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# Family Planning Services in Africa: The Successes and Challenges

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Alhaji A Aliyu

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## Abstract

The world population is on the increase, and the majority of this increase will be from sub-Saharan Africa (SSA). It is estimated that by 2030 the population of Africa will rise to 1.3 billion. Published peer-reviewed journals, abstracts, Gray literature (government documents, technical reports, other reports, etc.), internet articles and Demographic and Health Surveys (DHS) reports were used as resource materials. Manual search of reference list of selected articles was checked for further relevant studies. Family planning (FP) programmes that started in 1960s across SSA have made steady progress with contraceptive prevalence rates still very low and unacceptably high unmet need. Despite near universal knowledge on contraceptives, there is an obvious knowledge-practice gap. There are barriers, personal, religious and community levels, to contraceptive use. Contraceptives have a lot of benefits to the mother, child and community. Thus, there is a need for publicity campaigns through information, education and communication (IEC) to address social and cultural barriers to FP including misconceptions and misinformation. Contraception should be vigorously promoted in SSA not only for its demographic dividends but also on socio-economic and health grounds and the attainment of sustainable development goals (SDGs).

**Keywords:** contraceptive use, benefits, barriers, unmet need, SSA

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## 1. Introduction

The world population reached 7.4 billion in 2016 at an annual growth rate of 2.55% with Africa accounting for 1203 million. It is estimated that between 2015 and 2030 the population in Africa will reach 1.3 billion [1]. Sub-Saharan Africa (SSA) (excluding North Africa) has seen remarkable population growth in the past three to four decades. SSA population in 1990 was 510 million, 688 million in 2002 and by 2016 has reached 974 million [2]. By 2050, three countries (Nigeria, 4th, Democratic

Republic of the Congo, 8th and Egypt, 10th) with a combined population of 779 million will be the most populous nations in Africa [1]. Sub-Saharan Africa (SSA) has 11% of the world population but accounts for a pitiable 2% of global trade [3]. The population growth is largely driven by high fertility rate and rising cohort of women of reproductive age group (WRAG) (15–49 years).

Demographically, there is population momentum across most of the countries, as more than half of the population are under the age of 15 years. What this means is that even if replacement-level fertility is achieved, the population growth will continue for at least two decades because of the momentum built up in the age structure due to the past high fertility levels that has given rise to the greater number of couples who are having children. Social forces and pronatalist factors sustaining high fertility and which also impedes family planning (FP) programmes are well known [4, 5]. Added to this is the fact that in SSA husbands tend to want large families than their wives [6, 7]. Sub-Saharan African countries are still undergoing both demographic and epidemiologic traditions. Even though birth rate is declining, it is still in excess of death rates. Thus, the region has the highest rates of fertility globally with total fertility rates (TFR) that ranged from 4.8 children per woman in Kenya, 5.2 in Nigeria, 5.7 in South Sudan, and 7.6 in the Republic of Niger [1, 4, 8, 9]. It also has a high annual growth rate of more than 2.5% per year.

Again, the same continent is vulnerable to the “destructive forces” caused by nature as recent events have shown. The harsh adverse effects of global warming in the Sahel region, draught/famine in the horn of Africa, deforestation, overgrazing with declines in soil fertility and incessant floods in West Africa has contributed in sustaining the vicious cycle of poverty and disease. As the number increases, the pressure on the environment (both built and natural) including natural resources and available fertile land for agriculture increases. Consequently, the net effect is increased in greenhouse gases (GHGs) with its attendant effects on public health.

Before 1970, majority of Africa countries had not viewed population growth as a major factor in their national development strategies because of their small population (34 of the 48 countries had a total population of less than 5 million) [8]. By the mid-1970s, the trend started to change with the rising number of national governments that reported having population policies aimed at reducing the rapid growth of their respective populations: 25% in 1976, 39% in 1986, 60% in 1996 and 64% in 2009 [9]. Previously, pronatalist governments that wanted to maintain or even increase population growth have gradually modified their stance and accepted provision of FP services as integral part of maternal and child health (MCH) which is a key component of primary health-care (PHC) system. Also, government policies regarding access to and availability of modern contraceptives have been an important determinant of reproductive behavior as well as maternal and child health. Many governments have given direct support providing FP services through state-owned health facilities. The provision of FP services is a key component of Safe Motherhood Initiative launched in 1987 in Nairobi, Kenya, to reduce maternal mortality in developing countries, where 99% of all maternal deaths occur [10]. In African region women have 1 in 42 lifetime risk (compared to 1 in 2900 in Europe) of dying prematurely in childbirth [11]. Provision of universal access to high-quality family planning and maternal health services and skilled attendance at delivery are key action strategies under the safe motherhood initiative [12]. Contraceptive use averts about 230 million births every year globally, and family planning (FP) is a primary strategy for prevention of unwanted pregnancy [13].

Contraception refers to the prevention of pregnancy as a consequence of sexual intercourse using either traditional or modern methods. The 1994 International Conference on Population and Development (ICPD) in Cairo was a paradigm shift and was seen as a turning point with respect to the role of FP. The earlier population conferences, Bucharest 1974 and Mexico City in 1984 mainly focused on demographic-economic issues. However, the Cairo Conference highlighted the important role FP plays in the context of social and economic development and goals regarding sexual and reproductive health and right including FP with a focus on women's empowerment [14, 15]. The universal access to FP that links the 1994 Cairo Conference to Millennium Development Goal 5b (MDG 5b) of universal access to reproductive health is very much connected to the successful achievement of sustainable development goal (SDG) themes of people, planet, prosperity, peace and partnership [16]. Voluntary FP brings transformational benefits to women, families, communities and nations. Without universal access to FP and reproductive health, the impact and effectiveness of offering interventions will be less, will cost more and will take longer to achieve [16].

The demand for FP will never cease as long as life continues to exist on earth, and humans want to satisfy their physiological desires and need for procreation (generational species sustainability). At any point in time, there will always be a cohort of young adult couples who not only want to fulfill their sexual desires but also want to delay or postpone pregnancy, and so the demand for contraception will continue.

In SSA, health-care systems are weak and dysfunctional; despite this, there have been some remarkable gains in immunization services with resultant decline in death rates among under-fives. Yet, fertility has remained high. Added to this dimension is the unprecedented rapid urbanization that is sweeping across the continent. There is still a long way to go to achieve small or desired family size. In the whole region, only 17% of married women are using contraceptives, very much lower than the 50% reported from North Africa. Only in five countries (South Africa, Botswana, Zimbabwe, Kenya and Malawi) have FP programmes been a success to increase contraceptive use to higher levels [3]. This chapter is based on FP services in Africa. Published peer-reviewed journals, abstracts, Gray literature (government documents, technical reports, other reports, etc.), Internet articles and Demographic and Health Surveys (DHS) reports were used as resource materials. Manual search of reference list of selected articles was checked for further relevant studies.

## 2. Benefits

The period 1970–1990 marked the golden era of family planning during which reproductive revolution occurred worldwide except in SSA. However, by the early 1990s, changes had begun to occur leading some experts to suggest that population and FP programmes started in the late 1960s in developing countries constituted one of the most important public health success stories of the twentieth century [14]. Benefits of FP were known ever since Beard in 1897 observed that ovarian follicles do not develop during pregnancy and that corpus luteum was responsible [17]. There are a variety of health benefits that are associated with the use of individual FP commodities; for instance, pills, injectable and implants have been associated with protection against uterine and ovarian cancers, benign cysts of the breast or ovaries and pelvic inflammatory diseases (PIDs). Pills can also reduce menstrual flow and dysmenorrhea and decreased prevalence of iron deficiency anaemia.

Family planning is a cost-effective public health and development intervention. Generally, planned pregnancies which are safer for the mother produce healthier children than unplanned pregnancy. FP allows individuals and couples to at least plan one aspect of their lives (reproductive life). The cost of averting unwanted birth is quite insignificant compared to the costs to the family and country of unwanted births [9]. Further, fewer public health interventions are as effective as FP programmes in reducing morbidity and mortality of mothers and infants and result in such a huge positive impacts [9, 18, 19].

The health and socio-economic benefits of healthy motherhood including the use of contraception are known. Contraceptive use promotes small family size, improves child survival and reduces sibling competition for scarce family and maternal resources [20, 21]. When used correctly and consistently, contraceptive use in developing countries have been shown to decrease the number of maternal deaths and also prevent more than half of all maternal deaths if full demand of birth control is met [12, 22]. Spacing children can reduce mortality among under-fives by 10% and among pregnant mothers by 32% [23–26].

At macro-level, national population growth is slower which reduces strains on the environment, natural resources, education and health-care systems. FP reduces the risk of maternal mortality per birth (i.e. number of maternal deaths in 100,000 live births per year) [27] as a result of pregnancies too early, too many, too close and too late (4Ts of maternal mortality) [28–30] all of which are prevalent in SSA. The effective use of contraception can help couples achieve the desired number of children they want, prevent the number of unwanted pregnancies and reduce the risks of sexually transmitted infections (STIs) and thus overall improvement in maternal and child health and the nation.

Contraceptive use allows couples to realize their full potentials, and the woman can better fulfill her roles as a wife, mother, wage earner and community member. The man can better expand his roles as husband, father and family caregiver [30]. All these go a long way in curtailing population explosion, reduce dependency ratio (youth), better the health indices for the country and improve socio-economic conditions. This will also assist Africa to make progress in achieving all the sustainable development goals (SDGs).

### 3. Family planning services

The decision to limit one's family size is wholly personal intimate decision between husband and wife. The practice to limit family size by whatever means has been known since man developed social conscience. In SSA, national family planning programmes were introduced, respectively, in the late 1960s in Kenya and Nigeria [31], in the early 1970s in Ghana and in the mid-1970s in South Africa [32]. Programmes to promote FP in developing countries began in the 1960s in response to improvements in child survival that led to increase in population growth. The number of developing countries with official policies to support FP rose from only 2 in 1960 to 74 by 1975 and 115 by 1996 [30]. Before the 1960s, African countries had no population policies in whatever form; by the mid-1970s, only 25% had; and this rose to 64% in 2009 [9]. Family planning programmes throughout SSA have made use of three approaches to service delivery:



1. Health-care facilities
2. Commercial outlets
3. Community-based systems

Family planning services and contraceptive commodity supply were started through assistance by the US Agency for International Development (USAID) and other international donors to national governments across Africa. Later on, non-governmental organizations (NGOs) came in to supply and/or donate FP commodities. Initially, the services were provided at health-care facilities in state, district and provincial capitals. During these “infantile” periods, access to family planning methods was under strict control of medical practitioner even in health facilities. During the period clients have to pay a token to access service which also was a huge barrier to many potential users. Firstly, the woman has to meet the eligibility criteria [33], they must be married and husband must give verbal (seen by the doctor) or written consent and be seen by the doctor as soon as she starts her menses. This was a good starting point for FP services delivery, but the burden and disadvantages of this “solo” practice became obviously inconvenient to the clients, long waiting time and other logistics. There was an urgent need to overhaul the system in order to improve access and service utilization. The World Health Organization (WHO) has published international guidelines on medical eligibility criteria that have proven to be invaluable [34].

Studies have shown that if given an adequate training, paramedical staff (nurses and midwives) could insert intrauterine devices (IUDs) and provide injectable contraceptives to high clinical standards and even lay staff, after a short training, could also dispense pills, and over-the-counter sale of pills without prescription was justifiable [9, 35–37]. Facility-based service provision is highly restrictive in terms of geographic access; this means that alternative approaches are in dire need in order to make the commodities easily accessible. However, studies have shown that the use of FP methods falls only modestly with increasing distance or travel time to the nearest source of contraception [38]. But in SSA where poverty index is high, physical accessibility becomes predictable and risky especially during raining season, and transport is available only once or twice (during market days) in a week; these are the real challenges to contraceptive use.

The provision of services through government facilities follows the PHC approach: all the three tiers (primary, secondary and tertiary) of health-care systems. The incorporation of contraceptive services into PHC facilities is an approach to boost contraceptive prevalence rates especially in SSA [39] where this has remained persistently low. In order to improve service availability and increase coverage, private health facilities later got involved. This involvement varies widely across the continent, being 40% in Kenya and more than 50% in Uganda but low (<20%) in areas where national government programmes are strong such as Namibia and South Africa. However, majority of these private facilities are Urban-based and thus serve the needs of urban elites.

Commercial outlets such as pharmacies, drug retail shops and patent medicine or street vendors and bazaars also constitute major significant outlets in which contraceptives (e.g. pills, condoms) can be obtained. Social marketing schemes run by NGOs or international organization are popular where advertising, logistics and product prices are highly subsidized in order to promote utilization. It is most effective when pills, condoms or both are fairly common methods; demand for contraception is well established coupled with a well-developed

infrastructure (radio and television) and no restriction on promotion of FP methods [9]. In a world that is becoming globalized with rapid urbanization developing across Africa and intense exposure to mass media both formal and informal (WhatsApp, Facebook etc) the role of social marketing of contraceptives will likely rise with time.

### 3.1. Community-based distribution (CBD) of contraceptives

Community-based distribution (CBD) of contraceptives can be used to supplement other government and private family planning services to meet the challenges of making the commodity widely available and accessible to those in urban slums, rural areas and hard-to-reach communities. CBD can be an important addendum or alternative to clinic-based services. Usually, it is cheap, easier for many people to reach and available in a wide range of settings. It is a complex concept involving varied operational design to suit local contexts. It is a programme involving non-clinical family planning service approaches that uses community organization, structure and institutions to promote the use of safe and simple contraceptive technologies [40]. It expands acceptability and convenience of contraceptives and resolves the cost of service, thereby extending its use among clientele who seek contraceptives but will not use services that are confined to clinical settings [40, 41].

CBD is thus a good example of the WHO's commitment of PHC by making essential health care available to individuals and families in the community in an acceptable and affordable way with their full participation [42]. CBD is also compatible with the trend in many countries towards the decentralization of health services and the involvement of community in the provision and support of its own health services.

The following factors are used to identify populations in need of CBD programme, all of which are applicable to SSA:

- Low prevalence of contraceptive use
- Lack of awareness of family planning
- Low usage of existing family planning services
- Are far away from family planning clinics
- Cultural barriers that impede attendance at clinics [42]

For a successful implementation, the agency (government, NGOs or international donors) usually worked with its own staff and the communities to identify local leaders and influential community members (gatekeepers). Regular meetings are held in the community centers, and assistance is sought to identify local volunteers (women and men) who will act as distributors of contraceptive methods.

CBD programmes originated in Asia in the 1960s and spread throughout Asia and Latin America in the 1970s and 1980s. It was introduced into sub-Saharan Africa in the late 1980s and 1990s; by 1996 more than half of the population of SSA lived in countries with some kind of CBD programme [41, 43]. At inception CBD programmes were integrated into existing health-care services with health-care providers involved in delivering FP services. But with time, community needs exceeded the abilities of national governments' health programmes [44]. So, lay health workers became a good asset to drive CBD programmes, and selected community members were trained

to provide FP services [45, 46]. CBD programmes are implemented through various approaches. These include home visits, group education meetings, fixed and mobile CBD posts, etc., while a variety of services are offered—contraceptive commodity distribution, health education and referrals for clinic-based services.

According to the WHO [42], different kinds of people can be recruited to work as distributors in CBD programmes across the world (**Table 1**).

Advantages of CBD programmes:

- Easy access to contraceptives by rural folk
- Receiving services in one’s own environment
- Convenience for clients (in terms of time spent traveling and consultation)
- Minimal transport costs

In sub-Saharan Africa, Zimbabwe was the first country to initiate CBD programme. On the other hand, Kenya has the greatest diversity in CBD programmes and activities globally. In the 1980s, CBD initiatives proliferated with the encouragement and support of the National Council for Population and Development and financial assistance from Kenyan USAID. Kenya in a sense thus represents a laboratory of CBD diversity in that nearly every type of CBD approach that has been tried elsewhere is present in some way in Kenyan setting [41, 47, 48]. The CBD programme in Tanzania started in 1988, when the International Planned Parenthood Federation (IPPF) launched a programme. By 1996, CBD programmes were fully functionally in 22 of the 104 districts in Tanzania and Zanzibar [43]. In Ghana, CBD programmes started with two experiments: the Danfa Project and Navrongo Community Health and Family Planning Project. The Navrongo Project started in the 1990s to address community explanations for failure of family planning outreach schemes [48]. The Navrongo Health Research Centre (NHRC) is part of a district-wide National Demographic Surveillance System. Mali had its most CBD project in 1986 in the rural district of Katibougou, and by the

- 
- Market traders
  - Traditional birth attendants
  - Community health workers
  - Shopkeepers
  - Factory workers
  - Hairdressers and barbers
  - Traditional healers
  - Taxi drivers
  - Mothers
  - Farmers
  - Agricultural extension workers
  - Waiters and waitresses
- 

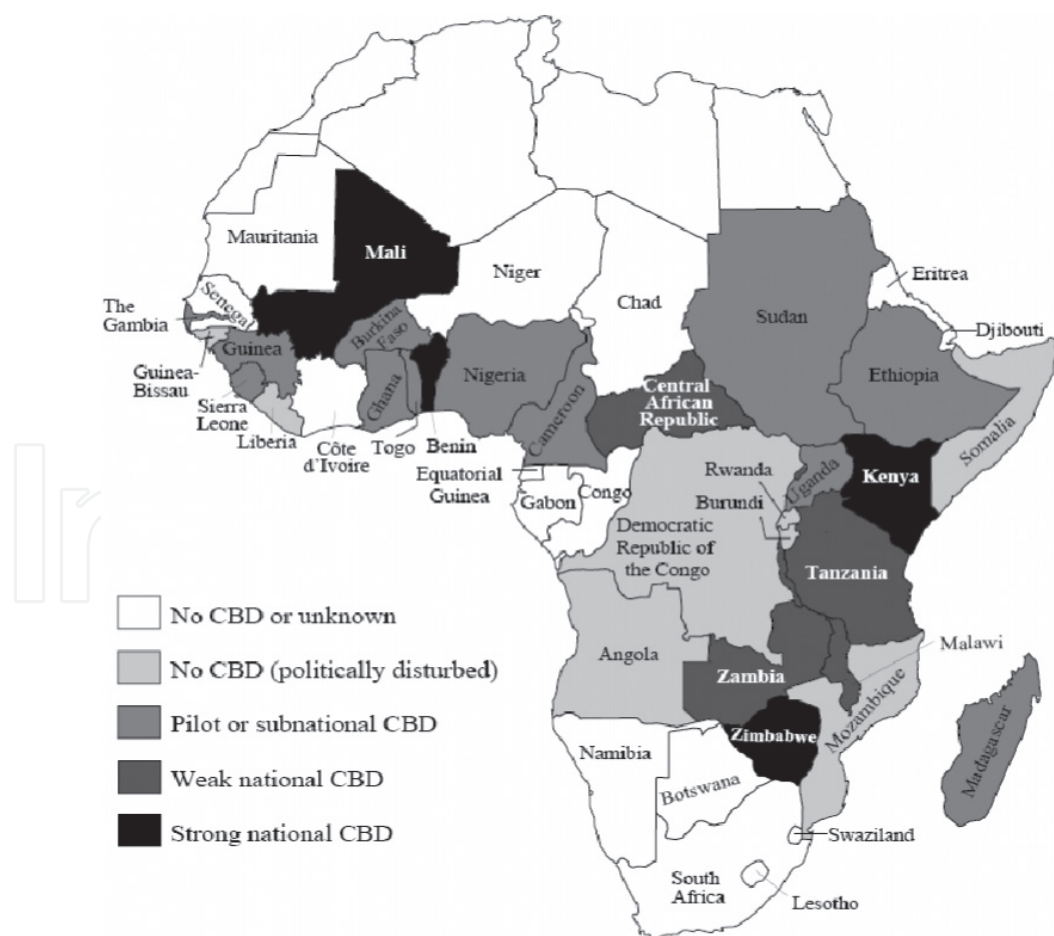
**Table 1.** Examples of possible distributors for contraceptive commodities.



early 1990s, the second project was funded by USAID to expand FP service delivery in nine rural districts in two regions using village-level family planning promoters [45, 49].

Nigeria has had some form of CBD programmes since the 1990s; but in 2007, the country reviewed the results of pilot programme in the use of Community Health Extension Workers (CHEWS). CHEWS are the lowest cadre of trained medical personnel, who had at least 2–3 years of training in basic curative and preventive health services. The country also undertook a study tour to Uganda in 2008 to assess its community-based distribution of injectable contraceptives. By 2012, the National Council on Health approved the recommendation that allows CHEWS to provide injectable contraceptives across the country.

Thus, it can be said that CBD programmes has expanded in SSA over the past 20 years. A review of 93 developing countries in 1984 revealed that CBD programmes were functioning in 34 countries across the world with 7 programmes operating in SSA [40]. Between the 1980s and 1990s, the programme has expanded considerably. Countries with coverage <21% were designed as weak effort, while those with  $\geq 21\%$  coverage in all areas are strong [40]. Even though coverage within countries is variable and actual rates of exposure to CBD activities are unknown, more than half of populations of SSA lived in countries where CBD activity is operating by 1996 (**Figure 1**). So, it can be said that CBD programmes are well grounded in Africa, and considerable experience has



**Figure 1.** Sub-Saharan countries with CBD programmes, pilot projects or research (1994–1998) [40].

accommodated over the years despite initial challenges. Family planning service has also been well integrated into other reproductive health services. It is important to note that contraceptive use relies on the principle of demand and supply. Generating demand is critical in the uptake of contraceptives, but this will not happen if supply system cannot guaranty consistent availability of acceptable and affordable commodities.

### **3.2. Family planning methods: Natural and modern**

Pregnancies too early, too frequent, too many and too late are always associated with adverse outcomes [27, 29]. The health of mothers and that of her baby are inextricably bound, and the survival and wellbeing of even the older children are also compromised by their mother's death. To avoid these adverse outcomes, medical guidelines recommend the uptake of family planning method by 6 weeks postpartum [50]. Contraceptive methods are by definition, preventive methods to assist women avoid unwanted pregnancies. The last few decades have witnessed a contraceptive revolution, and advances in medical science have shown us how to interfere with physiology of reproduction-ovulation cycle.

The methods can be categorized into:

- a. Natural
- b. Modern (temporary and permanent)

The production of an "ideal contraceptive" has continued to be elusive (contraceptive that is safe, inexpensive, acceptable, effective, reversible and long-lasting enough to obviate frequent administration which requires little or no medical attention) [51]. It is also difficult to assume that "one jacket" fits all, as a method that may be suitable to an individual may be unsuitable to another for a number of reasons—medical eligibility [34], religious beliefs and socio-economic situations. The current approach in family planning programmes is to provide a "cafeteria choice" where couples or individuals are offered all the available methods for which a choice can be made based on the need. Each method is unique in its mode of action, effectiveness, advantages and disadvantages.

#### *3.2.1. Traditional (natural) family planning methods*

In every human society, there are traditions that are passed down from generation to generation through the teaching of certain beliefs, cultural norms, attitudes, customs and habits. These traditional beliefs and practices cover all aspects of life including reproduction. Throughout human history, traditional family planning practices to space children have been rich and varied [52]. Traditional methods of contraception are those methods which do not involve the use of orthodox medicine. Some of these methods have existed dating back to prehistoric times. Today, traditional family planning is practiced worldwide for a number of reasons: being natural does not involve a third party (health-care provider) and does not fall under any religious ban [53].

Natural family planning (fertility awareness) is a method of family planning and preventing or spacing pregnancy by observing naturally (physiological) occurring signs and symptoms of the menstrual cycle. The couples avoid intercourse in the days (fertile period) during the

menstrual cycle when the woman is most likely to become pregnant. Fertility awareness is based on a scientific knowledge of the female and male reproductive systems and on the understanding of the signs and symptoms that occur physiologically in women’s menstrual cycle to indicate when she is fertile or infertile. This is often referred to as safe period.

Natural family planning provides women with alternatives for those who do not wish to use modern (artificial) methods. In low-income countries, women tend to adopt postpartum family planning methods only after resumption of sexual intercourse or menses [54–56]. In sub-Saharan Africa, both events can be delayed as typically women practice prolonged breastfeeding (up to 2 years) which lengthens their period of amenorrhea, and in Middle and West Africa, women abstain from sexual intercourse for extended periods of time after a birth [57]. Indeed, many African cultures discourage sex during breast-feeding because of misconception that semen pollutes the breast milk. However, recent report has shown that the mean duration of postpartum insusceptibility to pregnancy (combined period of amenorrhea and abstinence) is between 15 and 20 months in most SSA countries [58, 59]. The safety of these methods despite their use cannot be guaranteed. For instance, withdrawal method (coitus interruptus), one of the oldest methods of fertility control, the slightest mistake in timing of withdrawal may result in deposition of some amount of semen. Thus, the failure rate may be as high as 25% [51]. Many women erroneously believed that they were protected completely when amenorrhoeic. At the population level, amenorrhoea is related to low risk of pregnancy; the absence of menses does not guarantee protection from pregnancy for individual women (except during the time frame of lactational amenorrhoea). Despite these problems, till date they continue to be used alongside modern contraceptives as evidenced by Demographic and Health Surveys (DHS) conducted across Africa.

**Table 2** shows the percentage of women who use modern and traditional methods of contraception in 1992 and most recent DHS reports of some selected countries in SSA.

Country	1			2		
	Any method	Traditional method	Modern method	Any method	Traditional method	Modern method
Burkina Faso	10	6	4	15	1.0	15
Ghana	20	10	10	23	5.0	22
Kenya	33	6	27	58	4.8	53.2
Malawi	13	6	7	59	1	58
Niger	4	2	2	14	2	12
Nigeria	6	3	4	15.1	5.4	9.8
Senegal	7	3	5	25.1	2.1	23.1
Tanzania	18	5	13	38	6	32
Uganda	15	4	9	39	4	35
Zambia	26	12	14	49	4.3	44.8
Zimbabwe	48	6	42	67	1	66

(1) Robey et al.; (2) data from recent DHS of various countries.

**Table 2.** Family planning methods currently used (percentages) by married women (15–49 years) [60, 61].

## 4. Hormonal contraceptives

Since the 1960s when oral contraceptives (OCs) were first marketed, they have symbolized modern contraception and have remained the most widely used hormonal method globally. OCs provide millions of women with effective, convenient and safe protection from pregnancy. Currently, more than 100 million women use OCs. Data on both ever use and current use of contraceptive revealed the continuing popularity of OCs [63]. Hormonal contraceptives can be classified into:

1. Oral pills
  - a. Combined oral contraceptives (COCs)
  - b. Progestogen-only pill (POP)
  - c. Emergency contraception
2. Slow-release (depot) formulations
  - a. Injectable
  - b. Subcutaneous implants
  - c. Vaginal rings

Worldwide, an estimated 8% of all married women currently use the pill and rank third among all family planning methods currently used by married women. The use of pills accounts for about one-quarter of all contraceptive use among both married and unmarried women in sub-Saharan Africa [62]. Overall, about 15% of married women use family planning, and less than 4% use the pill.

In some countries in Africa, OC usage is among the highest in the world: 33% of married women in Zimbabwe, 21% in Mauritius, 1.8% in Nigeria, 18% each in Botswana and Cape Verde respectively [62]. The use of COCs has been associated with health benefits. It reduces menstrual blood flow and dysmenorrhoea and lowers the prevalence of iron deficiency anaemia [63–65]. Generally, when taken correctly, OCs offer highly effective contraceptive. Among perfect users (women who do not miss pills and follow the instructions correctly), only 1 in every 1000 women becomes pregnant in the first year [62]. Among typical users, about 60–80 women in every 1000 will become pregnant during the first year [66]. Appropriate health education and counseling of clients are the key ingredients to the successful use of OCs.

## 5. Injectable contraceptives

When oral contraceptives were introduced in family planning programmes, they were hailed as a major breakthrough. However, overtime, it became obvious that not many women are good in remembering to take their pills on a daily basis and follow the schedule

of administration. The use of injectable contraceptives provides many advantages: no user error, privacy and less dependence on the women’s compliance. The most commonly used is depot medroxyprogesterone acetate (DMPA). Irregular spotting, bleeding and amenorrhoea are well-known problems associated with the use of DMPA.

6. Intrauterine devices (IUDs)

The story of a small pebble placed in the uterus of a camel to prevent pregnancy during long caravan journeys by Arabs in Middle East is regarded as the beginning of intrauterine contraceptive devices [67]. The IUDs is one of the most effective reversible contraceptive methods with an average pregnancy rate after 1 year of use of 3–5 per 100 typical users. Because IUDs have longer continuation rates than the OCs or injectable contraceptives, the overall effectiveness of IUDs and oral contraceptives are about the same in family planning programmes [68]. A major concern of IUDs is expulsion and pregnancy rates as shown in Table 3.

As the use of contraceptives increase in Africa, IUDs are becoming more acceptable. However, its popularity varies widely throughout the continent and even within the countries as evidenced by recent DHS reports. For instance, its use in Nigeria between 1990 and 2013 was 0.8–1.1%, [70], while in Mali and Uganda, very few women use IUD [71].

The training of doctors and paramedical staff to deliver family planning services is the cornerstone to the success of family planning programmes. In Africa, the primary goal is to train doctors, nurses, midwives and other field workers to manage family planning clinics as a team. The family planning nurse is essential to the success of the family planning programme.

Device	Pregnancy rate	Expulsion rate
Lippes Loop		
C	3.0	19.1
D	2.7	12.7
Progestasert	1.8	3.1
Copper-7	1.9	5.6
Cu-T-200	3.0	7.8
Cu-T-200c	0.9	8.0
Nova T	0.7	5.8
Multiload 250	0.5	2.2
Multiload 375	0.1	2.1

Table 3. Rates of pregnancy and expulsion per 100 women after 12 months of use [69].



## 7. Condoms

Condoms are the most widely known and used as barrier device by male partners around the world. Condoms are easy, effective and safe method of preventing pregnancy and sexually transmitted infections (STIs) including HIV. Although rates of condom use have been low in many areas of sub-Saharan Africa, many people now use condoms because of HIV education and prevention programmes [72, 73].

## 8. Permanent methods: Female sterilization

Globally, millions of couples of childbearing age in developing countries used voluntary surgical contraceptive (VSC), making it a popular method of family planning in the world [74]. But data for sub-Saharan African countries are scarce; however, based on world fertility survey results for Kenya, Lesotho and Sudan, female and male sterilization appears to be rare [75]. In another report, the use of vasectomy was under 1% [52]. This method of family planning is not too popular in SSA for a number of reasons. The method requires skilled personnel that are not available at the primary healthcare (PHC) level used by majority, and services are only available in urban areas. On the conservative side, in situations where the marriage has failed or death of partner occurred, the woman by cultural and religious norm is encouraged to remarry, and in order to “secure” her marriage, position and respect in the family and the society, she will be desirous to have at least a child to the new husband.

## 9. Knowledge, attitude and practice of family planning

The dividends accrued from improvements in reproductive health are cumulative and key to achieving sustainable development goals (SDGs) by improving maternal health, reducing child mortality and eradicating extreme poverty. Family planning brings transformational benefits to the women, families, communities and nations [16]. In the twenty-first century, the maternal mortality in the continent is still unacceptably high. The lifetime risk of maternal mortality of women in SSA is 1 in 39 live births, the highest when compared to other regions.

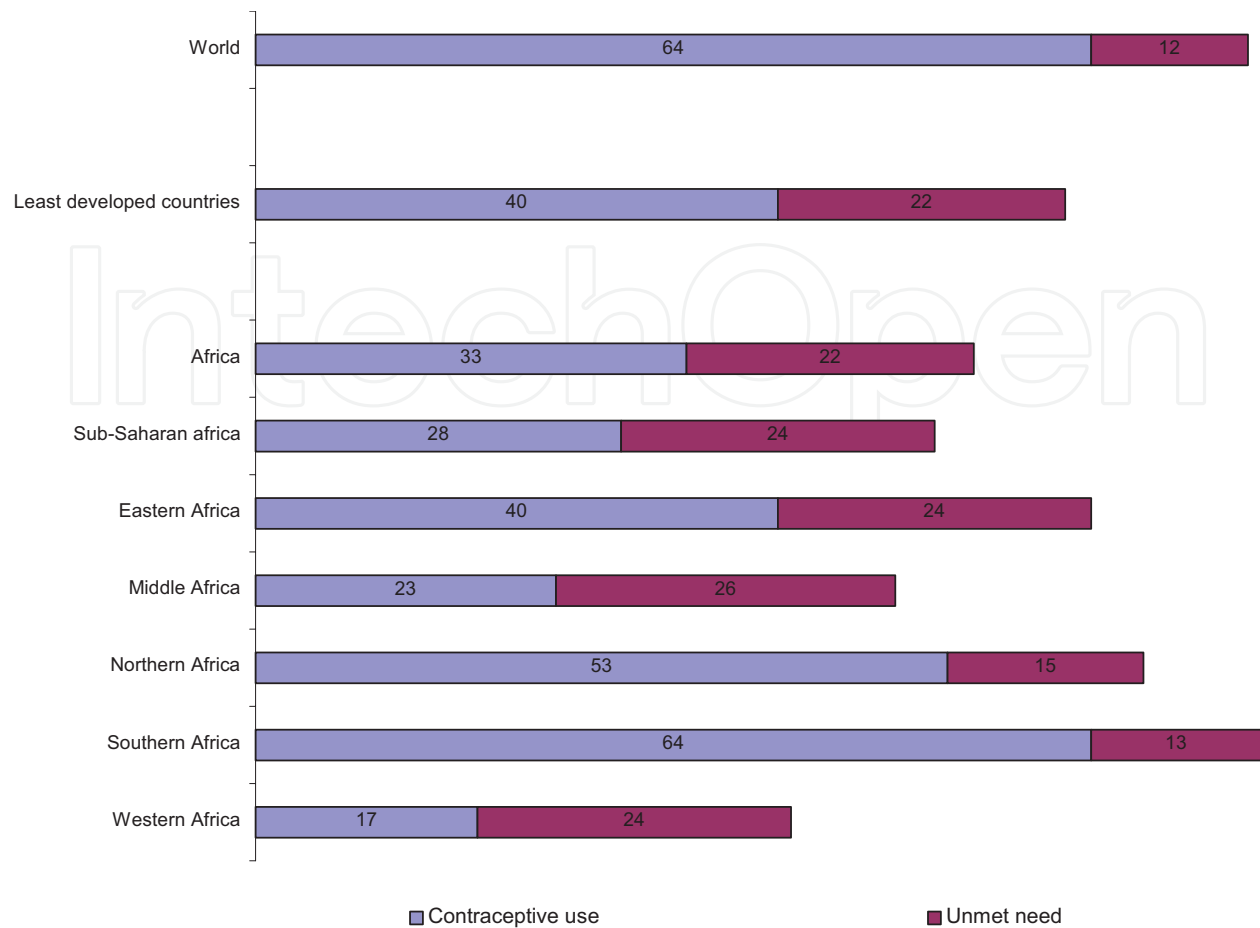
Despite recent increases in contraceptive use, sub-Saharan Africa is still characterized by high levels of fertility with TFR of 5 (number of births per woman) and a considerable unmet need for contraception [76]. Sub-Saharan Africa is still undergoing demographic transition (i.e. a shift to low death rate and birth rates). This is largely due to high birth rates with low contraceptive use. It is estimated that 90% of abortion-related and 20% of pregnancy-related morbidity and mortality together with 32% maternal deaths could be prevented by the use of effective contraceptive [9, 77]. In SSA, about 14 million

unintended pregnancies occur each year, with about half occurring among women aged 15–24 years [78, 79]. The low level of utilization of contraceptives is due to several factors, the health systems and the framework within which family planning (FP) services are delivered, and suboptimal service factors [79]. Others are barriers at the individual level: risk perception, lack of or insufficient knowledge needed to make desired decision or choices, male partner disapproval and economic and geographic access to service facility. Knowledge of FP is crucial to make informed choice. Also noted are barriers to utilization of FP: commodity stock-out, limited provider skills and limited number of methods [80]. Even though contraceptive methods and services are frequently geared towards women, men are the primary decision-makers on family size and their partners' use of family planning methods [8, 81, 82].

Men's fertility preferences and attitudes towards family planning seem to influence their wives' attitudes towards the use of modern contraceptives [83]. This translates to the fact that the importance of male involvement in any family planning programme cannot be over-emphasized. Information and knowledge on contraceptive methods are necessary tools to informed choices and utilization. Better informed and knowledgeable women are able to seek for desired information and also know where to access appropriate services. On the other hand, lack of knowledge together with cultural, social and religious factors is a major impediment to service utilization [81, 84, 85].

At the community level, since individuals live in communities, it definitely can influence personal health-seeking behavior, as there are intersections between personal beliefs and attitudes and community norms. Previous studies revealed that women may choose to accept family planning or indeed choose a particular method because of the methods adopted by those in the community [86]. Again, recently, several studies have explored the role of contextual factors in contraceptive use in African countries [87–90]. Beyond individual and family factors, the context in which women live does influence their contraceptive decisions. The growing body of literature has identified a number of contextual factors that influence the use of contraceptive: presence and quality of reproductive health services, macroeconomic factors, community fertility norms, female autonomy and availability of physical infrastructure [91]. Previous studies [26, 76, 92] and reports of Demographic and Health Surveys [61] in SSA reported a near universal knowledge on family planning among women of reproductive age group. Unfortunately, this has not translated into increased utilization of contraceptive methods as evidenced by low contraceptive prevalence rates (CPRs). This can well be demonstrated by contraceptive prevalence in the world and by region of Africa (**Figure 2**) [93] with West Africa having the lowest prevalence rate among married or in-union women (15–49 years old) in 2015.

The low usage and CPRs could be attributed to negative attitude directed at the methods and other factors discussed earlier. Thus, the promotion of modern contraceptive use will require multifaceted interventions across all the levels of society. Specifically, addressing some or all of these barriers to the use of modern FP will importantly contribute to family, community and national socio-economic development. Particularly, contraceptive use needs to be promoted in West Africa on both health and economic grounds.



**Figure 2.** Contraceptive prevalence and unmet need for FP (percent) in the world and African region.

## 10. Unmet needs for family planning

The decline in fertility in SSA has been slow than expected and has stalled in some countries [94, 95]. The total fertility rate varies from 4.8 children per woman in Kenya to 7.6 in the Republic of Niger [8, 9] and the lowest contraceptive prevalence of 22% among married women [96] and globally the highest level of unmet need for FP of about 25% [96]. Worldwide, over 222 million women have unmet need for contraceptive [97], and about 34 million women in Africa had unmet need for FP in 2009 [98]. The demand for contraceptives, with improved access and uptake, is the key public health intervention to improve maternal health outcomes, thereby reducing maternal mortality. Increasing contraceptive use has many demographic dividends, and unmet need denies women these benefits and violates their reproductive health rights. Studies have shown that several obstacles have hindered women access to FP services: unavailability of services, cultural and religious barriers, lack of knowledge and rural residence [99, 100]. Additionally, weaknesses in the existing FP programmes coupled with the fact that in SSA FP programmes tended to offer select methods (as a matter of convenience) or as a means of promoting the most effective and long-lasting methods [78]. Reasons for not

using contraceptive are quite unfounded as contraception is a safe medical intervention. It is estimated that mortality risk of unplanned and unwanted pregnancy is 20 times the risk of any modern contraceptive method and 10 times the risk of a “properly” performed abortion [101].

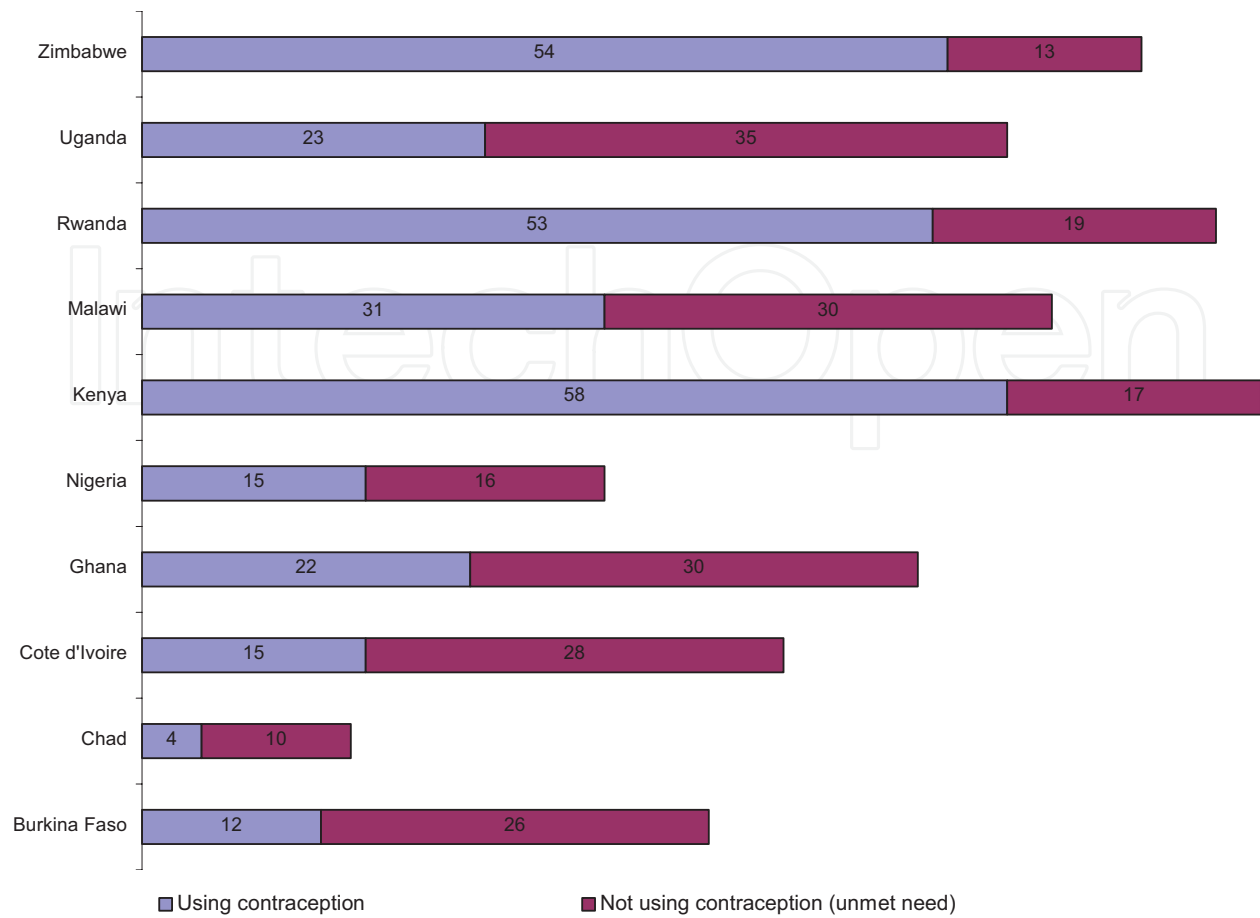
The concept of unmet needs for contraceptive dates back to the 1960s, the “KAP-Gap” era, and was used as a rationale for investment in family planning programmes [102]. It is the proportion of currently married, fecund women who do not want any more children but are not using any form of family planning (unmet need for limiting) or currently married women who want to postpone their next birth for 2 years but are not using any form of family planning (unmet need for spacing) [103]. Unmet need is essentially a conflict between what a woman wants and what she does about it. She might want fewer fertility but fails to take action needed to prevent pregnancy. The total demand for family planning is the proportion of married women with unmet need and married women with met need for family planning. In other words, it is the sum of contraceptive prevalence plus unmet need for family planning. Currently, the total demand for FP (sum of unmet need and current contraceptive use) is around 44% in SSA [104]. Also, unique to the continent is the fact that predominantly the unmet need is for spacing rather than for limiting births. Thus, it shows the importance attached to child spacing in Africa and a reluctance to commit to a final cessation of childbearing [9]. It also shows that demand for contraception (to space) exists within this population that can be explored. In countries where growing numbers of women want to avoid a pregnancy but contraceptive use is low, unmet need is higher. Rwanda, Senegal, Togo and Uganda all have unmet need of about 30% or higher [104]. The main objective for the study of unmet need is to estimate the potential demand for FP [102].

Basically, its purpose is to identify women who are currently exposed to the risk of unintended pregnancy but who are not using any method of contraceptive. In theory, these women either do not want any more births (limiting) or want to postpone the next birth for at least 2 more years (spacing). The computation of unmet need is complex and can vary depending on which categories of women are included in the definition [104]. When this is summed up with current contraceptive use, it provides a picture of total potential demand for FP in a country (**Figure 3**).

Experts have also raised the following concerns on its measurement:

- The term does not necessarily reflect actual or potential interest in method use.
- Women’s personal opposition to family planning.
- It does not reflect how women perceive themselves to be at risk of pregnancy.
- Failure to differentiate between married women who are sexually active and those who are not and thus not at risk of pregnancy [105].
- Underreporting of natural methods [106] in large-scale surveys which is a long standing methodological issue.

Today, the major source of data for measuring unmet need globally is the Demographic and Health Surveys (DHS) and for which data is available in most countries in SSA. Many countries have had two or four rounds of such surveys between 1990 and 2014. The DHS questions administered to women asked whether they are doing anything to avoid a pregnancy. If the woman reports the use of a natural method and does not simultaneously use a more effective method, she is counted



**Figure 3.** Potential demand for family planning.

as a user of natural methods. Currently, in the DHS questionnaire, there is no follow-up questions specific to natural methods resulting in possibility of under reporting in some developing countries [106]. Despite these drawbacks, measurement of unmet need has endured as a good analytical tool till date. Its importance cannot be overemphasized: the estimate is useful as it helps to reveal the size and characteristics of the potential market for contraceptives, allows for projection of how much fertility could decline if additional needs for FP were met. Reducing unmet need for FP is key to helping couples achieve their reproductive rights and achieving demographic goals.

The lessons here are to understand the variations in unmet need across the continent. Respective national governments will need to understand uniqueness of unmet needs in order to strengthen family planning programmes to reduce unmet need. Studies have revealed that strong programmatic interventions not only reduce unmet need and increase contraceptive use but also increase the proportion of women using modern contraceptives [107].

## 11. Challenges

The challenges to family planning programmes are many, varied and require attention at the highest policy level in order to realize the huge demographic, socio-economic and development



dividends of low fertility levels. This will also make SDGs achievable. Continued political will and support are prerequisite for sustainability and acceptability of FP programme:

- Data collection and analysis are still problems coupled with weakened and dysfunctional health-care systems in virtually all countries across Africa. This makes monitoring and evaluation of programmes a challenging task.
- Persuading national governments to adjust their budgetary priorities to meet health requirements is one of the biggest challenges. Indeed, in 2001, African leaders made Abuja (Nigeria) declaration with a commitment to allocate 15% of public expenditure to health by 2015 [108]. Till date, there is still huge funding gaps as the health sector is heavily underfunded.
- There is a need for broader attention to ever-increasing reproductive health needs including FP of women especially the cohort of women coming into motherhood or childbearing age.
- Studies in SSA and around the world reveal a near universal knowledge on contraceptive methods, yet the practice has shown the contrary. So, addressing all or some of these barriers responsible will significantly influence service uptake.
- Expanding FP services in a variety of “right mix” of contraceptive commodity availability to the rural folk and hard-to-reach areas has still persisted and needs to be addressed.
- There is a need to link population pressure on both the built and natural environments to reproductive health interventions as a national policy to FP service utilization.
- More research is needed on family planning: most studies are based on cross-sectional designs that cannot establish temporal sequence of cause and effect. Researches based on longitudinal data analysis methods or experiment or randomized control trial designs are needed to generate quality evidence that underscore important causal linkages between factors of interest and adolescent, maternal, child, family and population outcomes [109].

## 12. Conclusion

Over the past five decades, the use of FP methods has steadily increased in SSA with percentage of married women using modern contraceptives ranging between <20% and 69%. Unmet need for FP is unacceptably high. Despite near universal knowledge on contraceptives, practice remains low. Thus, there is a need for publicity campaigns through information, education and communication (IEC) to address social and cultural barriers to FP including misconceptions, misinformation and myths about modern FP methods.

Since decision-making power still resides with men, creating an environment in which both sexes can seek services and encouraging men to discuss FP with their wives will go a long way in promoting service utilization. Contraceptives for spacing are the predominant forms of FP preferred in SSA and show that even within this population demand for contraceptives exists. So, campaigns and provision of services that frame contraception as a method to space births and improve maternal and child health may be more culturally acceptable to promote use. Contraception should be vigorously promoted in SSA not only for its demographic dividends but also on socio-economic and health grounds and the attainment of SDGs.

## 13. Recommendations

Important shift in political commitment and priorities together with good governance, adequate funding is needed to sustain FP programmes. Efforts need to be intensified to encourage partner communication and engagement in order to improve FP practice. Further, research is needed to address unmet needs for FP.

### Conflict of interest

I declare that I have no conflict of interest in writing this chapter.

### Author details

Alhaji A Aliyu

Address all correspondence to: [alhajimph@gmail.com](mailto:alhajimph@gmail.com)

Department of Community Medicine, Ahmadu Bello University, Zaria, Nigeria

## References

- [1] WHO/USAID. Repositioning Family Planning: Guidelines for Advocacy Action. Available at: <http://www.africahealth2010.aed.org> (Accessed 2/7/015)
- [2] World population data sheet 2016
- [3] Frederick TS. Population, Family Planning and the future of Africa. Available at: <http://www.worldwatch.org/features/population> (Accessed 26/6/017)
- [4] Binka FN, Nazzar A, Philips JF. The Navrongo community health and family planning project. *Studies in Family Planning*. May/June 1995;**26**(3):121-139
- [5] Arends-Kuoening M, Hossain MB, Barkat-e-Khuda. The effects of family planning workers contact on fertility preferences. *Studies in Family Planning*. Sep. 1999;**3**(3):183-192
- [6] Aliyu AA, Shehu AU, Nasir MN, Sabitu K. Contraceptive knowledge, attitudes and practice among married women in Samaru community, Zaria-Nigeria. *East African Journal of Public Health*. 2010;**7**(4):354-357
- [7] Bankole A, Singh S. Couples' fertility and contraceptive decision-making in developing countries: Hearing the men's voice. *International Family Planning Perspective*. 1998;**24**(1):15-24
- [8] Aliyu AA, Dahiru T, Oyefabi AM, Ladan AM. Knowledge, determinants and use of contraceptives among married women in Sabon Gari, Zaria- northern Nigeria. *Journal of Medicine and Biomedical Research*. 2015;**14**(2):13-21
- [9] Cleland J, Bernstein S, Ezeh A, Glasier A, Innis J. Family planning: The unfinished agenda. *Lancet*. 2006;**368**:1810-1827

- [10] WHO. Mother-baby package: Implementing safe motherhood in countries. Geneva: WHO, 1996. Available at: [www.whoqlibdoc.who.int/lq/1994/WHO-FHE\\_MSM](http://www.whoqlibdoc.who.int/lq/1994/WHO-FHE_MSM) (Accessed 6/2/017.)
- [11] WHO, Africa. Addressing the Challenges of Women's Health in Africa: A Summary of the Report of the Commission on Women's Health in the African Region 2012
- [12] Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: An analysis of 172 countries. *Lancet*. 2012;**380**:111-125
- [13] Singh S, Darroch JE, Ashford LS, Vlassoff M. Adding it up: The Costs and Benefits of Investing in Family Planning and Maternal and Newborn Health. New York: Guttmacher Institute and UNFPA; 2009
- [14] Rosenfield A, Schwartz K. Population and development-shifting paradigms, setting goals. *NEJM*. 2005;**352**(7):647-649
- [15] Brown W, Druce N, Bunting J, Radloff S, Koroma D, Gupta S, et al. Developing the "120 by 20" goal for the global family planning 2020 initiative. *Studies in Family Planning*. 2014;**45**(1):73-84
- [16] Starbird E, Norton M, Marcus R. Investing in family planning: Key to achieving the SDGs. *Global Health: Science and Practice*. 2016;**4**:2
- [17] Gathinji IE. In: Mati JKG, Lalipo OA, editors. *USA Reproductive Health in Africa*. 1984
- [18] Bongaarts J, Sinding S. A respect to critics of family planning programs. *International Perspectives on Sexual and Reproductive Health*. 2009;**35**(1):39
- [19] Mwaikambo L, Speizer IS, Schurmann A, Morgan G, Fikree F. What works in family planning interventions: A systematic review of evidence. *Studies in Family Planning*. 2011;**42**(2):67-82
- [20] Potts M. Family planning is crucial to child survival. *Network*. 1990;**11**:2
- [21] Yeaky MP, Muntifering CJ, Ramachandran DV, Myint Y, Creanga AA, Tsui AO. How contraceptive use affects birth intervals: Results of literature review. *Studies in Family Planning*. 2009;**40**:205-214
- [22] Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraceptive and health. *Lancet*. 2012;**380**(9837):149-156
- [23] UNFPA. Global need for family planning (no date). Available at: <http://www.unfpa.org/rhg/planning> (Accessed 2/3/016)
- [24] UNFPA. *Maternal Health in Africa 2013*
- [25] Cleland JG, Ndugwa RP, Zulu EM. Family planning in SSA. Progress or stagnation? *Bull World Health Organization*. 2011;**89**:137-143
- [26] Malalu PK, Alfred K, Too R, Chirchir A. Determinants of use of modern family planning methods: A case of Baringo North District, Kenya. *Science Journal of Public Health*. 2014;**2**(5):425-430
- [27] WHO. The Sisterhood methods of Estimating maternal mortality: Guidance notes for potential users; 1997. Available at: <http://www.sisterhoodmethods/who/int> (Accessed 14/5/013)

- [28] O'Loughlin J. Safe motherhood: Impossible dream or achievable reality? *The Medical Journal of Australia*. 1997;**167**:622-625
- [29] UNICEF: Plan of Action of Implementing the World Declaration on the Survival, Protection and Development of Children in the 1990s. Available at: <http://www.unicef.org/wse/plan> (Accessed 15/8/016)
- [30] Coale AJ, Hoover EM. Population Growth and Economic Development in Low Income Countries. Princeton New Jersey: Princeton University press; 1958
- [31] Oyediran MA. Family planning in Nigeria. *Journal of Medical Education*. 1969;**11**:160-161
- [32] Chimbwete C, Watkins SC, Zulu EM. The evolution of population policies in Kenya and Malawi. *Population Research and Policy Review*. 2005;**24**:85-106
- [33] Campbell MM, Sahin-Hodoglugil NN, Potts M. Barriers to fertility regulation: Reviews of the literature. *Studies in Family Planning*. 2006;**37**:87-98
- [34] WHO, Department of Reproductive Health and Research. Medical Eligibility Criteria for Contraceptive Use. 3rd ed. Geneva: WHO, 2004
- [35] Bang S, Song SW, Choi CH. Improving access to IUD: Experiments in Koyang. Korea standard Family Planning. 1968;**27**:4-11
- [36] Rosenfield A, Limcharaen C. Auxiliary midwife prescription of oral contraceptives: An experimental project in Thailand. *American Journal of Obstetrics and Gynecology*. 1972;**113**:942-949
- [37] Trussel J, Stewart F, Potts M, Guest F, Ellertson C. Should oral contraceptive be available without prescription? *American Journal of Public Health*. 1993;**83**:1094-1099
- [38] Bongaarts J, Bruce J. The causes of unmet need for contraceptive and the social content services. *Standard. Family Planning*. 1995;**26**:57-75
- [39] Okonofua F. Confronting the Challenge of Reproductive Health in Africa: A Textbook for Students and Development Practitioners. 2002
- [40] Rose JA, Lauro DL, Way JD, Rosenfield AG. Community-based distribution. In: Lapham RJ, Simmons GB, editors. *Organizing for Effective Family Planning Programs*. Washington DC: National Academy Press; 1987
- [41] Philips JF, Green WL, Jackson EF. Lessons from Community-Based Distribution of Family Planning in Africa. New York: Population Council, 1999. Available at: <http://www.populationcouncil.orgpdfs> (Accessed 6/8/017)
- [42] WHO. Community-Based Distribution of Contraceptives: A Guide to Programme Managers. Geneva: WHO; 1995
- [43] Janowitz B, Chege J, Thompson A, Rutenberg N, Homan R. Community-based distribution in Tanzania: Costs and impacts of alternative strategies to improve worker performance. *International Family Planning Perspectives*. 2000;**26**(4):158-160 and 193-195
- [44] Prata N, Vahidnia F, Potts M, Dries-Daffner I. Revisiting community-based distribution programs: Are they still needed? *Contraception*. 2005;**72**:402-407

- [45] Katz KR, West CG, Doombia F, Karie F. Increasing access to family planning services in rural Mali through community-based distribution. *International Family Planning Perspectives*. 1998;**24**:104-110
- [46] Soares H, Prata N, Mitchell B, et al. NGOs providing low cost high gravity family planning and reproductive health services: case study, FEMAP-MEXICO. University of California, Berkeley: Bay Area International Group Monograph series. 2002;1(3):3. Available at: <http://www.big.berkeley.edu.research.monograph.1.3-3.2002/pdf> (Accessed 6/8/017)
- [47] Njogu W. Contraceptive use in Kenya: Trends and determinants. *Demography*. 1991;**28**:83-99
- [48] Goldberg IH, Malcolm M, Spitz A. Contraceptive use and fertility decline in Chogoria, Kenya. *Studies in Family Planning*. 1989;**20**(1):17-25
- [49] Population Council. Operation research project dramatically increases contraceptive prevalence in Mali. *Africa Alternative*. 1995;**11**(1):7
- [50] World Health Organization (WHO). Programming strategies for Postpartum Family Planning, Geneva: WHO, 2013
- [51] Demography and Family Planning. In: Park's Textbook of Preventive and Social Medicine (Park K). 17th edition. Banarsidas Bhanot, India: 2002
- [52] Centre for Disease Control and Prevention [CDC]. Family Planning methods and practice: Africa. 2nd edition. Atlanta, Georgia. 2000
- [53] Chaudhuri SK. Practice of fertility control, 6<sup>th</sup> edition. Elsevier, New Delhi, India. 2004
- [54] Becker S, Ahmed S. Dynamics of Contraceptive use and breast feeding during the postpartum period in Peru and Indonesia. *Population studies*. 2001;**55**(2):165-179
- [55] Gebreselassie T, Rutstein SO, Mishra V. Contraceptive Use, Breastfeeding, Amenorrhea and Abstinence during the Postpartum Period: An Analysis of four Countries, DHS Analytical Studies. Calverton, MD, USA: Macro International; 2008 No. 14
- [56] Ndugwa RP et al. Menstrual pattern, sexual behaviours and contraceptive use among postpartum women in Nairobi urban slums. *Journal of Urban Health*. 2011;**88**(suppl 2):S341-S355
- [57] Rossier C, Hellen J. Traditional birth spacing practices and uptake of family planning during the postpartum period in Ouagadougou: Qualitative results. *International Perspectives on Sexual and Reproductive Health*. 2014;**40**(2):87-94
- [58] Brown M. When ancient meets modern: The relationship between postpartum non-susceptibility and contraception in sub-Saharan Africa. *Journal of Biosocial Science*. 2007;**39**(4):493-515
- [59] Supriya M, Guengant J-P. An Analysis of the Proximate Determinants of Fertility in Sub-Saharan Africa. Addis Ababa, Ethiopia: Paper Presented International Conference on Family Planning; Nov. 2013
- [60] Robey B, Rutstein O, Morris L. The reproductive revolution: New survey findings. *Population Report*. 1992;**series M**(11)
- [61] Demographic and Health Surveys (DHS): Available at: <http://www.dhsprogram.com/publications> (Accessed 3/9/017)



- [62] Population reports. Oral contraceptives: An update. 2000;**28**:1
- [63] Sadek SS, El Shaw S, Sadek W. Effect of the copper T380 IUD on Haemoglobin and iron stores in Egyptian women. *International Journal of Gynecology & Obstetrics*. 1999;**64**:69-70
- [64] Larsson G, Milsom I, Lindstedt T, Rybo G. The influence of a low-dose combined oral contraceptive on menstrual blood loss and iron status. *Contraception*. 1992;**46**(4):327-334
- [65] Frassinelli-Gunderson EP, Margen S, Brown JR. Iron Stores in Users of oral contraceptive agents. *The American Journal of Clinical Nutrition*. 1985;**41**(4):703-712
- [66] Moreno L, Goldman N. Contraceptive failure rates in developing countries: Evidence from the demographic and health surveys. *International Family Planning Perspectives*. 1991;**17**(2):44-49
- [67] Ampofo DA. The intrauterine device. In: JKG M, Ladipo OA, editors. *Reproductive Health in Africa*. USA. 1984
- [68] Liskin L, editor. *Intrauterine Devices, the John Hopkins University-Population Report Series B1982*. p. 4
- [69] Gray RH et al. *Manual for the Provision of Intra-Uterine Devices*. Geneva: WHO; 1980
- [70] National Population Commission (NPC) [Nigeria] and ICF International. *Nigeria Demographic and Health survey 2013, Abuja—Nigeria and Rockville, Maryland; USA: NPC and ICF International 2014*
- [71] Treiman K, Liskin L, Kols A, Rinehart W. Intra-uterine devices-an update. *Population Report*. 1995;**series B**:6
- [72] Goldberg HI, Lee NC, Oberle MW, Peterson HB. Knowledge about condoms and their use in less developed countries during a period of rising AIDS prevalence. *Bull WHO*. 1989;**67**:85-91
- [73] Liskin L, Wharton C, Blackburn R, Kestelman P. Condoms: Now more than ever. *Population Report*. 1990;**series H**(8):1-36
- [74] Rutenbery N, Laundry E. A comparison of sterilization use and demand from the demographic and health surveys. *International Family Planning Perspectives*. 1993;**19**(1):4-13
- [75] Liskin L. Female sterilization: *Population reports*. 1985: Series C: No. 9: :C-126 - C-131
- [76] Tilahun T, Coene G, Luchters S, Kassahu W, Leye E, Termmerman M, Degomme O. Family planning knowledge, attitude and practice among married couples in Jimma zone, Ethiopia. *PLoS One*. 2013;**8**(4) e6 1335
- [77] Williamson LM, Parkes A, Wright D, Petticrew M and Hart GJ. Limits of modern contraceptive use among young women in developing countries: a systematic review of qualitative research. Available at: <http://www.reproductive-health-journal.com/content> (Accessed 6/5/016)
- [78] Hubacher D, Mavranouzouli ME. Unintended pregnancy in sub-Saharan Africa: Magnitude of the problem and potential role of contraceptive implants to alleviate it. *Contraception*. 2008;**78**:73-78

- [79] Population Reference Bureau (PRB). World population datasheet. Washington DC. 2008;2008
- [80] Aryeety R, Kotoh AM, Hindin MJ. Knowledge, perception and ever use of modern contraception among women in the Ga District, Ghana. *African Journal of Reproductive Health*. 2010;14(4):27-32
- [81] Mosha I, Ruben R, Kakako D. Family planning decisions, perceptions and gender dynamics among couples in Tanzania. A qualitative study. *BMC Public Health*. 2013;13:523
- [82] Soldan V. How family planning ideas are spread within social groups in rural Malawi. *Studies in Family Planning*. 2004;35:275-290
- [83] Mahmood N, Ringheim K. Knowledge, approval and communication about family planning as correlates of desired fertility among spouses in Pakistan. *International Family Planning Perspectives*. 1999;23:122-129
- [84] Martin EP. Socio-economic and development factors affecting contraceptive use in Malawi. *African Journal of Reproductive Health*. 2013;17(3):91-104
- [85] Ezeh AC. Gender Differences in Reproductive Orientation in Ghana: A New Approach for Understanding Fertility and Family Planning Issues in Sub-Saharan Africa, Paper Presented at the Demographic and Health Surveys 5-7. Washington DC: World Conference; 1991
- [86] Stephenson R, Baschieri A, Clements S, Monique Hennink and NyovaniMadise. Contextual influences in modern contraceptive use in sub-Saharan Africa. *American Journal of Public Health*. 2007;97:1233-1240
- [87] Bogale B, Wondafrash M, Tilahun T, Girma E. Married Women's decision-making power on modern contraceptive use in urban and rural Ethiopia. *BioMed central. Public Health*. 2011;11:346
- [88] Dynes M, Stephenson R, Rubardt M, Bartel D. The influence of perceptions of community norms on current contraceptive use among men and women in Kenya. *Health & Place*. 2012
- [89] Kaggwa EB, Diop N, Storey DJ. The role of individual and community normative factors: A multilevel analysis of contraceptive use among women in Union in Mali. *International Family Planning Perspectives*. 2008;34(2) 72-79,88
- [90] Wang W, Alva S, Winter R, Bugert C. Contextual influences of modern contraceptive use among rural women in Rwanda and Nepal DHS Analytic Studies; 2013: No. 14. Washington DC, USA
- [91] Ejembi, CL, Dahiru T, Aliyu AA. Contextual Factors Influencing Modern Contraceptive Use in Nigeria DHS Working Papers; 2015: No. 120. Rockville, Maryland, USA: ICF International
- [92] Yakasai I, Yusuf AM. Contraceptive choices among women in Kano-Nigeria: A five year review. *Journal of Medicine in the Tropics*. 2013;15(2):113-116
- [93] Gribble J. Family planning in West Africa. Population Reference Bureau (PRB). Available at: <http://www.prb.org/publications/Articles/2008/westafricafamilyplaning> (Accessed 9/8/2017)

- [94] Bongaarts J. Fertility transitions in developing countries: Progress or stagnation? *Studies in Family Planning*. 2008;**39**(2):105-110
- [95] Shapiro D, Gebreselassie T. Fertility in sub-Saharan Africa: Falling and stalling. *African Population Studies*. 2008;**23**(1):3-23
- [96] United Nations (UN), Department of Economic and Social Affairs, Population Division. World contraceptive Use 2010 (POP/DB/CP/Rev 2010); 2011. Available at: <http://www.un.org/esa/population/publications/wcu2010> (Accessed 29/9/017)
- [97] Wafula SW. Regional differences in unmet need for contraception in Kenya: Insights from survey data. *BMC Women's Health*. 2015;**15**:86
- [98] WHO. World Health Statistics 2011, Ross JA, Winfrey WL. Unmet need for contraception in the developing world and the former soviet union: An updated estimate. *International Family Planning Perspectives*. 2002;**28**(3):138-143
- [99] Abdul-Hadi RA, Abass MM, Aiyenigba BO, Oseni LO, Odafe S, Chabikuli OW, et al. The effectiveness of community-based distribution of injectable contraceptives using community health extension Workers in Gamble State, northern Nigeria. *African Journal of Reproductive Health*. 2013;**17**(2):80-88
- [100] Moore A. If we are serious about Millennium Development Goals, Let's Get Serious about Family Planning. Available at: <http://www.stimson.org/pub.cfm?> (Accessed 15/1/2016)
- [101] Ross J, Frankenberg E. Findings from Two Decades of Family Planning Research. New York: Population Council; 1993
- [102] Casterline, John B, Sinding SW. Unmet need for family planning and implications for population policy. *Population and Development Review*. 2000;**26**(4):691-723
- [103] Westoff CF. New Estimates of Unmet Need and the Demand for Family Planning. DHS Comparative Reports. Calverton, Maryland, USA: Macro International Inc; 2006. p. 14
- [104] Ashford L. Unmet Need for Family Planning: Recent Trends and Their implications for Programmes. Population Reference Bureau MEASURE Communication. Available at: <http://www.measurecommunications.org/> (Accessed 30/9/017)
- [105] Bradley SEK, Casterline JB. Understanding unmet need: History, theory and measurement. *Studies in Family Planning*. 2014;**45**(2):123-50
- [106] Rossier C, Senderowicz L, Soura A. Do natural methods count? Underreporting of natural of contraception in urban Burkina Faso. *Studies in Family Planning*. 2014;**14**(2): 172-182
- [107] Bongaarts J. The impact of family planning programs on unmet need and demand for contraception. *Studies in Family Planning*. 2014;**45**(2):247-262
- [108] Aliyu AA, Ahmadu L. Urbanization, cities and health: The challenges to Nigeria a review. *Annals of African Medicine*. 2017;**16**:149-158
- [109] OlaOlorun F, Tsui A. Advancing family planning research in Africa. *African Journal of Reproductive Health*. 2010;**14**(4):9-12

