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Contraceptives
Knowledge file

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1 Introduction

Since the 1960s, women and men have access to a variety of contraceptive methods. The arrival of modern contraception empowered women to take control of their own bodies, of their sexuality and their choice to have or not to have children. However, not all people have equal access to (information on) contraceptives, as this is dependent on their social, cultural or economic status and the country they live in.

Rutgers believes that having access to safe and modern contraceptives is the cornerstone of women's and girls' rights and their sexual and reproductive health. Access to family planning contributes to more freedom, independency of women and gender equity. Therefore, Rutgers likes to attribute to these rights and to improve reproductive health, by promoting access to contraceptives to all, by delivering proper knowledge, evidence and practice based information and supporting professionals with tools and advice.

In this paper, we will first introduce the variety of contraceptive methods, then we discuss the policies and actors related to reproductive health and rights, and we continue this paper with the use, availability and access of contraceptives worldwide, and more specific in the Netherlands. We will also describe the health risks and side effects of contraceptives, the benefits of education and services and developments and innovations. At the end, we will describe some good practices and we will conclude with recommendations for the future.

1.1 Variety of contraceptive methods

In most instances, contraception is used to prevent unwanted and unplanned pregnancies, but it also is used to regulate bleeding patterns or severe pain during the menstrual period. Contraception prevents ovulation or prevents sperm to reach the oocytes. The most well-known contraceptives are the oral contraception pill (OCP) and the male condom. Many other options exist, especially for women. In general, we can distinguish seven types of contraceptive methods:

- a. *The hormonal short-term contraceptive methods*, like the Oral Contraceptive Pill, the birth control patch, the birth control vaginal ring and the birth control injection.
- b. *The hormonal long acting contraceptive methods*, like the hormonal Intrauterine System (IUS) and the birth control implant.
- c. *Non-hormonal long acting contraceptive methods*, like the copper Intrauterine Device (IUD).
- d. *Non-hormonal barrier methods*, like the male and female condom and the diaphragm. Only the male and female condoms protect against Sexual Transmitted Infections (STIs).
- e. *Irreversible non-hormonal methods*, like vasectomy and sterilisation.
- f. *Emergency contraceptive methods*, like morning-after pills and the copper IUD, which are used just after sexual intercourse.
- g. *Other more natural and more traditional methods* of family planning are: coitus interruptus and coitus reservatus. These methods are less reliable and always available. Other more traditional methods are the Temperature and Billing method, mostly used to measure fertility periods and recently supported by online family planning apps.

Modern oral contraception may be categorized by the hormones they contain:

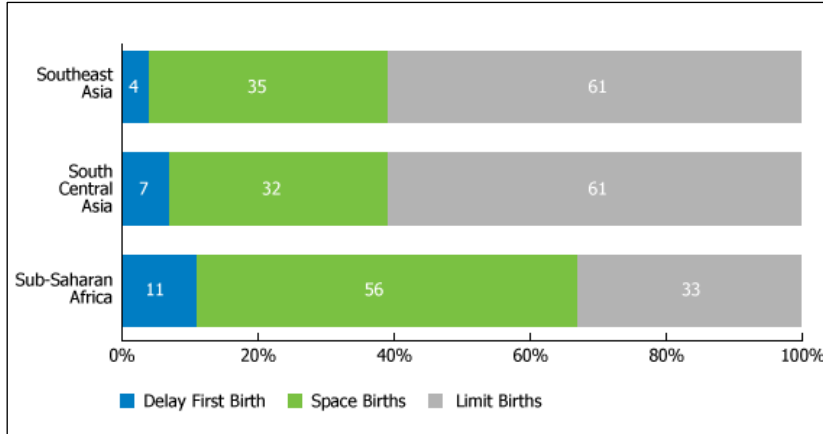
- a. *First generation*: included norethisterone and norethindrone acetate containing pills
- b. *Second generation*: levonorgestrel (Microgynon, Mirena, morning after pill, etc.)
- c. *Third generation*: desogestrel- gestodene- and norgestimate (Arianna, Careza, etc.)
- d. *Fourth generation*: drospirenone or other new progestin containing pills (Yasmin, Yaz, etc)

While several contraceptive methods have been developed for short- and long-term protection against pregnancy, women's (and men's) needs differ and may change over the course of their lifetime. During the lifetime it is necessary to look at the right match, which is based on personal preferences and medical contra indications, but also on the reasons of women (and partners) for not wanting to become pregnant.

It is important to understand the reasons women (and men/partners) have for not wanting to become pregnant. Some of them do not want to have children at all. Some of them would like to

delay their pregnancy, while others already have the number of children they want (limit births). There are also women who already have one or more children and they want to wait a few years to become pregnant again, they prefer to space their births. This information is very important as some contraceptive methods better suit the need of women who want to delay or space births, while others are better for women who want to stop childbearing all together (PRB, 2017).

Per region the reasons for not wanting to become pregnant differ widely among women as can be seen in the following graphic.



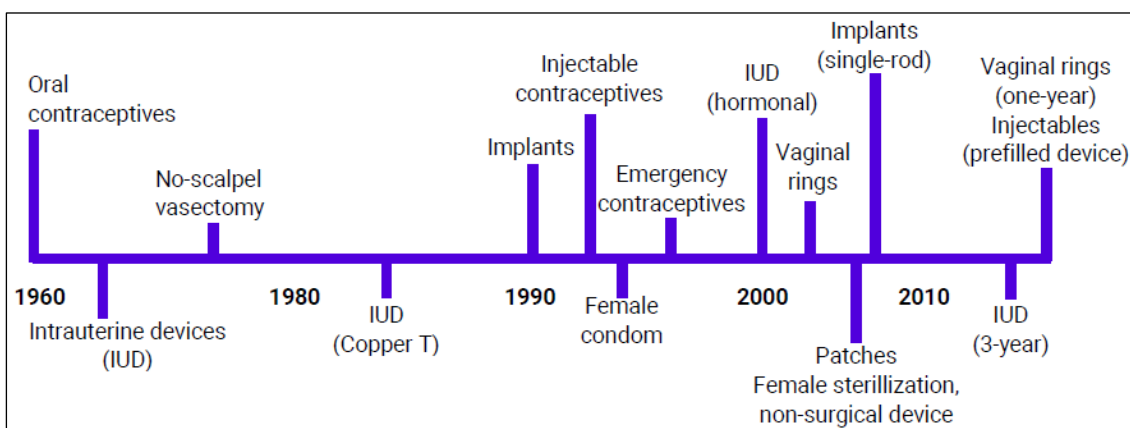
Source: Jacqueline E. Darroch, Guilda Sedgh, and Haley Ball, *Contraceptive Technologies: Responding to Women's Needs* (New York: Guttmacher Institute, 2011).

1.2 A brief history

The most traditional and well-known methods to prevent pregnancy are withdrawal and the condom, which have been used for several centuries. Another contraceptive that has been around since 1842 is the diaphragm (Harvey et al, 2004). More modern contraceptive methods like the oral contraception pill were firstly introduced in the 1960s. In the 1950s large scale clinical trials were conducted and the pill was tested on Puerto Rican and Haitian women. The pill appeared to be 100% effective, although some serious side-effects were present but ignored in the beginning. The pill was an instant hit, and in the USA around 6,5 million women used the pill within five years of its launch in 1960 (Nikolchev, 2010). In the Netherlands the pill was introduced in 1964 and in four years four out of 10 Dutch women between the ages of 21 and 34 had used it (Ketting, 1982). With the introduction of the pill, it was the first time that sexuality and reproduction were disconnected and women could enjoy sexuality without worrying about pregnancy. In most countries the pill was only available for married women, but this was still revolutionary. It empowered women to take control over their own bodies, of their sexuality and their desire to have or not to have a child. Though, not everyone agreed with women having access to contraception. After the introduction, discussions started if the contraception pill would contribute to a greater freedom and sexual empowerment of women or attribute to more coercion and pleasure for men (Andere Tijden, 2002).

Women's increased autonomy changed the traditional power dynamics between men and women. The OCP has caused much controversy as well, especially within the Catholic Church. In 1967 the controversy around the pill took a new dimension when African-American activists claimed that by providing the pill in poor, minority neighbourhoods, genocide was committed (Blakemore, 2018; Vargas, 2017).

Since the 1960s other variants of OCP's were introduced, followed by the IUD (1980s) and Implants, Injectable contraceptives, female condoms, emergency contraceptives in the 1990s and hormonal IUDs, vaginal rings, patches, implants (single) in the 2000s.



Source: UN department of Economic and Social Affairs, 2015.

1.3 Reliability

The most widely used statistical measure of contraceptive failure is the Pearl Index. The Pearl Index indicates the number of pregnancies that will occur, on average, when a specific method is used by 100 women in one year. The Pearl Index may vary, due to different studies. The higher the index number, the higher the changes to get pregnant. The reliability of contraceptive methods is based on 2 indicators, the method itself and the rate of it being used correctly. In the table below you can see the percentages of the perfect use (when the method is always used correctly) and the percentages of the typical use (in reality). If for example 100 sexually active couples will use no contraceptive method for one year, about 85% of the women will get pregnant, therefore the Pearl index is 85%. 100 couples who did use the diaphragm for one year, 3% - 16% get pregnant but in case of perfect use this will be 1% - 6%.

The Pearl Index is often criticized, as it does not consider that contraceptive failure rates typically decline with continued use. Therefore, a Pearl Index determined by a study of new and short-term users of a method will likely be higher than in a study of long-term users. Demographic factors are also not considered, although they influence method adherence and, in turn, efficacy. Because of variations in study design, study populations, and data collection and analyses, rates of contraceptive failure reported in clinical trials are difficult to interpret and compare. Due to many different studies and interpretations, different Pearl Indexes are available. We would like to give an example in the following graph.

Table 1 Pearl Index

Method	Typical Use	Perfect use
No Method	85	85
Female condom	10-15	2-5
Male condom	10-15	2-5
Diaphragm	3-16	1-6
OCP (pill)	0,5-10	0,1-0,5
Hormonal IUS	0,2	0,1
Copper IUD	0,2-2	0,2-2
Female vasectomy	0,2-3	0,2-3
Male sterilization	0,15	0,1
Withdrawal	12-38	1-4
Natural family planning (temperature)	6-47	3-5
Hormonal implant	0,05-0,3	0,05
Hormonal Ring	0,7	0,4-0,6

Source: Example Pearl Index table 10.1 (RIVM, 2016).

Most contraceptive methods are reliable when used correctly.

Long acting reversible contraception and sterilization are associated with the lowest pregnancy rates. Injectable contraceptives have the highest reliability in this tier. Oral contraceptives, the patch and vaginal ring, are also associated with a very low pregnancy rate if they are used consistently and correctly. Other methods of contraception, including diaphragms, cervical caps, sponges, male and female condoms, spermicides, periodic abstinence and withdrawal are associated with actual pregnancy rates that are much higher than perfect use rates.

Actual effectiveness is usually lower due to inconsistent or incorrect use. Actual effectiveness is also influenced by frequency of intercourse, age, and regularity of menstrual cycles. Pregnancies are less likely in women who are older, have infrequent sexual intercourse, and have irregular menstrual cycles.

Explanations for the apparent failure of other contraceptive methods when used by the typical user include inconsistent adherence to method requirements, incorrect use, gaps in use, discontinuation of the method, as well as failure of the method itself (Picavet, 2016, LAR, 2016).

2 Policies and actors in a global world

This section will give an overview of the most recent and important frameworks, policies and stakeholders in the field of reproductive health and rights.

2.1 Human rights framework

People have the right to decide on the number and spacing of their children, which is related to the right to health, the right to equality and non-discrimination (everyone should have access to contraceptives) and the right to privacy (when going to a health clinic, everyone's privacy should be assured). Contraceptives reduce the number of unintended and unplanned pregnancies and therefore help prevent pregnancy related deaths and infant deaths. Being able to plan pregnancies increases women's status and decision-making power, resulting in and from enhanced access to education and employment. International bodies repeatedly call on states to ensure women have access to contraceptives. The United Nations (UN) on Economic, Social and Cultural Rights, the UN Committee on Elimination of Discrimination against Women and UN Human Rights committee are some of the many bodies fighting for reproductive health and rights (Center for Reproductive Rights, 2012).

According to the International Conference on Population and Development (ICPD) reproductive health is defined as: *"a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes"* (WHO, 2014-II).

Reproductive rights are defined as: *"Reproductive rights embrace certain human rights that are already recognized in national laws, international human rights documents and other consensus documents. These rights rest on the recognition of the basic right of all couples and individuals to decide freely and responsibly the number, spacing and timing of their children and to have the information and means to do so, and the right to attain the highest standard of sexual and reproductive health. It also includes their right to make decisions concerning reproduction free of discrimination, coercion and violence, as expressed in human rights documents"* (UNFPA, 2014).

Under International Human Rights Law, states have an obligation to provide women with access to a full range of contraceptives and information on the methods and it stipulates that women should have access to female-controlled contraceptives (Shalev, 1998).

2.2 International policy in the last decades

In the timeline below, an overview is given of several consensus documents explaining the relationship between human rights and sexual and reproductive health and rights (UNFPA et al, 2014).

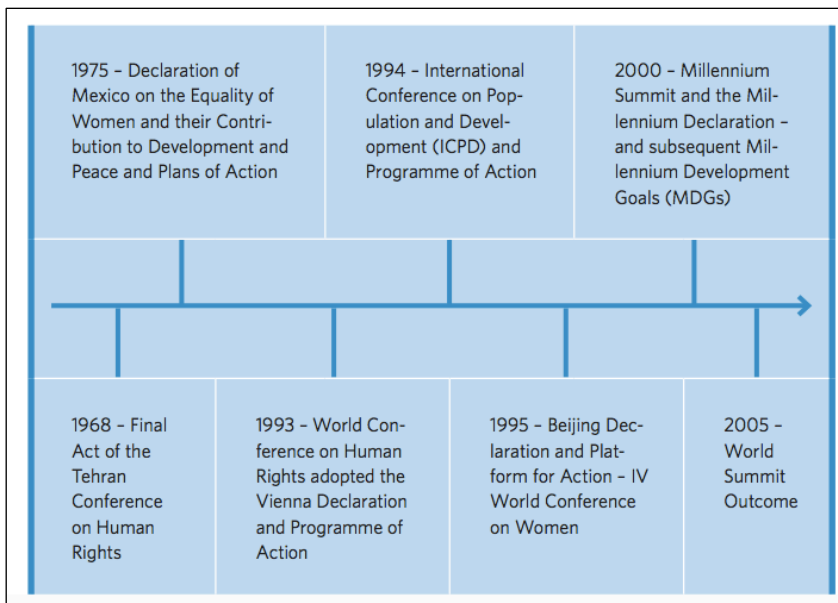
The 1994 International Conference on Population and Development (ICPD) in Cairo placed reproductive rights on the global agenda. In the Programme of Action it is clearly affirmed that reproductive and sexual health is protected within the human rights already recognized by both national and international law. Moreover, the complex link between population, growth and gender equality was recognized. During this conference, the UN adopted the agreement that countries should provide a wide choice of family planning methods and services to everyone that needed them, no matter their age, background, or gender. During the 1995 World Conference in Beijing it was highlighted, among other issues, that women and men have the right to equal access to education and health care and equal treatment. Moreover, it highlights the enhancement of women's sexual and reproductive health as well as education.

Both the ICPD Programme of Action and the Beijing Declaration and Platform for Action show that alongside health and health care, education is a crucial tool in promoting and protecting reproductive rights (UNFPA et al, 2014).

In 2000 the Millennium Development Goals were developed and all the then 189 member states adopted the UN Millennium Declaration. One of the goals was to achieve universal access to reproductive health by 2015. Although a lot of progress has been made considering reproductive health and rights, much more can and needs to be improved.

During the 2012 London Summit the Family Planning (2020) global partnership, initiated by the Bill & Melinda Gates Foundation, together with 150 leaders, governmental representatives and civil society, endorsed the ambitious goal to enable an additional 120 million women and girls to have access to rights based family planning services and supplies by 2020, the so-called FP 2020 program. In 2016, they estimated that around 300,3 million women were using a modern method of contraception across the 69 FP 2020 countries (FP, 2015).

More recently, the 193 member states of the United Nations adopted the Development Goals (SDG), which is part of the Sustainable Development Agenda 2030. The SDGs focus on social, economic and environmental areas of sustainable development (UN, 2015). The SDGs include ambitious goals towards Sexual Reproductive Health and Rights (SRHR). Three goals are related to SRHR issues, like universal access to sexual and reproductive health care services, including family planning, information and education and the integration of reproductive health into national strategies and programs by 2030. To prevent early and unwanted pregnancies, The UN recommended good quality comprehensive sexuality education (learning about their bodies, hoe to manage their reproductive health, including content on gender equality and power in relationships), and linkages with services ensuring the availability of contraceptives. Education in general has a key role in preventing early and unintended pregnancies.



3 Access to contraceptives

During centuries, a majority of women did not have any access to modern contraception methods, most families were big and women were mostly pregnant during their reproductive age. Since 1960s with the introduction of the OCP, the position of women in society changed dramatically. The birth rate declines in most countries where contraceptives are available, affordable and accepted. In this chapter we show these aspects.

The core state obligations in connection to the right to health, is to ensure the availability, accessibility and acceptability of contraceptives. The WHO invented an essential medicines' list on which all the medicines are listed which states should provide. A wide range of contraceptive methods is included in this list, including emergency contraception (WHO, 2017-I). These methods should be *available*. Furthermore, International Human Rights law requires health-care facilities, commodities and services to be *accessible* to everyone without discrimination. This includes physical and economic accessibility as well as access to information. All healthcare facilities, commodities and services must also adhere to *acceptability* and therefore be respectful of medical ethics, the culture of individuals, minorities and communities and be sensitive to gender and life cycle requirements. All healthcare facilities must be designed to respect confidentiality and improve the health status of those concerned (WHO, 2014-II).

3.1 Availability, accessibility & acceptability

In reality, not all people have equal access to information and contraceptives, due to a number of reasons. Although in most countries a wide range of contraceptive methods are available and provided by most reproductive health services, differences may exist in availability of methods between urban and rural or private and governmental hospitals and health centers. Accessibility is mainly dependent on the cultural, economic and political contexts of individuals and countries. Particularly young people, poorer segments of populations or unmarried people have limited access to contraception. Young and unmarried people in many communities are not allowed or expected to have sexual relationships before marriage. Therefore, prescriptions might not be given without parental consent or health services are not youth friendly. People with a lower income do not always have the means to pay for contraceptive methods or, if they live very rural, they have to travel a lot to reach health clinics where methods are available (WHO, 2017-I).

Dutch case: Availability of contraception in the Netherlands

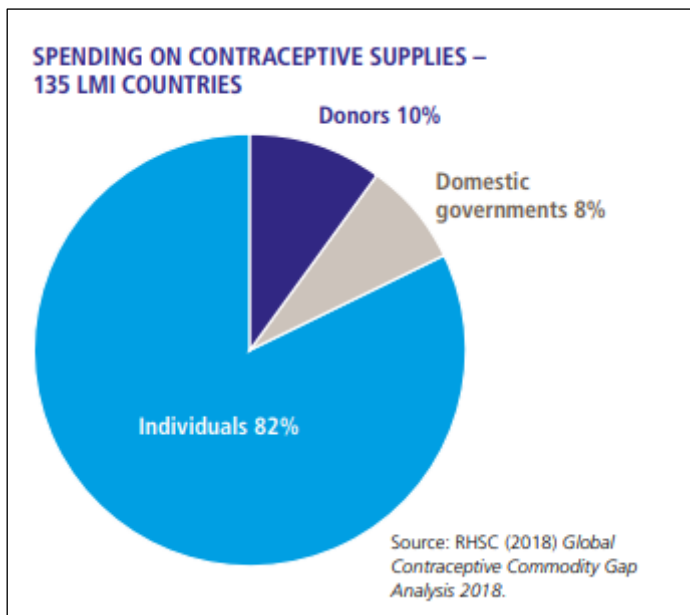
In the Netherlands male condoms are widely available at pharmacies, drugstores, supermarkets and vending machines in bars, online or in entertainment venues in the Netherlands. Since a couple of years the female condom is available but only online or at the condom shop and drugstores. The emergency pills (Norlevo since 2005 and Ella One since 2015) are available at the pharmacy without prescription. A general practitioner's (GP) or gynaecologist's prescription is required for all contraceptive methods, except for condoms and the emergency pill. Since 2015 midwives may also prescribe contraception and in 2018 they may place and insert all kind of contraception. Youth under 25 years old can visit Sense (youth friendly services) for free. They inform adolescents about a wide range of contraception methods, but not all Sense services can deliver or insert all contraception methods. Once a prescription is obtained all modern contraceptives are obtainable at the drugstore. For the pill no repeat prescription is needed once an initial prescription has been obtained. Still 85% of young people under 25 got a contraception prescription from their family doctor (GP) (De Graaf et al., 2017). Sterilisation and vasectomy are carried out in hospitals, or licensed sexual reproductive health services or abortion clinics. There are no age restrictions on contraceptives other than those of a medical nature. Under the age of 16 parental consent must be provided unless to require such consent would cause serious detriment. For a minor aged 16 or above, no parental consent is needed anymore. The general practitioner has oath of secrecy. In fact a young person is regarded as acting responsible and should be secured confidentially.

3.2 Affordability of contraceptives

Contraceptives can be funded or financed by donors, national governments, health insurances and by the users themselves. Per country, it differs what funding or reimbursements looks like. In many

Southern countries access to contraception is donor driven, particularly in South Asia and sub-Saharan Africa. It is difficult to give an overview of how the contraceptive methods are being funded or financed as it differs a lot per country and over time.

An overall picture is shown in the figure below. It can be seen that in low- and middle income countries (LMI) 82% of the individuals pay for their own contraceptives, while domestic governments pay only 8% and donors only 10% (Countdown 2030 Europe, 2018).



The price that people have to pay for contraception methods in Europe and in the global world varies extremely and emphasizes the arbitrariness of the prices. In several countries prices are increasing while reimbursement from health insurances has been reduced over the past years. Some countries provide certain reimbursement arrangements aimed at addressing the social and economic barriers faced by young people or low-income groups, but in the picture above it can be seen that most individuals pay for their contraceptives themselves.

In Europe only three countries, France, Belgium and the UK, offer excellent general reimbursement schemes for contraception. 28 European countries offer little or no reimbursement for any form of contraception. Most of the reimbursement schemes do not include newer forms of contraception like the IUD or implant. The greater one-time cost makes them less accessible to certain women, such as low-income women, younger women and women in vulnerable circumstances like asylum seekers and refugees (EPF, 2018).

Dutch case: Reimbursement

In the Netherlands, since 2011 contraception for adolescents and young adults up to 21 years is reimbursed by the basic health insurance. Within this basic health insurance everyone pays a certain 'own risk' of 385 euro's, which means that in most cases, healthy young people pay for their own contraceptives due to this own risk obligation. But the affordability and availability of modern contraception methods for low income and vulnerable groups from 21 years, is again on the political agenda.

High costs can undermine prevention of unwanted pregnancies. This is impacting particularly young women with a low income, unemployed ones or non-documented ones and women who are economic dependent.

3.3 Contraceptive use and unmet needs

In this paragraph we will dive into information on contraceptive use and unmet needs and we mainly use statistics of married women or women who are having a committed relationship. Unfortunately, it has been difficult to find statistics on adolescent women or unmarried women who have unmet needs for contraceptives.

We use the definition of contraceptive use of the World Health Organization: “Contraceptive prevalence is the percentage of women who are currently using, or whose sexual partner is currently using, at least one method of contraception, regardless of the method used” (WHO, 2018-II). This can include both modern and traditional methods.

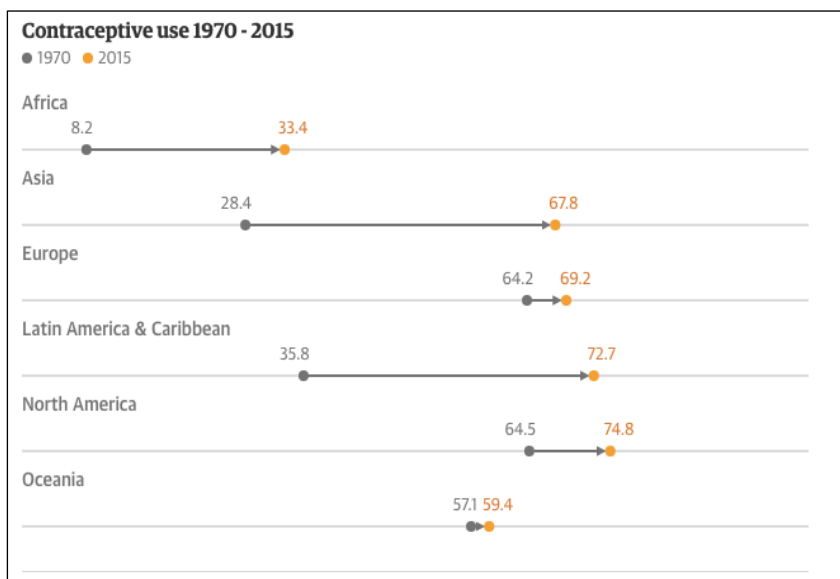
We use the definition for unmet needs of the World Health Organization: “Women with an unmet need are those who are fertile and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child”. The concept of unmet need points to the gap between women's reproductive intentions and their contraceptive behavior” (WHO, 2018-I). The unmet need is especially high among groups such as adolescents, migrants, urban slum dwellers, refugees, women in the postpartum period.

An unmet need therefore can have many reasons and does not only refer to lack of access to contraceptives. People also do not use contraceptives for specific reasons. However, it can be difficult sometimes to distinguish arguments as unmet needs or a conscious decision for not using contraceptives as can be seen in the following.

3.3.1 Contraceptive use

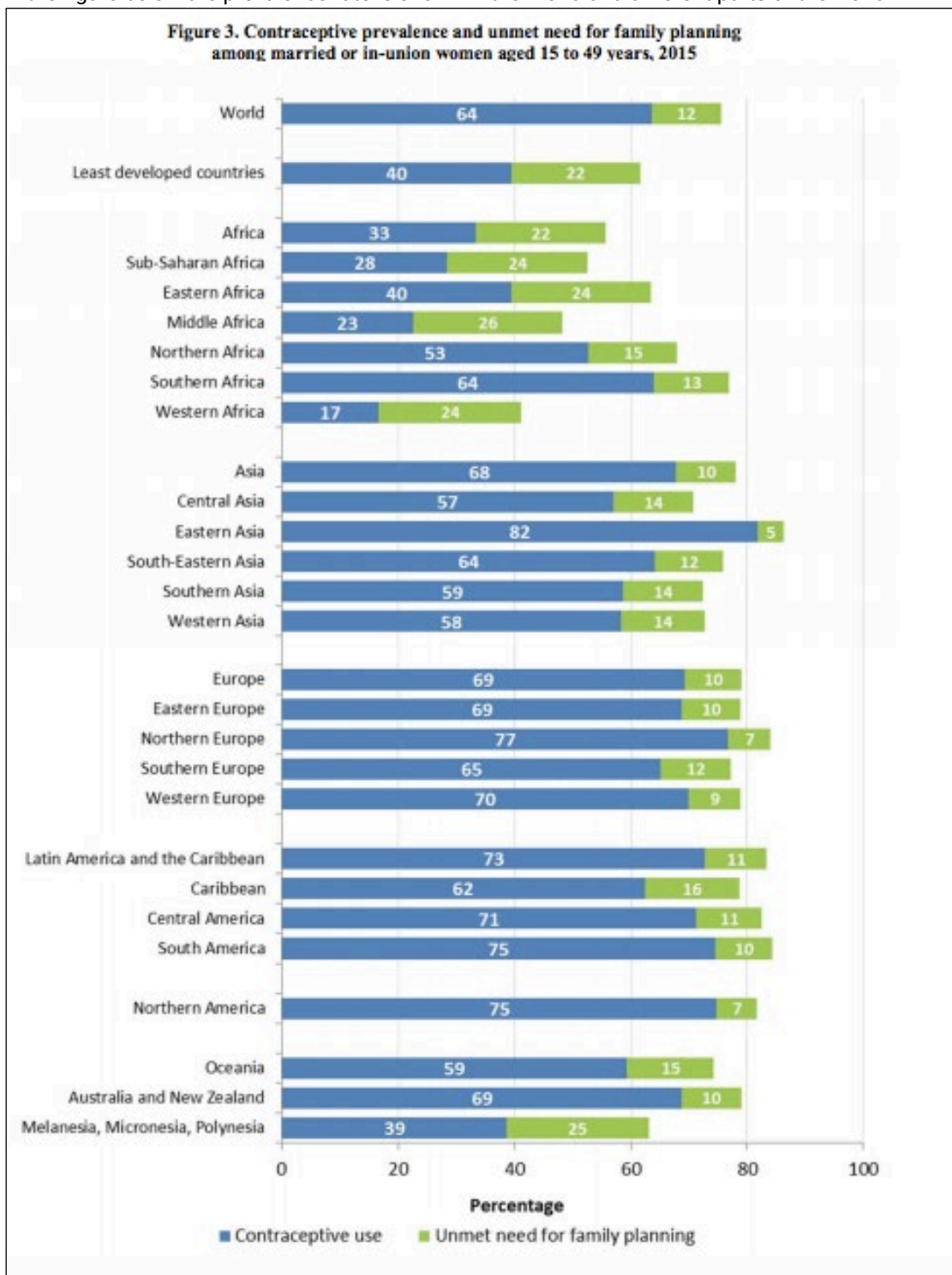
The UN Department of Economic and Social Affairs (2015) shows that 64% of the married or cohabiting women used modern or traditional forms of contraception in 2015. In the figure below it is shown that the use of contraceptives increased globally, although the figure shows wide disparities between and within regions and countries (Ford and Hold, 2015). Data refers to women aged 15 to 49 who were married or living with a partner and includes both modern and traditional methods.

Africa has the lowest percentage of women using contraceptives, and the highest unmet need in relation to contraception in the world. At the same time, some African countries have made the biggest steps forward in the last 15 years. Asia and Latin America & the Caribbean also made lots of progress in contraceptive use and reducing unwanted pregnancies.



Source: (Ford and Holder, 2015). Data refers to women aged 15 to 49 who were married or living with a partner and includes both modern and traditional methods.

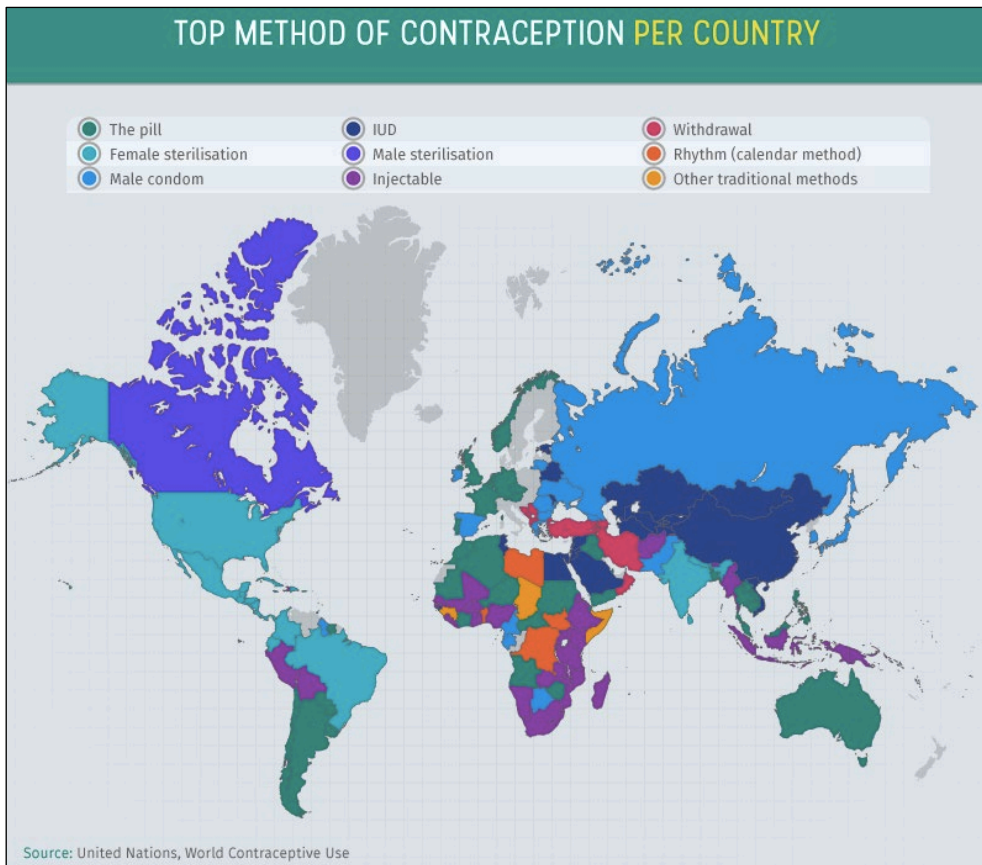
In the figure below the prevalence rate is shown in the World and different parts of the world.



Source: WHO, 2015: Data refers to women aged 15 to 49 who were married or living with a partner and includes both modern and traditional methods.

As can be seen Asia had the biggest contraceptive use percentage in 2015 and the lowest level of unmet need, mostly due to China.

The used methods of contraceptives differ a lot per country. In the figure below, it can be seen what the top method of contraception is among married and cohabitating women.



In Africa, short-term and reversible methods are used most, like the pill and injections. Africa has the lowest use of male condoms. In Asia female sterilization is by far the most common method of family planning (23,7%), in India for example almost 40% of women who use contraception have been sterilized. Furthermore, the IUD is also popular (17,4%). Across Europe the pill is the preferred method of contraception (21,9%), but this continent has also the highest number of couples using the withdrawal method (7,8%), and the highest use of traditional methods 2,4%). The male condom (16,7%) and the IUD (11,3%) are quite popular as well. Latin America has the highest percentage of sterilized women in the world (25,7%). Other popular methods are the Pill (15%) and the male condom (9,6%). In Oceania, the pill is the most popular method (21,6%), although the region differs a lot in prevalence rate and used methods. North America has the highest number of male sterilization in the world (11,9%). Female sterilization is very popular as well (20,6%). The third most popular method is the Pill (16,5%) The Guardian, 2015).

Dutch Case: Contraceptive use in the Netherlands

In the Netherlands contraception use among women and men of reproductive age is relatively high. In 2017 62% of the sexual active women aged 18 – 49 used a contraceptive method. Especially for the age group 18-25 years the OCP is still the most popular method: 51% of the sexually experienced young women used the OCP (Wijzen & Graaf, 2018). During the first sexual intercourse, almost 62% of the girls aged 12-25 used the contraceptive pill or another method (Graaf et al, 2017).

The use of long term and permanent methods increases with age. Combining condoms and oral contraceptives decreases also with age. The current contraceptive method for women aged 18-24 years is 51%. 24% of women aged 25-39 used de OCP and 17% the IUD, but also 13% used a condom. 18% aged 40-49 used the OCP and 18% the IUD. From 40 years, 2% of the respondents have had a sterilisation themselves or the partner had. Other modern long term contraceptives (path, ring, implant) are seldom used (1-2%). 5% of the women have used an emergency pill at least once in the last year, in particular young people aged 18-24 (Wijzen & De Graaf, 2018).

Contraceptive use among young people

Empowering adolescent girls to access and use contraception is a global public health priority. Nowadays, there are an estimated 252 million women aged 15-19 in developing countries. An estimated 38 million are sexually active and do not want a child in the next two years. About 15 million of these adolescents use a modern contraception method, while 23 million have an unmet need for modern contraception and are thus at elevated risk of unintended pregnancy (Darroch et al, 2016).

Almost 70% of these adolescent women live in Sub Saharan Africa (45 million), in Latin America and the Caribbean (45 million) and in South Central and Southeast Asia (113 million). These women account for about one-sixth of all women of reproductive age (15-49) in developing regions all over (WHO, 2016-III). About half of the pregnancies among adolescent women in the South are unintended, and more than half of these results in an induced, and often unsafe, abortion (Guttmacher, 2018).

Adolescent's birth-rates declined in nearly every country worldwide from 1990 to 2010. The decline is due to the rising school enrolments of girls, the increase of the average age of first marriage and the increasing use of contraceptives. Still, adolescent birth rates remain high in most of the developing countries, especially in the poorer communities within countries (Darroch et al, 2016). About 21 million 15-19-year-old girls in developing countries become pregnant every year, while nearly half of these pregnancies (49%) are unintended. 38 million 15-19-year-old adolescent girls are at risk of pregnancy but do not want a child in the next two years, but only 40% are using a modern method of contraception (WHO, 2016-I). Unmet need is much higher among adolescents than among all women aged 15-49 who want to avoid pregnancy (60% versus 26%) (Guttmacher, 2016)¹.

Dutch case: contraceptive use among youth under 25

Contraception and condom use among youth up to 25 is relatively high. Almost 92% of the boys and 94 % of the girls used contraception during their first intercourse. Compared to 2012 this slightly increased. 82% of the girls and 78% of the boys have ever used contraception. Four out of five young people used contraception with their last partner. 50% of the sexually active girls used the oral contraceptive pill, 12 % used a condom and the pill, 11 % used the Intra-Uterine Devices (IUD) and 10% used nothing. Only 2% of the girls used other modern contraceptive methods like the hormonal shot, implant or contraception ring. The use of the contraception pill declines by 10% and the use of IUD increased 16 out of 1000 boys and 24 out of 1000 girls have ever had experience with an unplanned pregnancy (De Graaf et al, 2017).

Ineffective use

When long acting contraceptives are used, like IUDs and implants, little can go wrong in terms of effectiveness. For many other methods correct and/or consistent use is essential. Women who use the OCP have a higher risk to not take the pills on time, or they start too late with a new strip after a stop week. In the case of condoms, there is a risk of breaking or slipping off, or condoms may not be used consistently during sexual intercourse (Graaf et al, 2017).

Dutch case: contraception use after an abortion

Of all Dutch women who had an abortion in 2015, almost one third said they had used the OCP or a condom in the months before getting pregnant (LAR, 2016). Protective failure may be attributed to imperfect use or failures in use (Twisk & Wijzen, 2017). The main reasons for missing pills cited by adolescents themselves, is being away from home, forgetting the pill and having no new pack available. Also not having a set routine for pill use and having a non-steady relationship or different sex partners, were related to missing pills (Cense & Dalmijn, 2016). Only a third of OCP users claim to have taken every pill on time during the previous six months, where 21% of women using OCP, admit having missed at least two pills of the same pack during the previous six months (Picavet, 2012).

¹ See also the online factsheets on adolescents' contraception use by marital status from 58 developing countries (WHO, 2016-I). On this website: <http://www.who.int/reproductivehealth/adol-contraceptive-use/en/>, fact sheets on adolescent contraceptive use can be found for 58 countries.

3.3.2 Non-use, unmet needs or discontinuation

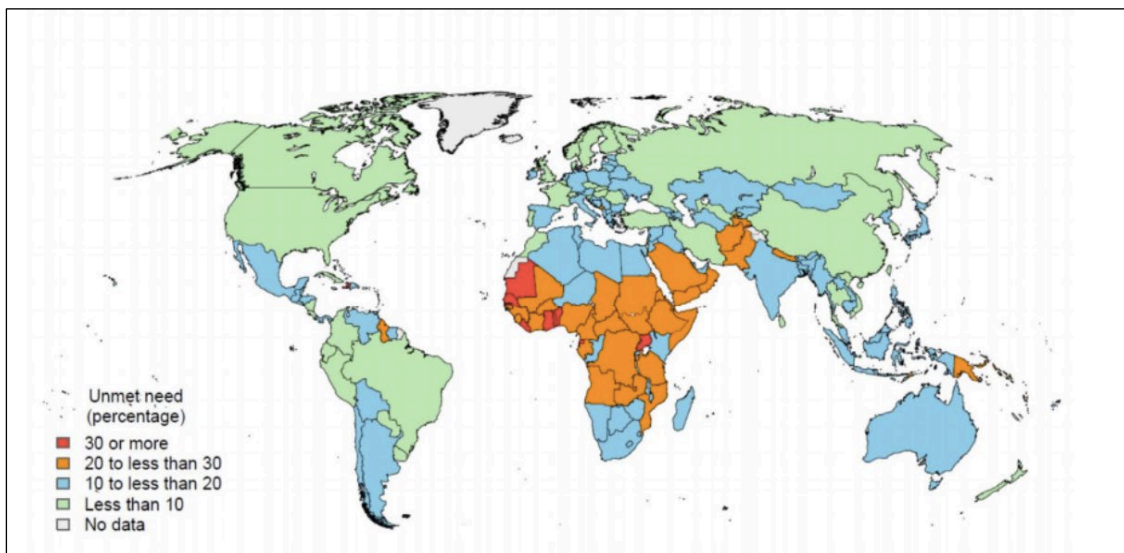
Most common reasons for non-users are religious concerns, negligence and practical barriers like difficulties with using the OCP or costs. Other reasons teenagers mentioned were: a lack of knowledge, low risk perception, strong gender beliefs and values, misconceptions and myths, and lack of communication skills. Other reasons and barriers were specifically linked with certain methods. Men are perceived to be averse to condom use, condoms are seen as a barrier for intimacy (Darroch et al, 2016).

Dutch case: Non-use of condoms and non-use of contraception

In a national survey among adolescents under 25, the main reasons for not using condoms, is the fact that they and their sex partner trusted each other or that it is less enjoyable. Even with casual sex partners, condom use is low. Over four in ten young people whose most recent sex partner was a one-nightstand report, they did not use a condom on that occasion. Among young people who had sex more than once with the same sex partner without being in a relationship, three quarters did not always use condoms. Among the sexually experienced young men, 52% usually or always carries condoms; among young women this is 25% (Graaf, et al 2017)

In the national survey among adults, eight per cent of women in fertile age, who are sexual active and don't want to get pregnant, didn't use any contraception method at all. They are at higher risk for unplanned and unwanted pregnancy. In particular women aged 25-39 years, Islamic and very religious groups are more at risk (Wijsen & Graaf, 2018).

In the next infographic, the percentage of women with an unmet need for family planning among those aged 15-49 who are married or in-union in 2015 can be seen.



Source: UN Department of Economic and Social Affairs, 2015.

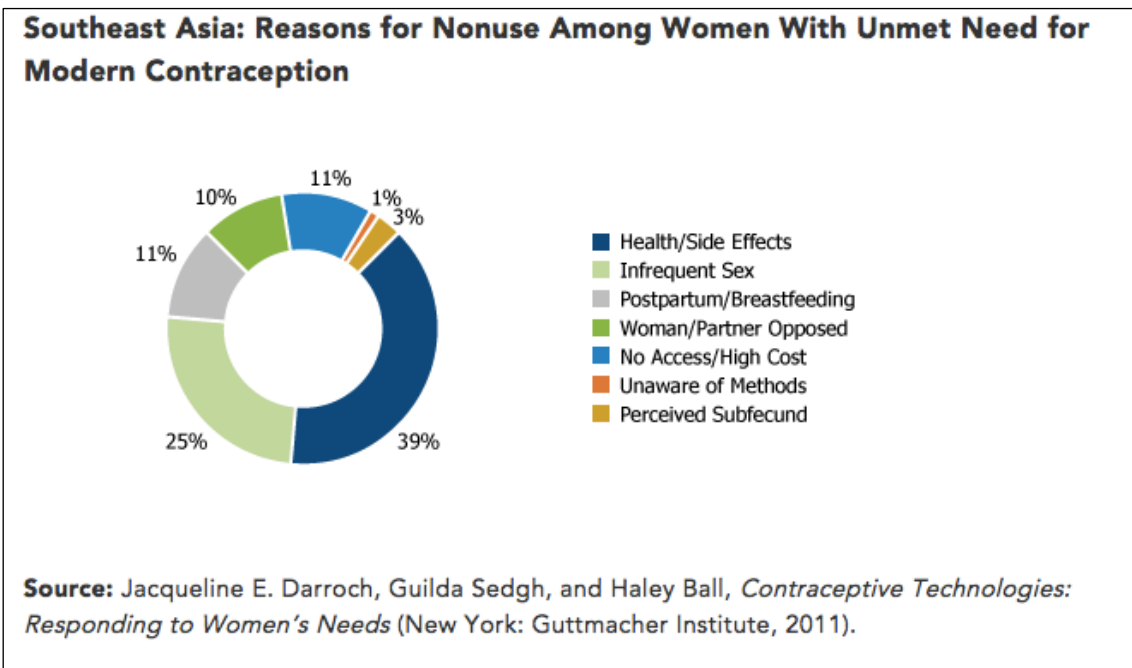
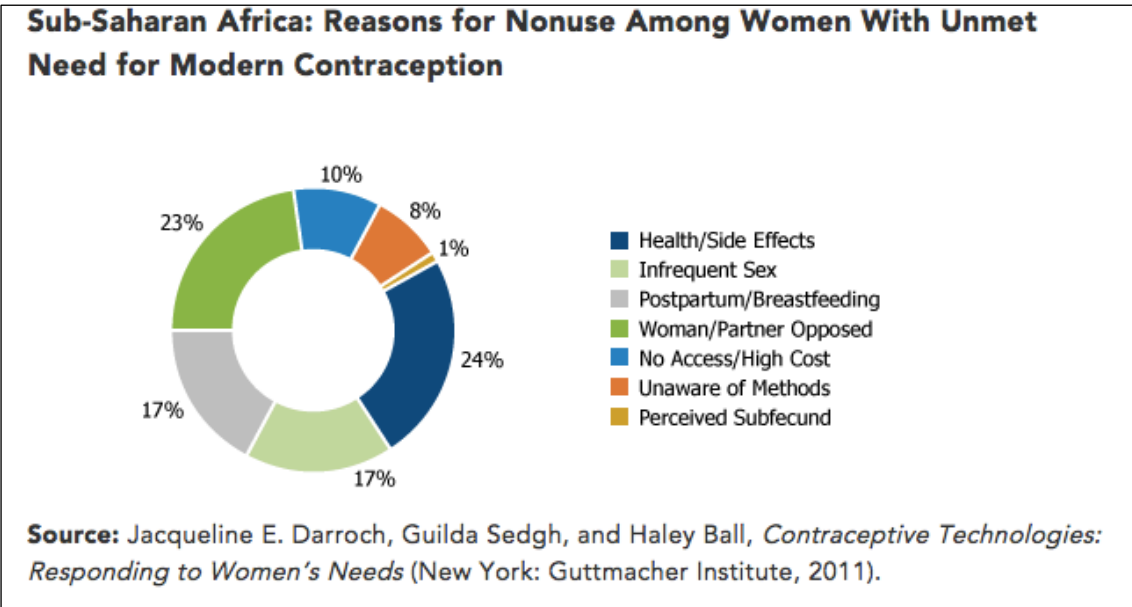
Worldwide in 2015, twelve per cent of married or in-union women are estimated to have had an unmet need for family planning, which means that they wanted to stop or delay childbearing but were not using any method of contraception (including natural contraceptive methods). Many of the countries in sub-Saharan Africa, have a percentage of 20% or higher. The demand for children is higher on average in Sub-Saharan Africa than in any other region. Married men prefer more children than married women. In all but five East African countries less than half of these women report not wanting any more children (UNFPA, 2018).

The Guttmacher Institute (2016) published a study on the reasons of non-use of contraceptives while wanting to avoid pregnancy. The findings show that the most common reasons for married women to not use contraception are perceived side effects and health risks (26%), the belief that they have sex too infrequently to warrant use (24%) or the fact that they are still breastfeeding or have not resumed to menstruation after giving birth (20%). Lastly only 5% of women stated to have no access to contraceptive methods. Overall, sexually active never-married women with unmet needs come up with mostly the same reasons as married women. However, they also state that they do not use contraceptives because they are 'not married'. Unmarried women therefore have much lesser access

to contraceptives than married women. They believe that it would be socially unacceptable for them to obtain contraceptives, or health providers deny unmarried women access to contraceptive services (Guttmacher Institute, 2016). Other reasons for the unmet needs in Sub Saharan Africa were also the absence of a preferred method, costs, opposition from family members, less access for young and unmarried people and judgemental or unskilled providers (Sedgh et al, 2016).

Important barriers for non-use of modern contraceptives are the negative myths and misconceptions about family planning. The most prevalent myths around the world are that contraceptives are dangerous to women’s health, they can harm your womb, usage can lead to infertility and when you get pregnant, you might get a baby with a deformity (Gueye et al, 2015).

Reasons for non-use among women with unmet needs can vary across regions. In the figures below, the differences can be seen between regions in Sub-Sahara Africa and South-East Asia. It can be seen that in Sub-Sahara Africa most women do not use modern contraception because of negative health effects (24%) and because the woman or her partner opposed to it (23%). In Southeast Asia, most women did not use any modern methods because of the supposed health/side effects (39%) and because they stated that they have infrequent sex (25%). Information on unmet need is particularly lacking in Europe, though survey data show low levels (UN, 2015).



Less compliance and discontinuation is mainly caused by side effects and health concerns. These are the main reasons for women to discontinue or switch methods. 30-50% of women discontinue use of OCP's or injections within 12 months because of side effects or health concerns. Most of them promptly switched to alternatives (Cleland, 2010). Another important reason why women discontinue methods like implants or other hormonal methods, is bleeding unpredictability. In case of oral contraception use, being tired of swallowing the pill daily could be a reason to look for an alternative. (Mills & Barclay, 2006)

3.4 Vulnerable groups

Some groups are more vulnerable for unwanted pregnancies than others. This is most common among adolescent women, poor women and rural women (WHO, 2014-I). In most of the developing countries early marriage leads to unwanted pregnancies. Limited education, inadequate knowledge about contraception and family planning services, low resistance and limited negotiation skills, unequal relationships, and little independence in the decision-making process on the timing of births or use of contraception, makes female adolescents and unmarried women in developing countries especially vulnerable. Unmarried women often face disapproval and condemnation if they are sexually active (Blum & Mmari, 2006; Guttmacher, 2010).

Dutch case: vulnerable groups more at risk

Also in the Netherlands, some groups seem to be more vulnerable for unwanted or unplanned pregnancies. For instance low educated women, Dutch women with a Surinam, Antillean or Sub Sahara background, migrants and religious people (LAR, 2015; Graaf et al 2017, Wijzen & De Graaf, 2017). Dutch pill users with a migrant background were more likely to miss pills or didn't use contraception during intercourse (De Neef & Van Dijk, 2010). Starting with sex at a young age is related with less consistent use of OCP and unsafe sex (De Graaf et al, 2017). Dutch women with a Turkish and Moroccan background use contraceptives less often than native Dutch people do.

Sterilisation and the combination of condom and pill use are also less common among these groups. Religious people use modern contraception and hormonal methods less often than non-religious people do. Only the copper IUD is used more often in these groups (Picavet, 2012).

Qualitative research showed that factors like problematic youth, unsafe or unstable relationships, low resistance, limited knowledge and a low risk perception might attribute to a higher risk of unwanted or unplanned pregnancies or teenage motherhood (Cense & Dalmijn, 2016). Teenagers with a mental disability are more vulnerable because of lower access to qualified education, a low risk perception, stereotype gender roles, romantic ideas of having a child and having a hidden child wish (Lisdonk et al, 2016).

3.5 Compulsory, forced or coerced use of contraception methods

In some countries, there is a discussion going on under what conditions contraception use is obligatory for specific groups and has to be forced or not. In former decades, some governments have implemented sterilization programs to prevent the reproduction of groups of the population. For example, people with defective genetic traits, people with mental disabilities, people with HIV/aids, homosexuals or sex offenders but also ethnic groups like Jewish people in the 1940s. In 2014, a number of Human Rights organisations (WHO, UNFPA, UNAIDS, UNICEF, etc) issued a joint statement on eliminating forced, coercive and involuntary sterilization. The report recommends a range of guiding principles for medical treatment and contraception use, including ensuring the autonomy of people in decision-making.

Recently, in the Netherlands, the discussion started again around the question if women with severe mental disabilities, psychiatric problems or drug addictions have to be forced to use contraception. Most people doubt if they are sufficiently able to raise and support children in a safe way. In the vision of the Dutch government and the Dutch professional association of doctors for mental disabled people (NVAG), the possibility of giving birth to a child without support or help, has to be discouraged (Verdonk, 2011). Instead of forced contraception, motivational and more intensive counselling on birth control, seems to be more effective for women with a high vulnerability like addicted, mental disabled and multi problem groups (Rijlaarsdam, 2015; Rijlaarsdam, 2017)

4 Health risks and side effects

We do want to emphasize that, in general, the risks associated with use of contraceptives do not outweigh their positive impact. Contraception use can prevent unwanted pregnancies but also maternal deaths in case of unsafe abortion. Planned motherhood, contributes to happier and healthier children and family life. In smaller families, women are more able to participate in society and earn their own money. It makes them economic independent, protect them against the cycle of poverty and will contribute to more equal and safe relationships. In addition, having smaller families allows parents to invest more in each child. Children with fewer siblings tend to stay in school longer than those with many siblings (WHO, 2018).

In particularly in countries where the quality of reproductive health services is low or abortion is not allowed, family planning and contraception services are urgently needed. Maternal death risks are associated with pregnancies at a very young age, old maternal ages, short interpregnancy intervals and with pregnancies that would have ended in unsafe abortion (WHO, 2016-I). Teenage pregnancies (mostly unwanted or unplanned) and unplanned teenage motherhood can influence the school career, it lowers the chance on paid jobs and economic independency (Rosenberg et al, 2015). It can improve the chance on domestic violence, problems in relationships, and other psychosocial problems (WHO, 2016-I). On the other hand contraception use can deliver also some health or wellbeing benefits like: period/cycle regulation, less bleeding or pain during period, less acne or skin problems or less bone loss or even less risk on cancer.

In this section, we will mainly talk about the impact and risks of hormonal contraceptive methods on health. Especially the health risks of the oral contraceptive pill are best studied over the years.

4.1 Health risks

OCP's are associated with a very low risk of cardiovascular disease. Young healthy women who do not smoke and who are using the pill have a slightly higher risk of getting cardiovascular disease. Women above the age of 35 and women who smoke are at an increased risk of getting this disease. The risk depends on which OCP is being taken and on the health history of the woman (Vessey, Yeates and Flynn, 2010). The results of population studies to examine associations between oral contraceptive use and cancer risk have not always been consistent. Overall, the risks of ovarian and womb cancers appear to be reduced with the use of oral contraceptives, whereas the risk of breast and cervical cancer appear to be increased (Burkman et al, 2004; Hunter & Colditz et al, 2010). The risk of cervical and ovarian cancer will increase the longer the pill has been taken and will fall back down again once a women stops using it (Appleby & Beral, et al, 2007; Beral & Doll et al, 2008)).

In response to public alarm a couple of years ago in European Countries, where women sued manufacturers for potential fatal blood clots (venous thromboembolism, VTE) because of using the third and fourth generation combined oral contraceptive pills, IPPF published a short statement on their safety (IPPF Medical Bulletin, 2013). The chance on thromboembolism is estimated as 2-4 per 10.000 women using the second generation pill and 3-6 per 10.000 women using the third or fourth generation pill. Recently the Diana showed an increased risk on venous thromboembolism, and is taken out. Recent epidemiological and clinical studies have not shown increased risk of VTE by using the third and fourth generation combined oral contraceptive pills. Earlier studies who did report increased risk of VTE, produced conflicting results and had methodological limitations that call into question the validity of their findings and conclusions about the magnitude of the additional risk associated with using these products.

There could be a relationship between starting with hormonal (levonorgestrel) contraception use (OCP or IUD) and feelings of depression, particularly in the first 6 months of use. No relationship was found anymore after 4 years of use (Skovlund et al, 2016). A systematic review showed no evidence that OC levonorgestrel releasing IUD use among women with depressive or bipolar disorders was associated with worse clinical course or disease when compared with no hormonal method use. This conclusion was based on women who used IUD or OCP on the long term (Pagano et al, 2016).

Other noted side effects of OCP's are: headaches, pain in the chest, reduced sexual arousal, increased appetite, tiredness, acne and depression, among others. These side effects are dependent on one's medical condition, living conditions and personal characteristics.

Results of studies have shown overall health benefits and few long-term risks for most women who use intrauterine devices (IUD). Women with chlamydia or gonorrhoea infections, are at increased risk for a pelvic inflammatory disease. Hormonal IUS's have been associated with a reduced risk of endometrial cancer (Miller, 2016).

Common side effects while using hormonal contraception and IUD are bleeding disturbances and changes in menstruation patterns (irregular, infrequent or no bleeding at all). The specific pattern in any given women cannot be predicted with certainty, however. A recent study of the Erasmus University shows that woman with hormonal IUDs have higher levels of cortisol, the hormone causing stress (Erasmus MC, 2017).

The copper IUS are commonly associated with heavy bleeding during periods and it can cause an increase in cramping and backaches during monthly periods (Marcin, 2016). Moreover, although very rare, it is possible to get signs and symptoms due to copper allergies, like swelling, redness and itching (anticonceptie-online.nl, 2017).

Many studies have shown that, in general, sterilisation and vasectomy have little long-term health effects, beyond the noted beneficial effects on pregnancy prevention. Tubal sterilisation is associated with a reduced risk of ovarian cancer (Rice et al, 2012).

Implants (depot medoxyprogesterone acetate injections) are associated with bone loss during long-term use. It is unknown if early use by adolescents will affect their peak bone mass and risk of fractures as they get older (WHO, 2005). Moreover, implants increase the risk of blood clots (especially when smoking) and ovarian cysts may develop. Most common side effects are longer or shorter bleeding during periods, spotting, mood swings, weight gain, headaches and acne, among others.

When using condoms, no health risks or health related side effects are known. Only latex condoms can cause allergic reactions, when a person is allergic to latex.

Since 1991, there has been mixed evidence as to whether using hormonal contraceptive methods increases a woman's risk of acquiring HIV (WHO, 2016-I). New information increases concerns about DMPA (Depot medoxyprogesterone acetate) and HIV acquisition risk in women. More research should be done to see if a causal link exists between hormonal contraception and HIV (Polis et al, 2016).

Medical Eligibility Criteria (MEC) are set up with medical information on contraceptives. To guide contraceptive providers on the Medical Eligibility Criteria (MEC) for contraceptive use, WHO developed a full MEC guidance, which contains more than 2000 recommendations for 25 different contraceptive methods, addresses more than 80 medical conditions or personal characteristics (WHO, 2016-I).

It is important to realize that most of the modern contraceptives has also lot of benefits. Use of OCP with hormonal combinations, may contribute to less bleeding, less pain during your period and less cycle related complains, less acne, less risk on pelvic inflammatory disease (PID) and less risk on cervical cancer (RIVM, 2016).

5 Education, services and contraception counselling

To support girls, women, boys, men and couples in making well informed choices and using contraception in the right way, sexuality education and well-trained professionals are highly needed. Not all adolescents, men and women received appropriate information and sexuality education at the right time or in a right way.

5.1 Education

Many young people do not know how to avoid unwanted pregnancies. Comprehensive sexuality education (CSE) is lacking in many countries, or information on sexuality is given too late. Gender inequality has a significant impact on girls' life choices and experiences and is strongly correlated with unwanted pregnancies. Young girls who marry later and delay pregnancy beyond their adolescence have more chances to stay healthier, to gain a better education and a better life (WHO-I, 2014). Investment in education of girls can contribute to their empowerment and self-esteem and could make them more assertive in relationships with boys. In countries working with programs with conditional cash transfers (CCT's), like Peru and Colombia, effectiveness of such programs has been shown. Parents receive money under the condition that they send their girls to school.

Sexual reproductive health among adolescents is mostly restricted by national laws and policies. Sexuality education is most of the time focused on HIV prevention and the promotion of abstinence, while using fear-based messages. Information on gender equity, contraceptive use including how to use condoms, self-esteem or information on rights is often lacking. There is robust evidence that sexuality education programs promoting abstinence only, is not effective (Kirby, 2007). A 2017 review of abstinence-only programmes found them to be ineffective, stigmatising and unethical (Santelli et al, 2017). Under certain conditions comprehensive sexuality education has shown to be effective in preventing and reducing early and unintended pregnancy in different country contexts (Kirby, 2007; Dicenso et al, 2002; Chandra-Mouli et al, 2013 Kohler et al, 2008; Rosenthal, 2009;WHO, 2011). Results from a review of 41 RCTs showed that multiple interventions (combination of educational and contraceptive interventions) lowered the rate of teenage pregnancy among adolescents. Due to the variability in study populations, interventions and outcomes of included trials, it was difficult to conclude which type of intervention is most effective (Oringanje et al., 2010).

There seems also to be a strong connection with CSE and birth rates at a young age. It is remarkable that in most Eastern European countries and Central Asia the birth rates are much higher than in countries with long standing and embedded comprehensive sexuality education programs in school like the Netherlands, Denmark, Sweden and Switzerland (IPPF & BZgA, 2018). There are also strong links with supportive schools and health services, to reduce unwanted pregnancies. Programs combining education and contraceptive promotion reduces risks (Oringanje et al., 2010).

The World Health organization came up with 'health promoting schools', which are described as schools 'constantly strengthening its capacity as a healthy setting for living, learning and working' (WHO, DU). By engaging stakeholders in- and around the school in to make the school a healthy place and to promote the cooperation between the education and the health sector among others they want to create safe and enabling schools. Building on this, an integrated comprehensive approach - this means comprehensive sexuality education in school with a relation to youth friendly health services, a supportive environment, a warm parenting climate, good access to reliable and affordable contraception and an open and non-judgemental society - may contribute to the prevention of teenage pregnancies and unwanted pregnancies in general.

A study showed that CSE among adolescent boys, increased boys' gender equitable attitudes including a sense of shared responsibility to prevent unwanted pregnancies (Trivedi et al., 2009). CSE programmes that addressed gender of power were associated with a significant decrease in

pregnancy, childbearing, and were five times as likely to be effective than programmes that did not address gender or power (Haberland, 2015).

Dutch case: sexuality education and effectiveness

In the Netherlands 65% of the young people under the age of 25, said they received sufficient sex education on contraception and pregnancy, however 35% said they did not. (De Graaf et al, 2017). In the Netherlands information on unwanted pregnancy, contraception and child wish, is currently embedded in curricula of biology and care. An effect study among young learners (aged 14-15 year) in secondary schools, showed significant increase of knowledge and a more positive intention to use condoms and (other) contraceptives after six lessons of Long Live Love . Outcomes were measured 6 months before and 6 months after the lessons (Van Keulen, et al, 2014).

There is evidence, that programs on television about teen age pregnancy or other programs trying to get fear-based messages across, do not work. Recently, the effectiveness of reality soaps (like Teen Mom and 16 and Pregnant on MTV) have been studied. The outcomes were non-significant and contradictory. Some of the teens who looked at these programs frequently, developed romantic views on teenage pregnancy and motherhood. Also, studies where girls in 90 countries got an artificial but real-life baby to look after, showed an unwanted outcome. In Australia, the chance they got a child under the age of 20, was twice as high, as among teens who didn't follow the program (Brinkman et al, 2016).

5.2 Services and counselling

Girls and women need access to contraception. To obtain contraception, girls and women have to consult a health provider like a doctor or gynaecologist at a clinic or health service. Not all services are available or accessible due to age constraints, costs or the need of adult consent. Also attitudes of health care providers present an important barrier to reproductive health care. The 1.8 billion adolescents in the world are having the highest rates of unmet needs regarding contraceptives in comparison with other age groups (UNFPA, 2014).

Health care professionals and service providers need the right information, skills and attitudes to provide effective counselling on prevention of pregnancy, fertility and contraceptive use. Professionals should inform clients about a wide range of contraceptive options in a client centred approach. Thoughtful counselling is needed to help clients to select a method, discuss its characteristics, and dispel myths and misperceptions. Furthermore, in the counselling there must be room to discuss the common side effects (and how to manage them) and anticipate on the risks if one doesn't use contraception in the right way. Also, the opportunity for a follow up counselling is needed for advice, reassurance, treatment of side effects, removal or evaluation of the contraception method and looking for alternatives.

Furthermore, counselling should be responsive to the special needs of specific groups taking in account life style and life phase. For example, adolescents, single adults, adults in a relationship and perimenopausal women can have very different contraceptive needs. This also counts for clients with disabilities or HIV. IPPF has published an IMAP statement how to do contraceptive counselling in a good way (IPPF, 2009). Motivational interviewing could for example, be effective during contraception counselling. In many of the international programmes of Rutgers one of the components is to sensitise health providers on providing (youth) friendly health services. Everyone, including young people, should be able to seek counselling on contraceptives or other SRHR needs without judgment.

Research shows, that when health providers give correct and accurate information and take the time to talk to women about their concerns, the adherence to the chosen contraceptive improves. Personalised and targeted counselling is crucial for being effective (Picavet, 2016). The TANCO study in 11 European countries, showed a high prevalence of contraceptive use and general satisfaction with the current method. Despite the fact that 55 per cent of women used a short acting contraceptive method, 73% of women said they would consider LARC if they received more comprehensive information. Health care providers tend to underestimate women's interest in receiving more specific information on contraceptive methods, more specifically LARC (Merki et al, 2018).

Dutch case: quality of reproductive health care

In the Netherlands health care providers work with evidence-based guidelines on contraception and are mostly educated in family planning. High quality delivery is encouraged through a systematic update of standards and guidelines on modern contraception counselling, using evidence-based information followed by a systematic implementation, training and education. However, in practice the quality of counselling in family planning varies a lot. Family planning is part of the medical curriculum and compulsory in all medical schools.

6 Innovations

In the last decade, methods like the OCP and the IUD have been improved. For the OCP, pills with different hormonal compositions were developed and pills with lighter dosage are available. Also, IUDs for young people or people with overweight are recently introduced. The innovations are not very revolutionary, but they are more adapted to the needs of the users. For example the first one-year contraceptive ring Annovera, is introduced and is fully under a women's control and in 2018 approved by the Federation Drugs Administration.

In 2014, researchers in Eindhoven started developing a new contraceptive, which they named Choice. The idea is that small valves will be placed within the fallopian tubes. When the valves are open, women will be fertile, when the valves are closed they will be infertile. It will take quite some time until this new development can be used, because the valves will be placed in the organ and it is still unclear if this will be safe or not (Koetsenruijter, 2015).

6.1 Technical innovations in natural birth control

Natural birth control methods, like the temperature- and calendar method are still used and technical innovations have been developed, such as mobile applications to monitor fertility. Fertility apps and monitors are often very expensive, difficult to use and they do not show yet enough proof to be effective towards prevention of pregnancies. Moreover, a lot of factors may influence the outcomes of these methods. For example, the body's temperature may vary during the menstrual period (illness, stress, alcohol etc.). Strong discipline is needed to temperature your body daily at the same time. And still, women and their bed partners need great self-control during the ovulation period in having no sex or they still have to use a contraception method. Therefore, if used at all, it is very important to know your period and body very well and be very precise in keeping track of everything. To our knowledge, there is only one retrospective study that has shown the effectiveness of a fertility awareness-based method supported by a mobile application. The application contributes to fertility awareness and can protect against pregnancies if couples consistently protect themselves on fertile days (Berglund et al, 2016). However, the majority of the fertility apps is not based on independent research or does not include a disclaimer in discouraging use for avoiding pregnancy. Relying solely on an app without an appropriate training may not be sufficient to prevent unwanted pregnancies. After a longer period of use the reliability will decrease due to less adequate use.

6.2 Contraception for men

For men, only the male condom and sterilisation is an option. Since 1970 the WHO and scientists are looking for different reliable contraceptives for men with fewer negative sides, non-hormonal as well as hormonal. For example, research from the University of California claims that chemicals found in certain plants (like mangos and dandelions) will reduce sperm's ability to fertilise a women's egg (Mannowitz et al, 2017).

Different researchers are looking at the possibilities to develop contraceptives for men. Since the introduction of the OCP in the 1960s, the prevention of pregnancy seems to be the responsibility of women, as only they could use pills, insert IUDs or use other methods (besides the condom). Because of the importance that both men and women are taking care of preventing pregnancy and share this burden we think it is necessary that male contraceptives are being developed. The reproductive system of men is difficult to manage though, as 70 million sperm cells are being produced every day. Also pharmaceutical industry is holding back.

Different initiatives and methods are being developed at the moment. One relates to hormonal injections for men (Sciencealert.com, 2016). The Injection has been proven to be effective in 96 per cent of users. Although it is not as safe as the female pill, the researchers are claiming its efficacy so far as a victory, as no other male contraceptives are clinically tested. Side effects however were reported by some of the participants, like mood swings, an increased libido and acne among others,

and therefore the trial ended earlier than planned. The internet reacted outraged by these outcomes, as the pill and many other contraceptive methods for women seem to have the same side-effects (Rhodes, 2016, NPR, 2016).

Another initiative known as Vasalgel, works by blocking the tube that sperm travels down, the vas deferens, with a flexible, spongy, hydrogel material. Men could theoretically still ejaculate, but the sperm cells will be blocked. The gel has been tested on 16 adult rhesus monkeys and no pregnancies have been reported during the trial. No evidence of complications has been reported. In the next years another contraceptive for males will be tested with 400 couples in six countries, a hormonal gel that decreases production of sperm and will not affect the libido (Population Council, 2018).

We wonder if modern contraception for men, will be introduced, because of the expected resistance of men themselves, the expected side effects and the expected distrust of women. But at the same time, we see a growing interest and willingness among men in becoming more involved in family planning and women welcome more contraceptive choices. This will contribute also to a more shared responsibility. However, even if the male gel contraception is successful, it will take at least five years before the gel is approved and available for public.

Introduction and use of new reliable contraception methods takes a lot of time and investments. Not all pharmaceutical industries will take these risks. We don't expect new contraceptive methods for men in a short run. Maybe more options for women will be available in the near future.

7 Conclusions & Recommendations

Since decades most women and men have access to a wide range of modern contraceptives. Still there is a large unmet need, mostly in developing and low-income countries. Some groups, like unmarried women, low-income groups and low literacy groups, are more vulnerable than others. They are less informed, have less access to contraception methods, feel relatively strongly reluctant towards contraception. Often sex is being forbidden outside of marriage, which makes it more difficult to access contraceptive methods or contraception is too expensive. Contraceptive use can reduce the amount of unwanted pregnancies and the fulfilment of unmet need for contraception and can even cut the number of maternal deaths. Long acting contraception seems to be most effective due to the low risk of user failure, but is not available in all countries or accepted by women (and men). Research on health risks shows that, in general, the health risks of hormonal contraception are low, but can't be neglected.

Rutgers believes that everyone should be able to make an informed choice about family planning and pregnancy. Therefore women (and men) including young people, must have access to a broad range of reliable and affordable contraceptives. Several efforts in a multilevel approach with several stakeholders is needed.

Recommendations

- Universal access to quality education for all girls should be ensured to prevent early child marriage and promote gender equality. Education is a key intervention for reducing early and unintended pregnancies.
- There is a need for curriculum based comprehensive sexuality education (CSE) with strong links to youth friendly services. More attention is needed to address gender norms, gender roles and relationships, the engagement of men and boys in family planning and caregiving of children (shared responsibilities).
- In every country women (and men) must have good access to (online) information and access to a broad range of modern and effective contraceptive methods. Schemes for reimbursement should be extended to all people of reproductive age.
- Quality contraception counselling is needed in a cultural and gender sensitive way. Men have to be involved in the process of family planning.
- We emphasize that prevention will not succeed if only focussing on information or sex education. A multicomponent approach is needed, this means investment in education and empowerment of girls, involvement of boys and men, strengthening a supportive environment, good access to contraceptives and youth friendly services.
- Specific attention is needed for reaching and supporting vulnerable groups.
- More research is needed to identify the most effective strategies for preventing unwanted pregnancies among vulnerable groups.

We lobby on national, European and UN level for better access to contraceptive methods for everyone, in particularly for vulnerable groups. Rutgers has several programs, interventions and websites, both nationally and internationally, to give the right information to everyone, change attitudes around contraceptives and skills to empower girls, and guidelines and education programs for professionals in reproductive health care services or youth friendly services, establish relationships between schools and health clinics and involve parents to understand more of the sexuality of their children. We also do a lot of research to follow trends in sexuality and to measure the impact of our programs.

References

- Appleby, P., Beral, V. (2007) *Cervical cancer and hormonal contraceptives: collaborative reanalyses of individual data for 16,573 women with cervical cancer and 35,509 women without cervical cancer from 24 epidemiological studies*. *Lancet*, Nov. 10; Vol. 370 (9599) pg. 1609-21.
- Andere tijden (2002) *De seksuele moraal voor en na de pil*. [Online] <<https://www.anderetijden.nl/aflevering/558/De-seksuele-moraal-voor-en-na-de-pil>>.
- Anticonceptie.nl (2017) *Koperspiraaltje*. [Online] <<http://www.anticonceptie.nl/product/spiraaltje/spiraal-zonder-hormoon/>>.
- Bakker, F., Graaf, H. de, Haas, S. de, Kedde, H., Kruijjer, H., Wijsen. C. (2009) *Seksuele gezondheid in Nederland*, Utrecht, Rutgers Nisso Groep.
- Bandel, C. Eijndhoven, P. van .(2017) *De pil en depressie*. *Nederlands Tijdschrift Geneeskunde*,161.
- Center for Reproductive Rights. (2012). *Access to Contraceptives in the European Union. Human Rights, Barriers and Good Practices*. [Online] <https://www.reproductiverights.org/sites/crr.civicactions.net/files/documents/crr_eu_contraception_factsheet_v2.pdf>.
- Bennitt., S., & Assefi, N. (2005) *School based teenage pregnancy prevention programs: A systematic review of randomized controlled trials*. *Journal of Adolescent health*, 26 (1), 10.
- Beral V., Doll R., et al., (2008). *Ovarian cancer and oral contraceptives: collaborative reanalysis of data from 45 epidemiological studies including 23, 257 women with ovarian cancer and 87,303 controls*, *Lancet*; 371:303-314.
- Berglund Scherwitzl, E., Lundberg, O., Kopp Kallner, H., Gemzell Danielsson, K., Trussell, J., Scherwitzl, R.(2017) *Perfect-use and typical-use Pearl Index of a contraceptive mobile app*. *Contraception*. December, Volume 96, Issue 6, Pages 420–425.
- Blakemore E. (2018) *The first birth control pill used puerto rican somen as guinea pigs*. [Online] <<https://www.history.com/news/birth-control-pill-history-puerto-rico-enovid>>.
- Blum, R., Mmari, K. (2006) *Risk and protective Factors Affecting Adolescent Reproductive Health in Developing Countries*. WHO.
- Brinkman, S., Johnson, S., Hart, Straton, J., Silburn S. (2016) *Efficacy of infant simulator programmes to prevent teenage pregnancy: a school-based cluster randomised controlled trial in Western Australia*. [*Lancet*] Nov 05; Vol. 388 (10057), pp. 2264-2271.
- Burkman, R., Schlesselman, J. and Ziemann, M. (2004) *Safety concerns and health benefits associated with oral contraception*. *American Journal of Obstetrics and Gynaecology*; 190 (4 Suppl): S5-22.
- Cancer Research UK (2017) *The contraceptive Pill*. [Online] <<http://www.cancerresearchuk.org/about-cancer/causes-of-cancer/hormones-and-cancer/the-contraceptive-pill>>.
- Cense, M., Dalmijn, E. (2016). *In één klap volwassen. Over tienerzwangerschap*, Utrecht: Rutgers & Fiom.
- Chandra-Mouli, M., Svanemyr, J., Amin, A., Fogstad, H., Say, L., Girard, F. & Temmerman, M. (2015). *Twenty Years After International Conference on Population and Development: Where Are We With Adolescent Sexual and Reproductive Health and Rights?* *Journal of Adolescent Health*, Vol. 56: s1-s6.
- Cleland, J., Conde-Agudelo, Peterson, H., Ross, J., Tsui, A. (2012) *Family planning 2, contraception and health*,. *Lancet*, vol. 380, July 14.
- Countdown 2030 Europe (2018) *Contraceptive Supplies financing: what role for donors?* A brief guide. IPPF.
- Darroch, J., Sedgh G. and Ball, H. (2011) *Contraceptive Technologies: Responding to Women's Needs*. [Online] New York: Guttmacher Institute.
- Darroch, J., Woog, V., Bankole, A. and Ashford, L. (2016) *Adding it up: Costs and Benefits of Meeting the Contraceptive Needs of Adolescents*. New York: Guttmacher Institute. <<https://www.guttmacher.org/report/adding-it-meeting-contraceptive-needs-of-adolescents>>.
- DiCenso, A., Gordon Guyatt. (2002) *Interventions to reduce unintended pregnancies among adolescents: systematic review of randomised controlled trials*. *British Medical Journal*. 324(7351):1426-1430.
- Dockrill, P. (2016) *A New Male Contraceptive Injection is 96% Effective in Human Tests. But side effects could mean it never gets released*. [Online] Alert Science

- <<https://www.sciencealert.com/a-new-male-contraceptive-injection-is-96-effective-in-human-tests>>.
- EPF (2018) *Contraception Atlas*. European Parliamentary Forum on Population & Development
- Erasmus MC (2017). *Hormoonspiraaltje verhoogt stressrespons*. [Online] <https://www.erasmusmc.nl/patientenzorg_algemeen/nl/nieuws-zorg/hormoonspiraaltje.verhoogt.stress/>.
- Estrella, R., Montoya Bos, A. (2017). *Review how oral contraceptives impact social emotional behaviour and brain function*, Trends in cognitive sciences, vol 21, nr. 2.
- Familyplanning2020 (2015). *Impacts of Modern Contraceptive Use*. [Online] <<http://progress.familyplanning2020.org/page/measurement/the-impact-of-modern-contraceptive-use-indicators-5-8>>.
- Family Planning Association (2010) *Factsheet. Contraception: past, present and future*. [Online] <<http://www.fpa.org.uk/sites/default/files/contraception-past-present-and-future-factsheet-november-2010.pdf>>.
- Ford, L. and Holder, J. (2016) *Contraception and family planning around the world-interactive*. *The Guardian*. [Online] <<https://www.theguardian.com/global-development/datablog/2016/mar/08/contraception-and-family-planning-around-the-world-interactive>>.
- Graaf, H. de, Kruijer, H., Acker, J., Meijer, S. (2012). *Seks onder je 25^e. Seksuele gezondheid van jongeren in Nederland anno 2012*. Delft, Eburon, Rutgers Nisso en Soa Aids Nederland.
- Graaf, H. de, Nikkelen, S., Twisk, D., Van den Borne, M., Meijer, S. (2017). *Seks onder je 25e. Seksuele gezondheid van jongeren anno 2017*. Utrecht; Rutgers en Soa Aids Nederland.
- Gueye, A., Speizer, I., Corroon, M., Okigbo C.C. (2015) *Belief in Family Planning Myths at the Individual and community levels and Modern Contraceptive Use in Urban Africa*. *Int Perspect Sex Reproductive Health* 2015 Dec.; 41(4): 191-199. [Online] <www.ncbi.nlm.nih.gov/pmc/articles/PMC4858446/>.
- Guttmacher Institute (2010) *Facts on the Sexual and Reproductive Health Of Adolescent Women in the developing World*. New York: Guttmacher Institute.
- Guttmacher Institute (2016-I) *Adding it up: Costs and benefits of meeting the contraceptive needs of adolescents in developing regions*. New York: Guttmacher Institute.
- Guttmacher Institute (2016-II) *New Study Examines Why Women in Developing Countries Who Wish to Avoid Pregnancy Do Not use Contraceptives*. [Online] New York: Guttmacher Institute. <<https://www.guttmacher.org/news-release/2016/new-study-examines-why-women-developing-countries-who-wish-avoid-pregnancy-do-not>>.
- Guttmacher Institute (2018) *Future scenarios of adolescent contraceptive use, costs and impact in developing regions*. [Online] < <https://www.guttmacher.org/fact-sheet/adolescent-contraceptive-use-in-developing-regions>>.
- Haberland N., 2015. *The case for addressing gender and power in sexuality and HIV education: A comprehensive review of evaluation studies*. *International Perspectives on Sexual and Reproductive Health* 41(1): 31-42.
- Harvey, S., Thorburn Bird, S., Roberts Branch, M. (2004). *A new look at an Old Method: The Diaphragm*. Guttmacher Institute, Vol. 35, Issue 6, Pages 270-273.
- Hunter, D., Colditz, S., Hankinson, S., Malspeis, D., Spiegelman, W., Chen, M.J., Stampfer, Willett, W. (2010) *Oral contraceptive use and breast cancer: A prospective study of young women*. *Cancer Epidemiology, Biomarkers & Prevention: A Publication Of The American Association For Cancer Research*, Oct; Vol. 19 (10), pp. 2496-502.
- IPPF (2009). *IMAP Statement on contraceptive counselling*, IPPF medical Bulletin, Vol. 43, number 3.
- IPPF (2013). *IMAP Short Statement on the Safety of Third and Fourth Generation Combined Oral Contraceptives*. IPPF Medical Bulletin. [Online] <http://www.ippf.org/sites/default/files/tks_medbulletin_feb13_en_v02.pdf>.
- Jaarrapportage 2016 van de Wet afbreking zwangerschap: Gezond vertrouwen/Inspectie voor de Gezondheidszorg (IGZ)*. Utrecht: Inspectie voor de Gezondheidszorg, 2013. - e40 p.
- Ketting, E. (1982) *Contraception and fertility in the Netherlands*. *International Family Planning Perspectives*. Vol. 8 No. 4. pp 141-147.
- Keulen, H. van, Hofstetter, H., Peters, L., Meijer, S. Schutte, L., Empelen, P. van (2015). *Effectiveness of the Long Live Love Program for 13-14 year old secondary school students in the Netherlands:*

- a quasi-experimental design. Delft Netherlands Organisation for Applied Scientific Research (TNO) in press.
- Kirby, D. (2002). *The impact of schools and school programs upon adolescent sexual behaviour*. The Journal of Sex Research, 39, 27-33.
- Kirby, D. (2007). *Emerging answers: research findings on programs to reduce teenage pregnancy and sexually transmitted diseases*. Washington, DC: the National Campaign to Prevent Teen and Unplanned Pregnancy.
- Kirk, C., Krishnaswami, C., Mesner-hage, K. and Nickalls, S. (2013) *Reproductive Rights Around the World. The complete global map of laws governing abortion and birth control*. [Online]. <http://www.slate.com/articles/news_and_politics/map_of_the_week/2013/05/abortion_and_birth_control_a_global_map.html>.
- Koetsenruijter L. (2015) *Hierdoor zijn de eileidersluisjes van Choice nog niet te koop*. De correspondent.
- Kohler, P.K., L.E. Manhart, W.E. Lafferty (2008), *Abstinence-only and comprehensive sex education and the initiation of sexual activity and teen pregnancy*. Journal of adolescent health. 42: 344-351.
- Lisdonk, J., Dalmijn, E., Cense, M. (2016). *Gewoon gezellig, met zo'n buik. Tienerzwangerschap bij meiden met een licht verstandelijke beperkin.*, Utrecht: Rutgers & Fiom.
- Mannowitz, N., Miller, M.R. and Lishko, P.V. (2017) *Regulation of the sperm calcium channel CatSper by endogenous steroids and plant triterpenoids*. PNAS, Vol. 114, no. 22, pages 5743-5748.
- Marcin, A. (2016). *Is my period heavy because of my IUD?* [Online]. <<http://www.healthline.com/health/birth-control/iud-heavy-period#3>>.
- McDonald, P. (2018). *The Power of choice: reproductive rights and the demographic transition. State of world population 2018*. Rutgers. - New York : UNFPA, 156 p.
- Merki-Feld, G.S., C. Caetano, C.T. Porz, J. Bitzer (2018). *Are there unmet needs in contraceptive counselling and choice? Findings of the European TANCO Study*. European journal of contraception and reproductive health care; Jrg. 23 nr. 3, p. 183-193.
- Miller, K. (2016). *Birth Control & Cancer: Which Methods Raise, Lower Risk*. [Online] <<https://www.cancer.org/latest-news/birth-control-cancer-which-methods-raise-lower-risk.html>>.
- Mills, A., L. Barclay (2006) *None of them were satisfactory: Women's experiences with contraception*. Health care for women international; Jrg. 27 p. 379-398.
- Neef M. de, Dijk, L. van "Het is anders gelopen dan we allebei voor ogen hadden". Rutgers 2010.
- Nikolchev, A. (2010) *A brief history of the birth control pill*. [Online] <<http://www.pbs.org/wnet/need-to-know/health/a-brief-history-of-the-birth-control-pill/480/>>.
- NPR.org (2016) *Male birth control study killed after men report side effects*. [Online] <<http://www.npr.org/sections/health-shots/2016/11/03/500549503/male-birth-control-study-killed-after-men-complain-about-side-effects>>.
- Oringanje, C., Meremikwu, M., Hokehe, Eko, H., Esu, E., Meremikwu, A., Ehiri, J., (2010). *Interventions for preventing unintended pregnancies among adolescents (review)*. The Cochrane Collaboration. John Wiley & Sons.
- Pagano, H., Zapata, L., Berry, N., Curtis., K. (2016). *Safety of hormonal contraception and intrauterine devices among women with depressive and bipolar disorders: a systematic review*. Contraception 2015, 94(6) 641-649.
- Picavet, C. (2016). *The Contraceptive Cycle*. Proefschrift, Utrecht, Rutgers.
- Polis, C., Phillips, S., Hillier S., Achilles, S. (2016) *Levonorgestrel in contraceptives and multipurpose prevention technologies: does this progestin increase HIV risk or interact with antiretrovirals?* AIDS (London, England) [AIDS] Nov 13; Vol. 30 (17), pp. 2571-2576.
- Population Reference Bureau (2011). *Unmet Need for Contraception: Fact Sheet*. [Online] <<http://www.prb.org/Publications/Media-Guides/2012/unmet-need-factsheet.aspx>>
- Population Council (2018) *project nestorone testosterone transdermal gel for male contraception*, New York, PC.
- Rhodes, A. (2016) *Yes, contraceptives have side effects – and it's time for men to put up with them too*. [Online] Independent. <<http://www.independent.co.uk/voices/male-contraceptive-injection-successful-trial-halted-a7384601.html>>.
- Rice, M., Murphy, M., Tworoger S.S. (2012) *Tubal ligation, hysterectomy and ovarian cancer: A meta-analysis*. Journal of Ovarian Research. Volume 5, Issue 13. [Online]

- <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3386864/>>.
- Rijlaarsdam, C. (2015). *Contraceptives, what helps? A qualitative explorative case study on a pilot program, offering birth control to vulnerable groups*, Thesis, Birmingham University, Birmingham.
- Rijlaarsdam, C., Rooij, I. van, Fiedeldeij, C. (2017), *Respectvolle benadering werkt. Kwetsbare vrouwen best over te halen tot anticonceptie*, Maatschappij, Medisch Contact, pag 18-21.
- RIVM, (2016). *Draaiboek consult Seksuele Gezondheid, tabel 10.1*, Bilthoven, VWS.
- Rosenberg, M., Pettifor, A., Miller, W.C., Thirumurthy, H., Emch, M., Afolabi, S., Kahn, K., Collinson, M. and Tollman, S. (2015). *Relationship between school dropout and teen pregnancy among rural South African young women*. Oxford Journals 44 (3): 928-936.
- Rosenthal, M., Ross, J. Bilodeau, R., Richter R. Palley J. (2009), *Economic Evaluation of a Comprehensive Teenage Pregnancy Prevention Program: Pilot Program* American Journal of Preventive Medicine 37(6) Supplement 1:S280-S287
- Scherwitzl, E., Danielsson, K., Sellberg, J., Scherwitzl, R. (2016) *Fertility awareness-based mobile application for contraception*. The European Journal of Contraception and Reproductive Health Care 21, Iss.2,2016.
- Sedgh, G. Ashford, L., Hussain, R. (2016). *Unmet Need for Contraception in Developing Countries: Examining Women's Reasons for Not Using a Method*. - New York : Guttmacher Institute, 93 p
- Shalev, C. (1998) *Rights to Sexual and Reproductive Health – the ICPD and the Convention on the Elimination of All forms of Discrimination Against Women*. CEDAW [Online] <<http://www.un.org/womenwatch/daw/csw/shalev.htm>>.
- Skovlund, C., Morch, L., Kessing, L. Lidegaard, O. (2016) *Association of Hormonal Contraception With Depression*. JAMA Psychiatry. Nov. 1; 73 (11) pp 1154-1162.
- A Technical Guide to Understanding the Legal and Policy Framework on Termination of Pregnancy in Mainland Tanzania*: Briefing paper (2012). New York. Center for Reproductive Rights.
- Trivedi D., F. Brooks, F. Bunn and M. Graham (2009) *Early fatherhood: a mapping of the evidence base relating to pregnancy prevention and parenting support*. HEALTH EDUCATION RESEARCH Vol.24 no.6 Pages 999–1028
- UNFPA, The Danish Institute for Human Rights and United Nations Human Rights (2014). *Reproductive rights are human rights. A Handbook for National Human Rights Institutions*. United Nations. [Online] <<http://www.ohchr.org/Documents/Publications/NHRIHandbook.pdf>>.
- UNFPA (2018). *State of world population 2018, The power of choice, reproductive rights and demographic transition*, New York.
- Trends in Contraceptive Use Worldwide*. (2015)United Nations. [Online] United Nations Department of Economic and Social Affairs <<http://www.un.org/en/development/desa/population/publications/pdf/family/trendsContraceptiveUse2015Report.pdf>>.
- Vargas T. (2017) *Guinea pigs or pioneers? How Puerto Rican women were used to test the birth control pill*. The Washington Post.
- Verdonk, I. (2011). *Ze zeggen dat we het niet kunnen: kinderwens en ouderschap van mensen met een lichte verstandelijke beperking*, Assen, Van Gorkum.
- Vessey, M., Jeates, D., Flynn, S. (2010), *Factors affecting mortality in a large cohort study with special reference to oral contraceptive use*, Contraception, sept. 82(3):221-9.
- Visser, E. de. (2014) *Nieuw voorbehoedsmiddel in de maak: de anticonceptiesluis*. Volkskrant. [Online] <<http://www.volkskrant.nl/magazine/nieuw-voorbehoedsmiddel-in-de-maak-de-anticonceptiesluis~a3795604/>>.
- World Health Organization (2014-I) *Contraception Factsheet Teenage Pregnancies*. WHO: Geneva.
- World Health Organization (2014-II) *Framework for ensuring human rights in the provision of contraceptive information and services*. WHO Document production Services, Geneva, Switzerland.
- World Health Organization (2015) *Medical eligibility criteria for contraceptive use*. Geneva: World health Organization. [Online] <http://apps.who.int/iris/bitstream/10665/181468/1/9789241549158_eng.pdf?ua=1>.
- World Health Organization (2016-I), *Action plan for sexual and reproductive health*. Copenhagen, Denmark.
- World Health Organization (2016-II). *Maternal Mortality Fact Sheet*. [Online]

- < <http://www.who.int/mediacentre/factsheets/fs348/en/>>.
- World Health Organization (2016-III) *WHO releases new fact sheets on adolescent contraceptive use*. [Online].
<<http://www.who.int/reproductivehealth/topics/adolescence/contraceptive-use/en/>>.
- World Health Organization (2017-I) *Family Planning/Contraception Fact sheet*. [Online]
<<http://www.who.int/mediacentre/factsheets/fs351/en/>>.
- World Health Organization (2017-II) *WHO Model Lists of Essential Medicines*. [Online]
<<http://www.who.int/medicines/publications/essentialmedicines/en/>>.
- World Health Organization (2018-I) *Family planning/contraception Key Facts*. [Online]
< <http://www.who.int/news-room/fact-sheets/detail/family-planning-contraception>>.
- World Health Organization (2018-II) *Contraceptive prevalence*. [Online].
<http://www.who.int/reproductivehealth/topics/family_planning/contraceptive_prevalence/en/>.
- World Health Organization (Date Unknown) *What is a health promoting school?* [Online]
<http://www.who.int/school_youth_health/gshi/hps/en/>.