120 hours. They are also known as morning after pills or post coital contraceptive or plan b pill. They work by delaying the process of ovulation at day 14 of the menstrual cycle. Morning after include levonorgestrel pill and ulipristal acetate pills [42]. The side effects of plan b are altered bleeding pattern, abdominal pain, nausea, vomiting, headache, breast tenderness, fatigue and dizziness. The clients are advised to check if the pack is not damaged when purchasing, to keep the pack in clean, dry storage, away from sun, extreme heat, pack must be with the expiry date and pack must include the correct medication and dose [43].

### ***Progestin only pill***

Due to the presence of progestin pills the client is supposed to be tested blood pressure and check if the client suffers migraine, headache or auras before dispensing. It is not recommended to dispense the pills to the client with abnormal Bp, suffers migraine, with acute blood clot in the deep veins of the legs or lungs, suffered breast cancer, severe cirrhosis and taking barbiturates, carbamazepine, oxcarbazepine, phenytoin, primidone, rifampicin and rifabutin as they diminish the effectiveness of POP. They are also referred to as mini pills. Mini pills lack estrogen hence they can be administered throughout breastfeeding. They successfully work by thickening the cervical mucus to block the sperms from reaching the egg for fertilization and inhibit the ovulation process. They are useful in protecting against pregnancy, can be stopped at any time without consulting a healthcare provider, do not interfere with sex, no delay in fertility after stopping and controlled by the woman [44]. Mini pill example include norethindrone pill, levonorgestrel only pill and desogestrel only pill.

### ***Combined oral contraceptive***

They contain female hormones which are estrogen and progestin in low doses. Their primary function is to inhibit the releasing of eggs from the ovaries. The combined contraceptive pills are of two types which are 21-day pack and 28-day pack depending on the branding. The 21-day pill pack is taken orally every day and when the pack finishes, a one week break of not consuming the contraceptive pill is mandatory and resume the next pack after one complete week. In the 28-day pill pack the last 7 pills which remains after consistently administer orally for 21 days are a different color and do not contain hormones. Clients are advised to take a pill every single day including the no hormonal pills and once the pack



is complete start the next pack immediately. It is advised to make it a habit of consuming the pills at the same time every day to eradicate the risk of unintended pregnancy. Upon missing a pill for 3 days or more, women are encouraged to make use of condoms during copulation or abstain from sex for at least 7 days. If the client misses the non-hormonal pill it is advised to discard the pill that was missed and continue. The side effect of combined oral contraceptives include headache, breast tenderness, weight changes and its benefits are the combined oral contraceptives regulated by woman, prevent pregnancy, reduce menstrual cramps (dysmenorrhea), reduce heavy menstrual bleeding (menorrhagia), can be stopped at any time with affecting the fertility of the woman, do not interfere with sex and rapid return to fertility after stopping the course [45,46].

### **Self-injectables**

#### ***Progestin only injectable***

Blood pressure measurement is mandatory when dispensing the injections. The injectable contraceptive contains the hormone progestin which is similar to the progesterone which is present in females which is secreted by corpus luteum and placenta. It is administered under the skin and slowly the hormone is introduced into the blood stream. They prevent pregnancy by inhibiting ovulation process and the injectables are highly recommend for their effectiveness when properly utilized.

Most women prefer the self-injectables due to their merits such as they help to protect against

pregnancy and endometrial cancer, reduce the vulnerability of sickle cell anemia, lowers the risk of susceptible to iron deficiency anemia, require action after every 2 to 3 months, they do not interfere with sex, no one can tell that a women is using the contraceptive plan, ceases the monthly bleeding and do not disrupt the existing pregnancy [47]. The self-injectables side effects are mood swings, loss of bone density, abdominal bloating, headache, weight gain, dizziness and discomfort.

The examples of self-injectables which are available in the market are as follows depot medroxyprogesterone acetate (DMPA), norethisterone enanthate (NET-EN), depot medroxyprogesterone acetate subcutaneous (DMPA-SC) and Sayana press.

### **Permanent sterilization method**

There are two methods in this category which include vasectomy and tubal ligation.

#### **Vasectomy**

It is a surgical procedure performed in males to seal the vas deference tubes which are responsible for transportation of matured sperms from the epididymis towards the urethra for ejaculation.

#### **Tubal ligation**

It is a permanent procedure performed in female reproductive organ to block the fallopian tube so that the sperm will not fuse with the matured ovum during unprotected sexual intercourse during fertile days.



**Table no 1: Herbal plants used as contraceptives**

Sr. No	Plant name	Parts used	Pharmacological mechanisms	Phytochemical constituents	Reference
1	Papaya ( <i>Carica papaya</i> )	Latex, seeds	Antispermaticogenic, abortifacient	Alkaloids, flavonoid, tannins, papain, saponins, glycosides, chymopapain	[48,49]
2	Ankol ( <i>alangium salviifolium</i> )	Stem bark	Abortifacient, antiimplantation	Ankorine, alkaloids, steroids, triterpenoids	[50]
3	Aloe vera ( <i>kuvar pathu</i> )	Leaf, latex	Spermicidal, antifertility	Anthraquinone, tannins, amino acids sterols	[51]
4	<i>Curcuma longa</i> (haldi)	rhizomes	Inhibit sperm motility, antiimplantation	Curcumin, demethoxycurcumin, tannins, flavonoids	[52]
5	<i>Biophytum sanctivum</i> (lajalu)	Leaves	antiimplantation	Flavonoids, tannins, phenolic compounds	[53]
6	<i>Cardiospermum helicacabum</i> (kanphuti)	Whole plant	antiimplantation	Sterols, tannins, saponins	[54]
7	<i>Cassia fistula</i> (golden shower)	seeds	antifertility	Glycosides, saponins	[55]
8	<i>Cyclea burmanni</i> (parvel)	roots	antiestrogenic	Tannins, flavonoids	[56]
9	<i>Embelia ribes</i> (vidanga)	fruit	Antifertility, antiestrogenic	Embelin, quercitol, alkaloids	[56]
10	pennyroyal	Leaves	Contraception activity	Menthol, menthone, limonene	[56]
11	<i>Ocimum sanctum</i> (tulsi)	leaves	Late abortifacient	Eugenol, ursolic acid, linalool, saponins	[57]
12	<i>Gossypium hirsutum</i> (cotton root)	bark	Abortifacient, antispermaticogenic	Gossypol, terpenoids	[58]
13	<i>Jatropha curcus</i> (jangliarandi)	fruits	Decrease sperm motility and count, antiimplantation	Curcin, alkaloids, tannins	[59]
14	Neem	Roots, leaves	antifertility	Nimbin, salannim, gedunin	[60]
15	<i>Citrullus colocynthis</i>	Roots, seeds, leaves, fruits	antifertility	Alkaloids, saponins, glycosides, tannins	[61]

## DISCUSSION

Contraceptives are crucial substances that used for family planning, prevention of unintended pregnancies, lowering of maternal mortality and enhancement of human reproductive health. Contraceptive methods are broadly classified into modern methods, traditional methods and ancient methods. Modern contraceptive methods which are also regarded as recently advanced methods

have emerged as the safe, efficient and trusted option worldwide due to high reproducibility of results. Modern contraceptive methods are further subdivided into oral contraceptive pills, intra uterine devices, condoms, injectables, implants, emergency pills and sterilization. These mentioned contraceptive methods work differently from each other, have varying effectiveness level, consumer acceptability, usage, duration of action, application, administration technique and



mechanism of action but they all yield the same outcome when utilized correctly. Most of the population have shown greater interest in long-acting reversible contraceptives due to their effectiveness in pregnancy prevention and their ability to be reversed when the person wants to become pregnant for example intrauterine device and contraceptive implants. Hormonal contraceptive methods are the least preferred due to multiple side effects and adverse reaction which arises from their usage such as menorrhoea, dismenorrhoea, body weight changes, nausea, hormonal imbalance and mood swings. Despite the presence of modern contraceptive with popularity that has been skyrocketing worldwide, some still prefers ancient and traditional methods which are labeled as high risky methods. Traditional methods have declined drastically due to their disapproval by health sectors due to higher failure rates. The examples of traditional methods utilized are natural fertility awareness methods, basal body temperature, rhythm method, cervical mucus monitoring and abstinence. Ancient contraceptive methods utilized are herbal drugs such as papaya seeds, pomegranate, beeswax, tulsi, ankol, neem, pennyroyal and haldi. Their usage has declined due to multiple researches claiming that they are safe, side effects, not preclinical approved and adverse effects. Herbal remedies have resulted in complicated problems which include teratogenicity, embryotoxicity, hormonal imbalance, abortifacient and congenital malformation. Some of the herbal phytoconstituents are capable of crossing the placenta and affect the human body and the fetus. Based on the available evidence there is need to conduct researches in order to improve reproductive health, improve male contraceptive options, targeted clinical development and introduction of community led education.

## CONCLUSION

According to WHO after multiple researches has been accomplished, they concluded that the balance of efficacy and safety of modern contraceptive method is of importance. Both the traditional methods and the recently advanced methods play a crucial role in controlling the population growth since they reduce maternal morbidity, prevent sexually transmitted infections from spreading, treatment of medical conditions like endometriosis, allow women to plan their family, spacing, helps to manage global population growth, advancing gender equality, empower women to pursue education and employment. However, recently contraceptive methods are more superior than the natural methods because of dual contraception merit, improved metabolic pathway, improved acceptability, effectiveness, less failure rate, pharmacodynamics, pharmacokinetics (ADME) and pharmacovigilance of each contraceptive method. The healthcare providers are urged to communicate with the clients in a no judgmental tone, check the eligibility and fully inform the clients of the particular contraceptive so that they can make their own decisions based on their interest and that they can be fully aware of the consequences of contraceptive failure. Contraceptive courses have recently emerged as the essential measures which protects, guides and empowers women in various ways since it one of their critical elements of health and autonomy.

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## CONFLICT OF INTEREST

The authors have no conflicts of interest.



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