# The Contraceptive Cycle

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ISBN 9789077289082

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# The Contraceptive Cycle

## De anticonceptiecyclus
(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor
aan de Universiteit Utrecht
op gezag van de
rector magnificus, prof.dr. G.J. van der Zwaan,
ingevolge het besluit van het college van promoties
in het openbaar te verdedigen op
vrijdag 27 mei 2016
des middags te 12.45 uur

door

Charles Bernard Cornelis Picavet

geboren op 21 april 1972
te Druten

Promotoren: Prof.dr. E.M. Woertman
Prof.dr. J.B.F. de Wit

# Dankwoord (Acknowledgements)

Mijn moeder was 21 toen ze mij kreeg. Ook in 1972 was dat jong om aan kinderen te beginnen. Gemiddeld waren vrouwen toen 24,5 bij het eerste kind. Ik was zeker wel gewenst, maar toch niet gepland. Tijdens de tienerjaren van mijn moeder was de pil geïntroduceerd en in die beginjaren waren er nog veel vragen en onzekerheden, bijvoorbeeld over effecten op gezondheid. Toch maakte de pil een enorme opmars. In 1976 gebruikte 41% van de vrouwen in vruchtbare leeftijd de pil, vergelijkbaar met het huidige percentage. Tussen 1965 en 1975 is het aantal geboorten daardoor scherp gedaald. Door effectieve anticonceptie kan men nu onbezorgd(er) met elkaar vrijen. De loskoppeling van seks en voortplanting was al gaande, maar heeft een enorme stimulans gekregen door de pil. Het is goed om te bedenken hoe recent dit is gebeurd en de impact die het heeft gehad. Alleen daarom al doe ik graag onderzoek naar anticonceptiegebruik.

Ik wil iedereen bedanken die heeft bijgedragen aan de totstandkoming van dit proefschrift. Voor alles zijn dat mijn promotoren prof.dr. E.M. Woertman en prof.dr. J.B.F. de Wit. Liesbeth en John, misschien was dit proefschrift er ook wel gekomen zonder jullie, maar jullie hebben mij net het zetje gegeven dat nodig was om er eindelijk eens aan te beginnen. Jullie waren niet de meest voor de hand liggende mensen om een promotie over anticonceptiegebruik te begeleiden, maar dat jullie dit voor mij wilden doen, gaf warmte en vertrouwen. Ik herinner mij onze afspraken in de Faculty Club met veel plezier. Als we met elkaar spraken, dan konden er belangrijke stappen worden gezet.

Natuurlijk gaat mijn dank uit naar de overige coauteurs van mijn artikelen: Maaike Goenee, Ciel Wijsen en Ineke van der Vlugt, en naar degenen die hebben meegelezen, meegedacht en commentaar gegeven: Linda van der Leest, Floor Bakker, Elizabeth Westley, Henny Bos, Rens van de Schoot, Nelleke Buijs en Mieke van Kooten Niekerk. Ik heb ook veel gehad aan de commentaren van redacteuren en reviewers van de tijdschriften waarin de artikelen zijn geplaatst. De interesse en aanmoedigingen van familie, collega's en vrienden hebben ook geholpen. Het schrijven zelf is misschien eenzaam werk, maar alles eromheen zeker niet!

Ik heb een groot deel van dit proefschrift geschreven in Egmond. Hele dagen heb ik bij Strandpaviljoen de Schelp gezeten, met stopcontact en wifi (we hadden geen stroom in ons duinhuisje), grote flessen bubbelwater, 'Tapas de Schelp' en

ander lekkers tot mijn beschikking. Zo is schrijven geen beproeving! Zelfs niet op een klein 10 inch laptopje.

Dit proefschrift gaat over vrouwen. De wereld om mij heen bestaat grotendeels uit vrouwen. Daarom gaat mijn dank tot slot uit naar die belangrijke vrouwen in mijn leven. Dat is allereerst mijn moeder. Ik ben net zo trots op haar als zij op mij. Ook zijn dat mijn paranimfen Hanneke en Thea, samen met wie ik me heb ontwikkeld tot de onderzoeker die ik nu ben. En natuurlijk zijn dat mijn lief Floor, en mijn twee supermeiden Sarah en Marijn. Sarah, speciaal bedankt voor figuur 2.1 die jij hebt gemaakt! Jullie hebben het zwaar gehad met me. Een beetje in de tijd dat ik aan dit boek schreef, maar nog veel meer in de tijd daarvóór. Ik ben blij dat ik er weer meer voor jullie kan zijn.

Ik ben trots op dit proefschrift en hoe het tot stand is gekomen. Ik heb het gedaan naast mijn werk, in een tijd dat ik onder meer een bestaan als zelfstandige heb opgebouwd. Maar het schrijven ging als een speer. Dit leverde heel veel energie op, al was het aan het einde nog even ploeteren. Ik ben blij dat het zover is, en zal mijn werk met plezier verdedigen!

Charles Picavet

# Contents

# Chapter 1

# General Introduction

Chapter 1

## 1.1 The Problem of Contraception

Contraceptive behaviour is not regarded as a big problem in the Netherlands. The prevention of unwanted pregnancies in the Netherlands has long been regarded as an example for other countries (Garssen, 2004). The abortion rate in the Netherlands has been among the lowest in Western countries since the early 1970s (Health Care Inspectorate, 2013b; Marston & Cleland, 2003) and teenage pregnancy rates are low as well (Garssen & Harmsen, 2013; Picavet, Tonnon, & van Berlo, 2014; Singh & Darroch, 2000). The image of the Netherlands as exemplar for pregnancy prevention has however eroded over the past years. Abortion and teenage pregnancy rates in the Netherlands have slightly gone up after the mid-1990s, while they dropped in countries around us to comparable levels (Garssen, 2004). In recent years, both abortion and teenage pregnancy rates have gone down again (Garssen & Harmsen, 2013; Health Care Inspectorate, 2013b).

Despite the relatively favourable position of the Netherlands with regard to reproductive health, there is no reason for complacency. Unwanted pregnancies remain common. More than one in eight pregnancies end in an induced abortion (Health Care Inspectorate, 2013b). Many of these pregnancies could have been prevented by using effective contraceptive methods, or by using them more consistently. For example, many users of oral contraceptive pills (OCPs) miss pills regularly. This is true for about one fifth of all users of OCPs (Picavet, 2012). Others do not use any contraception at all, even if they do have sex and do not want to become pregnant. Of all women of reproductive age, this amounts to 9% (Picavet, 2012). These women may risk an unplanned or possibly unwanted pregnancy.

Unintended pregnancies can have serious consequences for women and their families. Adverse effects on antenatal care, breastfeeding, and child nutrition have been observed, as well as relationships with depression, anxiety, and abuse (Gipson, Koenig, & Hindin, 2008). Problems appear to be more pronounced when the pregnancy was unwanted, rather than mistimed (D'Angelo, Gilbert, Rochat, Santelli, & Herold, 2004). There are substantial monetary costs as well. On average, direct medical costs of unintended pregnancies in the United States have been estimated to be US$1609, totalling US$5.0 billion each year (Trussell, 2007). Estimates for the Dutch situation are not available. Although it appears to be important whether pregnancies are intended, not all unintended pregnancies are unwanted. Of all unplanned pregnancies in Western countries, the majority is mistimed, rather than unwanted (Sedgh, Singh, & Hussain, 2014). Furthermore, pregnancies may be welcome, even if they were not planned or intended,

depending on the circumstances (Lifflander, Gaydos, & Rowland Hogue, 2007). Therefore, our focus is on the prevention of unwanted, rather than unintended, pregnancy.

The use of contraception is an effective way to prevent unwanted pregnancy. However, there is not necessarily a direct link between contraceptive non-use and pregnancy. Women may not become pregnant, even if they do not use any form of birth control. Others could get pregnant despite using a contraceptive method correctly and consistently. However, most unwanted pregnancies were caused by using no contraception or using contraceptives incorrectly. Of women seeking abortion in 2011, approximately a third used oral contraceptives, a fourth used condoms, and almost a third did not use any method. Eighty percent of the OCP users and 60% of condom users admitted that the pregnancy was a consequence of their own failure to use their contraceptive correctly (Goenee, Picavet, & Wijsen, 2013).

## 1.2 The Contraceptive Cycle

There are different aspects of contraceptive decision-making and use. Firstly, a woman must be aware of a need for contraception. Then, a choice needs to be made among the many available methods. When the chosen method is being used, this may lead to various experiences, including whether the method can be used correctly and consistently. These experiences could possibly result in a re-evaluation of contraceptive needs and strategies, leading back to the decision to use contraception and method choice. We call this recursive process of contraceptive choices and use the contraceptive cycle, which we use as an organising framework for this thesis (see Chapter 2 for a more comprehensive discussion).

Each of the cycle's stages encompass behavioural aspects. If anything goes wrong with these behaviours, this could lead to an increased risk of unwanted pregnancy. For example, a woman could be unaware of contraception or decide not to use it. If she does intend to use contraception, she may choose a method that does not fit with her wishes or lifestyle. Adherence to the prescribed regimen may then prove difficult, which can result in unwanted pregnancy, especially when she uses a short-acting method such as OCPs or condoms. When something has gone wrong with her regular contraceptive method, a woman can still use emergency contraceptive pills (ECPs) in order to reduce the likelihood of becoming pregnant. However, not all women are willing to take these pills. Lastly, dissatisfaction with a contraceptive method may lead to a switch to less

effective methods, or even to the use of no contraception at all (Rosenberg & Waugh, 1998).

## 1.3 Theoretical Framework

*Health inequities*

There are major public health inequities with regard to reproductive health. Unplanned pregnancy has been related to poorer family socioeconomic outcomes, family functioning, parent-child relationships, and behavioural and educational outcomes (Boden, Fergusson, & Horwood, 2014). In the Netherlands, unwanted pregnancies are especially common in non-Western ethnic groups, particularly those from Caribbean or Sub-Sahara African origin (Goenee et al., 2013). The evidence with regard to poor contraceptive use is not as straightforward, but social disadvantages seem to play a role there as well. See Chapter 2 for a full discussion of socio-demographic differences of contraceptive use.

From a sociological perspective, health disparities have been called 'social patterning' of health across socio-demographic dimensions, particularly gender, age, ethnicity, social/occupational class, marital status, and area of residence (Macintyre, 1986). There are several theoretical approaches to these social patterns of health. The association of health with these dimensions can be spurious relationships – as these differences tend to be inter-correlated with other risk factors. They may also be the result of 'health selection': For example, healthier men and women may find it easier to get a good job or a relationship. However, both these theories have failed to explain the existence of health inequities empirically, which suggests there exists a causal link between background factors and health outcomes. There are two broad theoretical perspectives on these causal relationships. One looks at behaviour and its psychological determinants. The other at structural factors, such as disposable income or living conditions, and the chances and constraints that go with them (McCartney, Collins, & Mackenzie, 2013).

What works in reducing social inequities is unclear. Most research on causes of reproductive health differences focuses on behaviour. Behaviour is indisputably linked to health. For example, unprotected intercourse is related to unintended pregnancy and its negative health consequences. However, the role of behaviour in the development of health inequity is less obvious. Disadvantaged groups tend to be in worse health, seemingly regardless of behavioural differences. Moreover, a focus on behaviour fails to recognise the background of unhealthy behaviours.

Therefore, structural changes seem to be required, narrowing income differences and democratising power (McCartney et al., 2013). However, the impact of policies to this effect has not been well substantiated. Actually, health differences in modern welfare states have not disappeared and are widening again since the second half of the 20th Century (Mackenbach, 2012). Even if structural differences are the root cause of health inequity, behavioural factors can still be relevant. Behaviour may not fully mediate the link between social status and health, but it still accounts for a part of this relationship. It may therefore be suitable to target behaviour with health interventions.

*Behaviour change*

If behaviour should be changed in order to improve health and reduce health inequities, effective interventions are needed. Intervention Mapping provides a framework for the systematic development of preventive health programmes (Bartholomew, Parcel, Kok, Gottlieb, & Fernández, 2011). Its premise is that behaviour cannot be influenced directly, but its causes and determinants are changeable. Interventions have been found to be more effective if they were produced in a planned and systematic manner. Intervention Mapping describes this process in six steps: (1) needs assessment, (2) development of programme objectives, (3) the selection of theory-based intervention methods, (4) the production of the programme, (5) implementation, and (6) evaluation (Bartholomew et al., 2011).

Whereas the first step of Intervention Mapping is conceived to follow the PRECEDE part of Green and Kreuter's (2005) PRECEDE-PROCEED model, it's generally not theory-driven. It is an open-ended exploration of the health problem, the actors involved (epidemiological analysis), and its related behavioural and environmental conditions (behavioural and social analyses). For example, with regard to unwanted pregnancy, behaviours that could contribute to this health problem should be explored. Correct and consistent use of reliable contraceptive methods is the most effective preventive behaviour with regard to pregnancy. However, birth control entails an array of necessary behaviours, each of which may go wrong, for example choosing a reliable method or following its prescription. In addition to getting grips on which behaviour needs to be targeted, it is also important to know which are the populations at risk. This first step results in specific performance objectives, which are the behavioural and environmental targets that need to change in order to improve health. Theory does play a more dominant role in the following steps.

In step 2, programme (or change) objectives are developed by crossing the performance objectives with theory-based determinants of these targets in a matrix (Bartholomew et al., 2011). For example, a performance objective may be to go to a doctor for advice on which contraceptive method to choose. The social norm, an element of the Theory of Reasoned Action and the Theory of Planned Behaviour (Ajzen, 1991; Fishbein & Ajzen, 2010), may be perceived as negative toward going to a doctor. A programme objective would then be to convince women that others think positively about going to the doctor for advice.

The first and to a lesser degree the second Intervention Mapping steps are the focus of the studies in the current thesis. Therefore, the actual development of programmes, and its implementation and evaluation are beyond the scope of this thesis. However, to take the example about going to the doctor further, in the third step, it may be decided to provide women with role models who express positive feelings about asking the doctor for advice. This method may be integrated in a media campaign in the fourth step. The fifth and sixth steps pertain to planning the implementation and the evaluation of this media campaign. The evaluation may look at whether women's perceived social norm improves because of the campaign, or perhaps even whether they are less likely to experience an unwanted pregnancy.

*Behaviour change theories*

Intervention Mapping itself is not a theory. It is a protocol which programme developers and researchers can use, but it does not prescribe which theoretical perspective or perspectives can be selected for a specific intervention (Bartholomew et al., 2011). There is a large number of behaviour change theories. Many of these theories focus on the individual, particularly on his or her cognitions and motivations. A widely used example of this approach is the Theory of Planned Behaviour (Fishbein & Ajzen, 2010). In this theory, intention is considered the most proximal predictor of any given behaviour. In turn, intention is determined by the attitude toward this behaviour, social norms, and the perception of behavioural control. All these determinants consist of beliefs. The link between intention and behaviour is moderated by whether people actually do have control over their behaviour.

There has been considerable criticism of the Theory of Reasoned Action/Theory of Planned Behaviour. In a recent editorial, Sniehotta, Presseau, and Araújo-Soares (2014) argue that the theory deserves to be retired. They acknowledge that the theory has had its use to move the field beyond the view that behaviour simply reflects attitudes, but that it is no longer useful. Some of its basic

premises have been shown to be incorrect, the theory is static, and it does not specify how to actually change behaviour. They suggest that the constructs of the Theory of Reasoned Action/Theory of Planned Behaviour should be incorporated in broader theoretical approaches. An example is the Integrated Behaviour Change model of Hagger and Chatzisarantis (2014). They integrated newer approaches with the components of the Theory of Reasoned Action to model physical activity.

According to Sniehotta and colleagues (2014), a range of recent alternative theories could present novel insights into behaviour and behaviour change, such as an emphasis on non-conscious processes (Sheeran, Gollwitzer, & Bargh, 2013) or self-regulation (Hagger, Wood, Stiff, & Chatzisarantis, 2010). The application of these (or even the older) theoretical perspectives on the prevention of unwanted pregnancy and contraceptive use is largely absent.

*Ecological and multi-system perspectives*

An approach that has gained increasing attention over the last two decades, but that was not mentioned by Sniehotta and colleagues (2014), is the socio-ecological approach. This perspective focuses on the influence of the environment on behaviour. In an adaptation for health promotion, six ecological levels are distinguished: individual, interpersonal, organisational, community, society/policy, and supranational levels. Interventions may focus on specific agents at each level, who control environmental conditions. If health promotors choose to target environmental factors, these should ultimately influence the individual's behaviour (Kok, Gottlieb, Commers, & Smerecnik, 2008). Such an approach does more justice to the complexities associated with health-related decision-making than a simple focus on the individual.

With respect to reproductive health, factors at different ecological levels may play a role. At a societal level, policies ensuring reproductive rights do not seem to lead to lower mortality among women, but they are related to less impairments in mental health, such as depressive symptoms, and to reduced infant mortality (Borrell et al., 2014). At a community level, availability of and access to contraceptives is a major factor in sustaining contraceptive use and family planning (Bachrach, Compernoll, Helfferich, Lindahl, & van der Vlugt, 2012). At the level of organisations, this may be reflected in school-based clinics and condom-availability programmes. However, the impact of these policies and services is unclear (Kirby, 2002). On an interpersonal level, power relations are relevant. For example, the association of condoms with male control is a reason

for not using these contraceptives (Williamson, Parkes, Wight, Petticrew, & Hart, 2009).

The ecological model has been applied to sexual and reproductive health behaviour earlier. Kotchick, Shaffer, and Forehand (2001) have used the ecological perspective to organise evidence about adolescent sexual risk-taking. Their multi-system approach distinguishes the self-system from the familial and extrafamilial systems. The self-system includes biological factors, such as age or ethnicity; psychological factors, such as attitudes; and behavioural factors, like delinquency and substance use. Both the familial and extrafamilial systems should be placed in the interactive level of Kok et al. (2008). The classification of Kotchick and colleagues (2001) has been devised for understanding adolescent behaviour. More suited for an adult population is the classification of van Lunsen and van Dalen (2007). They distinguish between individual, interactional, and environmental factors, giving prominence to the role of the partner in decision-making with regard to contraceptive use. Their environmental factors encompass everything from the organisational to the supranational levels of Kok et al. (2008).

*Conclusion*
Social inequities persist in many health domains. Advancing health and simultaneously reducing inequities is a challenge. We need to be modest in the pretence of reducing health inequities with behavioural interventions alone. These should always be accompanied with changes in the distribution of resources and access to health. However, behavioural interventions have been shown to have an impact when their development was carefully planned. This should start with a thorough needs assessment, including a specification of the problem, related behavioural and environmental factors, and which groups are most at risk. After this, an analysis of behavioural determinants should contribute to an understanding of the change objectives of an intervention. These determinants may be derived from any number of theories that could be applicable to the behaviour which needs to be changed. Furthermore, it is important to address the problem at different ecological levels, in order to effectively change the environment of the target group, as well as their cognitive determinants.

## 1.4 This Thesis

Contraceptive use of Dutch women will be investigated with the purpose of providing insight in contraceptive decision-making and use. This insight could be used by practitioners and developers of behavioural interventions in the field

of contraception to help women improve their choices and behaviour. We focus on contraceptive use of women. Although men have their own reproductive needs and desires (Picavet, 2009), their contraceptive options are more limited, only condoms or vasectomy. Approximately 20% of women who use contraception report one of these methods as their primary method of birth control (Picavet, 2012). For women, there are many more options with regard to contraceptive methods (Scott & Glasier, 2006), leading to diverse patterns of contraceptive decision-making and use. In this thesis, we aim to shed some light on these patterns among Dutch women.

In the chapters that follow, one literature review and five empirical studies are presented. Each of these six studies has its specific research questions, which reflect different aspects of three overarching questions that will be addressed.

The first research question is what contraceptive behaviours exist which are suboptimal for the prevention of unwanted pregnancy. This is the behavioural analysis of Intervention Mapping step 1. The behaviours that we investigated are based on the contraceptive cycle, in particular contraceptive method choice, correct versus incorrect use, and use of ECPs as a backup option.

The second question is which women could best be targeted by interventions to improve their contraceptive decision-making and use. For this purpose, we assessed social-demographic characteristics of women who use different contraceptive methods, those who have difficulty using contraception correctly, and women who have abortions more than once. This belongs to Intervention Mapping step 1 as well. It entails the epidemiological analysis of the problem.

The third and last research question is which social cognitive factors could be influenced to improve contraceptive use. This is part of Intervention Mapping step 2, in particular the analysis of which determinants are relevant for changing the target behaviour.

Quantitative methods were used for all empirical studies in this thesis. In all but one of these studies, data from web-based surveys were analysed. Three of the studies used data from the Sexual Health in the Netherlands Surveys from 2009 and 2011, which are representative for the Dutch population on a few key demographics. The study on contraceptive decision-making used data from a non-representative convenience sample. Research showed that the diversity of Internet samples does not compare unfavourably to other samples. Moreover, findings of web-based studies are consistent with those which used traditional

paper-and-pencil methods of data collections (Gosling, Vazire, Srivastava, & John, 2004). The last empirical study used registration data from ten abortion clinics.

The use of data from the Sexual Health in the Netherlands Surveys has great advantages. The size and representativeness of the samples make it possible to generalise findings to the Dutch population as a whole. The abortion registration data may not be representative, but the sample is even larger and migrants are better represented in these data, allowing for comparisons between migrant groups. A disadvantage of using these data is that there was little room for additional questions in the surveys. Therefore we could not include questions about many theoretically relevant determinants of behaviour. This resulted in our focus on step 1 of Intervention Mapping (the first two research questions). Where possible, we included an analysis of possible social-cognitive determinants of behaviour, which is part of the second step of Intervention Mapping.

*Outline of the thesis*

First, in Chapter 2, the contraceptive cycle is investigated. This literature review provides an overview of what is known about each element of the contraceptive cycle in the Netherlands, compared to the United States. The first research question regarding contraceptive behaviour problems is addressed by investigating contraceptive choices and use patterns. What is known about risk groups is summarised in order to answer the second research question. Addressing the third research question, about which social-cognitive factors may be related to improved contraceptive choices and use, correlates of problematic contraceptive behaviour are investigated. Also, the effectiveness of previously developed preventive strategies is examined.

Chapter 3 is about what women find important about contraception and how this relates to the method they use. This study addresses the first question, about which contraceptive choices might be problematic, as well as the second, which is about the social-demographic characteristics of women. It is based on a convenience sample of 1184 women, mainly recruited through ads on websites and discussion platforms. We compare women who use different methods regarding what they found important about contraception at the time they chose their current method, as well as regarding their current evaluation of this method. Whether women who evaluate their method positively found other aspects of contraception important at the time of their decision than those with a negative evaluation of their method was investigated as well.

In Chapters 4 and 5 we focus on OPCs, the most widely used contraceptive in the Netherlands, and examine patterns of use and correlates of inconsistent use. Both studies are based on data from the 2011 Sexual Health in the Netherlands Survey. In Chapter 4 we investigate how many women miss pills and their social-demographic characteristics. Whether social-demographic differences (research question 2) between women who did and those who did not miss pills were related to social cognitive differences (research question 3) was investigated with a mediation analysis. The pill-free interval is the topic of Chapter 5. Women who use OCPs traditionally take one pill each day for 21 days, followed by a seven day pill-free interval. There is no medical necessity to have a pill-free interval, and skipping it may reduce the likelihood of getting pregnant when one or a few pills are missed. We examine how many women regularly skip intervals, and the social-demographic profile of these women, addressing the first research question.

The focus of the subsequent two chapters is on what women can do if something goes wrong with contraception. In Chapter 6, women's intention to use ECPs is investigated using data from the 2009 instalment of the Sexual Health in the Netherlands Survey. In addition to the second research question about social-demographic characteristics of women, the third research question is addressed. In particular, the study investigates whether better knowledge of ECPs is related to a greater willingness to use them. In Chapter 7, social-demographic characteristics and use of contraception of women who had a repeat abortion were compared with those of women who had a first abortion. For this study, abortion registration data were collated from ten clinics, representing 64% of all abortions in the Netherlands in 2010.

# Chapter 2

# The Contraceptive Cycle: Improving Contraceptive Choices and Use

This chapter is based on the following publication:
Picavet, C., de Wit, J. B. F., & Woertman, E. M (2014). The contraceptive cycle: Improving contraceptive choices and use. In L. Bourgois, & M. Cauchois (Eds.), *Contraceptives: Role of cultural attitudes and practices, predictors of use and levels of effectiveness* (pp. 131-156). Hauppauge, NY: Nova Publishers.

## Abstract

In this literature review, we explore contraceptive choices and use by women. Many women do not use any form of contraception, choose less effective methods, or use their chosen method incorrectly. Possible behaviours that could be targeted to improve contraceptive use and efficacy are described. Data from population studies in the US and the Netherlands provide insight in the extent of poor contraceptive use. Other studies about contraception, such as intervention studies, provide a broad overview of possibilities for behaviour change. In addition to prevalence, demographic profile of women at risk of unwanted pregnancy through suboptimal contraceptive use and determinants of risk behaviour are explored. Implications for behavioural interventions are considered, as well as possibilities for further research.

## 2.1 Introduction

> *"I was using condoms only when I first started having sex and then decided to get pills my freshman year of college. I took them for a year and a half. They were giving me headaches and making me have worse cramps but that's not why I stopped taking them, I just didn't like taking them."*
> (20-year-old mother of one child, from Kendall et al., 2005)

Unwanted pregnancies are a personal concern for those women who have them and their partners, as well as an important societal concern. The most effective way of reducing unwanted pregnancy is to use reliable contraceptives. Almost all people have a desire to control their fertility at some point in their lives. In Western countries, many women use reliable, reversible methods of contraception, often for prolonged periods of time. The main reason for using contraception is to be able to have sexual intercourse without the need to worry about pregnancy. Other benefits of contraception may play a role as well, like hormonal control of acne or menstrual problems.

*The Contraceptive Cycle*

When a woman wants to start with contraception, she needs to decide what method to use and do so as prescribed. This proves to be difficult for many women, which is when backup options need to be considered. Within five days after unprotected intercourse, emergency contraception is possible. When this period has expired, the only alternative is to wait and see whether a pregnancy occurs. Contraceptive needs and desires change over time. When earlier decisions are evaluated, previous experiences with contraception may be taken into account. Other relevant concerns are sexual behaviour, relationship characteristics, and child wish. This reflects that contraceptive decision-making is not a once in a lifetime phenomenon. It is a dynamic process dependent on life stage, situation, experiences, knowledge and new information (Free, Ogden, & Lee, 2005). We call this process the contraceptive cycle (Figure 2.1).

Contraceptive use can still be improved considerably, despite enormous progress that has been made since 'the pill' was introduced. Many women do not use any form of contraception, use less effective methods, or use their chosen method incorrectly. This can lead to unwanted pregnancy. Women from certain backgrounds, particularly from ethnic minorities, are at increased risk of unwanted pregnancy. However, particular risk groups may vary across the contraceptive cycle, as well as predictors of poor contraceptive behaviour. For example, predictors of nonuse may differ from those of poor adherence.

Moreover, the reasons for increased risk of unwanted pregnancy may be different for different socio-cultural groups.

Reducing the number of unwanted pregnancies is important. When women have children while this was not intended, adverse maternal behaviours include inadequate or delayed initiation of prenatal care, smoking and drinking during pregnancy, and lack of breast-feeding. This could lead to negative physical and mental health effects on children (Barber, Axinn, & Thornton, 1999; Dott, Rasmussen, Hogue, & Reefhuis, 2010; Dye, Woitowycz, Aubry, Quade, & Kilburn, 1997; Hellerstedt et al., 1998; Mayer, 1997; Taylor & Cabral, 2002). Every pregnancy and delivery may involve medical complications. Excluding the 33% of caesarean births, more than one in four US births are associated with at least one complication, including obstetric trauma and laceration (8%), infection (6%), haemorrhage (4%), gestational diabetes (4%) and severe preeclampsia and eclampsia (1%) (Speidel, Rocca, Thompson, & Harper, 2013). The medical costs involved in unintended pregnancy are conservatively estimated to be US$4.6 billion annually in the US (Trussell et al., 2013).

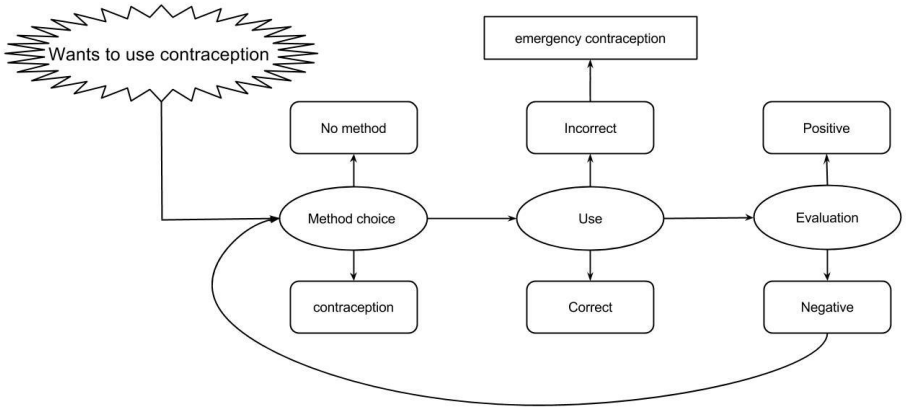


**Figure 2.1** The contraceptive cycle.

Consequences of unintended pregnancy may be especially severe when the pregnancy occurs at a young age. Adolescent mothers tend to be from disadvantaged backgrounds and raising children often interferes with their education and economic prospects (Fergusson, Boden, & Horwood, 2007; Kiernan, 1997). Teenage pregnancy is related to depression, insecure attachment styles, external locus of control and low self-efficacy (Figuerido, Bifulco,

Pacheco, Costa, & Magarinho, 2006). In addition to these negative consequences for teenage mothers, there is evidence that their children are likely to suffer numerous health and psychosocial disadvantages as well (Jaffee, Moffitt, Belsky, & Silva, 2001).

In this chapter, we review possible target behaviours for behavioural interventions to improve contraceptive use. We describe their respective risk groups and determinants, as well as results of existing interventions. Contraceptive use and reproductive health in the United States (US) and the Netherlands are used as background for this overview. These countries are of interest, because they are very different with regard to reproductive health, such as the number of teenage pregnancies and abortions (Bachrach et al., 2012). Most research (by far) on contraceptive decision-making and use has been done among women. Therefore, the focus in this chapter is on women, although men have reproductive health needs as well and many of them use contraception (particularly condoms and withdrawal, but also vasectomy) (Picavet, 2009). After a general introduction about contraceptive use and unwanted pregnancy in the US and the Netherlands, each stage in the contraceptive cycle is discussed in turn. In conclusion, recommendations for behavioural interventions and future research are formulated.

*Contraception and Unwanted Pregnancy in the US and the Netherlands*

Most women in Western countries use contraception. Of all American women who ever had intercourse, 99% used at least one form of contraception during their lives, most often oral contraceptive pills (OCPs) (82%). Currently, 62% of all women between ages 15-44 use any contraception. In addition to OCPs, sterilisation (male and female), and condoms are the most used methods (Mosher & Jones, 2010). The proportion of women who use contraception in the Netherlands is similar to the US. In the Netherlands, 60% of women use contraception (Picavet, 2012). However, the method mix is different (Table 2.1). In the Netherlands, OCPs are even more popular than in the US. Of women using any form of contraception, 53% use OCPs as their main method. In the US, this percentage is only 28%. Intrauterine devices (IUDs) are also used more often than in the US (14% versus 6% of contraception users). In the US, women are more likely to use barrier methods like condoms and diaphragms and less reliable methods like withdrawal. Women in the US are also more likely to be sterilised (Mosher & Jones, 2010; Picavet, 2012).

Despite widespread contraceptive use, unwanted pregnancy is common, as is evidenced by a high number of abortions. In Europe, the abortion rate per 1,000

women varies from 6.8 in Switzerland to 20.8 in Sweden. The US has a high abortion rate of 19.6, while the rate in the Netherlands (8.5) is among the lowest in the world (Health Care Inspectorate, 2013b). In the US, approximately half of all pregnancies are unintended, and half of these end in abortion (Finer & Henshaw, 2006). Even in a country like the Netherlands, which has a low abortion rate, more than one in eight pregnancies end in abortion (Health Care Inspectorate, 2013b). The difference between the US and the Netherlands is even more pronounced when teenage pregnancies are considered. In the Netherlands, there are relatively few teenage pregnancies. Every year, 12 of every 1,000 girls under 20 become pregnant. Approximately two thirds of these pregnancies end in abortion (Picavet et al., 2014). In the US, the pregnancy rate among teenagers is 74, more than six times as high as in the Netherlands. Of these pregnancies, 82% are unintended (Finer & Zolna, 2011).

**Table 2.1** Women's contraceptive use and nonuse in the United States and the Netherlands

| | The US[1] (%) | The Netherlands[2] (%) |
|---|---|---|
| **Contraceptive use** | | |
| OCPs | 17.3 | 31.7 |
| Ring, patch, implant | 2.2 | 1.3 |
| Injectable | 2.0 | 1.4 |
| IUD | 3.4 | 8.3 |
| Condoms | 10.0 | 6.2 |
| Female sterilisation | 16.7 | 3.2 |
| Male sterilisation | 6.1 | 6.2 |
| Other methods | 4.0 | 1.5 |
| Total contraceptive use | 61.8 | 59.6 |
| **Nonuse** | | |
| No intercourse | 19.2 | 20.5 |
| Pregnant or seeking pregnancy | 9.5 | 11.0 |
| Sterile | 2.1 | ? |
| Other | 7.3 | 8.8 |
| Total contraceptive nonuse | 38.2 | 40.4 |

1 National Survey of Family Growth 2006-2008 (Mosher & Jones, 2010)
2 Sexual Health in the Netherlands 2011 Survey (Picavet, 2012)

Policies and sexual and contraceptive behaviour in the US and four European countries, including the Netherlands, have been compared. It was concluded that

the main reason for a higher teen pregnancy rate in the US is differences in contraceptive use, particularly the method mix. In turn, other factors may explain the difference in contraceptive use and unintended pregnancy. These include a more problem- and risk-focused attitude toward sexuality and a higher number of people living in poverty in the US. In Europe, universal health care and faster access to services contribute to low rates of unintended pregnancy (Bachrach et al., 2012).

## 2.2 Contraception or no Contraception, That's the Question

The main precondition for entering the contraceptive cycle is that a woman wants to start using contraception. Women's reasons to use birth control include not being able to afford a baby, not being ready for children, feeling that having a baby would interrupt the women's goals, and wanting to maintain control in their lives. Women report that using birth control helps them to take better care of themselves or their families, support themselves financially, complete their education, or get or keep a job (Frost & Lindberg, 2013). However, not all women who wish to prevent pregnancy are willing to use contraception, although most are.

The main reasons for not using contraception are similar for women in the US and women in the Netherlands (Table 2.1). One in five women have not had sex in the preceding three months and therefore do not use contraception. A further 10% are pregnant or desire to become pregnant. In the US, sterility was assessed and 2.1% were proven sterile, either surgically or non-surgically. Similar data are unavailable for the Netherlands. For the remaining 8%, no sound reason for not using contraception could be established. These are women who do not want to become pregnant, do have sexual intercourse, but do not use any form of contraception. Therefore, they may be at risk of unwanted pregnancy (Mosher & Jones, 2010; Picavet, 2012).

Self-reported reasons for refraining from contraceptive use vary. In a Dutch survey, an implicit child wish, religious concerns, negligence, and practical barriers like costs were mentioned (Wijsen & Zaagsma, 2006). An American study shows that knowledge is an important predictor of contraceptive use. Among unmarried women aged 18–29, for each correct response on a contraceptive knowledge scale, the odds of currently using a hormonal or long-acting reversible method increased by 17%, and of using no method decreased by 17% (Frost, Lindberg, & Finer, 2012). Qualitative studies among American women provide additional reasons. Women may feel invulnerable to pregnancy and have an unrealistic optimism regarding risk. Others may actually feel excited about the

risk involved in unprotected intercourse. There were also reasons that were specific to certain methods. With regard to condom use, interpersonal factors may play a role. Men are perceived to be adverse to condom use. Therefore, women may find it difficult to bring up the issue. Condom breakage is something many women have experienced. Moreover, in ongoing relationships, some women view condoms as a barrier to intimacy. Barriers to the use of hormonal contraceptives are the experience of side-effects and the worry that 'unnatural hormones' may cause harm in (as yet) unknown ways (Free et al., 2005; Mills & Barclay, 2006).

Ethnicity or race is related to contraceptive nonuse. In the Netherlands, this is the only relevant demographic characteristic: Women of Turkish and Moroccan descent are less likely to use any form of contraception than Dutch-native women (Picavet, 2012). Women of Caribbean (Surinamese or Dutch Antillean) origin are as likely as Dutch-native women to use contraception. In the US, black and Hispanic women more often use no contraception than white women. An age over 35, a lower level of education, no insurance, and a low frequency of intercourse are also related to no contraceptive nonuse (Frost, Singh, & Finer, 2004). Moreover, American teenagers are unlikely to use contraception. Although there are no differences in age of sexual initiation or sex frequency between Dutch and American teenagers, 48% of Dutch teenagers use contraception, whereas only 28% of teenagers in the US use any form of contraception (Bachrach et al., 2012; Mosher & Jones, 2010; Picavet, 2012).

There is very little research into factors that can be influenced to decrease contraceptive nonuse. Risk perception and future aspirations seem to be important. Women, who believe they have a low risk of pregnancy, are less likely to use contraception (Jones, Darroch, & Henshaw, 2002). The use of contraception is better among adolescents who want to go to or finish college, compared to their peers (Imamura et al., 2007). Women who use no contraception are likely to be either more positive or ambivalent about getting pregnant. More of them would be pleased if they were pregnant and they find avoiding pregnancy less important. They also have less access to contraceptive service providers (Frost et al., 2004).

*Sexuality Education*

The most important strategy to stimulate women to use contraception when they have sex, is comprehensive sexuality education. This type of intervention is typically aimed at adolescents, often in a school setting. These programmes seek to prevent teenage pregnancy through promoting abstinence when girls are

**Box 2.1.** Effective elements of sexuality education

**In the process of developing the curriculum, effective programmes:**

- Involved multiple experts in theory, research, and sexuality education;
- Assessed needs and assets of the target group;
- Used a logic model approach to specify health goals, behaviour affecting health, protective and risk factors, and activities to change these factors;
- Designed activities consistent with community values and resources;
- Pilot-tested the programme.

**With regard to the content of the curriculum, objectives of these programmes:**

- Focused on clear health goals, such as pregnancy prevention;
- Focused narrowly on specific types of behaviour, had clear messages, and addressed situations in which behaviour change may be difficult;
- Addressed psychosocial determinants of behaviour, such as attitudes.

**Activities and teaching methodologies:**

- Created a safe social environment for adolescents to participate;
- Included multiple activities to influence protective and risk factors;
- Actively involved participants, and helped them to personalise the information;
- Were appropriate to the participants' culture, developmental age, and sexual experience;
- Covered topics in a logical sequence.

**And the process of implementing the curriculum:**

- Secured support from appropriate authorities;
- Selected, trained and supported educators;
- If needed, implemented activities to recruit and retain participants;
- Implemented virtual all activities with reasonable fidelity.

(Adapted from Kirby, 2007)

not yet sexually active, or promoting correct and consistent use of contraceptives for sexually active girls. Abstinence programmes appear to have no effect on delaying sex. Most programmes to encourage contraceptive use combine pregnancy and sexually transmitted infection (STI) prevention. These are more likely to be effective than abstinence programmes, even with regard to delaying sex. About half of the interventions result in delayed initiation of sex and reduce the number of sexual partners, and more than a quarter reduce sex

frequency. Also, half of the interventions that measured condom use reported an increase. The uptake of other contraceptives has been studied less extensively, but this is increased by half of the relevant interventions as well. However, the effects of even the most effective programmes were modest. Nevertheless, seventeen characteristics of effective interventions were identified. Programmes that incorporate more of these characteristics are more effective than other programmes. For an overview, see Box 2.1 (Kirby, 2007).

In addition to educational interventions for adolescents, other types of interventions have been tried out as well, particularly aimed at improving services. For example, providing contraceptives outside usual health care settings or counselling. While a counselling intervention did not produce any improvement in contraceptive use, two interventions that provided contraception did have short-term effects. None of these programmes reduced pregnancy (Jones et al., 2002). Similarly moderate results are found in studies on contraceptive services in educational settings. It appears that intensive case management is required to prevent unwanted pregnancy, as well as on-site availability of contraceptives (Blank, Baxter, Payne, Guillaume, & Pilgrim, 2010).

## 2.3 Which Method?

When a woman (or girl) has decided to start contraception, she needs to choose a method. Nowadays, there are many reliable contraceptive options for women (for an overview, see Figure 2.2). For men, the only reversible and more or less reliable option is to use condoms. Women can choose between many forms of hormonal contraception, each with its own way of releasing hormones to the woman's body. Alternatives are barrier contraceptives like diaphragms and condoms, and long-term non-hormonal contraceptives like copper IUDs and sterilisation. Nevertheless, for many women, the choice is one between only unsatisfactory alternatives, particularly because of side effects. Use of hormones feels 'unnatural' for some women, condoms are unpopular, and IUDs and other methods suffer from unfamiliarity and negative press (Mills & Barclay, 2006).

The choice for a particular method may depend on a variety of factors. Reliability is an important concern for many women who use contraception. Modern contraceptives are very reliable, when used correctly and consistently. Perfect use failure rates for hormonal methods, copper IUD, and male and female sterilisation are below 1%. Failure rates during typical use are higher, especially when reliability depends on user adherence. Because of this, long-acting methods are the most effective, followed by shorter-acting hormonal methods.

Methods that need to be used every time during intercourse, like condoms and fertility awareness methods, are less reliable in practice (Trussell, 2011).

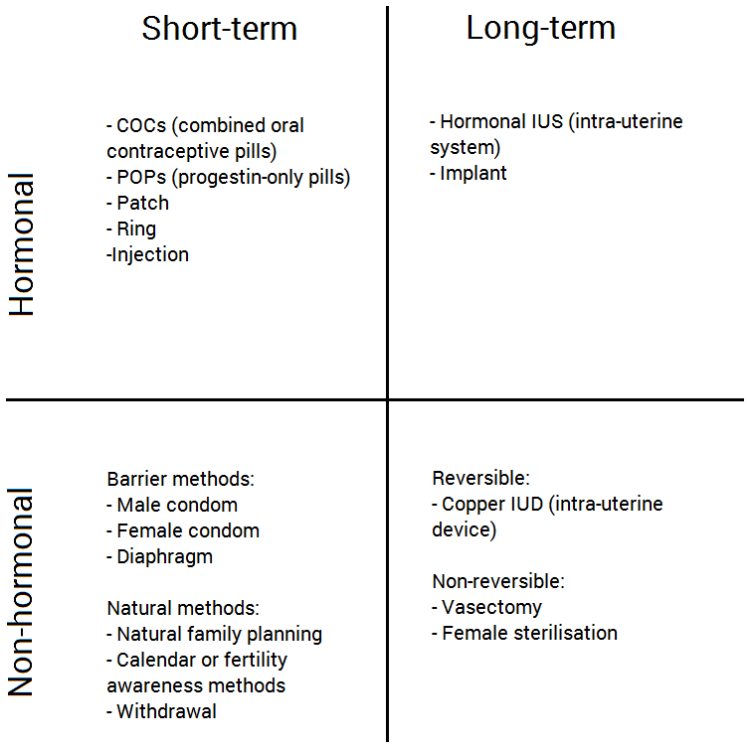


**Figure 2.2** Overview of contraceptive methods

However, reliability is not the only concern that may be of importance for women. Otherwise the most reliable methods would be best for all women. Other considerations may lead to different choices, balancing the various and sometimes opposing needs of women. For example, women may not feel comfortable with the insertion of long-acting methods or they may object to using hormonal methods, even though these methods are the most reliable ones.

What is deemed important about contraception does not need to be constant. Needs may shift over time. These are reflected by changes in which methods are used across age groups. Young people, both in the US and in the Netherlands, who initiate having intercourse almost always choose OCPs and/or condoms. Other methods come into focus before the age of 30, particularly the hormonal

IUS (intrauterine system). After the age of 40, sterilisation and other long-term methods become very prominent. In the US, sterilisation is the most-used method by this age, but in the Netherlands OCPs remain the method of choice for most women (Mosher & Jones, 2010; Picavet, 2012).

In qualitative studies from the beginning of the 1990s, women from ethnic minorities report more worries about contraception than women from Dutch-native origin. OCPs are the most acceptable method, even though women are uncomfortable to use hormones. The acceptability of all other methods is almost zero (Lamur, Makhan, Morsink, & Rebsaet, 1990; Mouthaan & De Neef, 1992). More recent data on women's attitudes are absent, but ethnic minority women do not currently use substantially different methods from women of Dutch origin. They are marginally less likely to use dual methods and vasectomy, and more often use withdrawal and copper IUDs (Picavet, 2012). In the US, the main difference between white and other women is that white women use OCPs more often. Furthermore their partners are more likely to have had a vasectomy (Mosher & Jones, 2010).

*Support for Decision-Making*

The World Health Organisation (WHO) has developed a decision making tool to assist contraceptive service providers with their counselling (WHO & The INFO Project, 2005). The tool has been shown to improve the quality of counselling. More information is given about a wider range of contraceptives and the clients are more involved in the decision-making process (Kim et al., 2005). However, two studies did not find any improvement in contraceptive use after receiving counselling with the tool. Women who received such counselling were no more likely to initiate using contraception, use more effective methods, or continue using contraception. Unexpectedly, the women in the control group of one of these studies, receiving usual care, report higher rates of contraceptive use. Therefore, using the tool may even have undesirable effects. However, the women who were counselled with the aid of the decision-making tool did have better counselling experiences. They report receiving more information on how to use their method, and about advantages and disadvantages of the method (Chin-Quee, Janowitz, & Otterness, 2007; Langston, Rosario, & Westhoff, 2010).

In addition to the extensive WHO tool, a wide variety of informative websites, brochures and leaflets have been developed in order to assist women in their contraceptive decision-making. These typically have not been evaluated. One study compared counselling pregnant women and giving them an information leaflet, hypothesizing that counselling is more effective. Of the women in this

study, 92% intended to use contraception and 27% were unsure of which method to use. Yet, at six to nine months after delivery, only 80% used any form of contraception and 69% a highly effective method. There was no difference between the women who received counselling and those who received a leaflet (Akman, Tüzün, Uzuner, Basgul, & Kavak, 2010).

There are a number of decision aids available online, which usually have not been evaluated. One evaluation study exists of a computerised decision-aid, which was tested in family planning clinics before the introduction of modern hormonal methods such as ring, patch, implant and IUS. It was found to improve short-term contraceptive knowledge and uptake among adolescents, and their knowledge remained better at one year follow-up. However, continuation at follow-up and pregnancy rate were not improved (Chewning et al., 1999).

The high level of contraceptive failure when OCPs and condoms are used, is seen as a reason to induce women to change methods. This is most pressing in countries where the number of unwanted pregnancies is high, like the US. Especially long-acting reversible contraceptives (LARCs) are being promoted in order to reduce contraceptive failure and unwanted pregnancy. The contraceptive CHOICE project aims to promote LARCs by removing knowledge and financial barriers. By result, women are likely to choose LARCs when they receive information on these methods and when all contraceptives are offered without costs, which leads to a reduction in the number of unwanted pregnancies and abortions (McNicholas, Madden, Secura, & Peipert, 2014; Secura, Allsworth, Madden, Mullersman, & Peipert, 2010).

## 2.4 Correct and Consistent Use

When long-acting contraceptives are used, like IUDs and implants, little can go wrong using them. However, for many contraceptive methods, correct and consistent use is essential. Especially among teenagers, use of such user-dependent methods is high. In the US, almost all sexually active girls have used condoms (96%). The other popular methods in the US are withdrawal (57%) and OCPs (56%) (Martinez, Copen, & Abma, 2011). In the Netherlands, teenagers use OCPs and condoms almost exclusively (de Graaf, Kruijer, van Acker, & Meijer, 2012; Picavet, 2012). Women who use OCPs may forget to take pills on time, placing them at risk. In the case of condoms, they may break or slip off, but more importantly, they may not be used consistently during every act of intercourse. Withdrawal has particularly low efficacy in practice, because withdrawal often occurs too late, if at all. Because OCPs is the most commonly used contraceptive in both the US and the Netherlands, we focus on the use of this method.

Missing pills is a common occurrence. In the Netherlands, only a third of OCP users claim to have taken every pill on time during the previous six months. Most women say they never forgot more than one pill of the same pack. However, 21% of OCP users admit having missed at least two pills of the same pack during the previous six months (Picavet, 2012). Dutch women report more missed pills than American women. 38% of American women report having missed at least one active pill during the previous three months. Most of these, 71%, were simply forgotten (Frost & Darroch, 2008). In an earlier study, 47% of an American sample of women who had recently initiated the use of OCPs had missed at least one pill in the previous cycle, and 22% missed two or more (Rosenberg, Waugh, & Burnhill, 1998). Even though the prevalence of missing pills differs between studies, there is clearly a lot of room for improvement.

The most risky time for missing pills is around the pill-free interval. Prolonging the pill-free interval to more than eight or nine days puts a woman at increased risk. Therefore, skipping the pill-free interval may help protect against unwanted pregnancy. Extended-cycle use is safe and has other benefits, like ameliorating menstrual pain and other period-related complaints (Edelman et al., 2006). In the US, but not in the Netherlands, dedicated OCP products are available for continuous use during three months. Of American OCP users, 12% use these extended-cycle regimens (Stidham Hall & Trussell, 2012). However, skipping the pill-free interval is possible with almost all existing OCP formulations, and it occurs frequently in the Netherlands. Intervals are skipped at least regularly by 38% of Dutch OCP users (Picavet, 2012).

It is difficult to pinpoint demographic risk groups for missing pills. Most studies find few associations with demographics and findings are conflicting. In national samples of both the US and the Netherlands, age, ethnicity and social-economic factors are not related to missing pills (Frost & Darroch, 2008; Picavet, 2012). However, other studies do find associations with demographic background. Poverty and less education explained noncompliance in some studies (Westhoff et al., 2012). Ethnic minority women were found to be at increased risk of missing pills in some studies (Peterson, Oakley, Potter, & Darroch, 1998; Steinkellner, Chen, & Denison, 2010). Women who are younger may miss pills more frequently (Steinkellner et al., 2010), but another study found them to be more careful than older women (Hughey, Neustadt, Mistretta, Tilmon, & Gilliam, 2010). One study found that women who live with a partner are relatively likely to miss pills, as are those who have more than 10 hours per week of paid employment (Hughey et al., 2010). Having small children has also been linked with lower adherence rates (Moreau, Bouyer, Gilbert, the COCON Group, & Bajos, 2006).

A modest number of studies describe why women miss pills. Women themselves cite as the most important reasons being away from home, simply forgetting the pill, and having no new pack available (Smith & Oakley, 2005). Studies on missing pills and related behaviour suggest other factors may be at play as well. For example, having no established routine for pill use and having multiple or non-steady partners may be important. Having used OCPs longer and a positive evaluation of this method lead to more consistent use. Likewise, good compliance has been linked to patient satisfaction with the health care provider, as with reading and understanding the written instructions for use (Frost & Darroch, 2008; Moreau et al., 2006; Peterson et al., 1998; Rosenberg et al., 1998).

Qualitative studies among ethnic minority women in the Netherlands show that women who know much about OCPs, have a strong desire not to have children at this time, and who have contact with Dutch-native residents are more likely to report correct and consistent use of OCPs. A steady relationship and a positive attitude about contraception contribute to its use as well. On the other hand, low adherence may result from a taboo on sexuality, low motivation to use contraception, lack of aspirations, and little knowledge about the reproductive functions of their bodies. Common mistakes in OCP use are extending the pill-free interval for as long as the bleeding continues and using the pill only when women have intercourse (Lamur et al., 1990; Mouthaan & De Neef, 1992).

*Improving Contraceptive Use*

A few strategies to influence OCP use have been designed and tested. A 45 minute educational intervention by a contraceptive counsellor, based on the health belief model, either with or without monthly follow-up phone calls, did not have any effect on accuracy of contraceptive pill use, continuation or pregnancy after 3, 6, and 12 months (Berenson & Rahman, 2012). A computer-based, tailored intervention did have impact on continuation and adherence. However, adherence was operationalised as taking the pill during the past two weeks. This measure does not seem specific enough to assess missing pills and the time-frame of two weeks may be too short (Garbers et al., 2012). A final educational intervention is much older and compared the effect of counselling adolescents by a peer or by a nurse. The girls who were counselled by adolescent peers showed better compliance than the ones who were counselled by a nurse (Jay, DuRant, Shoffitt, Linder, & Litt, 1984). The effectiveness of educational interventions seems to be modest at best.

Several daily reminder systems have been tested. Different types of daily reminders to take the pill have been studied. Of 40 women receiving reminders

by e-mail, most considered the e-mails somewhat (65%) or very helpful (19%). However, no conclusion can be drawn about whether it effectively reduced the number of missed pills, because there was no control group (Fox, Creinin, Murphy, Harwood, & Reid, 2003). Daily text-message reminders did not improve contraceptive use (Hou, Hurwitz, Kavanagh, Fortin, & Goldberg, 2010). However, an electronic reminder card, emitting a beeping sound at a predetermined time of the day, did significantly reduce the number of missed pills. Furthermore, 80% of the users said the card had helped them not to forget the pill at least once (Lachowski & Levy-Toledano, 2002). As with educational interventions, reminders may help, but the evidence is mixed.

A final strategy to promote adherence may be to lower barriers to services. In one study, women could receive OCPs, contraceptive rings or patches for free during the course of the study. Only 30% of the sample came on time for their repeat prescriptions. In this study, use of the hormonal ring and having had an abortion are the main risk factors for low adherence. Despite the free choice of method for participants and the absence of any costs for contraception, adherence remained unsatisfactory (Pittmann et al., 2011).

## 2.5 What if Anything Goes Wrong?

If sexual intercourse occurs without using any contraception or when contraception has failed, emergency contraception is a second line of defence against unwanted pregnancy. There are several options, of which pills containing the progestogen levonorgestrel is the most widely used. They can be used up to three days after unprotected intercourse. The chance of becoming pregnant is thereby reduced by 57% to 95%, depending on timing. The quicker after intercourse the emergency contraceptive pill (ECP) is taken, the higher its efficacy. The main method of action of ECPs is to delay ovulation, thereby preventing fertilisation. Another method of emergency contraception is the insertion of a copper IUD. This is almost 100% effective during five days after intercourse. Additionally, if left in place, it protects against pregnancy for up to ten more years. Two more recent medicinal alternatives are pills containing ulipristal acetate or mifepristone (Stewart, Trussell, & Van Look, 2007).

Despite the efficacy and safety of emergency contraception, it could be used more frequently. Based on statistics of contraceptive non-use and ineffective use, it is likely that acts of unprotected intercourse are much more frequent than the use of EC. This may be the result of a risk assessment. After unprotected intercourse, the chance of pregnancy may be about 10% or less. This chance of needing an abortion may be preferred by some women over the use of hormones.

Also, ECPs are often mistaken to be abortion pills, which may be a reason for women not to use them (Crosier, 1996). Previous methods of EC caused many women to experience nausea and other side-effects. These side-effects are less frequent with modern ECPs (Task Force on Postovulatory Methods of Fertility Regulation, 1998), but these pills are still associated with such side-effects by many women. Unwillingness to use ECPs may of course also be the result of unfamiliarity with the option.

In a study among women in the Netherlands who bought ECPs, it was found that these women are mostly under 25, without children, of Dutch native origin, and involved in a steady relationship. Their level of education is relatively high. This profile differs from women who have an abortion, who are more often of non-Western origin and single (van Lee, Picavet, & Wijsen, 2006). This is an indication that ECPs may not be used as often as needed, particularly by women most at risk of unwanted pregnancy. However, the evidence is mixed. A Danish study showed ECP users are older and better educated, whereas an American study found that they are younger and from a lower socio-economic background. A French study found no demographic differences at all (Baldwin et al., 2008; Goulard et al., 2006; Sørensen, Pedersen, & Nyrnberg, 2000). Apparently, the relationship between demographics and ECP use is diffuse and may be different in different cultural contexts.

*Accessibility of Emergency Contraception*

The copper IUD is the most effective method of emergency contraception, with the added benefit of ongoing contraception. Nevertheless, interventions have focused mainly on ECPs. The main strategy for improving ECP use, is to increase access. For example, advocacy groups have accomplished that ECPs are available without a doctor's prescription in a growing number of countries, including the US (without the age restrictions that were upheld until recently) and the Netherlands. This has increased the use of ECPs in these countries, but no population effect on unwanted pregnancy or abortion has been observed (Raymond, Trussell, & Polis, 2007). Another way of improving access to emergency contraception is by providing advance supplies of ECPs free of charge. Again, these interventions do promote the use of ECPs, but they do not have an impact on preventing pregnancy (Rodriguez, Curtis, Gaffield, Jackson, & Kapp, 2013).

Educational interventions that focus on emergency contraception are scarce. One British intervention aimed to improve use of ECPs by providing information on ECPs to 14/15 year olds in an educational setting. Although EC knowledge

increased, intention to use EC and actual use in the following six months were not affected (Graham, Moore, Sharp, & Diamond, 2002). The use of ECPs may be improved a little by better knowledge, but the contribution will be small at most.

## 2.6 Method Re-Evaluation

If a woman uses any highly effective contraceptive method, continuation of this method is the safest option with regard to pregnancy prevention. An estimated 20% of unplanned pregnancies in the United States each year result from discontinuation of oral contraceptives. About 14% of sexually active women who do not want to become pregnant fail to use any contraception for at least a month while switching contraceptives (Jaccard, 2009). Continuation rates after one year for long-acting methods are higher than for OCPs (86% versus 55%) (Peipert et al., 2011). In this American study, user satisfaction is higher among users of long-acting methods, compared to OCP users. Although Dutch women are believed to use contraception more consistently than American women, there are no recent data to substantiate this (van Lunsen & Wijsen, 2009).

Many women who discontinue using a contraceptive method want to become pregnant or feel that they cannot become pregnant anymore. However, other reasons are important as well. The reason most women give for discontinuing pill use, is that they experienced side effects; however, individual tolerance of side effects varies, and there is clear evidence that psychological factors play a role (Jaccard, 2009). Women who are black, not married (anymore) or receive public assistance are more likely to discontinue using their hormonal methods. More importantly, women who discontinue using their method find it more difficult to obtain contraception and are less certain that they would continue despite side effects (Stuart, Secura, Zhao, Pittman, & Peipert, 2013).

It is likely, but not well-studied that subsequent contraceptive choices after discontinuation are affected by the reasons for discontinuation, earlier experiences with contraception, and possibly by other reproductive health events. For example, adolescent girls who had an abortion are more likely to use hormonal contraception afterwards than other girls of their age. However, when they choose condoms, they use them less consistently (Rosenberg, Waugh, & Meehan, 1995).

### *Prevention of Discontinuation*

In 2013, a Cochrane review of counselling strategies to improve adherence to and continuation of hormonal methods concluded that these strategies are by

and large ineffective. This review included only eight trials, most of which suffered from small samples or high losses to follow-up. Only one of the studies found an effect of repeated structured information on continuation of having hormonal injections (Halpern, Lopez, Grimes, Stockton, & Gallo, 2013). However, continuation of OCPs can be improved by increasing the number of pill packs that are supplied. Moreover, issuing a greater number of packs is associated with fewer pregnancy tests and fewer pregnancies (Steenland, Rodriguez, Marchbanks, & Curtis, 2013). Often, providers tell their clients to wait with the start of a new hormonal method, particularly OCPs, until the first day of the next menses. If contraception is started immediately, continuation of the method is improved (Lopez, Newmann, Grimes, Nanda, & Schulz, 2008).

## 2.7 Conclusion

Based on the contraceptive cycle, a number of contraceptive behaviours can be identified that could be promoted. Both in the US and the Netherlands, there is considerable room for improvement of contraceptive use. One in 12 women do not use contraception despite their desire not to become pregnant. Furthermore, considerable proportions of young people in the US use withdrawal, although this is not a very effective contraceptive method. In the Netherlands, only a few women use less effective methods. OCPs are commonly used in both countries. One in five Dutch OCP users miss pills regularly, putting them at risk of pregnancy. Only in a minority of instances of unprotected intercourse, emergency contraception is being used. And when women begin using a contraceptive method, many of them discontinue using that method within the first year of use. The contraceptive cycle may not provide the answer to how behaviour may be changed, but it does suggest that multiple behaviours need to be targeted, with strategies focusing on determinants that are specific to each target behaviour.

Racial, ethnic or cultural background appears to be an important factor in the quality of contraceptive use. However, behavioural differences between white/native and ethnic minority women are not as large as could be expected, based on the large difference in the incidence of abortion between these groups. For example, the odds of Caribbean women to have an abortion is up to ten times higher than those of Dutch-native women (Goenee et al., 2013).

Effective behavioural interventions are obviously needed in order to reduce unwanted pregnancy, particularly among ethnic minority women. Unfortunately, many of the existing interventions to improve contraceptive use appear to have little impact. They often do improve determinants, and may have some (usually

little, and short-term) effect on contraceptive use. However, effects on unwanted pregnancy are rare. Others have reached this conclusion before. From a review of reviews on sexuality education, several structural elements of effective interventions can be derived. It appears to be necessary to have more than one session in an intervention. It is preferable that the intervention takes place before the young people it targets become sexually active. Gender differentiated groups seem to be more susceptible to change than mixed groups. And instructors need to be well trained (Poobalan et al., 2009).

A clear theoretical framework is also an important element of successful interventions. Dardano and Burkman (2001) provided an overview of possible theories and intervention strategies, but this has not been followed up by research in this field. A theoretical focus seems missing in many of the interventions that have been described. When theoretical frameworks are specified, the main theoretical approaches are social cognitive theory and motivational interviewing (Lopez, Tolley, Grimes, & Chen-Mok, 2009). Newer theoretical approaches, such as those aimed at improving self-management skills may be helpful. These emphasise the need for goal setting, problem solving, decision making, and resource utilisation (Lorig & Holman, 2003). All these skills are required for effective contraceptive behaviour, especially because health care professionals have very limited time for monitoring and support of contraceptive use.

Another condition for effectiveness is that behavioural goals are specified and that these guide the development of the programme. We believe that the contraceptive cycle can be used to frame such goals. Especially, motivating women to start using contraception or to improve the consistency and continuation of their use may generate the desired results. However, how this can be achieved is a matter that requires further research and development of theoretical perspectives that are specific to contraceptive use, rather than general theories for health behaviour change. The contraceptive cycle may not provide the answer to the ‘how’ question, but it does suggest that multiple behaviours need to be targeted, with strategies focusing on determinants that are specific to each target behaviour.

# Chapter 3

# Contraceptive Decision-Making: What Women Found Important When They Chose Their Method

## Abstract

*Introduction*

Contraceptive technology has provided women with a multitude of options to regulate their fertility. Little is known about why women choose the methods that they do.

*Methods*

A convenience sample of 1184 women, using any of seven different contraceptive methods, participated in an Internet survey. They indicated what they found important at the time of their decision, as well as how they currently evaluated their chosen method.

*Results*

Method reliability was found most important by users of all methods. Ease of use was in particular important to users of alternatives for oral contraceptives, menstrual concerns to users of hormonal methods, and shared responsibility to women who used condoms or natural family planning (NFP). NFP users found health and sexual concerns important as well. All methods were evaluated positively. Some relationships were found between evaluative outcomes and what women found important. Satisfied users of hormonal rings were more likely to have found ease of use and reliability important, and sexual concerns less so.

*Discussion*

Women seem to select a contraceptive method that fits their needs and preferences in this non-representative sample. More research about decision-making among women who are at increased risk of unwanted pregnancy is needed.

*Implications*

Most women are able to select a method without a need for additional guidance. When women consider using the hormonal ring, it might be advisable to discuss ease of use, reliability, and sexual concerns with them.

## 3.1 Introduction

Contraceptive technology has provided heterosexually active women with a multitude of options to choose from when they want to regulate their fertility (Scott & Glasier, 2006), but little research has assessed why women use certain methods rather than others. The ideal contraceptive method does not exist and all methods have both advantages and disadvantages (Mills & Barclay, 2006; Webb, 2002). Even the need to use any method at all can be considered a disadvantage. Most research of contraceptives is about their efficacy and safety profile. User's perspectives are assessed in acceptability studies, which have generally been designed regarding single methods. These studies provide information about user satisfaction and (dis)continuation of the method (e.g., Baldaszti, Wimmer-Puchinger, & Löschke, 2003; Edwards & Moore, 1999; Novák, de la Loge, Abetz, & van der Meulen, 2003). If choices of women regarding contraception are taken into consideration, research is limited either to the choice of one particular method of fertility control, or to the decision to use any contraceptive. Studies in which more than one methods are compared are rare and still limited to assessments of a few specific methods, rather than the whole range of options (e.g., Gilliam et al., 2010; Short, Dallay, Omokanye, Stauch, & Inki, 2014).

The main source of information about choice of contraceptive method in the Netherlands to date is descriptive behavioural research (Picavet, 2012; de Graaf et al., 2012). These studies show that oral contraceptives are the prime method of birth control in the Netherlands. Newer methods, in particular the intrauterine system that releases the progestogen levonorgestrel (LNG IUS) and, to a lesser degree, the hormonal ring, are gradually becoming more popular. Furthermore, there are important differences in method choice between different age groups. Young people under the age of 20 almost exclusively use oral contraceptive pills (OCPs) and condoms, while the LNG IUS is becoming a popular method among women between the ages of 20 and 40. Women in the Netherlands who are older than 40 more often report female sterilisation and especially vasectomy as their main contraceptive method. Other than age, social-demographic differences in use of contraceptive methods are minor (Picavet, 2012).

Descriptive studies of behaviour provide little insight in opportunities for interventions to improve contraceptive use. Some qualitative studies have been reported regarding preferences for and experiences with different methods. These studies show that dissatisfaction about hormonal contraceptives can result in the use of less effective but more acceptable methods, or no contraception at all. Dissatisfaction is often related to side-effects and bleeding

disturbances. Concerns about 'unnatural' hormones also play a role (Cheung & Free, 2005; Mills & Barclay, 2006; Snow et al., 1997). Although these findings provide insight into possible motives to use particular contraceptive methods, they do not clarify how important the different motives are.

The use of long-acting reversible contraceptives (LARCs) has been stimulated in recent years, because of their high efficacy (McNicholas et al., 2014). However, from the user's point of view, other concerns may be important as well, including practical, health, and social issues. Surprisingly little research has been undertaken to assess what women find important about contraception when they choose a contraceptive method. In a recent study, Frost and Lindbergh (2013) found that women wanted to avoid pregnancy because of, among other reasons, financial constraints, because they did not feel ready for a baby, or to retain control over their lives. However, while these reasons may predispose women to use any contraception, they are less informative regarding method choice. For women in another study, the most relevant and important considerations regarding contraceptive choice, in addition to method effectiveness, were expectations of side-effects, health risks and the effects of long-term use (Walsh, Lythgoe, & Peckham, 1996).

In this study, the focus will be on how important different aspects of contraceptives are to women. The aim of this study is to improve knowledge about how the choice for a particular method is related to what women find important about contraception and to the evaluation of their method, in order to be able to help women to make a choice that fits their preferences. The questions we will address are: Do women who use different methods differ in what they found important about contraception at the time of the decision for their current method? Do they evaluate their methods differently? And can women with a positive evaluation of their method be distinguished from the ones who are less positive by what they found important at the time they chose their method?

## 3.2 Methods

*Sample selection and procedure*

In this study, we aimed to compare users of different methods in a cross-sectional design. We attempted to include a minimum of 50 users of each contraceptive method, varying in age as much as possible. Inclusion criteria were that the participant was a woman, living in the Netherlands, under the age of 50, and was currently using contraception. The focus in recruitment was on women who used other methods of contraception than OCPs and condoms. The vast

majority of participants were recruited through the Internet. They were reached through messages on over twenty Dutch websites and discussion platforms (after permission of the moderators). These websites were about contraception in general, a specific contraceptive method, sexuality, or other topics concerning women. Additional recruitment took place via sexologists, sexual health clinics, pharmaceutical companies, and through personal networks.

Women who were willing to participate in the study clicked on a link (or entered it manually), leading them to the Internet survey. Their eligibility to participate was assessed with the first questions. Completion of the questionnaire took most participants 20 to 25 minutes. Participants were not paid or rewarded for their participation. Under current Dutch regulations, no formal medical-ethical approval was required.

*Measures*

Current contraceptive method was assessed with the question 'What is the most important method you have used lately in order to prevent pregnancy?". One from fourteen alternative could be selected. The options were: oral contraceptive pills (including progestin only pills); injection; contraceptive patch; contraceptive ring; implant; hormonal IUS, copper IUD; sterilisation of the partner; sterilisation of oneself; condom; female condom; diaphragm or cervical cap; periodic abstinence or natural family planning (no or safe sex during fertile period); or withdrawal (man withdraws before ejaculation). Participants could also indicate that they did not need protection, did not use contraception, or specify an alternative. Popular brand names were added for recognisability.

The following social-demographic variables were assessed. Age was measured with a single question. Ethnicity was investigated with three items, about the country of birth of the participant and both her parents. When a woman indicated a country of birth outside the Netherlands, another European country, North America, or Australia/ Oceania for herself or either of her parents, she was considered to be of non-Western origin. Religiosity was measured by two items. The first assessed to which religious group the participant belonged, with eight options including Roman Catholic, Protestant or other Christian religion, Islam, and no religion. In a second question, those who belonged to any religious group were asked to rate how much religion meant in their lives on a four point scale ranging from nothing to very much. Those who did not respond ‘nothing’ to this question were considered religious. For level of education, participants were asked about the highest education that they had finished. They could choose between nine alternatives, including primary school only, vocational training,

college, or university. These were recoded into three categories: lower, middle, and higher education. Relationship status was assessed by the question whether the participant had ‘a steady partner with whom [she had] sex’ or not.

Sexual and reproductive characteristics included the following. Number of contraceptive methods used was measured by asking for each of the aforementioned contraceptive methods whether they had ever used them. It includes their current method. For duration of use of the current method, a single question assessed how many years the method was being used. Child wish was assessed by two questions. The first was about whether the participant wanted to become pregnant at the present time, while the second inquired about child wish in the future. For each question, the response categories were yes, no, and I do not know. These questions were combined into four categories, women who wanted to become pregnant now, who did not want to become pregnant now, but did desire having children in the future, who did not ever desire to have children (again), and those who did not currently want children and did not know about the future child wish. Frequency of intercourse was assessed with a single item with seven response options, ranging from ‘less than once per month’ to ‘several times a day’. For the analyses, those who had sex more often than once a week were compared with those who had sex less often. Number of sex partners was based on the question how many sex partners the participant had had in the past six months, with response options ‘none’, ‘one’, ‘two’, or ‘more than two’. The two last options were taken together for the analyses as ‘more than one’.

What women found important about contraception was measured with questions about the importance of different aspects of contraception. This was measured retrospectively, about the time of the decision to start with the current contraceptive method. Participants rated the importance of 23 aspects of contraception. Examples are: ‘Whether the method is reliable’, ‘Whether it requires a prescription’, and ‘Whether the method causes less severe periods’. Each was rated on a 5 point scale, ranging from 1 'very unimportant' to 5 'very important'. In order to reduce the number of variables we needed to consider in the analyses, a principal components analysis (with oblimin rotation) was performed with these items, yielding a six-component solution, for which subsequent internal consistency analyses were performed. The factors were interpreted as practical concerns, cycle-related concerns, health concerns, ease of use, sexual concerns, and shared responsibility. The factor analysis showed that method reliability clustered with ease of use. However, it did not contribute to the reliability of the resulting scale and would need to be eliminated from

**Table 3.1** What women found important about contraception

| n = 1184 | *M* | *SD* |
|---|---|---|
| **Practical concerns (**α = .73) | | |
| Costs | 3.0 | 1.13 |
| Whether I only need to think about it when I have sex | 3.5 | 1.21 |
| Whether it requires a prescription | 2.6 | 0.99 |
| Whether it requires medical procedures | 2.8 | 1.04 |
| Whether I can keep it a secret for my partner | 1.8 | 0.98 |
| Whether it is possible to have children again, right after I quit using contraception | 3.2 | 1.28 |
| Whether it protects against STIs and HIV | 3.0 | 1.41 |
| **Cycle-related concerns (**α = .85) | | |
| Whether the method causes less severe periods | 3.5 | 1.22 |
| Whether there are less or no bleeding periods | 3.3 | 1.19 |
| Regularity of the cycle | 3.5 | 1.23 |
| Whether the method affords period control (when to have a period or not have any at all) | 3.4 | 1.29 |
| **Health concerns (**α = .79) | | |
| Whether there are positive consequences for my health (such as acne or preventing some forms of cancer) | 3.3 | 1.28 |
| Whether there are negative consequences for my health (such as heart or arterial diseases, cancer) | 3.3 | 1.21 |
| Whether there are side-effects (headache, nausea, pain) | 3.4 | 1.19 |
| Possibility of infertility | 3.2 | 1.30 |
| **Ease of use (**α = .67) | | |
| Whether it is easy to use | 4.1 | 0.85 |
| The chance of user failure (such as missing pills) | 3.3 | 1.12 |
| Whether it does not require to think about regularly (also when I do not have sex) | 2.6 | 1.09 |
| **Sexual concerns (**α = .73) | | |
| Whether it has negative consequences for my sex life | 3.1 | 1.11 |
| Whether it has positive consequences for my sex life | 3.4 | 1.08 |
| **Shared responsibility (**α = .88) | | |
| Sharing responsibility between woman and man | 3.3 | 1.16 |
| Sharing control over becoming pregnant or not between woman and man | 3.3 | 1.19 |
| **Reliability** | | |
| Whether the method is reliable (the odds of becoming pregnant) | 4.5 | 0.86 |

the analyses. Because reliability was rated as the single most important item by the women in this study, it was retained as a separate variable. See Table 3.1 for which items contributed to which component.

Evaluation of the currently used contraceptive method was assessed with three items: overall satisfaction, perceived efficacy, and self-efficacy. All three were measured with single items. Satisfaction was rated on a 5 point Likert scale, from 1 'very dissatisfied' to 5 'very satisfied. For perceived efficacy, participants needed to indicate how often they worried about being pregnant, with four alternatives ranging from 'never' to 'often'. Self-efficacy was measured with the item: 'I find it difficult to use my contraceptive method correctly?' with five response options, ranging from 1 'totally agree' to 5 'totally disagree'. The variables were recoded so that a higher score corresponded with a more positive evaluation. The three items did not form a reliable scale ($\alpha$ = .47), therefore the three items were investigated separately.

*Participants*

A total of 1280 women participated in our study. Female condom (n=2), diaphragm (n=2), patch (n=11) , withdrawal (n=17) , implant (n=25), and injection (n=39) user groups were too small to draw meaningful conclusions. Therefore, their data were excluded. The data of women who were sterilised and those whose partners had had a vasectomy were combined. The remaining sample consisted of 1184 users of OCPs, hormonal ring, LNG IUS, copper intrauterine device (Cu IUD), condoms, natural family planning (NFP, which includes fertility awareness methods), and sterilisation.

*Data analysis*

Whether women who use different contraceptive methods differ on social-demographic and sexual/reproductive characteristics, was analysed with $\chi^2$ tests for categorical data, and bivariate analyses of variance (ANOVAs) for continuous data. Differences between users of different methods for the seven aspects of contraception were analysed in a multivariate analysis of variance (MANOVA). Scores of users of each contraceptive method were compared against the mean scores of all participants. With subsequent paired t-tests, the order of aspects from most to least important was investigated for each method. Another MANOVA was used to investigate differences in the three evaluative variables.

The relationship between what aspects of contraceptives were found important and current method evaluation was explored separately for each contraceptive

method. This was done with separate multivariate linear regression analyses for each method, with all three evaluative outcomes as dependent variables. Because we wanted at least 10 cases per covariate and we included seven covariates, only those methods for which use was reported by at least seventy participants were investigated, which included OCPs, hormonal ring, LNG IUS, and condoms. The level of significance for all analyses was set at .05.

## 3.3 Results

*Social-demographic and sexual/reproductive characteristics*

In Table 3.2, the social-demographic characteristics of participants are presented. There were considerable differences between users of different methods. OCP users were the youngest, the lowest educated, and – together with condom users – the least likely to be in a steady relationship. Another group that is worth mentioning is women who use NFP. They were highly educated, more often religious than the other groups, and often in a steady relationship. The methods that were used by Dutch or Western women did not differ from those used by non-Western migrant women.

The sexual and reproductive characteristics of the women differ as well (Table 3.2). While only a small proportion of pill users had ever been pregnant, almost all women who relied on (male or female) sterilisation had experienced pregnancy. The sterilisation group had no desire to have another child. OCP users had used only 2.2 contraceptive methods on average, typically pills and condoms. Users of Cu IUDs and sterilisation had used the highest number of methods. There were also differences in sex frequency and number of partners. OCP users had sex relatively often, while condom and NFP users were less likely to have sex more than once a week. NFP users, like women who relied on sterilisation, were likely to have had one sex partner during the previous six months.

*Importance of aspects of contraceptives*

What women found important about contraception when they chose their current contraceptive method was examined for users of different methods. The results are shown in Tables 3.3 and 3.4. On average, reliability was the most important aspect of contraception according to participants. Ease of use was considered relatively important as well, followed by cycle-related concerns. Practical aspects were considered the least important at the time women chose their current contraceptive method.

**Table 3.2** Social-demographic and sexual/reproductive characteristics of participants, by primary contraceptive method

| | | Total (n = 1184) % | OCPs (n = 521) % | Ring (n = 99) % | LNG IUS (n = 199) % | Cu IUD (n = 61) % | Condom (n = 189) % | NFP (n = 54) % | Sterilisation (n = 61) % |
|---|---|---|---|---|---|---|---|---|---|
| **Social-demographics characteristics** | | | | | | | | | |
| Age (mean) | | 27.0 | 22.9 ** | 26.2 ** | 32.3 ** | 30.1 | 26.8 ** | 31.0 | 39.8 ** |
| Education | Lower | 20.3 | 24.0 * | 9.1 * | 18.6 | 13.1 | 25.0 | 3.7 ** | 19.7 |
| | Medium | 42.8 | 49.5 ** | 33.3 * | 41.2 | 32.8 | 38.8 | 31.5 | 37.7 |
| | Higher | 36.9 | 26.5 ** | 57.6 ** | 40.2 | 54.1 * | 36.2 | 64.8 ** | 42.6 |
| Ethnicity | Dutch/ Western | 93.2 | 93.5 | 94.9 | 91.5 | 91.8 | 93.7 | 90.7 | 96.7 |
| | Non-Western | 6.8 | 6.5 | 5.1 | 8.5 | 8.2 | 6.3 | 9.3 | 3.3 |
| Religious | | 36.6 | 31.6 ** | 31.9 | 37.0 | 28.3 | 40.1 | 75.0 ** | 36.6 * |
| In steady relationship | | 84.8 | 81.2 * | 85.9 | 91.0 * | 88.5 | 79.4 * | 98.1 * | 95.1 * |

Table continued on next page

**Table 3.2** Continued

| | | Total | OCPs | Ring | LNG IUS | Cu IUD | Condom | NFP | Sterilisation |
|---|---|---|---|---|---|---|---|---|---|
| **Sexual and reproductive characteristics** | | | | | | | | | |
| Experienced pregnancy | | 37.0 | 14.4 ** | 19.2 ** | 60.8 ** | 65.6 ** | 43.4 * | 77.8 ** | 96.7 ** |
| Child wish | Now | 6.9 | 5.8 * | 12.1 * | 6.0 | 13.1 * | 6.3 | 14.8 * | 0.0 * |
| | Future | 51.7 | 68.5 ** | 56.6 | 30.7 ** | 36.1 * | 50.3 | 37.0 * | 1.6 ** |
| | Never | 26.2 | 10.2 ** | 14.1 * | 53.3 ** | 29.5 | 24.3 | 24.1 | 98.4 ** |
| | Don't know | 15.2 | 15.5 | 17.2 | 10.1 * | 21.3 | 19.0 | 24.1 | 0.0 ** |
| # of methods used (mean) | | 2.7 | 2.2 ** | 3.4 * | 3.4 * | 3.7 ** | 2.6 ** | 2.9 | 3.9 ** |
| Duration of use (in years, mean) | | 4.6 | 6.1 ** | 2.0 ** | 2.4 ** | 3.3 | 4.4 | 5.4 * | 4.7 |
| Sex frequency | > 1/week | 47.4 | 54.2 ** | 52.6 | 43.8 | 43.3 | 33.3 ** | 32.7 * | 52.5 |
| | ≤ 1/week | 52.6 | 45.8 ** | 47.4 | 56.2 | 56.7 | 66.7 ** | 67.3 * | 47.5 |
| Sex partners | 0 | 5.7 | 7.5 * | 4.0 | 2.5 * | 1.6 | 7.9 | 3.7 | 3.3 |
| | 1 | 77.0 | 74.7 | 78.8 | 78.4 | 77.0 | 72.5 | 94.4 * | 88.5 * |
| | >1 | 17.2 | 17.9 | 17.2 | 19.1 | 21.3 | 19.6 | 1.9 * | 8.2 |

*Note.* * Different from the total percentage or mean, $p < .05$, ** $p < .001$

**Table 3.3** Importance of aspects of contraception at the time women chose their method, by current method

| | **Total (n = 1184)** *M (SD)* | **OCPs (n = 521)** *M (SD)* | **Ring (n = 99)** *M (SD)* | **LNG IUS (n = 199)** *M (SD)* | **Cu IUD (n = 61)** *M (SD)* | **Condom (n = 189)** *M (SD)* | **NFP (n = 54)** *M (SD)* | **Sterilisation (n = 61)** *M (SD)* |
|---|---|---|---|---|---|---|---|---|
| Practical concerns | 2.7 (0.7) | 2.8 ** (0.7) | 2.6 (0.5) | 2.5 (0.7) | 2.5 (0.6) | 2.9 ** (0.7) | 2.6 (0.7) | 2.2 ** (0.8) |
| Cycle-related concerns | 3.4 (1.0) | 3.9 ** (0.8) | 3.3 * (0.9) | 3.6 ** (0.8) | 2.6 ** (0.9) | 2.9 (1.1) | 2.4 ** (0.9) | 2.6 ** (1.1) |
| Health concerns | 3.3 (1.0) | 3.2 * (0.9) | 3.6 * (0.9) | 3.4 (0.9) | 3.3 (0.9) | 3.2 * (1.1) | 3.9 ** (1.0) | 3.0 * (1.1) |
| Ease of use | 3.6 (0.8) | 3.4 ** (0.7) | 4.3 ** (0.8) | 4.1 ** (0.8) | 3.9 * (0.7) | 3.4 ** (0.8) | 2.9 ** (0.7) | 3.8 (0.8) |
| Sexual concerns | 3.3 (1.0) | 3.2 ** (1.0) | 3.6 * (0.9) | 3.4 (1.0) | 3.2 (1.0) | 3.2 (1.0) | 3.7 * (0.9) | 3.3 (0.9) |
| Shared responsibility | 3.3 (1.1) | 3.3 (1.1) | 3.1 * (1.0) | 3.1 * (1.2) | 2.8 ** (1.2) | 3.6 * (1.0) | 4.0 ** (0.9) | 3.4 (1.3) |
| Reliability | 4.5 (0.9) | 4.5 (0.9) | 4.7 * (0.6) | 4.6 (0.9) | 4.6 (0.6) | 4.4 (0.9) | 4.2 * (1.0) | 4.6 (0.8) |

*Note.* * Different from the total mean, $p < .05$, ** $p < .001$

**Table 3.4** Aspects of contraception, ordered from most to least important, by current method

| Order of importance | Total (n=1184) | OCPs (n=521) | Ring (n=99) | LNG IUS (n=199) | Cu IUD (n=61) | Condom (n=189) | NFP (n=54) | Sterilisation (n=61) |
|---|---|---|---|---|---|---|---|---|
| 1 (most) | A | A | A | A | A | A | A / F / D | A |
| 2 | B | C | B | B | B | F | | B |
| 3 | C | B | D / E | C / E | D / E | B | D / E | F |
| 4 | D / E / F | F | | E / D | | D / E | | E / D |
| 5 | | D / E | C / F | | F / C | | B | |
| 6 | | | | F | C / G | C / G | G / C | C / G |
| 7 (least) | G | G | G | G | | | | |

*Note.* A = Reliability, B = Ease of use, C = Cycle-related concerns, D = Health Concerns, E = Sexual concerns, F = Shared responsibility, and G =Practical concerns. If aspects of contraception did not differ significantly in importance, they are presented in the same row, the aspect with the highest average score first.

Differences between users of different contraceptive methods are presented in Table 3.3. Women who found practical concerns important were relatively likely to use OCPs or condoms, but less likely to be sterilised (oneself or one's partner). Cycle-related concerns were mainly important to OCP and LNG IUS users. Users of hormonal ring or NFP found both health concerns and sexual concerns more important than other users. Ease of use was especially important to women who used hormonal ring, hormonal IUS, or copper IUD. Users of condoms or NFP were more likely to find shared responsibility between partners important. Reliability was more important to users of the hormonal ring than to users of other methods.

As shown in Table 3.4, the order from most to least important aspect of contraception is similar for users of different methods. Method reliability is most important according to users of all methods, and practical concerns are least important to all except women who use NFP, for whom it is the second least important aspect. Health and sexual concerns are of intermediate importance to all women. The order of the other aspects is different for users of different methods. Ease of use is important to users of all methods, except for NFP users, for whom it is only the fifth important aspect. Cycle-related concerns are relatively unimportant to most women, but they are among the most important aspects according to OCP and LNG IUS users. Shared responsibility is among the least important aspects to all women, except to those who use condoms, NFP, or sterilisation.

*Evaluation of contraceptive methods*

Table 3.5 shows how the various contraceptive methods are evaluated by their users. Satisfaction with the current method was generally very good, especially among LNG IUS and NFP users, and those who had undergone (their partners or themselves) sterilisation. Most women had few worries about pregnancy. The average score for experienced efficacy was above 3 for each method, with 3 indicating rarely and 4 never to have such worries. OCP and condom users were most likely to feel worried about being pregnant every once in a while.

Self-efficacy was also high, indicating that participants had little trouble with the correct use of their method. Users of long-acting methods had the highest self-efficacy, while condom, OCP, and NFP users had slightly more difficulty using their method.

In order to find out whether the importance of aspects regarding contraceptives predisposes women to decreased satisfaction, perceived efficacy, or self-

**Table 3.5** Evaluation, by current method

| | **Total (n = 1184)** | **OCPs (n = 521)** | **Ring (n = 99)** | **LNG IUS (n = 199)** | **Cu IUD (n = 61)** | **Condom (n = 189)** | **NFP (n = 54)** | **Sterilisation (n = 61)** |
|---|---|---|---|---|---|---|---|---|
| | *M* (*SD*) | *M* (*SD*) | *M* (*SD*) | *M* (*SD*) | *M* (*SD*) | *M* (*SD*) | *M* (*SD*) | *M* (*SD*) |
| Satisfaction | 4.1 (1.0) | 4.1 (0.9) | 4.2 (1.1) | 4.4 ** (1.0) | 3.9 * (1.2) | 3.5 ** (1.0) | 4.3 (0.8) | 4.5 * (1.0) |
| Perceived efficacy | 3.3 (0.8) | 3.2 ** (0.8) | 3.5 (0.6) | 3.5 (0.6) | 3.6 * (0.6) | 3.2 ** (0.8) | 3.2 (0.8) | 3.7 * (0.6) |
| Self-efficacy | 4.3 (0.9) | 4.2 ** (0.9) | 4.4 (0.9) | 4.7 ** (0.6) | 4.7 * (0.6) | 4.0 ** (1.1) | 4.2 * (0.8) | 4.8 ** (0.8) |

*Note.* * Different from the total mean, $p < .05$, ** $p < .001$

**Table 3.6** Relationships between what women found important and outcomes, by current method

| | OCPs (n = 521) | | Ring (n = 99) | | LNG IUS (n = 199) | | Condoms (n = 181) | |
|---|---|---|---|---|---|---|---|---|
| | β | *t* | β | *t* | β | *t* | β | *t* |
| **Method satisfaction** | | | | | | | | |
| Practical concerns | -.181 | -2.736 * | -.059 | -0.538 | -.008 | -0.076 | .087 | 0.782 |
| Cycle-related concerns | .057 | 1.233 | -.032 | -0.335 | .051 | 0.653 | -.012 | -0.128 |
| Health concerns | .084 | 1.604 | -.067 | -0.666 | -.014 | -0.161 | .153 | 1.632 |
| Ease of use | .161 | 2.683 * | .312 | 3.197 * | .058 | 0.697 | -.003 | -0.025 |
| Sexual concerns | -.016 | -0.284 | -.194 | -2.001 * | -.066 | -0.788 | -.219 | -2.233 |
| Shared responsibility | .042 | 0.775 | -.132 | -1.306 | -.142 | -1.616 | .097 | 1.081 |
| Reliability | .085 | 1.855 | .193 | 2.037 * | -.057 | -0.743 | .075 | 0.956 |
| *Adjusted $R^2$* | *.026* | | *.186* | | *-.001* | | *.013* | |
| | | | | | | | | |
| **Perceived efficacy** | | | | | | | | |
| Practical concerns | .092 | 1.372 | -.090 | -0.744 | .172 | 1.778 | .135 | 1.209 |
| Cycle-related concerns | .012 | 0.253 | -.290 | -2.781 | .027 | 0.358 | -.018 | -0.188 |
| Health concerns | .028 | 0.531 | .031 | 0.283 | -.005 | -0.055 | -.025 | -0.268 |
| Ease of use | -.014 | -0.227 | .165 | 1.547 | -.041 | -0.505 | -.156 | -1.483 |
| Sexual concerns | -.089 | -1.547 | .137 | 1.295 | -.014 | -0.178 | .022 | 0.221 |

Table continued on next page

**Table 3.6** Continued

| | OCPs (n = 521) | | Ring (n = 99) | | LNG IUS (n = 199) | | Condoms (n = 181) | |
|---|---|---|---|---|---|---|---|---|
| | β | *t* | β | *t* | β | *t* | β | *t* |
| Shared responsibility | -.068 | -1.245 | .105 | 0.957 | -.159 | -1.853 | -.074 | -0.818 |
| Reliability | -.031 | -0.665 | .001 | 0.010 | -.191 | -2.546 * | -.095 | -1.197 |
| *Adjusted $R^2$* | *.000* | | *.031* | | *.039* | | *.000* | |
| | | | | | | | | |
| **Self-efficacy** | | | | | | | | |
| Practical concerns | -.210 | -3.188 * | -.145 | -1.237 | -.247 | -2.585 * | -.044 | -0.388 |
| Cycle-related concerns | -.013 | -0.281 | .081 | 0.805 | .199 | 0.843 | -.110 | -1.130 |
| Health concerns | .099 | 1.912 | -.206 | -1.945 | -.065 | -0.767 | .079 | 0.836 |
| Ease of use | .019 | 0.315 | .240 | 2.322 * | .111 | 1.379 | -.032 | -0.304 |
| Sexual concerns | -.043 | -0.760 | .124 | 1.208 | .039 | 0.489 | -.075 | -0.751 |
| Shared responsibility | -.030 | -0.567 | -.018 | -0.165 | -.007 | -0.078 | .072 | 0.797 |
| Reliability | .137 | 3.006 * | .052 | 0.522 | .150 | 2.019 * | -.013 | -0.165 |
| *Adjusted $R^2$* | *.037* | | *.089* | | *.058* | | *-.012* | |

*Note.* * Significant relationship, $p < .05$, ** $p < .001$. Significant relationships with single covariates were only marked with an asterisk if the model as a whole was significant as well.

efficacy, additional analyses were performed for OCP, hormonal ring, LNG IUS, and condom users (Table 3.6). In six of the twelve analyses, a relationship was shown between what women found important and evaluation. Among OCP users, those who found ease of use more, and practical concerns less important, were more satisfied with their method. They had more self-efficacy when they found method reliability more, and practical aspects less important. Ring users were more satisfied when ease of use had been more important to them, and sexual concerns and reliability less so. Those who found ease of use more important, were also more likely to have more self-efficacy. Among LNG IUS users, better perceived efficacy is related to less importance of method reliability. For these women, self-efficacy is related to more importance of reliability, as well as less importance of practical concerns. No relationships were found between evaluation and the importance of aspects of contraception for condom users. The adjusted $R^2$ of the relationships that were mentioned were small. Only the relationship with satisfaction among ring users had an adjusted $R^2$ which was higher than .10.

## 3.4 Discussion

This study shows that there are differences between users of different methods in what they found important about contraception. By and large, these differences seem to be consistent with characteristics of the contraceptive methods used. For example, methods for which partner involvement is essential (condoms and NFP) are used by women who found shared responsibility more important than users of other methods. Similarly, cycle-related concerns were more important for women who use hormonal methods, which can be used for menstrual control. One study has been done about the consistency between method and reasons for using them. These were inconsistent among 25% of the women in this study (Lamvu, Steiner, Condon, & Hartmann, 2006). However, only the 'most important' reason was assessed, and consistency was only assessed for those women who found STI or pregnancy prevention most important.

Although previous studies have found few demographic differences other than age between users of different methods, level of education, religion and partnership status do differ in this study. Surprisingly, ethnicity is similar across all methods. Elsewhere, immigrant status has been linked to less use of contraceptives and use of less effective methods (e.g., Jones, Mosher, & Daniels, 2012; Wiebe, 2013). However, over the past years these differences have diminished in the Netherlands (Picavet, 2012). Like the importance of aspects of contraception, social-demographic and sexual/reproductive characteristics seem to be consistent with the methods that have been chosen. For example,

condom users are less often in a steady relationship, and have sex less frequently than other women. Therefore they may have less need for ongoing contraception, whereas STI control may be more urgent.

The evaluation of the current contraceptive method is very positive among users of all methods. They are satisfied with their method, know how to use it correctly, and have few worries about pregnancy. This positive evaluation of contraceptive methods may be surprising, considering previous research showing a strong sense of dissatisfaction (Mills & Barclay, 2006; Oddens, 1999; Rosenberg & Waugh, 1998). This could also be specific for the Netherlands, which may be reflected in high levels of contraceptive use, few contraceptive failures, and low abortion rates (Gissler et al., 2012; Godeau et al., 2008).

For some women, the evaluation of their contraceptive method is related to how important aspects of contraceptives were for them at the time of selecting a method. In particular, contraceptive ring users are more satisfied with their method if they reported that ease of use and reliability had been more important to them at the time of the choice of their method, as well as when sexual concerns had been less important. More importance of ease of use was also related to better self-efficacy for ring users. These findings might indicate that women are more satisfied with ease of use and reliability of the ring, and less satisfied with its effects on sexuality. However, this is not necessarily so, because what women find important about contraception may also have shifted since starting to use the ring. The effect size of other relationships between the importance of different aspects and method evaluation is small. Although significant differences were found in our study between users of different contraceptive methods, most averages of how important women found different aspects of contraception approached the 'neutral' score of 3. Only the average scores of importance of method reliability and ease of use exceeded the range of 2 to 4.

This is one of the few studies comparing women who use a variety of methods. It includes a broader overview of the importance of contraceptive aspects than previous research. However, there are several limitations of the study that should be taken into account. The sample is not representative for the Dutch population, which was impossible within the constraints of this study. Because the sampling procedure was the same for users of all methods, and the study was predominantly comparing users of different methods, the lack of representativeness may not be a big problem, but this cannot be ascertained in the context of this study. We were unable to gather sufficient data on users of

some methods that are rarely used by women in the Netherlands, such as contraceptive injections, implants or patches.

Furthermore, there are some issues about the questionnaire that need consideration. The self-developed measure of what women found important about contraceptive methods may need to be validated. They were asked retrospectively about when the current method was started. On average, participants had been using their method for over four years. It may be difficult for women to recall the thoughts and feelings they had about contraception at the time of the decision to use their current method. What they indicated as important may have been influenced by the experiences they had with their method in the meantime.

The evaluative outcomes were measured with single items. Only the evaluation of the current method was taken into consideration. Women who were dissatisfied may have switched to another method, because of which the results could have been less favourable if past users had been asked for their evaluation as well. A more sophisticated instrument would undoubtedly have led to a more nuanced and perhaps less positive picture of women's method evaluation. However, women who are dissatisfied may also be more likely to go to websites dedicated to contraception, where we advertised for our study, which could have led to a bias in the opposing direction.

Although there seems to be little room for improving contraceptive method choice, additional research among specific subpopulations with a known risk of unplanned pregnancy is required. For them, decision-making support may be worthwhile. It would be interesting to replicate this study among groups with increased risk of unwanted pregnancy, as well as in contexts with less positive reproductive outcomes than the Netherlands. Furthermore, studies with a prospective design could provide indications about causal relationships.

More research is also warranted about the actual decision-making process, rather than focusing only on what women found important. How do women reach a decision? What sources of information do they use and what information do they collect? How clear are they about what they expect from contraception? It would also be important to know whether increased levels of information leads to better outcomes. There are so many contraceptive options that information about all of them may lead to 'choice overload', a concept from behavioural economics (Stevens & Berlan, 2014). This may cause women to feel so overwhelmed that they fail to choose any method or that they are less satisfied

with their choice, once it is made made. Qualitative research could provide more detailed information about how women experience their choices and decision-making.

Most women seem to have little difficulty to select an appropriate contraceptive method. Apparently, current practice of sexuality education and contraceptive counselling is sufficient for them. The findings of this study regarding what women found important about contraception may be helpful, as these can be discussed during counselling with these women. Based on the order of which aspects of contraception are deemed more, and which are considered less important, advice may be given. Women who find shared responsibility with the partner more important than health or cycle-related concerns, are probably well off with condoms, NFP or vasectomy. Those who find cycle-related concerns important, may be advised to try the hormonal ring or the LNG IUS. NFP may be an option for women who attach less importance to ease of use than to health concerns. However, evaluative outcomes on the long term can scarcely be predicted from what a woman found important at the start of a method. Therefore, merely asking what women find more or less important may not be enough for guiding method choice. Especially for those subpopulations in which most unwanted pregnancies occur, additional support may be required.

## 3.5 Conclusion

This study showed that most women are able to select a contraceptive method that is appropriate for them. For the prevention of unwanted pregnancies or abortions, interventions to support the decision-making process of women are unlikely to have much impact. Other elements of contraceptive use seem to be more important, such as whether contraception is used at all, consistency of contraceptive use, or continuation of the chosen method. Women are usually satisfied with their contraceptive method. There seems to be little need to change sexuality education or contraceptive counselling with regard to contraceptive method choice in the Netherlands. However, for specific subgroups, contraceptive decision-making may require attention. In contexts where unwanted pregnancies are more prevalent, both in- and outside the Netherlands, method choice may be more problematic.

# Chapter 4

# Social-Demographic Differences in Oral Contraceptive Pill Adherence and the Mediating Function of Social Cognitive Factors

## Abstract

*Introduction*

Missing pills is a common occurrence. In this study, we investigate whether oral contraceptive pill (OCP) adherence varies by women's social-demographic characteristics and to what extent these differences in pill-taking can be explained by differences in social cognitive variables.

*Methods*

Data from the Sexual Health in the Netherlands 2011 Survey were used. Of the participants, 904 women used OCPs. The outcome of this study was whether or not women had missed more than one pill of any pack during the past six months. Social-demographic differences were investigated with logistic regression analyses. Multiple mediation analyses were used to assess the role of social cognitive factors with regard to these differences.

*Results*

Of OCP users, 21% had missed more than one pill from at least one pack during the preceding six months. Adherence to oral contraceptives differed according to age, ethnicity and relationship status. Ethnic differences in OCP adherence are mediated by differences in social cognitive factors, notably attitudes toward OCPs and perceived behavioural control regarding their use. Differences in OCP adherence by age and relationship status were not mediated by social cognitive factors.

*Conclusion*

Women who did not miss pills were older, more often of Dutch or Western migrant origin, and more often in a steady relationship than those who did not adhere to their contraceptive regimen. They also had a more positive attitude about OCPs and were more confident about their ability to take each pill, even in difficult circumstances. These factors mediated ethnic differences, but not other social-demographic differences.

*Wider implications of the findings*

Improving attitudes and behavioural control regarding oral contraceptive use may contribute to more consistent use of OCPs and reduce ethnic differences.

## 4.1 Introduction

Oral contraception is the most popular contraceptive method for Dutch women of all ages, especially among young people. This method is used, alone or combined with condoms, by 53% of all women who use contraception. Among teenagers who use contraception, 87% use oral contraceptive pills (OCPs) (Picavet, 2012). Pills need to be taken daily in order to be effective, except during a pill-free period (Zapata, Steenland, Brahmi, Marchbanks, & Curtis, 2013). However, not all women use OCPs as consistently as is required. This results in many unplanned pregnancies. Of all abortions each year, approximately 8,000 are performed on women who use OCPs (Goenee et al., 2013) The gap between pregnancy rates during perfect use and typical use of OCPs (Mansour, Inki, & Gemzell-Danielsson, 2010; Trussell, 2011) can be attributed to imperfect use, in particular to missing pills. Improving the adherence of OCP users could potentially prevent many unintended pregnancies.

Missing pills is a common occurrence. Of American women, 38% report missing at least one active pill during the previous three months. Most of these, 71%, were simply forgotten (Frost & Darroch, 2008). Aubeny and colleagues (2002) found that most pills were missed during the first week of the pack (45%), when there is more risk involved in missing pills. In some studies, migrant women were found to be at increased risk of missing pills (Peterson et al., 1998; Steinkellner et al., 2010). Other social-demographic differences were generally small or non-existent. In one population study, not any demographic differences were found between women who did and did not adhere to their OCP regimen (Frost & Darroch, 2008).

A modest number of studies describe why women miss pills. Women themselves cited as the most important reasons being away from home, forgetting the pill, and having no new pack available (Smith & Oakley, 2005). However, other factors may be involved as well. For example, having no established routine for pill use and having multiple or non-steady partners were related to missing pills. Having used oral contraceptives longer resulted in better OCP adherence. More consistent pill use has also been linked to patient satisfaction with the health care provider, as well as with reading and understanding the written instructions for use (Frost & Darroch, 2008; Moreau et al., 2006; Moreau, Hall, Trussell, & Barber, 2013; Rosenberg et al., 1998; Peterson et al., 1998).

Research on the demographic background of women who miss pills helps to identify women who can potentially benefit the most from preventive efforts. Associations with related behaviours, such as establishing a pill-taking routine,

helps to determine what behavioural changes could be targeted to improve pill-taking. However, these types of research should be supplemented with research on modifiable, theory-based determinants of behaviour (Dardano & Burkman, 2001). A theoretical perspective that has been used extensively to guide research into behavioural change is the recently revised and expanded theory of reasoned action of Fishbein and Ajzen (2010). In the current study, we use two of its central concepts, perceived behavioural control and attitude. Perceived behavioural control entails confidence in one's own capability to perform the desired behaviour, even in difficult situations. It has been found to contribute to OCP adherence (Molloy, Graham, & McGuinness, 2012). Attitude is the positive or negative appraisal of OCPs. Qualitative findings show that women's attitudes vary widely, which is associated with reproductive health behaviours (Cheung & Free, 2005). Consequently, it is hypothesised that women who are more positive about 'the pill' are also more likely to take their pills consistently.

Two more factors were derived from other theoretical approaches. Risk perception is one of the concepts derived from the health belief model and refers to somebody's perceived susceptibility to contract a particular condition or illness (Janz & Becker, 1984), in this case pregnancy. Risk perception has not been studied in conjunction with OCP use, but it has been found to be relevant for the use of emergency contraceptives (Moreau, Bouyer, Goulard, & Bajos, 2005). The last factor we take into account is child wish. Attitudes toward pregnancy have been found to have an impact on OCP adherence. Women who are more concerned about getting pregnant, are less likely to miss pills (Moreau et al., 2013).

In this study we examine the association of adherence to OCPs with the four social cognitive factors that were described. The first research question is whether there are social-demographic differences with regard to OCP adherence. The second question is whether social cognitive factors are related to OCP adherence. The third and final research question is whether social-demographic differences – if they exist – are mediated by social cognitive factors. With the first research question we investigate risk groups, with the second whether improving social cognitive factors could lead to better adherence to OCPs, while the third question is meant to assess whether demographic inequities could be reduced by improving these social cognitive factors. With the answers to these questions we aim to contribute to the understanding of mechanisms that lead to low OCP adherence, in order to be able to develop more effective interventions.

## 4.2 Methods

*Procedure*

Participants were recruited in September 2011 for the Sexual Health in the Netherlands 2011 Survey. All participants were members of the online research panel Panelclix. Potential members of this panel were approached through e-mail campaigns, banners, editorials and word-of-mouth advertising. Members of the panel receive e-mail invitations to fill out surveys on various topics on a regular basis. Participants receive a reward, so called 'clix' with which participants receive a discount on products that can be purchased online. The invitation for our study contained a link to an online questionnaire, which took about 20 minutes to complete.; anonymity was guaranteed as no identifying information was collected. Under current Dutch regulations, the study was exempt from formal medical-ethical review.

For this survey, Panelclix invited a random sample of their members. Statistics Netherlands provided figures about the distribution of age, biological sex, educational level, and level of urbanisation among the Dutch population. During data collection, it was assessed whether the sample and the Dutch population were equally distributed with regard to these characteristics. When certain groups were found to be underrepresented, sampling was extended among these groups. When a group was sufficiently represented in the sample, no new representatives of this particular group were admitted. As a result, our sample is representative of the Dutch population in terms of important demographic characteristics. To avoid biased participation due to the topic of the study, this was described in general terms as concerned with relationships and sexuality. In addition, it was emphasised that anybody was invited to fill out the questionnaire, regardless of marital status.

*Participants*

Of all Panelclix members who were invited (n=41,831), either randomly or specifically targeted, 45% (19,953) acknowledged receiving their invitation by clicking on the link to the questionnaire and 30% (12,594) started to fill it out. Of those who started, approximately one quarter (3,293) could not complete the questionnaire because they were advised that their demographic group was already sufficiently represented. A further 13% did not complete the survey. Of the persons who started the survey, the data of 0.5% were removed, because they were not members of the target population, did not report their demographic characteristics or provided data that contained three or more inconsistencies. The final study sample consisted of 3,927 men and 4,137 women, which was 40%

of those who clicked on the link to the questionnaire. Of the 1,912 sexually active women between ages 15 and 49 who were not (trying to become) pregnant, 904 (47.3%) reported using OCPs as their main method of preventing pregnancy, which subsample was analysed for this chapter. Fourteen percent of these women used OCPs combined with condoms.

*Measures*

The outcome variable, adherence to the recommended practice of oral contraception use, was defined as not having missed more than one pill of any pack during the past six months. This is in accordance with guidelines for missed contraceptive pills in The Netherlands, which recommend that additional protection is only required when two or more pills were missed (Brand et al., 2011). Two questions were asked. The first was whether any pill was missed during the previous six months. If this was confirmed, it was asked whether more than one pill of any pack was missed, with 'yes', 'no' and 'I do not know' as response options.

Social-demographic characteristics included age, ethnicity, level of education, urbanisation of place of residence, religiosity, having children, and relationship status. Age was measured with a single question. Ethnicity was examined with 2 items about country of birth of both parents, dichotomised in line with Dutch standards to Dutch/Western background and non-Western background. Three levels of education were distinguished, based on the highest education participants had finished. These were lower (primary education or lower vocational training), middle (secondary education or vocational training), and higher (college or university) education. Urbanisation was based on postal code. Participants were considered religious if they indicated to adhere to any religion. Having children was assessed by a single question, indicating that children could be participants' biological children, but also any children that participants considered theirs, including stepchildren, foster children or adoptive children. Relationship status was measured with a single question about whether participants had a steady partner.

Social cognitive constructs were measured with self-constructed 5 point scales, for which the responses were averaged. With regard to attitude and perceived behavioural control, these were based on guidelines on constructing scales for these factors by Fishbein and Ajzen (2010). Perceived behavioural control was measured by asking participants to rate whether they would be able to take all pills as required during the coming three months in several circumstances. Examples of these circumstances were "when you don't sleep at home" and

"when you have not had sex for a while". Internal consistency of these items was very good (Cronbach's alpha = .96). With regard to attitude toward oral contraception, participants were asked to rate how much they agree with eight statements about oral contraception. Examples of these statements are "I am worried about side effects of the pill" and "I would recommend the pill to my friends". The internal consistency of these items was good (Cronbach's alpha = .71).

Two questions were asked about risk perception when forgetting one pill and when forgetting more than one pill. Possible responses ranged from 'absolutely no risk' to 'a large risk'. Internal consistency was good (Cronbach's alpha = .81). Pregnancy intention was also assessed with two questions, one about how much the woman would want to avoid becoming pregnant, and the other about how she would feel when she would get pregnant (from 'very good' to 'very bad'). Internal consistency was good (Cronbach's alpha = .76).

*Data analysis*

In order to answer the question about social-demographic differences between women who do and those who do not use OCPs consistently, both bivariate and multivariable logistic regression analyses were performed. For bivariate analyses, odds ratios (OR) and for the multivariable analysis adjusted ORs (aOR) are presented, as well as 95% confidence intervals (CIs). The relationship of OCP adherence with social cognitive factors was investigated by means of bivariate logistic regression analyses as well. For these analyses, level of significance was set at $p < .05$.

A mediation analysis is required to answer the research question whether differences in social cognitive factors can account for social-demographic differences in OCP adherence. Mediation was tested by examining indirect effects (a X b pathways in Figure 4.1), using bootstrapping methodology with the process macro for SPSS (Hayes, 2013). A separate analysis was performed for each social-demographic variable that differed significantly between women who did and those who did not adhere to OCP prescription guidelines (with a significant total effect, the c pathway). This bootstrap method is particularly useful for testing models with more than one mediator (Preacher & Hayes, 2008). If there is no significant direct effect (c' pathway), after indirect effects were taken into account, the relationship under investigation is fully mediated (Zhao, Lynch, & Chen, 2010).

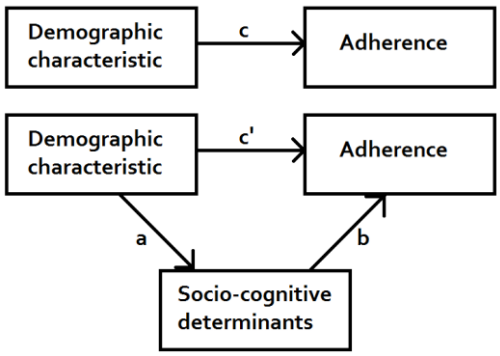


**Figure 4.1**. Mediation model

## 4.3 Results

*Social-demographic differences in OCP adherence*

In this sample, a majority of 67% of OCP users missed at least one pill during the past six months. A considerably smaller proportion of 21% admitted having missed at least two pills of any of the packs that were used in the same period of time. Most social-demographic characteristics were unrelated to OCP adherence. However, women of a higher age, a Dutch or other Western ethnicity, and those who had a steady partner were less likely to miss OCPs. In a subsequent multivariable analysis, all three demographics were found to contribute independently to OCP adherence (Table 4.1).

*The contribution of social cognitive factors to OCP adherence*

Whereas risk perception and pregnancy intention were not related to OCP adherence, a positive attitude regarding OCP use was related to better adherence to OCP use, as was higher perceived behavioural control (Table 4.2).

In Table 4.3, the results of the mediation analyses for the significant demographic differences are presented. For age, ethnicity, and partner status separate analyses were done. Whereas the total effect (c paths) of relationship status on OCP adherence was significant, the social cognitive factors under consideration did not mediate this effect. There was an indirect effect of perceived behavioural control on the relationship between age and OCP adherence. However, the effect was very small, near zero, and the direct effect was almost not affected by inclusion of the mediating factors.

**Table 4.1** OCP adherence by social-demographic characteristics

| | | **Total** n (%) | **Consistent OCP users** n (%) | **Inconsistent OCP users** n (%) | **Bivariate logistic regression** OR (95% CI) | **Multivariable logistic regression** aOR (95% CI) |
|---|---|---|---|---|---|---|
| Mean age | | 29.1 | 29.6 | 27.2 | 1.03 (1.01, 1.05)* | 1.05 (1.02, 1.08)* |
| Ethnicity | Dutch/Western (ref.) | 732 (81.0) | 618 (82.6) | 114 (73.1) | | |
| | Non-Western | 172 (19.0) | 130 (17.4) | 42 (26.9) | 0.76 (0.62, 0.92)* | 0.79 (0.63, 0.99)* |
| Religiosity | Yes (ref.) | 393 (43.5) | 324 (43.3) | 69 (44.2) | | |
| | No | 511 (56.5) | 424 (56.7) | 87 (55.8) | 1.02 (0.86, 1.21) | 1.01 (0.84, 1.22) |
| Relationship status | Yes (ref.) | 725 (80.2) | 614 (82.1) | 111 (71.2) | | |
| | No | 179 (19.8) | 134 (17.9) | 45 (28.8) | 0.73 (0.60, 0.89)* | 0.75 (0.61, 0.92)* |
| Children | Yes (ref.) | 288 (31.9) | 242 (32.4) | 46 (29.5) | | |
| | No | 616 (68.1) | 506 (67.6) | 110 (70.5) | 0.94 (0.78, 1.13) | 1.26 (0.97, 1.63) |
| Education | Lower | 236 (26.1) | 196 (26.2) | 40 (25.6) | 1.00 (0.76, 1.30) | 1.09 (0.82, 1.45) |
| | Middle | 417 (46.1) | 339 (45.3) | 78 (50.0) | 0.88 (0.70, 1.11) | 0.91 (0.72, 1.14) |
| | Higher (ref.) | 251 (27.8) | 213 (28.5) | 38 (24.4) | | |
| Urbanisation | Urban | 210 (23.4) | 168 (22.6) | 42 (26.9) | 0.82 (0.63, 1.08) | 0.90 (0.67, 1.21) |
| | Suburban | 470 (52.3) | 386 (52.0) | 84 (53.8) | 0.94 (0.75, 1.19) | 0.91 (0.72, 1.16) |
| | Rural (ref.) | 219 (24.4) | 189 (25.4) | 30 (19.2) | | |

*Note*. * Significantly different odds for OCP adherence, compared with the reference group (ref.), $p < .05$. OR = Odds Ratio, CI = Confidence Interval, aOR = adjusted Odds Ratio.

**Table 4.2** Mean scores of social cognitive variables by OCP adherence

| | | Total | Consistent OCP users | Inconsistent OCP users | Bivariate logistic regression OR (95% CI) |
|---|---|---|---|---|---|
| **Factors** | Risk perception | 3.44 | 3.44 | 3.47 | 0.97 (0.80, 1.17) |
| | Pregnancy intention | 3.88 | 3.89 | 3.83 | 1.07 (0.90, 1.27) |
| | OCP attitude | 3.67 | 3.70 | 3.52 | 1.85 (1.34, 2.57)* |
| | Perceived control | 4.13 | 4.23 | 3.65 | 1.48 (1.29, 1.69)* |

*Note.* * Significant relationship with OCP adherence, $p$ <. 05. OR = Odds Ratio, CI = Confidence Interval.

With regard to ethnicity, there were significant indirect effects for two of the four factors, indicating their mediating function. Indirect effects were shown for attitude and perceived behavioural control regarding OCP use. The remaining direct effect of ethnicity on OCP adherence (c' path), after inclusion of the mediators, was not significant, indicating that ethnic differences in OCP adherence is fully mediated by social cognitive factors. The resulting model is presented in Figure 4.2.

## 4.4 Discussion

Consistent with prior research, we found that many OCP users miss pills. Younger women, women of non-Western origin, and women without a steady partner are more likely to have missed more than one pill of any of the packs that were used during the previous six months. Ethnic differences in OCP adherence have been found before (Peterson et al., 1998; Steinkellner et al., 2010). However, age and relationship status have not previously been found to have an impact on OCP adherence. OCP users who adhere to their regimen think more positively about oral contraception and they tend to have a better sense of being able to take OCPs in difficult circumstances. As predicted from the theory of reasoned action (Fishbein & Ajzen, 2010), the effect of ethnic background on OCP adherence is mediated by perceived behavioural control and attitude towards OCPs. This means that ethnic differences are reflected in differences in these social cognitive factors. Women with a non-Western background miss pills more often insofar as they are less confident that they can take the pill consistently in difficult situations and when their attitude towards OCPs is less positive, compared to Dutch and Western women.

**Table 4.3** Indirect effects of age, ethnicity, and relationship status on OCP adherence through risk perception, pregnancy intention, OCP attitude, and perceived behavioural control

| | Effect | *SE* | *z* | *p* | Bootstrapped bias corrected 95% CI |
|---|---|---|---|---|---|
| **Age: higher** | | | | | |
| Total effect | .03 | .01 | 2.99 | .00 | |
| Indirect effects | | | | | |
| Risk perception | .00 | .00 | 0.42 | .68 | -.00, .01 |
| Pregnancy intention | -.00 | .00 | -0.64 | .52 | -.00, .00 |
| Attitude | -.00 | .00 | -1.31 | .19 | -.01, .00 |
| Perceived control | -.00 | .00 | -2.11 | .03 | -.01, -.00 |
| Direct effect | .04 | .01 | 3.50 | <.001 | |
| **Ethnicity: non-Western** | | | | | |
| Total effect | -.56 | .20 | -2.74 | .01 | |
| Indirect effects | | | | | |
| Risk perception | -.01 | .02 | -0.85 | .40 | -.07, .01 |
| Pregnancy intention | -.01 | .02 | -0.57 | .57 | -.05, .01 |
| Attitude | -.10 | .05 | -2.29 | .02 | -.22, -.03 |
| Perceived control | -.16 | .05 | -3.28 | .00 | -.26, -.08 |
| Direct effect | -.29 | .22 | -1.36 | .18 | |
| **Relationship status: a steady partner** | | | | | |
| Total effect | -.52 | .22 | -2.45 | .01 | |
| Indirect effects | | | | | |
| Risk perception | .00 | .01 | 0.09 | .93 | -.02, .04 |
| Pregnancy intention | .04 | .04 | 1.13 | .26 | -.02, .13 |
| Attitude | -.01 | .02 | -0.58 | .56 | -.08, .02 |
| Perceived control | -.08 | .04 | -1.75 | .08 | -.17, .00 |
| Direct effect | -.51 | .22 | -2.30 | .02 | |

*Note*. * Significant indirect effect, $p < .05$. SE = Standard Error, CI = Confidence Interval

That older women and those in a steady relationship take OCPs more consistently than other women cannot be attributed to differences in social cognitive factors, as measured in this study. There may be other explanations for these differences. For example, OCP use decreases with age. It is quite likely that those women who forget pills are likely to have discontinued using OCPs by the

age of 40, because missing pills can be a reason for a method switch or discontinuing contraception altogether (Rosenberg & Waugh, 1999). The better adherence to OCPs as reported by women in a steady relationship may result from their more regular lifestyle. For example, women who have a partner may spend more of their nights at home.

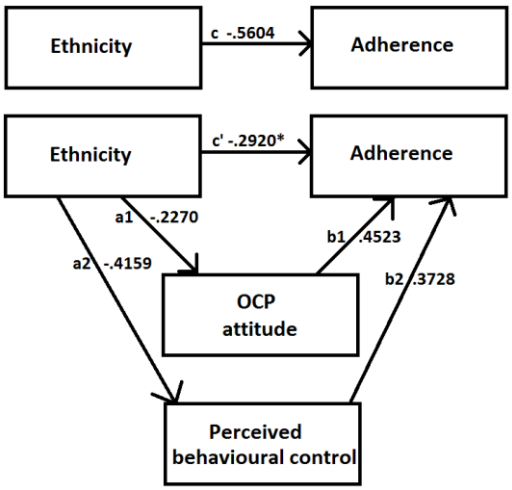


**Figure 4.2** Mediation; only significant relationships are included, except *, which is not significant

This is one of the few studies that investigates the influence of theory-derived social cognitive factors on contraceptive behaviour. The findings suggest a causal pathway for ethnic differences through attitude and perceived behavioural control. However, the cross-sectional study design does not provide conclusive evidence and further controlled experimental research is needed.

Another strength of this study is the large and nationally representative sample. Nevertheless, some concerns about the representativeness of the sample need to be considered. Notably, the response rate of 40% was limited, albeit similar to what is commonly observed for web-based surveys (Manfreda, Bosnjak, Berzelak, Haas, & Vehovar, 2008). A limitation of this study is that non-Western migrants, especially those over the age of 35, were underrepresented in the sample, which may have biased findings with regard to ethnicity. Another bias with regard to ethnicity is that the most vulnerable groups may not be well represented in the online panel we used.

Furthermore, the measures for social cognitive factors were self-constructed by the authors. Their validity may be limited. Because the differences we found on these measures were small, it is unclear whether these findings have clinical relevance. Moreover, this study relied on self-reported contraceptive use, and as Potter and colleagues (Potter, Oakley, de Leon-Wong, & Canamar, 1996) have shown, women often do not accurately report how many pills they miss. They typically report less occurrences than registered by electronic pill dispensers. Differences between women who do and do not miss pills may be underestimated in this study, because some of the women were misclassified as consistent OCP users. More accurate measures of pill-taking behaviour could result in more valid predictions of consistent use.

More research should be done on possibilities for improving consistent use of OCPs through behavioural interventions. There is a paucity of research on theoretical determinants of adherence to OCPs, while such studies could enhance our understanding of why women miss pills. For example, a replication of this study in other contexts would be useful to determine the validity of the results outside the Netherlands. Theories of the relationship between behaviour and other possible factors should be applied to OCP adherence. These could include pill-related cognitions, like in the current study, but also more general factors. For example, improving mental health or reducing poverty might result in better adherence to OCPs (Hughey et al., 2010; Westhoff et al., 2012).

Women who are younger, of non-Western backgrounds, or without a steady relationship are more likely to miss OCPs than others. Therefore, these are the primary groups that could benefit from additional guidance and behavioural interventions. Because attitude and perceived behavioural control are related to better adherence to OCPs, behavioural interventions might successfully focus on these elements. Furthermore, ethnic differences in OCP adherence are mediated by social cognitive differences between women of Western and those of non-Western backgrounds. This is encouraging, because social cognitive factors are susceptible to change, in contrast to ethnicity. Interventions that successfully improve attitude and behavioural control may hence not only bolster up OCP use, but also contribute to a reduction of disparities in adherence between Western and non-Western women. Our results suggest that such interventions may not reduce differences in OCP adherence according to age or relationship status.

## 4.5 Conclusion

This study contributes to the knowledge base regarding factors related to poor adherence to OCPs. More importantly, it adds to the theoretical understanding of

possible causes of inconsistent use of OCPs. This has implications for strategies to improve OCP adherence. The results of this study suggest that OCP adherence can be enhanced and ethnic disparities may be reduced by improving the attitude toward oral contraception, particularly of ethnic minority women, as well as women's sense of being able to take the pill consistently, even in difficult circumstances.

# Chapter 5

# Skipping the Pill-Free Interval: Data from a Dutch National Sample

This chapter is based on the following publication:
Picavet, C. (2014). Skipping the pill-free interval: Data from a Dutch national sample. *Contraception, 89*, 28-30.

## Abstract

*Introduction*

A monthly pill-free interval is unnecessary and many women prefer to have fewer bleeding episodes.

*Methods*

818 oral contraceptive pill (OCP) users reported frequency of skipping the pill-free interval in the online 2011 Sexual Health in the Netherlands Survey. Demographics of women who skipped pill-free intervals regularly were compared to those of women who rarely skipped intervals.

*Results*

73% of the women have ever skipped pill-free intervals and 38% do so regularly. Women of Dutch or Western origin and non-religious women skip intervals more frequently, but differences are small.

*Discussion*

Skipping pill-free intervals is common, even when it is not actively promoted.

*Implications*

Women who use OCPs can and do skip pill-free intervals, either with or without consulting a physician. If bleeding preferences were structurally discussed with patients, the number of women who skip intervals could increase even further.

## 5.1 Introduction

There is no medical necessity to have a pill-free interval every month during use of oral contraception. The main reason for having these intervals is to have scheduled bleeding episodes, much like the natural cycle. A Cochrane review compared extended-cycle use with cyclic monthly regimens. It found no disadvantages for extended-cycle use, whereas extended-cycle users had better control of headaches, fatigue, bloating, menstrual pain, and genital irritation than did cyclic users (Edelman et al., 2006). Acknowledging this, pharmaceutical companies have brought extended-cycle regimens to the market, but not in the Netherlands.

Several studies have been done to assess whether women would be willing to use pills with different regimens, and attitudes toward monthly bleeding. However, actual practices of skipping pill-free intervals have rarely been studied before, even though women have been capable of skipping pill-free intervals with most existing OCP formulations. In the United States, 12% of OCP users use dedicated extended-cycle regimens (Stidham Hall & Trussell, 2012). Even though these products are not available in Germany and Austria, almost all gynaecologists in these countries have ever prescribed OCPs for extended-cycle use. Of female gynaecologists who had used OCPs, 37% had ever used them in extended cycles (Wiegratz et al., 2010).

In this chapter, data are presented on how often women skip pill-free intervals and whether women who regularly skip these intervals differ from other OCP users on demographic characteristics. OCPs are the method of choice for most women in the Netherlands. Fifty-three percent of all Dutch women who use contraception rely on OCPs (Picavet, 2012). In the Netherlands, women need to get a prescription, usually from a general practitioner (GP), when they start using OCPs. Afterwards they can obtain repeat doses directly from the pharmacy. Compulsory health insurance makes sure that almost everybody is insured. The cheapest contraceptives are fully reimbursed for women and girls under 21, the costs of more expensive alternatives are only partly covered. Reimbursement for older women depends on whether they have additional insurance.

In a 1999 Dutch study, it was already established that only 30% of the women wanted monthly bleeding episodes. 25% did not want any bleeding episodes anymore (Tonkelaar & Oddens, 1999). In online patient information, both GPs and pharmacists indicate that women can skip pill-free intervals, for example in order not to bleed during vacation or exams, but prolonged OCP use without intervals is discouraged. Skipping intervals is only briefly mentioned in a recently updated

version of the primary healthcare guideline on contraception. It says that women may skip the pill-free interval in case of period-related complaints or when the woman so desires, but that she should be advised to have an interval when she has a breakthrough bleeding. Furthermore, there is a warning that long-term effects are unknown (Brand et al., 2011).

## 5.2 Methods

The 2011 Sexual Health in the Netherlands Survey was designed to explore a variety of sexual health subjects, such as sexual behaviour, dysfunctions, sexual violence, and reproductive health. This was the third edition of the biannual survey. OCP users were asked whether they had ever skipped a pill-free interval and how often they still had one (participants selected one of the following alternatives: rarely skipped one, has an interval at least once every three months, at least once a year, never, or only once they start bleeding). This was the first time these questions were included. They were formulated for this survey and not validated. Several demographic characteristics were determined. Ethnicity was based on country of birth of the parents. Level of education was categorised as low when a participant had only finished primary school or vocational training, medium for secondary school, and high for college or university education. Women who reported having a steady partner included married and unmarried women.

The Survey was an online questionnaire among people who were 15-70 years old. The sample was taken from an online panel of people who volunteered to participate in research. After a general sampling phase, additional recruitment took place among underrepresented subsamples, particularly of ethnic minorities. 41,831 members of the panel were approached at random and 19% completed the survey. Participants received discounts on on-line purchases.

The final sample of 3,927 men and 4,137 women was weighted, in order to reach maximum representativeness on age, sex, education, and urbanisation. Of the sexually active women between 15 and 49 who were not (trying to become) pregnant, 818 (weighted n, 32%) reported using OCPs as their main method of preventing pregnancy. 14% of these women used OCPs in combination with condoms. $X^2$ analyses were performed on the data, using SPSS 21. Under current Dutch regulations, no ethical approval was required.

**Table 5.1** Demographic profile of women who do not and who do regularly skip the pill-free interval (%)

| | Do not skip intervals (n=504) | Do skip intervals (n=314) | Total (n=818) | *p* |
|---|---|---|---|---|
| **Age** | | | | .06 |
| 15-19 | 16.3 | 18.5 | 17.1 | |
| 20-29 | 35.1 | 42.7 | 38.0 | |
| 30-39 | 27.2 | 21.3 | 24.9 | |
| 40-49 | 21.4 | 17.5 | 19.9 | |
| **Ethnicity** | | | | .04 |
| Dutch/Western | 80.6 | 85.5* | 82.5 | |
| Non-Western | 19.4* | 14.5 | 17.5 | |
| **Urbanisation** | | | | .43 |
| Urban | 23.4 | 23.6 | 23.5 | |
| Suburban | 47.1 | 51.0 | 48.6 | |
| Rural | 29.5 | 25.5 | 27.9 | |
| **Education** | | | | .99 |
| High | 27.4 | 27.1 | 27.3 | |
| Medium | 45.7 | 45.9 | 45.8 | |
| Low | 26.8 | 27.1 | 26.9 | |
| **Religion** | | | | .01 |
| Not religious | 52.2 | 61.8* | 55.9 | |
| Religious | 47.8* | 38.2 | 44.1 | |
| **Partner Status** | | | | .46 |
| No steady partner | 18.9 | 19.4 | 19.1 | |
| Steady partner | 81.1 | 90.6 | 80.9 | |
| **Children** | | | | .07 |
| Has no children | 62.8 | 69.1 | 65.2 | |
| Has children | 37.2 | 30.9 | 34.8 | |

*Note*. * More than the other women, $p < .05$.

## 5.3 Results

Only 27% of OCP users have never skipped a pill-free interval. A further 35% rarely skip one. The other 38% regularly skip intervals. Most of them (24% of all OCP users) have pill-free intervals at least once every three months. Eight percent have pill-free intervals at least once a year and three percent never have pill-free intervals. Another four percent start a pill-free interval once they start bleeding, conforming to the primary care guideline.

Women who regularly skip pill-free intervals were compared with women who do so rarely or never (Table 5.1). Women who regularly skip intervals are more often from Dutch or Western origin and are less likely to be religious. The two groups did not differ on other demographic background variables. Cramer's V was small (<.10), even for the significant differences.

## 5.4 Discussion

Although skipping pill-free intervals is not actively promoted in the Netherlands, it is very common among Dutch OCP users. Of those, 73% have ever skipped an interval, and 38% regularly do so. There are hardly any demographic differences between women who do and who do not (at least regularly) skip intervals. There are only minor differences in ethnicity and religion between the two groups.

The frequency of skipping pill-free intervals is consistent with the desire of many Dutch women to reduce the frequency of their bleeding episodes. Although 25% say they do not want any of these episodes altogether (Tonkelaar & Oddens, 1999), only three percent never have pill-free intervals. Therefore, the practice could become even more common when providers start informing women actively about the safety and additional benefits of skipping intervals. It is unclear whether pill-taking behaviour is similar in other countries, but that may well be so, because other studies indicate that similar proportions of women in the US and European countries would like to reduce the frequency of their bleeding (Andrist, Arias, Nucatola, Kaunitz, & Musselman, 2004; Fruzzetti, Paoletti, Lombardo, Carmignani, & Genazzani, 2008; Wiegratz, Hommel, Zimmermann, & Kuhl, 2004).

# Chapter 6

# Intention to Use Emergency Contraceptive Pills and the Role of Knowledge in a Dutch National Sample

This chapter is based on the following publication:
Picavet, C., van der Vlugt, I., Wijsen, C. (2014). Intention to use emergency contraceptive pills and the role of knowledge in a Dutch national sample. *European Journal of Contraception and Reproductive Health Care, 19*, 250-258.

## Abstract

*Objectives*

Emergency contraceptive pills (ECPs) are underused for preventing unintended pregnancy. Not all women are willing to use them even when at risk of conceiving. This chapter examines whether increased knowledge about ECP may increase the intention to use these products.

*Methods*

Factors associated with intention to use emergency contraception (EC) were assessed among 1,310 women who participated in the nationally representative Sexual Health in the Netherlands 2009 survey. Logistic regression models included demographics, prior use of ECPs, and ECP knowledge.

*Results*

Seventeen percent of the women do not intend to use EC after unprotected sexual intercourse and a further 27% do not know whether they would use it. Intention is most strongly related to prior use and not having children. Only two of six knowledge items are related to intention in multivariate analyses. Knowing that ECPs can be obtained without prescription upgrades intention. However, knowing that a woman can still get pregnant has a negative impact on intention.

*Conclusions*

Improving knowledge may contribute to intention to use EC, but its role will be modest. To understand the reasons behind ECP use it is essential to study the contribution of other factors, like attitudes and social norms.

## 6.1 Introduction

Emergency contraceptive pills (ECPs) are a safe and reasonably effective means for preventing pregnancy after unprotected sexual intercourse (UPSI) (Stewart et al., 2007). ECPs containing levonorgestrel (LNG) are the best known and most widely used method of emergency contraception (EC) in the Netherlands. Placing a copper IUD is a more effective option, but it is seldom used (Harper et al., 2012). ECPs containing ulipristal acetate (UPA) (Glasier et al., 2010) are not yet widely available in the Netherlands, whereas LNG ECPs have been available over the counter since 2004. At the time of data collection, UPA ECPs were not available at all. In this article, 'ECPs' refers to pills containing LNG.

In the Netherlands, women who buy ECPs are mostly natives of the country, under 25 years of age, without children, and in a steady relationship. Their level of education is relatively high (van Lee et al., 2006). In France, also, women under 25 years old were more likely to take ECPs. However, these odds were smaller among those in a committed relationship (Goulard et al., 2006). In an Australian study, only marital status was different between users and non-users. Unmarried women were more likely to have taken ECPs. No differences were found by age, education, urbanisation or country of birth (Hobbs et al., 2011).

Satisfaction with ECPs is high among most users in the Netherlands: 91% are (very or somewhat) satisfied, especially regarding ease of use and accessibility. They are less satisfied with costs and express concerns about possible health effects (van Lee et al., 2006). In spite of their effectiveness and acceptance, ECPs remain an underused option in birth control. A Swedish study involving women who sought an abortion showed that 64% were aware of the risk of conceiving at the time they had sex, yet only 4% had used ECPs (Sørensen et al., 2000). In an American study, about half of the clients of reproductive health clinics acknowledged that they had ever been in a situation where they could have used ECPs, but had not (Harvey, Beckman, Sherman, & Petitti, 1999). EC use must be promoted for these circumstances.

A lack of knowledge about ECPs may be one of the reasons why they are not used more often. To use them, the first thing a woman needs to know, is that ECPs exist. Awareness rates, according to previous studies, range from 39% (Ahern, Frattarelli, Delto, & Kaneshiro, 2010) to 96% (Bakker et al., 2009). The highest percentage came from the same study we report on, suggesting that lack

of awareness may not be an important factor, at least in the Netherlands. More detailed knowledge, particularly that ECPs are not abortifacient and that they are safe, was found to be related to the willingness to use ECPs (Spence, Elgen, & Harwell, 2003). In a prospective study, awareness of direct pharmacy access and of the window of efficacy was shown to increase uptake of ECPs. When a woman knows both that ECPs are directly available at pharmacies and that they can be used within 72 hours, the odds of using them during the following year is 5.9 times higher than when she is unaware of this (Goulard et al., 2006).

In this article, we focus on the intention to use ECPs. Few investigators looked at willingness to use ECPs. The ones who did, showed that not all women who may be at risk of unplanned pregnancy would consider using EC. In Turkey, 16% of the women said they would not use the ECP if they needed it and a further 29% were not sure (Aksu, Kücük, Karaöz, & Ünay, 2010). The aim of our study was to determine what information, for example provided in an educational intervention, could improve the willingness to use ECPs. The research questions were: (i) What proportion of women do not intend to use ECPs if they are exposed to the risk of becoming pregnant? (ii) Is intention to use these products related to social-demographic variables, prior use and knowledge? (iii) How well informed are women about ECPs and which elements of knowledge are most strongly linked to intention?

## 6.2 Methods

*Procedures and participants*

Data were obtained from the 2009 Survey on Sexual Health in the Netherlands (Bakker et al., 2009). This nationally representative, cross-sectional study describes problems and healthcare needs in various sexual health domains. Members of an online research panel of 250,000 volunteers were invited by e-mail to fill out an Internet-based questionnaire on 'relationships and sexuality'. By doing so, participants earned discounts on products they can buy on the Internet. The questionnaire took about 30 minutes to complete. Under current Dutch regulations, no ethical approval was required.

After a general sampling phase, specific underrepresented subsamples were recruited in order to achieve maximum representativeness. Of all those invited, 25% started to fill out the questionnaire. Of these 'starters', 16% were given notice that their social-demographic profile was already sufficiently represented, and a

further 17% decided not to finish completing the questionnaire for other reasons. Another 0.5% were removed from the sample because the data they provided contained inconsistencies. This led to a sample of 6,428 men and women. This sample is representative for the Dutch population on gender, age and level of education.

For the purpose of this study, a subset of the questions of the 2009 Sexual Health in the Netherlands Survey was analysed. Women between ages 15 and 49 were selected. Further inclusion criteria were that they were aware of the existence of ECPs (which actually applies to 97% of all women who were asked), were not currently trying to become pregnant, were using some form of contraception, and had had sex with a man during the preceding six months. This selection aimed at increasing the likelihood that participants would find themselves in a situation where they could need ECPs. This resulted in a sample of 1,785 women.

*Measures*

Intention:
The outcome variable in this study, namely, the intention to use EC was assessed by means of a single question: "Imagine you had intercourse without using contraception. You do not want to become pregnant. Would you take emergency contraception?" The three possible answers were "yes", "no" and "don't know". Women who did not intend to use ECPs were asked why.

Knowledge of emergency contraception:
Six statements (e.g., "Emergency contraception only works when a woman is not [yet] pregnant.") with three possible responses ("correct", "incorrect" and "don't know") were presented to the participants to assess their knowledge of EC.
The items did not form a scale (α=.49), which means that correct knowledge concerning one item does not necessarily increase the chance that other responses will be correct as well. Therefore, only the single items were used in the analyses.

Prior use:
Participants were asked whether they had ever used EC, and – if they had – how long ago.

Demographics:
In the Netherlands, ethnicity is commonly determined by the country of birth of the father and mother of the participant. When either of the parents was not born in the Netherlands, the person concerned is considered to have an ethnic minority background (of either first or second generation, depending on the country of birth of the participant him-/herself). Third generation minorities are considered Dutch. For this study, participants of Dutch or Western origin were compared with participants with a non-Western background. Japan and Indonesia are considered Western in the Netherlands. All other countries in Asia, as well as those in Africa and South America, are considered non-Western.

Levels of education were categorised as 'low', corresponding to primary education and lower vocational education; 'middle', relating to secondary school; and 'high', comprising college and university education. We considered that 'having a steady partner' did not require the woman to be married. Other included social-demographic variables were age, religiosity and whether the respondent had children.

*Analyses*

Differences between women who intended to use ECPs and those who did not were examined. Respondents who answered "don't know" were excluded. After preliminary descriptive analyses, bivariate logistic regression analyses were performed to analyse the relationship between single predictors and intention. The predictors that were taken into consideration were demographic background, ECP knowledge and prior use. Next, the individual contribution of all variables was examined in a multivariate logistic regression. In the first step, demographics and prior use were entered, as these are not changeable. To determine whether ECP knowledge adds to the predictive power of the model, independently from prior use, the knowledge items were entered in the second step. In all analyses, findings were considered significant if $p < .05$.

## 6.3 Results

*Sample characteristics*

In Table 6.1, an overview is presented of social-demographic characteristics of the sample. On average, the women were 30 years old (range: 15-49 years). Thirteen percent of them were of non-Western origin; due to oversampling this proportion is a bit higher than that in the Dutch population as a whole. The distribution of the levels of education corresponds to that in the population. We

could not compare religiosity, relationship status and having children with population data, as these are unavailable.

**Table 6.1** Characteristics of women residing in the Netherlands who do- and of those who do not intend to use emergency contraceptive pills (ECPs) if the need arises

| Characteristic | All (%) (n = 1,310) | Intention (%) (n = 1,010) | No intention (%) (n = 300) |
|---|---|---|---|
| **Age** | | | |
| Under 30 years of age | 53 | 59 | 34 |
| 30 years old or more | 47 | 41 | 66 |
| **Ethnicity** | | | |
| Dutch/Western | 87 | 86 | 91 |
| Non-Western | 13 | 14 | 9 |
| **Education** | | | |
| Low | 31 | 31 | 29 |
| Middle | 48 | 47 | 48 |
| High | 22 | 21 | 23 |
| **Religion** | | | |
| Not religious | 56 | 59 | 48 |
| Religious | 44 | 41 | 52 |
| **Partner Status** | | | |
| No steady partner | 19 | 22 | 12 |
| Steady partner | 81 | 78 | 88 |
| **Children** | | | |
| Has children | 43 | 35 | 66 |
| Childless | 58 | 65 | 34 |
| **Prior ECP use** | | | |
| No prior use | 70 | 64 | 89 |
| Prior use | 30 | 36 | 11 |
| **Knowledge** (% correct) | | | |
| ECPs are abortifacients (false) | 38 | 40 | 32 |
| ECPs are available without a prescription (true) | 44 | 48 | 31 |
| ECPs are only effective if a woman is not yet pregnant (true) | 43 | 45 | 38 |
| Most women have nausea after taking ECPs (false) | 13 | 15 | 7 |
| A woman can still become pregnant after taking ECPs (true) | 43 | 44 | 42 |
| A woman must take ECPs within 24 hours (false) | 18 | 21 | 7 |

*Intention and knowledge; descriptive findings*

Most women (57%, n=1010) intended to use ECPs should the need arise. However, 17% (n=300) did not contemplate doing so. The remaining 27% (n=475) did not know whether they would resort to postcoital contraception. A frequently mentioned reason for not intending to use ECPs was that these women did "not want to terminate a pregnancy" (56%). Other commonly reported reasons were that "the risk of getting pregnant is very small" (25%), "ECPs are bad for your health" (10%), "being (or the partner being) infertile" (9%), and "side effects" (8%).

Participants were not very knowledgeable about ECPs. Only a few knew that currently used ECPs mostly do not make a woman feel nauseous (13%) or that the time-frame in which ECPs can be taken is longer than 24 hours (18%). The three questions that were most frequently answered correctly (by 43-44% of the sample) were that ECPs are available without prescription, that they are only effective when a woman is not yet pregnant, and that a woman may still get pregnant after taking ECPs.

*Bivariate analyses*

Bivariate analyses (Table 6.2) show that intention is related to most social-demographic factors. Only education is not related to intention. Women who intended to use ECPs were younger, less religious, more often single, without children, and with a non-Western background than those who would not contemplate using postcoital contraception. Prior ECP use was also related to intention, as was knowledge of ECPs. Only the item "A woman can still become pregnant after taking ECPs" did not differentiate women who intended to use these products from those reluctant to do so. All other questions were more often answered correctly by women willing to use ECPs. The strongest odds ratios were found for prior use, not having children, and the knowledge item that a woman needs to take the ECP within 24 hours.

*Multivariate analysis*

In the first step of a multivariate regression analysis, prior ECP use and all social-demographic variables were entered (Table 6.2). In this step, age, ethnicity and level of education are not related to intention, whereas all other variables are. Therefore, the effects of age and ethnicity disappear when controlled for other social-demographic variables and prior use. In this step, the model explains 20% of the variance of intention (Nagelkerke $R^2$).

**Table 6.2** Bivariate and multivariate logistic regression predicting intention to use emergency contraceptive pills (ECPs); odds ratios and 95% confidence intervals

| Characteristic | Bivariate | Multivariate Model 1 | Multivariate Model 2 |
|---|---|---|---|
| Age | | | |
| Under 30 years of age | 1.00 | 1.00 | 1.00 |
| 30 years old or more | 2.84 (2.17-3.72)** | 1.36 (0.92-2.01) | 1.24 (0.83-1.84) |
| Ethnicity | | | |
| Dutch/Western | 1.00 | 1.00 | 1.00 |
| Non-Western | 1.56 (1.02-2.40)* | 1.24 (0.78-1.98) | 1.20 (0.75-1.93) |
| Education | | | |
| Low | 1.00 | 1.00 | 1.00 |
| Middle | 1.08 (0.78-1.50) | 1.31 (0.92-1.88) | 1.32 (0.92-1.90) |
| High | 1.20 (0.84-1.72) | 1.45 (0.98-2.15) | 1.45 (0.97-2.16) |
| Religion | | | |
| Not religious | 1.00 | 1.00 | 1.00 |
| Religious | 0.66 (0.51-0.85)** | 0.70 (0.50-0.93)* | 0.72 (0.54-0.95)* |
| Partner Status | | | |
| No steady partner | 1.00 | 1.00 | 1.00 |
| Steady partner | 0.51 (0.35-0.74)** | 0.67 (0.45-1.00)* | 0.70 (0.47-1.05) |
| Children | | | |
| Has children | 1.00 | 1.00 | 1.00 |
| Childless | 0.28 (0.21-0.37)** | 0.35 (0.24-0.52)** | 0.36 (0.24-0.53)** |
| Prior ECP use | | | |
| No prior use | 1.00 | 1.00 | 1.00 |
| Prior use | 4.48 (3.05-6.58)** | 4.72 (3.18-7.02)** | 4.17 (2.76-6.32)** |
| Knowledge (% correct) | | | |
| ECPs are abortifacients (false) | 1.37 (1.04-1.80)* | na | 1.18 (0.84-1.66) |
| ECPs are available without a prescription (true) | 2.06 (1.57-2.72)** | na | 1.43 (1.06-1.95)* |
| ECPs are only effective if a woman is not yet pregnant (true) | 1.32 (1.01-1.71)* | na | 1.06 (0.76-1.46) |
| Most women have nausea after taking ECPs (false) | 2.42 (1.49-3.94)** | na | 1.46 (0.84-2.51) |
| A woman can still become pregnant after taking ECPs (true) | 1.07 (0.82-1.38) | na | 0.74 (0.55-1.00)* |
| A woman must take ECPs within 24 hours (false) | 3.45 (2.16-5.51)** | na | 1.58 (0.94-2.65) |

*Note*. * Different from reference group, $p < .05$, ** $p < .01$. Figures in parentheses are 95% confidence intervals. na = not analysed; ref = reference group.

In the next step, the six knowledge items were entered as additional predictors. Two items (namely, [i] "ECPs are available without prescription", and [ii] "a woman can still become pregnant after taking ECPs") appeared to be independently related to intention, when controlled for all other variables. The latter of these items is interesting. First, it was not significantly related to intention in the bivariate analyses. More importantly still, the results indicate that knowing that a woman can still get pregnant reduces, rather than increases, the odds of intending to use ECPs after UPSI. Not having a partner is no longer related to intention. Women who had used ECPs before and who did not have children had the greatest odds of intending to use ECPs in the future. The model as a whole explains 22% of the variance of intention, so inclusion of the knowledge items does add to the understanding of whether women do or do not intend to use ECPs.

## 6.4 Discussion

*Findings and interpretation*

Not all women of reproductive age, living in the Netherlands, intend to use ECPs should they find themselves at risk of pregnancy, whilst not wishing to conceive. One in six sexually active women of reproductive age claims she would not resort to postcoital contraception in a risk situation. More than a quarter of the respondents did not know whether they would use ECPs. Lack of intention to use these products may therefore be a relevant factor contributing to why they are not used more often. The reason most frequently stated for not wanting to take ECPs is 'Not wishing to end a pregnancy'. It is unclear whether these respondents actually thought ECPs work by causing an abortion. Women may have understood this as 'ending the possibility of getting pregnant'.

Intention to use ECPs is related to most social-demographic factors in this study. Only level of education was not different between women who would or would not contemplate taking ECPs. Older respondents and those who had a steady partner or children were less willing to use ECPs. This may be because having another child would be less of a problem for them than for their younger, still childless counterparts without a steady partner. The women who did not intend to use ECPs did not want to have a child, but they would not have minded so much if they did become pregnant. Ambivalence concerning pregnancy is common and related to unwillingness to use contraception (Campo, Askelson, Spies, & Losch, 2012). Women with non-Western backgrounds residing in the

Netherlands on average have more traditional opinions than native Dutch women. That the former are more willing to use ECPs than native Dutch women may be due to the fact that they are younger on average.

Correct knowledge may be an important prerequisite for ECP use. We found that knowledge was poor, particularly regarding side effects and timing of ECP use. Five of the six knowledge items were related to intention in bivariate analyses. However, when controlled for social-demographic variables and prior use, only one item, knowledge that ECPs are available without prescription, contributes to intention. The results also show that better knowledge does not necessarily augment the willingness to use ECPs after UPSI. When a woman is more aware of the possibility of getting pregnant despite ECP use, she is, not surprisingly, less likely to intend to take it.

*Strengths and weaknesses of the study*

This study is one of the first to determine characteristics of women who do and do not wish to use ECPs after UPSI. It also gives insight in the influence of knowledge about ECPs on willingness to use them. It is based on data of a representative national sample. However, the study has some limitations. First, the outcome of this study is not ECP use, but the intention to use ECPs. The latter was measured by means of a single item, putting participants in a hypothetical situation of having had UPSI. Some women may find it difficult to imagine themselves in such a situation, for example because they never have unprotected sex or are unlikely to become pregnant because of reduced fertility. Therefore, a measure of intention which includes more diverse situations may be more appropriate.

Use of ECPs in the past should not be used as an outcome measure, because use of ECPs may contribute to knowledge. This is plausible because, when women take ECPs, they are likely to learn more about them, for example from providers or the package insert. Intention is the best alternative outcome in a cross-sectional study, because intention is considered to be an important predictor of behaviour (Fishbein & Ajzen, 2010). Nevertheless, conduct cannot be completely predicted by intention. In a meta-analytic review of the theory of planned behaviour, Armitage and Connor conclude that the mean correlation of intention and actual conduct is .47 (Armitage & Connor, 2001). This is based on 48 studies covering diverse behavioural domains. Although this correlation is far from optimal, it is substantial. Nevertheless, a prospective design would be

preferable. However, ECP use is relatively infrequent and a large sample or time-frame would therefore be required, which is probably why it has not been done more often.

The way knowledge is measured may be problematic as well. There was no validated instrument available and single items were used to assess what women know about ECPs. The participants we identified as knowledgeable may just as well have been good guessers. However, women could indicate they did not know whether a statement was true or false, reducing the need to guess. Correct answers may also result from incorrect beliefs. For example, with regard to the item on pregnancy risk after taking ECPs, the ones who answered correctly may also have mistakenly considered ECPs completely ineffective.

Even though much effort was put into making the sample as representative as possible, this may not have been fully achieved. First of all, recruitment through an Internet panel might have resulted in a sample that was more active on the Internet than the general population. Whether this biased the results is unknown. Also, our response rate was low. Low response rates are common in panel-based studies in the Netherlands. Three quarters of the men and women who were approached did not even start the survey. There is no information about whether these people actually saw or opened their e-mail. A non-response survey revealed that most non-response could be attributed to reasons that had nothing to do with the topic of the study, although for about a third of respondents it did.

*Differences in results and conclusions in relation to other studies*

Whether ECP users are the women most at risk of unwanted pregnancy, is under debate. Women who intend to use ECPs in an emergency situation are likely to be younger than those who do not. There are few studies on non-users, but users may be compared to abortion clients, although this population is not identical to women in need of EC. In the Netherlands, women most at risk of needing an induced abortion are also in their twenties, but they are far more likely to be of non-Western origin and to be without a steady partner (Goenee et al., 2013). Therefore, this study suggests that women who intend to use ECPs differ from those most at risk of unwanted pregnancy.

Previous research has shown that ECP knowledge is a prerequisite for its use, particularly that pertaining to the time frame within which ECPs should be taken (Goulard et al., 2006; Hobbs et al., 2011; Sørensen et al., 2000). In the current

study, knowledge appears to be less critical. Awareness of the time frame of use is unrelated to intention in the multivariate analysis. Also, being informed about the mechanism of action of ECPs is not very relevant for Dutch women's willingness to use ECPs, which contrasts with findings from previous research (Crosier, 1996). This may result from the specific Dutch context with a longstanding tradition of sexuality education and a pragmatic stance on sexual risk reduction (Ferguson, Vanwesenbeeck, & Knijn, 2008; Schalet, 2011).

Furthermore, ours is the first study which shows that knowing more about EC could actually be detrimental to its use. Apparently, knowing positive things about ECPs may increase intention, whereas awareness of negative aspects may reduce the willingness to use ECPs in an emergency. Attitude towards ECP use may be more important than just knowledge, which is consistent with Swedish findings that attitude was a stronger predictor than knowledge (Larsson, Eurenius, Westerling, & Tydén, 2004). The poor predictive value of knowledge is well-established with regard to other health-related behaviours, but we have shown that knowing more about EC contributes little to the intention to use ECPs. As knowledge is the only predictor in this study that can be influenced by reproductive health interventions, this finding is somewhat disappointing and directs us to investigate other possibilities.

*Relevance of the findings: implications for clinicians and policymakers*

This study shows that the willingness to use ECPs as back-up contraceptive method leaves room for improvement. More attention should be directed toward women who are particularly at risk of unwanted pregnancy, because they are not necessarily the ones who are most willing to use ECPs. Intention may be increased a little by better knowledge, but the contribution may be small at most. This was also shown in a British evaluation of an intervention in which teachers gave EC information to 14-15 year olds. Although EC knowledge increased, intention to use EC and actual use in the following six months were not affected (Graham et al., 2002). That women are less likely to use EC if they know they may not work, indicates attention should be given to informing women about more effective alternatives, UPA ECPs and especially copper IUDs.

*Unanswered questions and future research*

The multivariate model predicts 22% of the variance of intention. Apparently other factors play an important role as well. Based on the reasoned action approach (Fishbein & Ajzen, 2010), one would expect perceived social norms,

perceived behavioural control, and attitudes to be important determinants of intention. In follow-up studies, these variables should be taken into account. Because child wish may be of importance as well, not only attitudes toward ECP use should be investigated, but attitudes toward pregnancy and having a child as well. This is especially important, because ambivalence toward pregnancy is quite common16.

More prospective research is needed to determine which factors actually predict the use of ECPs. It would be nice if such a prospective study could investigate these factors more comprehensively, informed by a theoretical understanding of reproductive health behaviour and previous research. Until now, we have focused too much on the obvious lack of knowledge and myths among women about ECPs.

A last point concerns the sample. We only included women who used contraception. These women appear to be willing to use contraception and may therefore be more likely to use EC when they need it. However, ECPs are especially useful for women who do have intercourse, but do not use contraception despite not wanting to have children at the time. This group merits further investigation in the future.

## 6.5 Conclusion

Ongoing reliable methods of contraception are preferable over emergency contraceptive methods. Nevertheless, EC is an underutilised contraceptive option, because unprotected intercourse occurs frequently. A lack of intention may be one of the reasons that ECPs are not used more often. The present study confirms previous findings that not all of the women who are most at risk of unwanted pregnancy tend to use EC; more attention should be given to enabling ECP use among the latter. Knowledge that could increase ECP use is mainly about its availability without a doctor's prescription. On the other hand, awareness that one may become pregnant despite ECP use could lead to a decrease in use. Information on these products is clearly not enough. Alternative, more effective EC methods should also be promoted. Attitudes and social norms toward ECP use, but also toward pregnancy may be important predictors of intention that need to be addressed in research and interventions.

# Chapter 7

# Characteristics of Women Who Have Repeat Abortions in the Netherlands

This chapter is based on the following publication:
Picavet, C., Goenee, M., & Wijsen, C. (2013). Characteristics of women who have repeat abortions in the Netherlands. *European Journal of Contraception and Reproductive Health Care, 18*, 327-334.

## Abstract

*Objectives*

To explore demographic characteristics of women having multiple abortions, in order to identify abortion clients who might be at increased risk of repeat abortion.

*Methods*

On the basis of registration data of most Dutch abortion clinics, responsible for 64% of all such procedures, women who procured a first abortion were compared to those who had one or more previously. Results of bivariate analyses and a multivariate binary logistic regression analysis are presented.

*Results*

Of all abortions, 36% were repeat abortions. Women aged over 20 were more likely to have repeat abortions, as were migrants, particularly those with a Caribbean background (from Surinam or the Netherlands Antilles) and women who had children. Effect sizes of other factors were very small. Surprisingly, women who had repeat abortions more often used contraception in the preceding six months than women who had a first abortion, but also this effect size was small as well. A multivariate logistic regression analysis led to similar results.

*Conclusions*

Abortion clients with a Caribbean background should be targeted for the prevention of more unwanted pregnancies. Not only should the use of reliable contraception be promoted, but also compliance and continuation.

## 7.1 Introduction

*Abortion in the Netherlands*

Many women have unplanned pregnancies. In the Netherlands, one in five women had at least one unintended pregnancy (Picavet, 2012). However, not all unintended pregnancies are unwanted; in two thirds of these cases the pregnancy is accepted (Bakker et al., 2009). Most pregnancies that remain unwanted end in an abortion. Of all women who consult their general practitioner about unwanted pregnancy, 81% decide to have an abortion (Goenee, Donker, Picavet, & Wijsen, 2014). Abortion was legalised in 1984, but the first legally tolerated abortion clinic opened as early as 1971. Abortion is available on request for women at less than 24 weeks' gestation and is free of charge for Dutch residents. Although the right to have an abortion is fiercely defended in the Netherlands, the vast majority considers abortion as a last resort. Instead, the use of contraception is promoted, especially among adolescents.

Every year, almost nine out of 1,000 Dutch women aged 15 to 44 have an abortion. The odds of having an abortion are not evenly distributed within the population. Migrant women, particularly of Caribbean and African descent are much more likely to have an abortion than those of native or other West European lineage. Women in their twenties are more likely to have a pregnancy terminated than those belonging to other age groups (Goenee et al., 2013; Health Care Inspectorate, 2013a). Of all abortions carried out in 2010 in the Netherlands, approximately one third were performed on women who had an abortion before. This rate is similar to those reported from other European countries (30-38%), but lower than in the United States (47%) (Tørnbom, Ingelhammar, Lilja, Möller, & Svanberg, 1996). For 24% of the abortion clients in the Netherlands it is their second abortion and for 7% it is their third. Another 4% had more than three previous abortions (Health Care Inspectorate, 2013a).

*Repeat abortion*

Unwanted pregnancy is generally seen as a problem, and repeat abortion, as one of the indicators of this problem. Women who have repeat abortions had more psychological problems during their lifetime, used social welfare services more often, and had less harmonious relationships than women who have first abortions6. The prevention of unwanted pregnancies, particularly among young people, is a priority of the Dutch Ministry of Health (Bussemaker, 2009). Although repeat abortion is an important public health issue, little is known about the

women who have multiple abortions in the Netherlands. Studies that were done elsewhere give an insight into characteristics of women who have a repeat abortion, compared to women who have a first abortion. They show that ethnic minorities are at increased risk of repeat abortion (Fisher et al., 2005; Stone & Ingham, 2011). A lower education level or socioeconomic status, and already having children lead to a higher risk of having multiple abortions as well (Heikinheimo, Gissler, & Suhonen, 2008; Makenzius, Tydén, Darj, & Larsson, 2011). Regarding age, the findings are mixed. Most studies find that older women are more likely to have a repeat abortion (Kozinsky et al., 2011; Osler, David, & Morgall, 1997; Prager, Steinauwer, Foster, Darney, & Drey, 2007). In contrast, others found that young age is associated with repeat abortion (Heikinheimo et al., 2008; Palanivelu & Oswal, 2007). This is counterintuitive, because women are necessarily older when they have a second abortion than when they had their first abortion. It is possible, but only if women who have first abortions at a later age do not have subsequent repeat abortions.

Contraceptive behaviour has an obvious impact on the likelihood of having multiple abortions (Palanivelu & Oswal, 2007). The immediate start of contraception after an abortion is associated with a lower risk of repeat abortion (Heikinheimo et al., 2008), especially when an intrauterine contraceptive is inserted (Ames & Norman, 2012; Roberts, Silva, & Xu, 2010). In a Vietnamese study, negative attitudes toward contraception were associated with multiple abortions. On the other hand, women who have repeat abortions were more likely to use contraception and had more knowledge about contraception (Nguyen, Chongsuvivatwong, Geater, & Prateepchaikul, 2000).

### *The current study*

We compared women in the Netherlands who had repeat abortions with those who had a pregnancy terminated for the first time, with the view of identifying those who might be at increased risk of returning for another abortion. In addition to demographic characteristics, differences in contraceptive usage prior to the abortion were examined.

## 7.2 Methods

### *Data*

We gathered registration data pertaining to the year 2010 of ten of the 17 abortion clinics in the Netherlands. By law, Dutch abortion clinics are required to

keep track of a limited set of variables for each performed abortion and to report these to the Health Care Inspectorate. One of these variables is whether a woman had previous abortions. A number of clinics voluntarily register additional information, like ethnicity and contraceptive use before the pregnancy. This chapter is based on the registration data of these latter clinics, where 64% of all abortions in the Netherlands were done in 2010. Women who did not currently live in the Netherlands were excluded from the data (907 cases), as were all cases for which no information was provided about prior abortions (4,806 cases). The analyses are based on the remaining 17,884 cases, of which 6,430 (36%) were repeat abortions.

*Measures*

The dependent measure is whether a woman had prior abortions. Women who did not have prior abortions are compared with women who had already had one or more. When a woman has had a previous abortion in the same clinic, this is automatically registered. Otherwise, this is based on self-report.

As the registration was not originally set up for the purpose of this study, only a selection of variables could be examined. We included variables for their theoretical link to having experienced more than one abortion. The following variables were included:

Age: In four categories (13-19, 20-29, 30-39, and 40-49 years).

Ethnic background: In the Netherlands, ethnicity is commonly determined by country of birth of the participants' father and mother. When either of the parents was born outside the Netherlands, they are considered ethnic minorities of either first or second generation, depending on the country of birth of the participants themselves. Third generation minorities are considered Dutch. Women of Dutch background and the four largest migrant groups (Turkish, Moroccan, Surinamese, Dutch Antillean) are distinguished.

Other demographics: Education in three categories (low, medium, high). Lower education consists of primary school and lower vocational training. A medium level of education includes high school and vocational training, and higher education refers to college and university education. The respondent was asked in a single question whether she had children. No distinction was made between biological and non-biological children. Women who had a steady partner could be either married or not.

**Table 7.1.** Background characteristics of the study sample

| n=17,884 | n | % |
|---|---|---|
| Prior abortion | | |
| No | 11,454 | 64 |
| Yes | 6,430 | 36 |
| Age | | |
| 12-19 | 2,286 | 14 |
| 20-29 | 7,591 | 48 |
| 30-39 | 4,868 | 31 |
| 40-49 | 1,158 | 7 |
| Education | | |
| Low | 4,000 | 41 |
| Middle | 5,294 | 54 |
| High | 532 | 5 |
| Ethnicity | | |
| Dutch native | 8,310 | 48 |
| Turkish | 704 | 4 |
| Moroccan | 1,096 | 6 |
| Surinamese | 1,872 | 11 |
| Dutch Antillean | 952 | 6 |
| Other | 4,304 | 25 |
| Living situation | | |
| With a partner | 6,199 | 37 |
| Without a partner | 10,694 | 63 |
| Children | | |
| No | 9,044 | 51 |
| Yes | 8,794 | 49 |
| Contraception used | | |
| None | 5,746 | 33 |
| CHC | 6,417 | 36 |
| Condom | 4,521 | 26 |
| Long-acting method | 544 | 3 |
| Other method | 479 | 3 |

*Note*. The percentages were rounded to the nearest unit; their sum may therefore not amount to 100%.

**Table 7.2** Characteristics of women having a repeat abortion versus those having a first abortion

| | **First abortion (n=11,454)** n (%) | **Repeat abortion (n=6.430)** n (%) | Cramer's V |
|---|---|---|---|
| Age*** | | | .17 |
| 12-19 | 1,894 (19%) | 392 (7%) | |
| 20-29 | 4,549 (45%) | 3,024 (52%) | |
| 30-39 | 2,874 (29%) | 1,994 (34%) | |
| 40-49 | 739 (7%) | 419 (7%) | |
| Education*** | | | .09 |
| Low | 2,612 (44%) | 1388 (36%) | |
| Middle | 3,005 (51%) | 2,289 (59%) | |
| High | 308 (5%) | 224 (6%) | |
| Ethnicity*** | | | .22 |
| Dutch native | 6,104 (56%) | 2,206 (35%) | |
| Turkish | 431 (4%) | 273 (4%) | |
| Moroccan | 598 (6%) | 498 (8%) | |
| Surinamese | 839 (8%) | 1,033 (16%) | |
| Dutch Antillean | 465 (4%) | 487 (8%) | |
| Other | 2,517 (23%) | 1,787 (29%) | |
| Living situation** | | | .02 |
| With a partner | 4,015 (37%) | 2,184 (35%) | |
| Without a partner | 6,711 (63%) | 3,983 (65%) | |
| Children*** | | | .18 |
| No | 6,588 (58%) | 2,456 (38%) | |
| Yes | 4,857 (42%) | 3,937 (62%) | |
| Contraception used*** | | | .09 |
| None | 3,801 (34%) | 1,945 (30%) | |
| CHC | 3,821 (34%) | 2,596 (41%) | |
| Condom | 3,058 (27%) | 1,463 (23%) | |
| Long-acting method | 281 (3%) | 263 (4%) | |
| Other method | 340 (3%) | 139 (2%) | |

*Note*. Difference between first and repeat abortions, ** $p$ <. 01, *** $p$ <. 001. The percentages were rounded to the nearest unit; their sum may not amount to 100%.

Contraceptive use: Women were asked whether they had used contraception in the six months prior to the abortion. Users of contraception were categorised as: combined hormonal contraceptive (CHC) users, including women who relied for birth control on a pill, the vaginal ring or the contraceptive patch; condom users;

long-acting method users, including intrauterine contraceptives, implants, injectables, and sterilisation; and users of other methods, including other barrier methods than the condom, and fertility awareness methods.

*Analyses*

After preliminary descriptive analyses, binary chi-squared ($X^2$) analyses were used to test associations between the dependent measure and all independent measures. Because of the large sample, we did not only consider whether findings were significant, but also their effect sizes (Cramer's V). After that, a multivariate binary logistic regression analysis was performed to examine the individual contribution of all variables. Variables with more than two alternatives were dummy-coded.

## 7.3 Results

*Descriptive analyses*

In Table 7.1 the characteristics of the study sample are presented. Of the women in this sample 36% had a prior abortion. Most women in the sample were between 20 and 39 years old, had a low or middle-level education, were of Dutch native origin, and lived without a partner. Approximately half of the women already had children. Two thirds of the women had used some form of contraception in the months prior to their pregnancy, most commonly CHCs or condoms.

*Bivariate analyses*

Table 7.2 presents the percentages of women who had prior abortions by selected background variables. Chi-squared tests revealed that Dutch native women were less likely than women of migrant origin to have had previous abortions. Especially women of Surinamese and Dutch Antillean backgrounds were very likely to have had prior abortions. In these groups, more than half of the procedures were repeat abortions. Furthermore, women who were in their twenties and thirties were more likely to have had previous abortions than women of other age groups. Women with children more often had a repeat abortion than those who were childless. Although all background variables were significantly related to whether a woman has had previous abortions, the effect sizes were very small (Cramer's V < .10). This was also true for the use of contraception. Women who had a repeat abortion more often declared that they had used contraception in the preceding six months than those who had a first abortion. However, the difference was very small.

**Table 7.3** Odds ratios (ORs) of having had prior abortions by demographic characteristics and contraceptive use

| n = 9,731 | OR | 95% CI |
|---|---|---|
| Age | | |
| 12-19 (ref) | 1.00 | |
| 20-29 | 3.01*** | 2.59-3.50 |
| 30-39 | 3.43*** | 2.88-4.09 |
| 40-49 | 3.11*** | 2.47-3.93 |
| Education | | |
| Low (ref) | 1.00 | |
| Middle | 1.38*** | 1.25-1.51 |
| High | 1.43*** | 1.17-1.75 |
| Ethnicity | | |
| Dutch native (ref) | 1.00 | |
| Turkish | 1.39** | 1.11-1.74 |
| Moroccan | 2.09*** | 1.77-2.48 |
| Surinamese | 3.08*** | 2.69-3.52 |
| Dutch Antillean | 2.62*** | 2.20-3.11 |
| Other | 1.82*** | 1.63-2.03 |
| Living situation | | |
| Without a partner (ref) | 1.00 | |
| With a partner | 0.68*** | 0.61-0.75 |
| Children | | |
| No (ref) | 1.00 | |
| Yes | 1.79*** | 1.61-1.98 |
| Contraception used | | |
| None (ref) | 1.00 | |
| CHC | 1.54*** | 1.39-1.71 |
| Condom | 1.09 | 0.97-1.22 |
| Long-acting method | 1.91*** | 1.49-2.46 |
| Other method | 0.70* | 0.50-0.97 |

*Note*. Different from reference group, * $p < .05$, ** $p < .01$, *** $p < .001$. OR = Odds Ratio, CI = Confidence Interval, ref = reference group.

*Multivariate (logistic regression)*

After all variables had been entered in one multivariate binary logistic regression analysis, all remained significantly related to whether or not a woman had had a previous abortion (Table 7.3). Apparently all variables individually contributed to the explanation of variance of prior abortion. The highest odds ratios were found for women over the age of 20, and for women of a Surinamese background (all

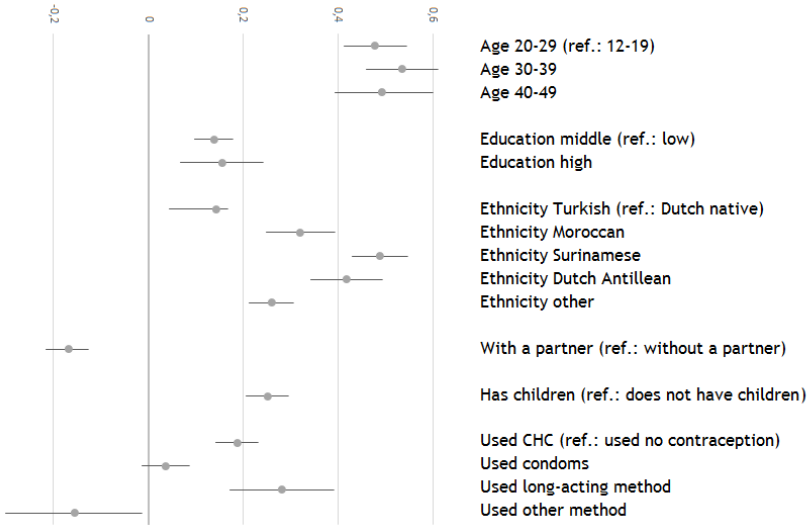


**Figure 7.1** Odds ratios of having a repeat abortion and 95% confidence intervals (after logarithmic transformation). CHC, combined hormonal contraceptive

above 3.0). The Nagelkerke $R^2$ for the model was .15. Figure 7.1 is a graphical representation of the findings.

## 7.4 Discussion

*Findings and interpretation*

This study shows that women who have an abortion differ with regard to the likelihood they may have another one later in life. Demographic characteristics of women having multiple abortions are very similar to the risk factors for having abortions at all, namely being from a Caribbean background and being older than 20. However, women who have multiple abortions are even more likely to have these characteristics than women who have a first abortion. Like in most studies, we found that women who have repeat abortions are older than women who come for a first abortion. This makes sense because women are older when they come for a repeat abortion than they were when they first had a pregnancy terminated. However, the odds of having a repeat pregnancy do not increase steadily with higher age. The odds are highest among women in their thirties, but they are almost as high for women in their twenties and forties. Studies that simply compare average age of women who do and do not have a repeat abortion cannot detect this non-linear relationship.

Because 55% of all Surinamese-Dutch abortion clients had abortions before, the likelihood that a woman of this group returns for more abortions is considerable. This is consistent with a previous finding that women with a Surinamese background are more likely to have experienced multiple unintended pregnancies1. The increased risk of unintended pregnancy may be the consequence of more ambivalent attitudes toward contraception and pregnancy in women of Caribbean origin (Mouthaan, de Neef, & Rademakers, 1998; van den Brink, Boersma, Meyboom-de Jong, & de Bruijn, 2011). However, from the high proportion of repeat abortions found in this study among them, it should not be inferred that all Caribbean women are at risk of unwanted pregnancy and (repeat) abortion. Most women of Surinamese and Dutch Antillean origin go through life without ever having an abortion. However, those who have one are more likely to return for more.

Surprisingly, women who have a repeat abortion are more likely to have used contraception in the six months prior to the abortion than women who have a first abortion. If this is not a result of self-report bias, then these women seem to be more motivated to use contraception – maybe because of their previous experience with abortion – but are unable to use it consistently.

*Strengths and weaknesses of the study*

This study is the first of its kind in the Netherlands. It is based on a large sample of abortions and provides insight in differences between women who had previous abortions and women who did not. Furthermore, it gives a preliminary insight into contraceptive use of repeat abortion clients. However, the study has some limitations as well. These data are not a representative sample of all abortions. The sample is from abortion clinics that voluntarily provide registration data. In the Netherlands, most abortions are performed in abortion clinics, but 8% of the abortions in 2011 were performed in hospitals (Health Care Inspectorate, 2013a). These hospitals and seven of the clinics do not participate in this registration. Abortions in hospitals are more likely to be later in the pregnancy and more likely to be on medical indication. Furthermore, the clinics care for populations that are dissimilar, if only because of their geographical situations. Our sample therefore differs in its composition from the whole population of abortion clients. For example, the percentage of women who had prior abortions is higher in this subset (36%) than in the whole data set (33%). Women who had a repeat abortion in a hospital or a non-participating clinic may differ from women who had a first abortion in other ways than we found in our study.

Another bias may affect the reliability of our data as well. An unknown number of previous abortions were reported by the abortion clients themselves. Women may find it difficult to admit having had prior abortions. Therefore, the group of women who were classified as having first abortions is likely to contain women who had repeat abortions. If those women could have been accounted for in the group of repeat abortion clients, differences between the two groups might have been greater.

A final limitation of the study is that education is not recorded in all abortion clinics. Therefore, the results of the multivariate logistic regression are based on a smaller subsample. However, a regression analysis without entering the level of education gave no substantially different results. We therefore believe that the findings are reasonably robust.

*Differences in results and conclusions in relation to other studies*

Our findings could be specific for the Dutch situation. Reproductive health in the Netherlands is very good, as is evidenced by low rates of abortion and teenage pregnancy (Gissler et al., 2012). Nevertheless, the differences we found are similar to those observed in other countries.

The finding that women having repeat abortions use contraception more often than women having first abortions has been documented before by investigators who attributed the difference to incorrect or inconsistent use (Nguyen et al., 2000). A study in the UK showed that many women who have a repeat abortion resorted to one or more methods of contraception after their first abortion, but discontinued using them (Palanivelu & Oswal, 2007). The registration in our study of whether a contraceptive method was used during the preceding six months is not sufficiently informative. We do not know whether women used their method the way it was prescribed, and whether they stopped, either temporarily or permanently.

*Relevance of the findings: implications for clinicians and policymakers*

Women of Caribbean descent are much more likely to have repeat abortions than those with other ethnic backgrounds. If they could be persuaded in pre- or post-abortion counselling to use contraceptive methods more consistently, this could have a considerable impact on rates of repeat abortion. However, a systematic review and meta-analysis of pre- or post-abortion contraceptive counselling of women showed that it lacked any effect (Ferreira, Lemos, Figueiroa, & De Souza, 2009). On the other hand, inserting an intrauterine contraceptive at the time of an abortion does have an impact (Ames & Norman, 2012; Roberts et al., 2010).

Creative new strategies are required to reduce unwanted pregnancy among abortion clients. These could include follow-up visits (either of the client to the clinic or – if that does not work – of a counsellor to the client) or community programmes.

*Unanswered questions and future research*

The studied variables reveal only in part whether a woman has a repeat abortion. Other factors that we did not review must be important as well. It is likely that contraceptive practices play an important role, even though women who have a repeat abortion are somewhat more likely to have used contraception than those who have a first abortion. Qualitative research may both help to identify possible predictors of having multiple abortions, and provide more insight into the way (multiple) abortions are experienced.

For this study, the current abortion could not be linked to possible earlier abortions. A prospective research design would be interesting in order to explore whether women's characteristics at a first abortion can be used to predict whether she will return for more abortions.

## 7.5 Conclusion

Abortion clients with a Caribbean background should be targeted for the prevention of more unwanted pregnancies. Not only should the use of reliable contraception be promoted, but also its continuation and consistency.

# Chapter 8

# General Discussion

## 8.1 Introduction

Although contraceptive use in the Netherlands is relatively good, as is evidenced by low rates of abortion and teenage pregnancy, it may still be improved. Over 26,000 pregnancies among Dutch women end in an abortion each year (Health Care Inspectorate, 2013b). Many of these unwanted pregnancies could have been prevented with consistent use of effective contraceptive methods. About 30% of abortion clients did not use any contraception prior to the abortion. A third of the clients had used oral contraceptive pills (OCPs), of whom more than three quarters said that the pregnancy was their own mistake. About half of the condom users, 25% of the abortion clients, admitted that they were responsible for the contraceptive failure (Goenee et al.,, 2013). Therefore, improving the use of contraception, and especially its consistent use, is a public health concern.

We investigated contraceptive use among Dutch women in order to increase the understanding of contraceptive decision-making and use. The research questions that we set out to answer are:

- To what extent do contraceptive behaviours exist, which are suboptimal for the prevention of unwanted pregnancy?
- Which women could best be targeted by interventions to improve their contraceptive decision-making and use?
- Which social cognitive factors could be influenced to improve contraceptive use?

The answers to these research questions, as derived from the literature review and the findings of five empirical studies included in this thesis, are presented and discussed in the remainder of this chapter.

## 8.2 Findings and Interpretation

*Suboptimal contraceptive behaviour*

The first overall research question of this thesis is the extent of suboptimal contraceptive choices and use. There appear to be problems with contraceptive use throughout the contraceptive cycle. When they chose a method, most women decided to use OCPs. For some women, a switch to longer-acting methods could possibly decrease the likelihood of unwanted pregnancy. In Chapter 3, a study on contraceptive decision-making revealed that differences in what women found important about contraception were generally consistent with the method that these women used. Moreover, what women found important at the time of their choice for a particular method was mostly unrelated to their later evaluation of that method. Therefore, an assessment of women's reasons for choosing a method at the time of their decision may

contribute little to improved decision-making. Apparently, Dutch women are generally capable of making a choice that is consistent with their needs and wishes.

As said, 'the pill' is the most popular contraceptive method among Dutch women. With regard to OCPs, correct and consistent use is crucial. This is all the more relevant because missing pills is a very common occurrence. The study in chapter 4, based on 904 OCP users from a national sample, showed that problems with adherence are more common among younger women, women from non-Western backgrounds, and women who are involved in a steady relationship. A more positive attitude toward OCPs and better perceived behavioural control regarding daily pill-taking are related to better adherence. These social cognitive factors mediated the relationship between ethnicity and adherence. This is consistent with the theory that differences are not caused by ethnicity itself, but by ethnic differences in social cognitive factors (Fishbein & Ajzen, 2010). However, other social-demographic differences were not mediated by these factors. Social cognitive factors that were not measured may be responsible for differences in age and relationship status, but it is also likely that the wider ecological environment plays a role, such as interpersonal factors. Based on the same sample, we studied how many women regularly skipped pill-free intervals in Chapter 5. This was true for 38% of all OCP users, while it is not actively promoted in the Netherlands. If the pill-free interval is skipped, the chance of becoming pregnant when a few pills are missed becomes smaller.

When women have intercourse after missing pills or when they have not used any contraceptive method, they can decrease the chance of getting pregnant by using emergency contraceptives. However, they do not use emergency contraceptive pills (ECPs) in most of these instances. The study that was presented in Chapter 6, based on a Dutch population sample of 1,785 women, showed that some women would even be unwilling to use UCPs at a time of need.

*Characteristics of women whose contraceptive use may be improved*

With regard to the second research question, about characteristics of women who could benefit from improved contraceptive behaviour, the results are varied. In most studies, we found that ethnic background is relevant. Pill-users of non-Western backgrounds were more likely to miss pills and to have pill-free intervals after every pack (Chapters 4 and 5). However, there were no differences between women of Western and non-Western backgrounds with regard to contraceptive method choice (Chapter 3) and intention to use emergency contraception (Chapter 6). Younger age was related with less consistent use of OCPs (Chapter

4). Younger women were also more likely to use OCPs and condoms, methods that need to be used consistently (Chapter 3). Age was not related to the other behaviours we investigated. Other demographic characteristics were mostly unrelated to contraceptive behaviour, or effect sizes were very small.

When contraception fails, women may decide to have an abortion. The abortion rate among Dutch women from Caribbean backgrounds is much higher than the rate among native Dutch women. This social difference is even more pronounced when repeat abortions are considered (Chapter 7). Importantly, the likelihood of having an abortion is much higher among women who already had an abortion before. Therefore, abortion clients are an important target group for the prevention of unwanted pregnancies. Improving contraceptive use should be a priority with these women. Almost two thirds of the women who have repeat abortions report having used contraception in the months before the unwanted pregnancy. This proportion is even higher among those who have repeat abortions. Apparently, they have a desire to prevent pregnancy, but are unable to do so effectively.

*Social cognitive factors that could be improved*

The final research question of this thesis is which social cognitive factors could be influenced in order to improve contraceptive behaviour. In two of the studies in this thesis, the role of social cognitive factors with regard to contraceptive use was investigated. The study about emergency contraception (Chapter 6) focused on intention to use ECPs and the relationship with knowledge about ECPs. In this study, knowledge contributed little to intention. Better knowledge about drawbacks of emergency contraception (i.e., that a woman might still become pregnant after taking these pills) was even related to decreased willingness to use ECPs. Based on this finding, we hypothesise that attitude might be more important than knowledge per se. In the study about OCP adherence (Chapter 4), we investigated the role of attitudes regarding OCPs, as well as pregnancy intention, risk perception, and perceived behavioural control. A more positive attitude toward oral contraception and more perceived behavioural control were independently related to better adherence. Improving these socio-cognitive factors could possibly contribute to more consistent pill-taking by OCP users. Moreover, the mediating role of these factors with regard to ethnic differences in adherence means that improved attitude and behavioural control among migrant women might contribute to a reduction of disparities between ethnic groups.

## 8.3 Similarities and Differences With Other Studies

The prevalence of problematic contraceptive behaviour and repeat abortion, as found in the studies that were presented in this thesis, are generally comparable to those reported previously. OCP adherence (Frost & Darroch, 2008), skipping the pill-free interval (Andrist et al., 2004), and intention to use emergency contraception (Jackson, Bimla Schwarz, Freedman, & Darney, 2000) are similar in the Netherlands and the United States. This may be considered surprising, because the general attitude toward both sexuality and contraception is quite different in both countries (Schalet, 2011), and the abortion rate in the US is much higher than in the Netherlands (Bachrach et al., 2012). The percentage of abortions that are repeat procedures is higher in the US as well (Tørnbom et al., 1996), but its prevalence in the Netherlands is consistent with that in other Northern European countries, such as Great Britain, Denmark, Sweden, and Finland (Heikinheimo et al., 2008).

There are some differences with previous studies with regard to correlates of the investigated contraceptive behaviours. For example, some demographic differences of contraceptive method choice in Chapter 3 were not found in earlier research, that is differences according to level of education, religion, and partnership status. In contrast, no ethnic differences were found here, whereas they were observed previously (e.g., Jones et al., 2012; Wiebe, 2013). Also, knowledge about ECPs seems to be less important for women's intention to use them at times of need in our study, compared to prior research (Chapter 6). Particularly knowledge about the timeframe within which ECPs should be taken and that they do not cause an abortion, have previously been found to be critical for using ECPs (Goulard et al., 2006; Hobbs et al., 2011; Sørensen et al., 2000). The differences between our and previous studies may be related to the specific context in the Netherlands. For example, in the Netherlands, there is little debate about whether women should be able to have an abortion. Therefore, the way ECPs work, and whether they are able to end an existing pregnancy, may be less important for Dutch women than for women who live elsewhere.

## 8.4 Strengths and Limitations of the Studies

The studies in this thesis have several strengths and limitations, with regard to sample, design, and measures. The most important strength of the studies that were based on the samples of the Sexual Health in the Netherland Surveys of 2009 and 2011 (Chapters 4-6) is that these were population samples. The study on repeat abortion (Chapter 7) was based on registration data of almost two thirds of all abortions in the Netherlands. The only study in which a convenience

sample was used, was the decision-making study (Chapter 3). However, this sample was large enough to compare users of seven different contraceptive methods, which is uncommon in contraception research.

However, the population samples we used (in Chapters 4-6) may not have been entirely representative of all Dutch women. These samples were selected from an online research panel. People who volunteer for such a panel may have specific characteristics. Moreover, the response rates in these studies were low. Whether these issues have biased the findings and in what way is not clear. The abortion registration data (Chapter 7) may have been biased as well. The data of most standalone abortion clinics were included, but not those of hospital-based abortion clinics. The clients of clinics that did not participate in the registration may have differed from those at the clinics that were included.

A limitation of all studies reported in this thesis is that they used cross-sectional designs. This means that no definite statements can be made about causality. This is also true for the mediation study (Chapter 4), although mediation can help to explain process and causality (Preacher & Hayes, 2008). In prospective designs, other outcomes, such as occurrence of (wanted or unwanted) pregnancy, could be included. This could shed more light on the (temporal) relationship between contraceptive behaviour and unwanted pregnancy.

Furthermore, the studies were based on self-report. Especially for retrospective questions, for example about missing pills (Chapter 4) or what women found important about contraception at the time of choosing a method (Chapter 3), this may have been problematic. Memory may fail, be influenced by later experiences, or women may be inclined to give socially desirable answers. Potter et al. (1996) showed that women underreported the incidence of missing pills when their accounts were compared with an objective measure based on an electronic pill dispenser.

Another problem is that there was very limited room for adding questions to the Sexual Health in the Netherlands Surveys (Chapters 4-6). It was impossible to add questions to the abortion registration (Chapter 7). This meant that no measures could be added, for example about theory-based factors that may determine contraceptive behaviour. There is a continuing need for more theory-informed research and the development and testing of theories of contraceptive behaviour.

## 8.5 Unanswered Questions and Future Research

Two elements of the contraceptive cycle have not been addressed in the research reported in this thesis. The first is the decision to start using contraception, and the second is the evaluation and continuation of contraceptive methods. There is some research regarding the initiation of contraception among young people (de Graaf et al., 2012), which shows that the large majority of teenagers use some sort of protection against pregnancy at first intercourse, almost always pill and/or condom. Not much is known however about contraceptive method evaluation and its consequences in the Netherlands. Method satisfaction was a small component of the study on contraceptive decision-making (Chapter 3), but assessment of the consequences of dissatisfaction were beyond the scope (and possibilities) of this study. However, as dissatisfaction can lead to a switch to less effective methods, or to quitting the use of contraception altogether, it is potentially very important (Rosenberg & Waugh, 1998). This needs to be investigated in future research.

A second suggestion would be to do qualitative research regarding women's views of contraceptive use. Although quantitative studies are able to show the extent to which problematic behaviour occurs and what its correlates are, they reveal little about people's personal perspective. This information is needed, however, for the development of interventions that connect to and build upon women's own motives and experiences. Particularly, qualitative research among abortion clients would be helpful in determining whether they are interested in support for contraceptive use, and what kind of intervention would be acceptable to them (Chapter 7). In addition to qualitative research, longitudinal or prospective studies are needed. These could potentially be more conclusive about causality of statistical relationships we found. This is especially important when relationships with social cognitive factors are studied.

A final suggestion would be to include men in studies on contraceptive decision-making and use. The one-sided focus on women's needs and choices disregards the needs of men, men's involvement, and relational issues between men and women. A larger emphasis on men's roles in contraceptive behaviour may lead to a more nuanced view on reproductive needs, practices, and experiences (van Lunsen & van Dalen, 2007).

## 8.6 Relevance of the Findings

The studies in this thesis aimed to increase the understanding of where contraceptive behaviour goes wrong and for whom. This is meant to help developers of behavioural interventions and practitioners who counsel women with regard to contraceptive use. Because resources for prevention programmes are limited, it is important to assess which behaviours are most likely to have an impact on the number of unwanted pregnancies if they improve. While the studies in this thesis were not designed to make such a comparison, they do provide some indications of what might work.

In the study in Chapter 3, we found that women typically can select a method that fits their wishes. Therefore, improving contraceptive choices seems unnecessary, at least for the majority of women. Improving adherence among users of oral contraceptives could be a better strategy, because many women miss pills, as we saw in Chapter 4. Approximately a third of abortion clients report using oral contraception (Goenee et al.,, 2013). A positive attitude regarding oral contraceptives and more perceived behavioural control regarding daily pill-taking were related to less missed pills. Strengthening these social cognitive factors could potentially lead to better adherence. Another way of reducing the possibility of pregnancy after missing pills could be to promote continuous or extended-cycle use of oral contraception (Chapter 5). Although ECP use has the potential of preventing many pregnancies, the study reported in Chapter 6 does not make clear how this can be accomplished. Moreover, increased use of ECPs has not been found to be related to a substantial decline of abortion rates (ESHRE Capri Workshop Group, 2015).

There is little information about continuation of contraceptive methods in the Netherlands, one of the elements of the contraceptive cycle that have not been studied for this thesis. However, our study in Chapter 3 suggests that the large majority of users of all contraceptive methods are quite satisfied with their methods. We also did not study contraceptive non-use. The group of women who do not use contraception despite not wanting to become pregnant and having sexual intercourse, is considerable, as was shown in a previous study (Picavet, 2012). Therefore, promoting contraceptive use may be more useful than furthering method continuation.

Like behavioural targets for interventions, target groups must be selected with care. For this reason, demographic background of women whose contraceptive behaviour needs improvement, was studied. The study on repeat abortion (Chapter 7) made it clear that improving the contraceptive use of abortion clients

should be a priority, because the chance that they return for another abortion is considerable. It was found that women who have repeat abortions are relatively likely to have used contraception in the preceding months. Apparently, they recognize the risk and are willing to protect themselves, but this protection is not optimally effective. Their willingness to use protection is something that can be developed further with the aid of behavioural interventions. If these women can be persuaded to use, for example, long-acting methods, to continue their chosen contraception, or use it more consistently, unwanted pregnancies can be prevented. More general interventions to improve contraceptive use, in particular aimed at young women and women of Caribbean backgrounds, may be warranted as well.

While more research is needed, there is some evidence that behavioural interventions can be effective, although the review in Chapter 2 shows that effects are often limited. Current interventions seem to have some shortcomings. The development of most interventions was not done as rigorously as Intervention Mapping prescribes. Problem analyses were limited, theoretical bases were weak, and target groups were not involved in developing the interventions. Also, the social environment of women, such as their partners, was rarely included. Furthermore, the number of interventions that were evaluated is low (Chapter 2). There is also a risk of undesired effects. Because contraceptive use is already good for many Dutch women, developers of behaviour change interventions should be cautious and aware of unintended adverse effects their interventions might have. For example, a contraceptive choice intervention may aim to improve awareness of all methods. However, better knowledge of alternative methods may also lead to more awareness of disadvantages of the chosen method, and thereby to less satisfaction.

If contraceptive use can be improved, will this also help reduce disparities between social or ethnic groups? The study that was presented in Chapter 4 shows that migrant women are more likely to miss pills due to less positive attitudes and lower perceived behavioural control. Improving their attitudes and perceived behavioural control could therefore lead to better pill use among these women. This would result in more equitable pill use across ethnic groups. However, there is some evidence that interventions can actually increase social disparities, because interventions tend to have more effect on women who already do well. This is especially true for interventions focused on individual factors, such as education (Lorenc, Petticrew, Welch, & Tugwell, 2013).

An alternative is to focus interventions on the groups most at risk, as we have suggested earlier. However, this raises other ethical concerns. Targeted interventions may contribute to stigmatisation of these groups. Even among women from the ethnic groups most at risk of having an abortion, most women will never have one, with or without an intervention. Another ethical problem is that women at risk who do not belong to groups with higher prevalence or incidence may be denied access to a programme or service (Bartholomew et al., 2011).

As suggested in Chapter 1, structural redistribution of power and resources is needed at least as much as behavioural change, if social inequities are to be reduced. Therefore, action needs to focus not only on the individual, but on all ecological levels that are relevant to an individual's health status. The strategy that would be most likely to reduce unwanted pregnancies among Dutch women, combines behavioural interventions, particularly targeted at women who are perceived as at risk such as abortion clients, with more general policies to improve living standards of disadvantaged groups. As Margaret Whitehead (2007) notes: "The evidence concerning [individual-level] interventions, for example, indicates that educational programmes to strengthen individuals rarely work in isolation, particularly for disadvantaged populations and areas. When combined with initiatives to create enabling environments that take account of structural barriers to healthier lifestyles, however, there is evidence of effectiveness at meeting educational goals."

## 8.7 Conclusion

Although unwanted pregnancy is less prevalent in the Netherlands than in many other high-income countries (Health Care Inspectorate, 2013b), even in the Netherlands one in eight pregnancies is terminated. Many of these unwanted pregnancies could be prevented with consistent use of an effective contraceptive method. The risk of unwanted pregnancy could be reduced if more long-acting contraceptive methods were used, methods were used consistently, backed up by emergency contraception if necessary, and if women did not discontinue using their contraceptive method.

The studies presented here have shown that there is room for improvement regarding women's use of contraception. Although women can typically choose a method that fits their needs, more use of long-acting methods, especially by women at risk of unwanted pregnancy, could help bring abortion rates further down. Oral contraceptives are the most used contraceptive method in the Netherlands. Inconsistent use of OCPs is common, impeding the effectiveness

of this method. Improving women's attitude toward OCPs and perceived behavioural control regarding consistent pill-taking could help women to adhere to their pill regimen. Less frequent pill-free intervals could also contribute to better effectiveness of OCP use. A considerable proportion of women do not intend to use ECPs as a backup option, not even when they are at risk of becoming pregnant, but more knowledge about ECPs is related to only a minor improvement of intention.

Unwanted pregnancies in the Netherlands are more common among women of Caribbean descent than among other women. Women of all ethnic groups who have had an abortion before are more likely to have more unwanted pregnancies. Therefore, these women are an important target group for interventions to improve contraceptive use. More research is needed to appraise how intervention methods can help women to prevent unwanted pregnancies, and which strategies and behaviour change techniques are effective.

In order to address unwanted pregnancy in the Netherlands, it is important to bring pregnancy prevention back to the attention of policy makers, from which it has been absent for years. Consequently, research and intervention development with regard to unwanted pregnancy prevention have lacked urgency and funding. This appears to be changing, as FIOM and Rutgers have received a Health Ministry grant for a programme to reduce the number of teenage pregnancies. It would be advisable to extend this policy focus to young adult women, because most pregnancies are terminated among women in their twenties.

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# Samenvatting (Summary in Dutch)

Anticonceptiegebruik wordt doorgaans niet als een groot probleem gezien in Nederland. Het abortuscijfer en het aantal tienerzwangerschappen behoren tot de laagste in de wereld. Toch eindigt in Nederland ruim een op de acht zwangerschappen in een abortus. Deze komen vooral veel voor onder vrouwen met een Caraïbische achtergrond of van Sub-Sahara Afrikaanse herkomst. Veel van deze zwangerschappen hadden voorkomen kunnen worden door goed gebruik van effectieve anticonceptie. Mogelijk kunnen gedragsinterventies helpen anticonceptiegebruik te verbeteren en daarmee het aantal ongewenste zwangerschappen te verminderen. Ook zou het goed zijn als verschillen op basis van etniciteit of sociale status zouden kunnen worden verminderd.

In dit proefschrift wordt een aantal studies beschreven over anticonceptiegebruik van vrouwen, waarmee wij bij willen dragen aan zulke interventies. Deze studies geven antwoord op de vragen: (1) In hoeverre bestaat anticonceptiegedrag dat risicovol is vanuit het oogpunt van de preventie van ongewenste zwangerschap? (2) Wat zijn de sociaal-demografische kenmerken van vrouwen die anticonceptie niet optimaal gebruiken? (3) Welke sociaal-cognitieve factoren kunnen beïnvloed worden om anticonceptiegebruik te verbeteren?

## Anticonceptiecyclus

De anticonceptiecyclus beschrijft het proces vanaf dat een vrouw zich bewust wordt van haar behoefte aan anticonceptie, via keuze voor een methode en al dan niet correct gebruik, tot een (her)evaluatie van de gebruikte methode, wat aanleiding kan zijn om opnieuw de cyclus te doorlopen (zie Figuur 2.1). In Hoofdstuk 2 is een overzicht gegeven van iedere stap in deze cyclus op basis van literatuuronderzoek. Er is gekeken naar wat er mis kan gaan, hoe vaak dat gebeurt en bij wie, en wat er bekend is over interventies om anticonceptiegebruik te verbeteren.

Lang niet alle vrouwen die de kans lopen om zwanger te worden en die dat niet willen gebruiken anticonceptie. Ongeveer één op de twaalf vrouwen tussen de 15 en 49 gebruikt geen enkele vorm van anticonceptie. Degenen die wel een anticonceptiemethode toepassen, doen dat lang niet allemaal consequent. Zo is bijvoorbeeld 21% van de pilgebruiksters in de afgelopen zes maanden wel eens meer dan één pil van dezelfde strip vergeten. De morning-afterpil (of noodpil) wordt lang niet altijd gebruikt als er iets is misgegaan met anticonceptie. Onder

vrouwen van niet-Westerse herkomst gaat er vaker iets mis met anticonceptiegebruik dan onder autochtone vrouwen. Het verschil tussen deze groepen in hoe vaak een abortus wordt uitgevoerd is bovendien nog een stuk groter.

Er zijn effectieve gedragsinterventies nodig om anticonceptiegebruik te verbeteren en daarmee het aantal ongewenste zwangerschappen terug te dringen. Helaas blijkt de impact van bestaande interventies vaak beperkt te zijn. Vaak lukt het wel om sociaal-cognitieve determinanten van gedrag (zoals attitude en intentie) te veranderen, maar het anticonceptiegedrag verbetert niet zo vaak en gedragseffecten zijn bovendien meestal kortdurend. Ongewenste zwangerschappen zijn zelden een uitkomstmaat in onderzoek en in de studies die kijken naar het aantal ongewenste zwangerschappen onder deelnemers wordt zelden een effect gevonden. Lang niet alle interventies voldoen aan voorwaarden voor effectiviteit, zoals dat zij bestaan uit meer dan één sessie en gebaseerd zijn op een helder theoretisch kader. Bovendien kan het gaan om uiteenlopende gedragingen met verschillende determinanten en benodigde strategieën.

## Anticonceptiekeuze

Als een vrouw besluit dat zij anticonceptie wil gaan gebruiken, kan zij tegenwoordig kiezen uit een veelheid aan alternatieven. Er is weinig bekend over hoe vrouwen komen tot hun keuze voor een anticonceptiemethode. In hoofdstuk 3 is onderzoek gepresenteerd naar wat vrouwen belangrijk vonden aan anticonceptie op het moment dat zij kozen voor hun huidige methode. Daartoe zijn via websites en discussiefora 1184 vrouwen geworven die anticonceptie gebruiken. Deze hebben een online vragenlijst ingevuld. Van zeven verschillende methoden (pil, ring, hormoonspiraal, koperspiraal, condoom, sterilisatie en natuurlijke methoden als periodieke onthouding) waren voldoende gebruiksters in de steekproef om deze met elkaar te vergelijken. Gebruiksters van deze methoden zijn niet alleen vergeleken op wat zij belangrijk vonden aan anticonceptie, maar ook op tevredenheid, zorgen om zwangerschap en eigeneffectiviteit.

Gebruiksters van alle methoden vonden gemiddeld genomen de betrouwbaarheid van de methode het belangrijkst in hun keuze, ook gebruiksters van minder betrouwbare methoden als condooms en natuurlijke methoden. Verder klopten de voorkeuren heel aardig met de gekozen methode. Zo vonden bijvoorbeeld de gebruiksters van hormonale methoden de regulering van hun menstruatie belangrijker dan andere vrouwen. Dit is alleen mogelijk met hormonale middelen.

De waardering voor de eigen anticonceptiemethode was over het algemeen erg hoog. Tevredenheid was het hoogst onder gebruiksters van het hormoonspiraal en onder gebruiksters van natuurlijke methoden. Spiraalgebruiksters en vrouwen die zelf gesteriliseerd waren, of van wie de partners gesteriliseerd was, maakten zich nauwelijks zorgen over zwangerschap. Gebruiksters van pil en condoom voelden zich minder in staat om hun methode goed toe te passen dan gebruiksters van andere methoden. Condoomgebruiksters waren bovendien minder tevreden en maakten zich vaker zorgen dat zij zwanger waren dan de andere respondenten.

Voor methoden waarvan genoeg gebruiksters aan het onderzoek meededen is vervolgens onderzocht of vrouwen die positief waren over hun methode andere aspecten belangrijk vonden aan anticonceptie toen zij voor hun methode kozen dan vrouwen die minder positief waren over hun methoden. De weinige verschillen die zijn gevonden, waren over het algemeen klein. Alleen de tevredenheid van ringgebruiksters verschilde naar gelang andere aspecten belangrijk gevonden werden. Gebruiksters van de ring die gebruiksgemak en betrouwbaarheid meer en gevolgen voor seksualiteit juist minder belangrijk vonden, waren meer tevreden over hun methode.

## Pilgebruik

De pil is de meest gebruikte anticonceptiemethode in Nederland; meer dan de helft van alle vrouwen die anticonceptie gebruiken, slikken de pil (Picavet, 2012). Toch gaat er vaak iets mis met pilgebruik, met name dat vrouwen vergeten om de pil in te nemen. Als meer dan een pil van dezelfde strip wordt vergeten, ontstaat er een verhoogd risico op zwangerschap. In Hoofdstuk 4 is een studie gepresenteerd naar de sociaal-demografische kenmerken van vrouwen die de pil vergeten en in hoeverre deze kenmerken samenhangen met kinderwens, risicoperceptie, attitude en eigeneffectiviteit. Met attitude wordt bedoeld hoe positief of negatief men denkt over de pil en eigeneffectiviteit is het gevoel in staat te zijn om iedere dag de pil te slikken, ook in lastige omstandigheden (bijvoorbeeld als men niet thuis slaapt). Voor dit onderzoek zijn data gebruikt van Seksuele Gezondheid in Nederland 2011, een bevolkingsstudie met een steekproef die op een aantal demografische kenmerken (leeftijd, sekse, opleidingsniveau en stedelijkheid) representatief is voor de Nederlandse bevolking. Hiervan gebruikten 904 vrouwen de pil. Het bleek dat vrouwen van niet-Westerse herkomst, jongere vrouwen en vrouwen zonder vaste partner vaker de pil vergaten. Vrouwen van niet-Westerse herkomst vergaten de pil vaker dan vrouwen van Nederlandse of Westerse herkomst, omdat zij een minder positieve attitude en minder eigeneffectiviteit hadden. De relaties tussen enerzijds pil

vergeten en anderzijds leeftijd en relatiestatus hingen niet samen met deze factoren.

Wanneer een vrouw geen stopweek houdt en de pil iedere dag doorslikt, is de kans op zwangerschap na een vergeten pil kleiner. Bovendien ervaren vrouwen die geen stopweek houden minder cyclus-gerelateerde klachten. Dit was het onderwerp van het onderzoek dat in Hoofdstuk 5 is gepresenteerd. Net als het onderzoek naar pil vergeten, is dit onderzoek gebaseerd op de steekproef van Seksuele Gezondheid in Nederland 2011. Behoorlijk wat vrouwen, namelijk 38% van de pilgebruiksters, slaan regelmatig de stopweek over, terwijl dit niet wordt gestimuleerd in Nederland. Het gaat iets vaker om vrouwen van Nederlandse of Westerse herkomst en vrouwen die niet gelovig zijn.

## Noodanticonceptie

Als er 'iets misgaat' met anticonceptiegebruik, kan tot 120 uur (vijf dagen) na het niet of minder goed beschermde sekscontact de morning-afterpil worden ingenomen om de kans op zwangerschap te reduceren. De morning-afterpil wordt echter lang niet altijd gebruikt wanneer dat zinvol zou kunnen zijn. Voor een deel komt dat doordat sommige vrouwen niet de intentie hebben om noodanticonceptie te gebruiken, ook niet als ze onbeschermde seks hebben gehad en niet zwanger willen worden. In Hoofdstuk 6 is een studie gerapporteerd waarin is nagegaan wat de kenmerken zijn van vrouwen die wel en van hen die niet de intentie hebben om de morning-afterpil te gebruiken. Ook is onderzocht of deze intentie samenhangt met meer kennis over het middel. Hiertoe zijn data gebruikt van Seksuele Gezondheid in Nederland 2009, een eerdere editie van de bevolkingsstudie waar de voorgaande hoofdstukken over zijn geschreven. Voor een zesde van alle vrouwen gold dat zij niet de intentie hadden om noodanticonceptie te gebruiken en nog eens een kwart van de vrouwen wist niet of zij dit zouden doen. Vrouwen die de morning-afterpil al vaker hadden geslikt en diegenen die geen kinderen hadden, hadden vaker de intentie om hem (weer) te gebruiken. Kennis droeg daar weinig aan bij. Als vrouwen wisten dat deze pillen zonder doktersrecept verkrijgbaar waren, was de intentie hoger, terwijl deze juist lager was bij vrouwen die zich er bewust van waren dat je ondanks de morning-afterpil nog zwanger kunt worden.

## Herhaalde Abortus

Wanneer noodanticonceptie geen optie meer is, zit er voor een vrouw niets anders op dan af te wachten of zij zwanger wordt. Wanneer zij ongewenst zwanger wordt, heeft zij de optie om een abortus uit te laten voeren. Abortussen

worden relatief veel uitgevoerd bij vrouwen van Caraïbische (Surinaamse of Antilliaanse) herkomst (Goenee, Picavet, & Wijsen, 2013). Bovendien is bekend dat bij ongeveer een derde van alle abortuscliënten al eerder een abortus werd uitgevoerd (Inspectie voor de Gezondheidszorg, 2013b). In hoofdstuk 7 is een studie beschreven waarin is nagegaan of vrouwen die al eerder een zwangerschap hadden laten afbreken andere sociaal-demografische kenmerken hadden dan vrouwen die voor een eerste abortus kwamen. De vrouwen die al eerder een zwangerschap hadden laten afbreken bleken ouder te zijn en hadden nog vaker een Caraïbische achtergrond dan vrouwen die een eerste abortus lieten uitvoeren. Bovendien bleek dat vrouwen die voor een herhaalde abortus kwamen vaker anticonceptie hadden gebruikt in de maanden voor de abortus dan degenen die voor het eerst een abortus lieten uitvoeren. Dit suggereert dat deze vrouwen gemotiveerd om een nieuwe ongewenste zwangerschap te voorkomen, maar dat er toch iets 'misgaat'.

## Conclusie

De studies die in dit proefschrift worden beschreven, laten zien dat er van alles mis kan gaan met anticonceptiegebruik. Het is echter ook zo dat er in Nederland relatief weinig ongewenste en tienerzwangerschappen voorkomen. Hoewel het abortuscijfer in de meeste landen hoger is, worden er jaarlijks meer dan 26.000 abortussen uitgevoerd onder vrouwen die in Nederland wonen. Voor het ontstaan van de meeste van deze ongewenste zwangerschappen werd geen of inconsequent anticonceptie gebruikt.

Deze studies geven zicht op waar anticonceptiegebruik verbeterd kan worden. Hoewel vrouwen over het algemeen een methode gebruiken die past bij hun behoeften, zou meer gebruik van langdurende methodes kunnen helpen om het aantal ongewenste zwangerschappen naar beneden te brengen. De meest gebruikte methode is de pil. Deze wordt veel vergeten, wat ten koste gaat van de effectiviteit van de methode. Een positievere attitude ten aanzien van de pil en verbeterde eigeneffectiviteit kunnen helpen de pil minder te vergeten. Een behoorlijk deel van de vrouwen wil geen morning-afterpil gebruiken in geval van nood, maar verbetering van kennis over de morning-afterpil helpt nauwelijks om intentie te verbeteren.

Ongewenste zwangerschappen komen relatief veel voor onder vrouwen van Caraïbische herkomst. Vrouwen van alle etnische groepen die een abortus ondergaan hebben een nog hogere kans op nog meer ongewenste zwangerschappen. Daarom zijn deze vrouwen een belangrijke doelgroep voor interventies om hun anticonceptiegebruik te verbeteren. Er is echter meer

onderzoek nodig om te bepalen hoe interventies vrouwen kunnen helpen ongewenste zwangerschap te voorkomen, en welke strategieën en methodieken daarbij ingezet kunnen worden.

Om iets te doen aan ongewenste zwangerschap in Nederland is het van belang dat de preventie ervan weer op de beleidsagenda terecht komt. Jarenlang is dat niet het geval geweest, waardoor er nauwelijks middelen zijn uitgetrokken voor onderzoek en interventieontwikkeling op dit terrein. Hierin lijkt iets aan het veranderen te zijn, nu FIOM en Rutgers van het Ministerie van Volksgezondheid, Welzijn en Sport geld hebben gekregen om het aantal tienerzwangerschappen nog verder terug te dringen. Het zou goed zijn als de focus in het beleid ook gelegd zou kunnen worden op de iets oudere groep, omdat de meeste abortussen worden uitgevoerd bij twintigers.

# Curriculum Vitae

Charles Picavet studied Psychology at Radboud University Nijmegen. He did a masters in Cultural Psychology and Psychology of Religion. For his master's thesis, he interviewed gay and lesbian teenagers about their coming out experiences.

Picavet started working for Rutgers in 1999. Initially, he did research in the field of lesbian and gay studies. After the first years, his work became more diverse. He did both qualitative and quantitative research on sexual health promotion, sexual health care, and reproductive health. Furthermore, he was involved in the development of several interventions, such as informative websites, decision making tools, and sexuality education. His main area of expertise has shifted to reproductive health, with a focus on contraception, although he has always remained active in other domains of sexuality research as well.

In addition to his research, Picavet contributed to sexology and Rutgers in various ways. He was board member of the Dutch Sexology Association (NVVS), where he was responsible for the research section and education policies. He chaired the Works Council during the merger of Rutgers Nisso Groep and WPF. He organised numerous symposia, conferences, expert meetings and workshops. He was guest editor for two special issues of the Dutch Journal for Sexology. He is now an editor of the European Journal of Contraception and Reproductive Health Care.

Since mid-2014, Charles Picavet works as a self-employed research consultant. He lives in Amsterdam with his wife and two (planned and wanted!) daughters.