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Hormonal contraceptive use among Norwegian women before first childbirth

A cohort study

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Preface

When introduced to the field of gynaecology and obstetrics at my fourth year of medical school, it immediately captured my interest. The variety of the discipline in itself, as well as the focus on women's health issues is of great importance to me. Searching for a project in this field for my master thesis was thus a natural choice. The purpose of this thesis is to provide data to the research of contraceptive use among women in the Nordic countries.

I wish to thank my fellow student and friend Martha Emilie Johannessen for interesting and rich discussions about the topic. I also wish to express my sincere gratitude and appreciation to my supervisor, Finn Egil Skjeldestad, who introduced me to this project and conducted the work with applications and collecting and sorting data. Thank you for your valuable time and dedication, and for excellent guidance throughout this process.

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Abstract

Introduction

Despite no major change in sexual debut, the total fertility rate in Norway has been declining over recent years. With perfect use, most modern contraceptive methods are effective to prevent conceptions. Hormonal contraceptive use is high among Norwegian women, suggesting high awareness of contraceptive behaviour and planned parenthood. This study aims to examine the contraceptive use among nulliparous women before first birth within the age of 30 years.

Material and methods

Data sources for this cohort study were the Norwegian Prescription database (NorPD), the Medical Birth Registry of Norway (MBRN), and Statistics Norway. The cohort comprised 58 549 women born in Norway in 1989 and 1990. We examined their use of hormonal contraception through dispensed prescriptions from age 14/15 in 2004 to age 29/30 in 2019, as well as first birth during 2004 to 2018. The statistical analysis was done in SPSS with Chi Square and T-test at significance level $p < 0.05$.

Results

Of the total population 8.4% were not registered with neither contraceptive use nor delivery, while 2.5% were registered firstly in the birth register with no collected hormonal prescriptions prior to delivery. The remaining 89% collected a prescription of a hormonal contraceptive method before delivery within the age of 30. The combined oral contraceptive (COC) was most commonly chosen as 1st (88.3%) method, followed by the progestogen-only pill (POP) (7.4%). The other hormonal methods were less frequently used as first choice and represented combined 4.3% of 1st contraceptive use. The COC, POP, patch, and Depo-Provera were methods more commonly chosen as 1st method before the age of 20, whereas the vaginal ring (VR), implant, and levonorgestrel-releasing intrauterine device (LNG-IUD) mainly were the 1st option among women initiating use after 20 years of age. The mean duration of use ranged from 28.2 for the patch to 73.3 months for COCs.

Conclusion

The study results suggest a high coverage of hormonal contraception among Norwegian women before first delivery within the age of 30. Oral contraceptives are most commonly used, and most women have collected their first prescription before the age of 19.

Abbreviations:

COC, combined oral contraception

POP, progestogen-only pill

VR, vaginal ring

LNG-IUD, levonorgestrel-releasing intrauterine device

LARC, long-acting reversible contraception

SARC, short-acting reversible contraception

1 Introduction

In her 2019 New Year's Eve speech, the Norwegian prime minister expressed her concern about the country's low birth rate (1). The speech referred to numbers from Statistics Norway, which revealed a record low fertility rate in 2017 and similar patterns the following two years (2).

Statistics Norway's surveillance data of births shows a steady decline in number of children born per woman per year (3). The register also depicts a significant increase in maternal and paternal median age at first birth (4). Despite the reduction in fertility rate and the increasing age of first-time parents, there seems to be no major change in age of sexual debut (5-7), suggesting an intentional postponement of parenthood over the last decades.

There are different motivations for postponing childbearing. From a medical perspective, adolescent pregnancy and childbirth is associated with increasing risk of preterm and instrumental assisted deliveries, low birth weight and neonatal and infant mortality (8, 9), including maternal complications such as anaemia (8, 9), and mental health problems (8). From a social perspective, the postponement of parenthood makes time for education and establishing a stable environment for the child to be born into. Higher socioeconomic status is associated with better perinatal and neonatal outcomes (10), but amongst young parents, incomplete education is increased (8).

On the other hand, advanced maternal age is associated with an increased risk of stillbirth, preterm delivery and macrosomia (11), as well as chromosomal abnormalities, miscarriage (12) and decreasing fertility (13). For some, postponing pregnancy leads to involuntary childlessness and add to a decreasing fertility rate in the society.

Although lower than in the other Scandinavian countries (14), the use of modern contraceptive methods is high in Norway (15, 16). This suggests a great awareness among Norwegian women on contraceptive behaviour, which reflect decisions when and if they want own children. With perfect use, most modern contraceptive methods are very effective to prevent conceptions (17, 18).

Scandinavian women start using contraception at an early age compared to other European countries (19). Often starting with condom use, many switch over to more effective hormonal contraception with increasing experience (5), supporting the suggestion that Norwegian women are very aware of their contraceptive behaviour and possibly implying that the contraceptive

efficacy is the most important factor in choice of method over the protection of sexual transmittable diseases (STDs) (5), possibly also reflected in the country's high use of emergency contraceptive pills (14).

The documentation on contraceptive use among nulliparous women is sparse. The aim of this study is to investigate the use of hormonal contraception among women before first childbirth.

2 Material and Methods

In this cohort study, we used data from the Norwegian Prescription database (NorPD), the Medical Birth Registry of Norway (MBRN), and Statistics Norway. The NorPD, established January 1st 2004, stores information about users and prescribers. Drugs delivered from pharmacies to users is registered, and a pseudonym is created from the personal identification number (PIN) for each patient which can be used to follow patient prescriptions without revealing personal data.

From the NorPD this study utilised the following variables: Pseudonym, year of birth, date of prescription, and remedy information as basis for hormonal contraceptive use (Anatomical Therapeutic Chemical (ATC number), package size, and number of packages). Included are combined oral contraceptives (COCs), progestogen-only pills (POPs), vaginal ring (VR), patch, implant, injection (Depo-Provera), and levonorgestrel-releasing intrauterine device (LNG-IUD). Use of less reliable contraceptive methods such as fertility awareness methods, condoms, and diaphragms are not included, neither is the use of copper intrauterine devices or the emergency pill.

Duration of use was estimated in months, from date of first prescription until the date of expiration of the last continuous prescription, or date of collection of prescription for another hormonal contraceptive. Pauses are included in the duration of use. "Switchers" are women who start using a new method of hormonal contraception within 28 days from expiration of last collected hormonal contraceptive or within 180 days if the prescription was implant or LNG-IUD.

From the MBRN this study utilises information on year and month of first delivery and country of birth from Statistics Norway.

The NorPD administrated the data merge between the different national health registries by creating a pseudonymous number from the personal 11-digit personal identification number. The data were stored and analysed at the TSD (Tjeneste for Sensitive Data) facilities, owned by the University of Oslo, operated and developed by the TSD service group.

The study population comprised women born in 1989 and 1990. Through data from NorPD we examined their use of hormonal contraception through dispensed prescriptions from age 14/15 in 2004 to age 29/30 years in 2019, and data on first birth during 2004 to 2018 from the MBRN.

The statistical analysis was done in SPSS with Chi Square and T-test at significance level $p < 0.05$.

3 Results

The total population of women born in Norway in 1989 and 1990 was 58 549. Among these, 4936 (8.4%) were not registered with neither contraceptive use nor delivery, while 1452 (2.5%) were registered firstly in the birth register with no dispensed hormonal prescriptions prior to delivery. The remaining women (52 161 (89.1%)) had filled at least one prescription of hormonal contraceptive methods (Table 1).

The combined oral contraceptive (COC) was most commonly chosen as 1st (88.3%) method, followed by the progestogen-only pill (POP) (7.4%) (Table 1). The other hormonal methods were less frequently used as first choice (Table 1).

3.1 Total contraceptive use

By the age of 15 years 9% of the birth cohorts had claimed at least one prescription of hormonal contraception. This increased to more than 50% at age 17, and 80% at age 20 (Figure 1a). The COC, POP, patch, and Depo-Provera were methods more commonly chosen as 1st method before the age of 20, whereas the vaginal ring (VR), implant, and LNG-IUD mainly were chosen as the 1st option among women initiating use after 20 years of age. Mean number of prescriptions collected ranged from 18.9 for the vaginal ring to 27.4 for the COCs, and 7.5 and 3.2 for implants and LNG-IUDs respectively (Table 2).

3.1.1 First method use

About 90% of the prescriptions taken out at the age of 15 was of the COCs, representing 8% of the cohort. This increased rapidly, and by the age of 17 years 50% of the cohort had claimed a prescription for a COC. This increased further to 72% at the age of 20, and to 79% at the age of 30, representing about 89% of the cohort (Figure 1a). Women with COC as their 1st prescription were registered with the longest time to method shift or discontinuation (73 months) (Table 2).

Similar to the COC use, the greatest uptake of POP as first method was seen in the younger age groups. Increasing from 2.6% at the age of 17, 5% and 7% of the cohort used POP as their 1st method by age 20 and 30 years, respectively (Figure 1a). This group was registered with 38.7 months before method shift or discontinuation (Table 2).

The other methods of hormonal contraception represented combined 4.3% of the total first prescriptions (Table 1/Figure 2). The mean duration of 1st use for these methods varied from 28.2 months for the patch to 47.6 months for the LNG-IUD (Table 2).

The LNG-IUD as 1st choice was registered with the highest mean age of 24.7 years (Table 2) and its use increased with increasing age. It had the lowest registered use (0.25%) among all other methods (Figure 2). Prescriptions for the implant steadily increased by age (Figure 2).

3.1.2 Switchers

Almost half of the women with COC as their first contraceptive prescriptions had no method shift over the study period, and 1.1% had only one prescription. Among those who switched from the COC, most (26%) changed to the POP. The 2nd most used method after COC use was the vaginal ring (7.8%), and the fewest (3.3%) changed to an LNG-IUD (Table 2).

32.1% of POP users had no method shift, and 3.8% had only one prescription. Almost half (48.2%) of POP users switched to a COC. The 2nd most popular method shift after POP use was to the implant (4.9%), whereas the LNG-IUD was the next to last choice (2.6%), followed by the patch (1.8%).

Users of the vaginal ring had a similar pattern as POP users, with 3.8% users with only one prescription and 31.9% with no method shift. 4% of patch users had only one prescription, 6.2% changed to a vaginal ring and 5.4% to the Depo-Provera, while changing to a long-acting

reversible contraception (LARC) was very uncommon. Among users of the Depo-Provera, the patch and implant were fairly equal as 3rd choice after the COC and POP (Table 2).

20.2% of implant users had only one prescription, and although POP was the 2nd most common switch it included only 7.1%, compared to 36.6% switching to COC. Few implant users (1.3%) changed to an LNG-IUD. Over half (62%) of the LNG-IUD users had only one prescription, and the difference between switchers choosing COC over POP was modest in this group. It was generally not a very popular 2nd choice of method, ranging from 1.3-3.4% of switchers in all groups (Table 2).

All groups had less than two mean method shifts, and a mean percentage of no method shift ranging from 15.5% to 48.7%. The highest mean method shifts were seen among Depo-Provera users of 1.92 method shifts. In most groups the number of method shifts correlated with the percentage of the cohort with no method shifts, except for users of the implant and LNG-IUD. These groups were registered with the least number of method shifts, but with a low proportion who had no method shifts at all (Table 2).

3.2 Deliveries

Overall, 2.5% of the cohort had a delivery prior to any prescriptions of hormonal contraception, while the remaining women had collected at least one prescription (Table 1). At age 18 1% of the cohort had delivered their first child, increasing to 10% at age 22, 30% at age 25, and 41% at age 29 (Figure 3).

4 Discussion

This study investigated the use of hormonal contraception among nulliparous women before first childbirth within 30 years of age. Only 2.5% of the cohort had a delivery prior to any prescriptions of hormonal contraception, while 89% of the cohort claimed at least one prescription, most before the age of 19 years. COC was the most popular choice as 1st and 2nd method, followed by POP. LNG-IUDs and implants were mainly prescribed to women over the age of 20 and increased in use with increasing age.

In line with our findings, studies of contraceptive use in the Nordic countries and the UK have concluded with COCs being the most popular hormonal contraceptive method, as well as being

the method the vast majority begins with as their first hormonal contraception (14, 20-22). In general, with increasing age the use of COCs and all types of short-acting reversible methods of contraception (SARCs) decrease while long-acting reversible methods of contraception (LARCs) increase in popularity (14, 22). According to the results of this study, this trend is also relevant for first prescriptions.

Mean number of prescriptions collected in each group, except for implants and LNG-IUDs, ranged from 18.9 for the vaginal ring to 27.4 for COCs. As all of these methods contain three months' worth of use per prescription, it equals almost 5 to 7 years of use. As expected, due to their long-lasting effect of 3 and 3 to 5 years, the mean number of prescriptions collected of the implant and LNG-IUDs were lower, 7.5 and 3.2 respectively. A low percentage of people collecting only one prescription was seen in all groups, except for LARCs, which is expected due to their long effective duration. This combined implies a continuous use of all contraceptive methods, and a high level of contraceptive coverage in the Norwegian female population, demonstrating that Norwegian women are very aware of their contraceptive behaviour.

All groups had less than two mean method shifts, suggesting the average woman is using two to three different contraceptive methods between the age of 15 and 30. Mean number of method shifts for COC users was 1.18 and nearly half had no method shift, implying the other half has about two method shifts after their initial COC use.

Most of women changing from COC chose a POP as a 2nd method, which is found to be the 2nd most popular choice of method also in other studies of contraceptive use in younger Norwegian women (14, 15, 23). One third of POP users had no method shift, and almost half changed to a COC. The 2nd most popular choice after POP use is the implant, which also is a progestogen-only method. It's common practice to use POP for a trial period of progestogen-only methods before transitioning to a long-acting contraception method containing only progestogen, such as implants or injections (24), which might explain why the general use of implants is most commonly seen among younger age groups (14, 25) in contrast to first prescriptions. It's therefore surprising to find that few chose either. Although the implant was the 2nd most common choice after POP use it only included 4.9%, and just 2.9% chose the Depo-Provera.

The other contraceptive methods were less common as 1st prescription and represented collectively 4.3% of the total first use of hormonal contraception. The highest number of method shifts were seen in the users of the Depo-Provera. This method was mainly used by the

younger women, with the lowest mean age registered of 17.4 years. With a young debut, there is more time to explore the preferred type of hormonal contraception, which may be a part of an explanation. The contraceptive vaginal ring is in other studies described as mostly used in a shorter perspective (26), but in our study it did not stand out from the other contraceptive methods concerning duration of use. However, a short duration of use was seen in users of the patch. One may speculate if such short use is caused by inconvenience, failure to adhere to the skin, skin irritation, or cosmetic reasons.

2.5% of the cohort gave birth prior to hormonal contraceptive use. In the remaining women, first deliveries were seen among 18-year-olds, and the percentage increased with increasing age to 41% at age 29. A study published in 2017 examined the relationship between birth rates and access to contraception and abortion between 1975-2013 and found that fertility rates in the Nordic countries remained high and stable compared to the declining trend in the rest of Europe (23). However, the fertility rate in Norway has declined further the recent years to new record lows, and in 2019 the total fertility rate in Norway was the same as in the rest of the EU at 1.53 live births per woman (2, 3, 27).

4.1 Possible factors influencing choice of contraception

During the study period, oral contraceptives were subsidized by the state in Norway in the age group 16-19 years (14), and LNG-IUDs and implants were not subjects for reimbursement until 2015 (28). At this time the study cohort were 25 and 26 years old and most (87%) had already started using hormonal contraception. Oral contraceptives are also perceived as more familiar and acceptable (29) and are easy to discontinue in cases of side effects.

LARCs are not user-dependent, and therefore impose a reduced risk of contraceptive failures (17). Yet the LNG-IUD was registered with the lowest mean number of collected prescriptions. This method of contraception is expected to last 3 or 5 years on one prescription, depending on type. Combined with a high mean age of 24.7 of first prescriptions, it's not unexpected that 62% were registered with only one prescription. This also explains the few method shifts, as most would not have had the time to change contraception method before delivery or the end of the study period. Many factors may influence the late start-up of LNG-IUD, one example is financial issues. Unlike oral contraceptives, intrauterine devices and implants were not subsidized in Norway at the time the study cohort was adolescents (14, 28). Knowledge and attitude in patients, their parents or health professional, and the invasive character of the procedure itself

(29), as well as sex education (14) may also affect the choice of LARCs as hormonal contraceptive method.

As for contraceptive use before first childbirth, oral contraceptives seem to be the most popular method among young and nulliparous women (14, 20, 21), and the switch to LARCs seems to depend more on parity than age (21).

4.2 Strengths and limitations

A strength of this study was the low percentage of only one prescription in all expected groups, demonstrating repeated prescriptions and thus suggesting real use. There are many studies exploring contraceptive use in the Nordic countries, but there are few longitudinal cohort studies. Another limitation is the change in subsidised contraception methods late in the study period, as the financial aspect to contraception choice is affected and in turn may affect LARC use over time.

5 Conclusion

Hormonal contraceptive use is high in nulliparous Norwegian women. Oral contraceptives are most commonly used in first prescriptions, the most popular choice being the COC. Other contraceptive methods represented less than 5% of first prescriptions. The majority of women had collected their first prescription of hormonal contraception before the age of 19, and the duration of use of first method ranged from 28.2 to 73.3 months.

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Figures and Tables

	N	%
None use, no delivery	4936	8,4
None use, delivery	1452	2,5
COC	46070	78,7
POP	3859	6,6
Vaginal ring	526	,9
Patch	578	1,0
Implant	238	,4
Depo-Provera	748	1,3
LNG-IUD	142	,2
In total	58549	100,0

Table 1: First event of use of hormonal contraception (2004 to 2019) and delivery (2004 to 2018) among the birth cohorts of 1989 and 1990, Norway.

	COC	POP	Vaginal ring	Patch	Implant	Depo- Provera	LNG- IUD
	N=46070	N=3859	N=526	N=578	N=238	N=748	N=142
Age (years)							
Mean	17.5	19.3	20.6	18.0	21.5	17.4	24.7
SE	0.011	0.055	0.136	0.117	0.28	1.01	0.316
Range	14-30	14-30	15-30	14-29	15-30	14-30	15-30
N prescriptions							
Mean	27.4	21.8	18.9	20.8	7.5	20.7	3.2
SE	0.075	0.247	0.645	0.668	0.624	0.560	0.562
Range	1-79	1-73	1-62	1-66	1-50	1-76	1-51
N method shifts							
Mean	1.18	1.36	1.31	1.87	1.01	1.92	0.35
SE	0.08	0.026	0.065	0.08	0.087	0.68	0.070
Range	0-20	0-14	0-9	0-12	0-7	0-14	0-6
Duration 1st method (months)							
Mean	73.3	38.7	36.6	28.2	37.1	36.0	47.6
SE	0.23	0.69	1.67	1.46	1.90	1.46	2.07
Range	1-193	1-175	1-162	1-174	1-147	1-191	1-124
Shift 1st to 2nd method	N=46070	N=3859	N=526	N=578	N=238	N=748	N=142

	%	%	%	%	%	%	%
Only 1 prescr.	1.1	3.8	3.8	4.0	20.2	1.5	62.0
No method shift	48.7	32.1	31.9	20.8	26.1	20.3	15.5
<i>Changed to</i>							
COC	-	48.2	33.7	45.2	36.6	48.4	7.7
POP	26.3	-	18.3	13.8	7.1	11.1	7.0
Vaginal ring	7.8	3.7	-	6.2	1.7	3.3	3.5
Patch	4.6	1.8	3.2	-	4.2	6.1	0.7
Implant	3.8	4.9	3.6	2.2	-	6.8	1.4
Depo-Provera	4.4	2.9	2.1	5.4	2.9	-	2.1
LNG-IUD	3.3	2.6	3.4	2.4	1.3	2.4	-

Table 2: Age at 1st prescriptions, number of prescriptions, method shifts, duration of 1st method, and 1st method change by 1st prescriptions (mean, standard error, range, percent).

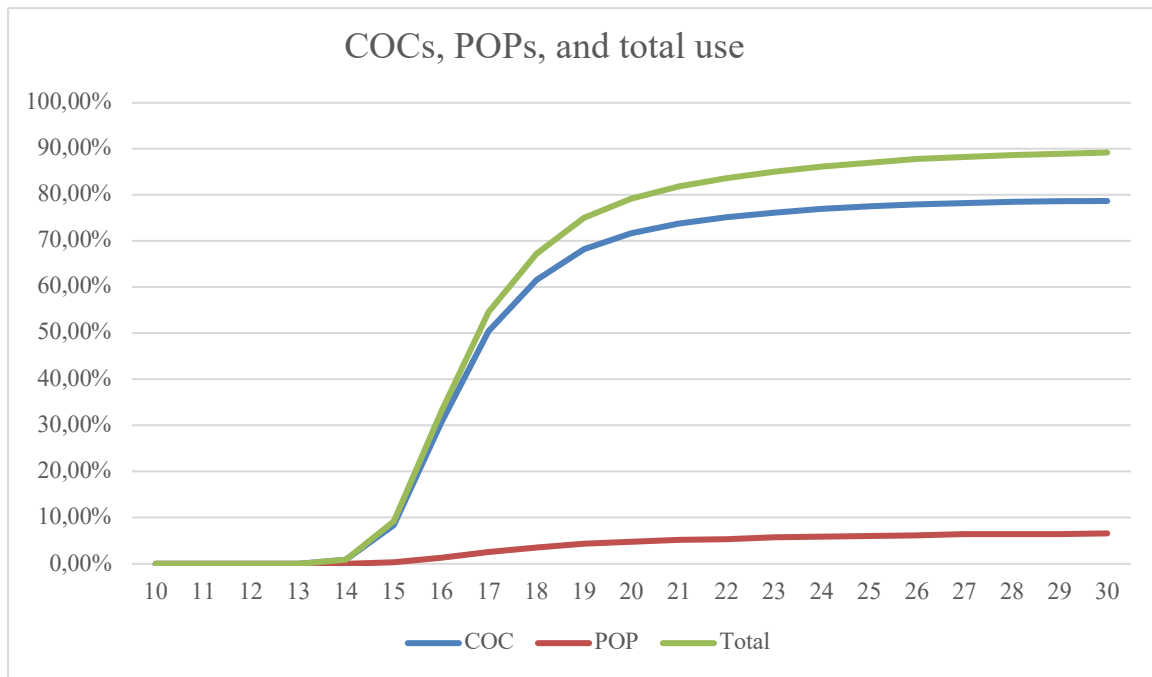


Figure 1: Cumulative proportions of women starting with COCs and POPs as 1st hormonal method, and in total, by age.

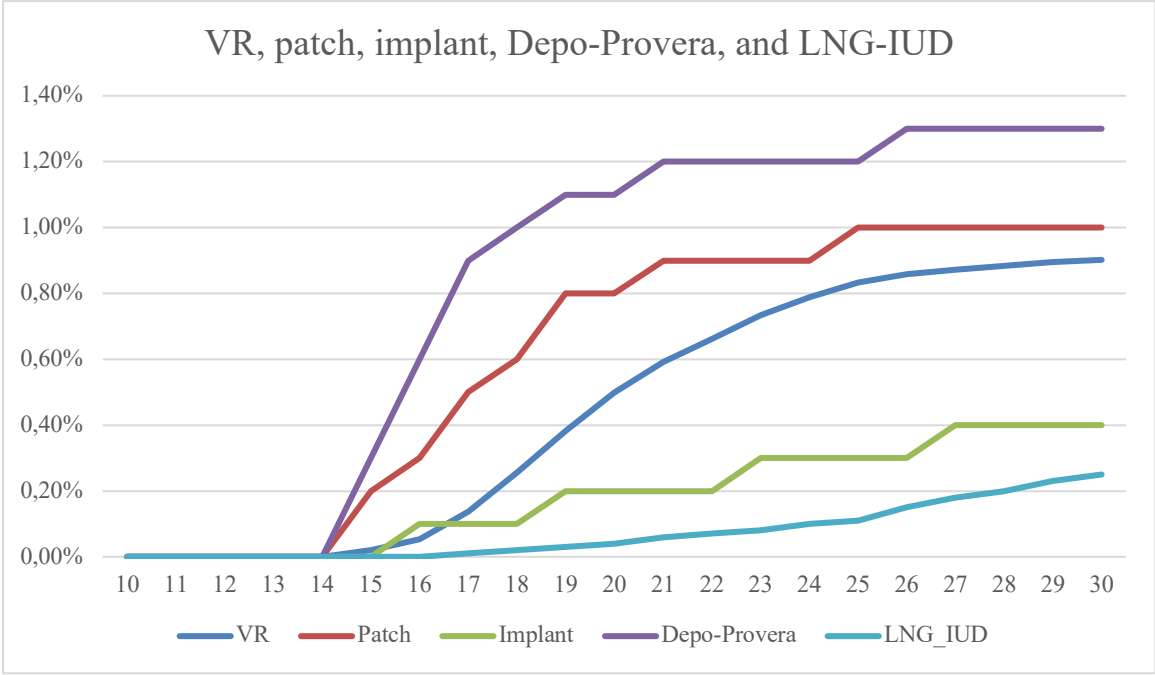


Figure 2: Cumulative proportions of women starting with VR, patch, implant, and LNG-IUD as 1 hormonal method by age.

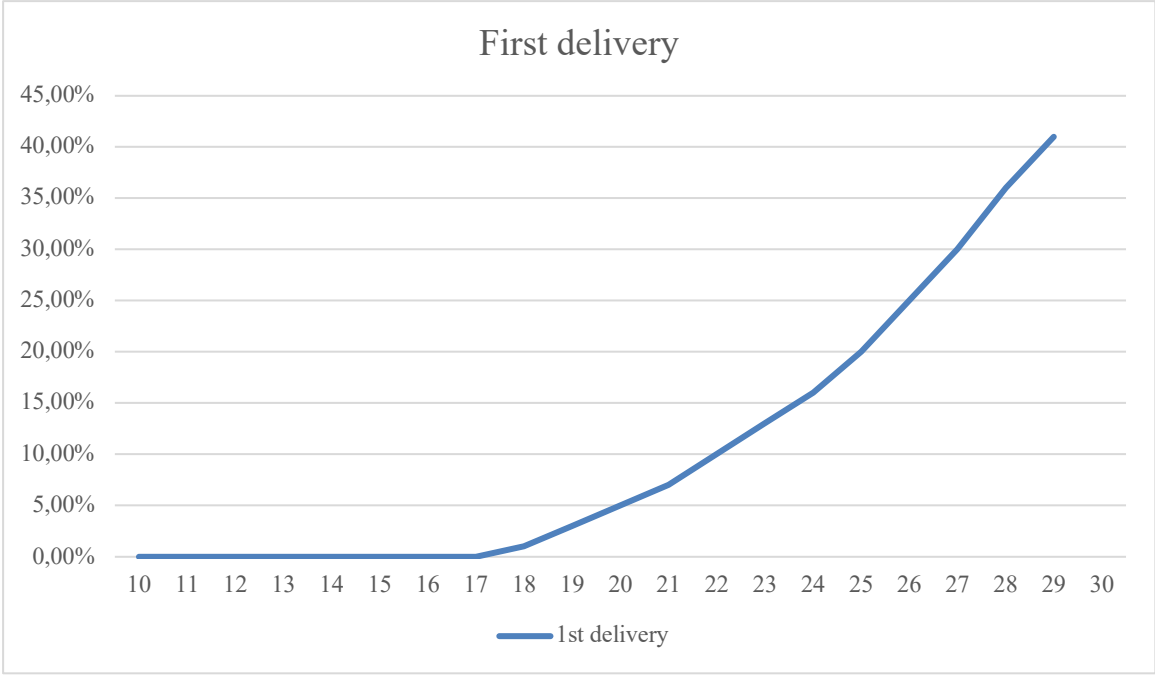


Figure 3: Cumulative proportions of women having had a 1st delivery by age.

Appendix

Appendix 1 – Artiklevalueringer

Appendix 2 – Spesifisering av arbeidsoppgaver

Appendix 1 – Artiklevalueringer

See next page.

Referanse: Lindh I, Skjeldestad FE, Gemzell-Danielsson K, Heikinheimo O, Hognert H, Milsom I, et al. Contraceptive use in the Nordic countries. Acta Obstet Gynecol Scand 2017; 96:19–28.		Design: Pasientserier	
		Dokumentasjonsnivå IIb	
		GRADE 2	
Formål	Materiale og metode	Resultater	Diskusjon/kommentarer
<p>1) To describe and compare contraceptive availability and use in the Nordic countries and compare usage by age in Scandinavia.</p> <p>2) Assess prescribing patterns in relation to the recommendations from the EMA.</p> <p>3) Compare infrastructure parameters which may influence contraceptive use.</p> <p>Konklusjon</p> <p>«Contraceptive use was highest in Denmark and Sweden, levonorgestrel-releasing intrauterine system use was highest in Finland and all long-acting methods were most common in Sweden. The use of combined oral contraception recommended by the European Medicines Agency was highest in Denmark.»</p> <p>Land</p> <p>Gothenburg, Sweden</p> <p>Ar data innsamling</p> <p>2010-2013</p>	<p>National prescription data available on the market from 2010-2013, collected from the Danish Prescription Registry, the Finnish Medicines Agency, the Icelandic Medicines Agency, the Norwegian Prescription Database and the Swedish Board of Health and Welfare.</p> <p>Population: 5.8 million women of reproductive age (Norway, Denmark, Sweden, Iceland and Finland). 1,173,586 Norwegians.</p> <p>- 13.5% of age group 15-19 y.o. - 14.1% of age group 20-24 y.o. - 13.9% of age group 25-29 y.o.</p> <p>Exclusion criteria: Not specified.</p> <p>Inclusion criteria: Registered in national prescription database, age 15-49 years.</p> <p>Main outcome: Contraceptive use in the Nordic countries (among age groups and according to EMA-recommendations).</p> <p>Main exposure: Different types of hormonal contraception (COC, POP, injection, implant, LNG-IUS, Cu-IUD, ring, patch).</p> <p>Explanatory variables: Sex education/education in contraceptive methods, who is allowed to prescribe contraception, financial assistance with contraception cost, availability of clinical guidelines, (availability of different methods).</p>	<p>* Norway in middle considering fertility.</p> <p>* Higher average income + education in Norway.</p> <p>* Minor differences in the available types of hormonal contraception (estrogen dose, progesterone type and route of administration).</p> <p>* Slight increase in hormonal contraceptive use in all countries from -10 to -13.</p> <p>* COC most commonly used in all five countries. Second most was LNG-IUS.</p> <p>* In Scandinavia, the proportion of combined hormonal contraceptive users was highest among teenagers and young adults → decreasing with increasing age, but partly compensated by increasing LNG-IUD use.</p> <p>* LARC usage did not increase in Norway during the study.</p> <p>* The share of recommended products increased in Norway.</p> <p>* Norway had the highest use of emergency pills (13.5 sold packages/100 woman in 2010 → 12.6/100 woman in 2013).</p> <p>* Patch more popular in Norway than the other countries.</p> <p>COC most popular among teenagers and young adults in Norway.</p> <p>- Increasing general use of contraception from age gr. 15-19 (~35%) to 20-24 (~58%, general peak), decreasing again in 25-29 (~41%).</p> <p>- COC-use among ~80% of contraceptive users in age gr. 15-19, ~70% in gr. 20-24, ~55% in gr. 25-29.</p> <p>- Decreasing use of implants with increasing age.</p> <p>- Increasing use of POP, ring, patch and LNG-IUS with increasing age (15-29 y.o.)</p> <p>- Injection use fairly the same in the age groups.</p>	<p>Sjekkliste:</p> <p>Er formålet klart formulert? JA.</p> <p>Var studien basert på et tilfeldig utvalg fra en egnet pasientgruppe? NEI.</p> <p>Var det sikret at utvalget ikke var selektert? JA.</p> <p>Var inklusjonskriteriene for utvalget klart definert? NEI, alle er med.</p> <p>Er svarprosenten høy nok? Irrelevant.</p> <p>Var alle pasientene i utvalget i samme stadium av sykdom? JA/irrelevant.</p> <p>Var oppfølgingen tilstrekkelig (type/omfang/tid) for å synliggjøre endepunktene? Irrelevant, prevalensdata.</p> <p>Ble objektive kriterier benyttet for å vurdere/validere endepunktene? JA.</p> <p>Ved sammenligninger av pasientserier, er seriene tilstrekkelig beskrevet og prognostiske faktorer fordelt beskrevet? JA (mellom landene+alder).</p> <p>Var registreringen av data prospektiv? NEI, historisk prospektiv.</p> <p>Hva diskuterer forfatterne som.</p> <p>Styrke: Use of National register data including all redeemed prescriptions of hormonal contraception. Repeat prescription, suggesting real use. No evidence to suggest potential bias differing between the countries.</p> <p>Svakhet: Not including sterilization or less compliant methods (condom, natural).</p> <p>Viser forfatterne til annen litteratur som styrker/svekker resultatene? JA</p>

Referanse: Hognert H, Skjeldestad FE, Gemzell-Danielsson K, Heikinheimo O, Milsom I, Lidegaard Ø, et al. High birth rates despite easy access to contraception and abortion: a cross-sectional study. Acta Obstet Gynecol Scand 2017; 96:1414-1422.			Design: Pasientserier
			Dokumentasjonsnivå IIb
			GRADE 2
Formål	Materiale og metode	Resultater	Diskusjon/kommentarer
<p><i>To describe and compare contraceptive use, fertility, birth, and abortion rates in the Nordic countries.</i></p>	<p>National data on births, abortions, fertility rate (1975-2013), redeemed prescriptions of hormonal contraceptives (HCs) and sales figures of Cu-IUDs.</p> <p><u>Population:</u> 5.1 (1975) to 5.8 (2013) mill women aged 15-49 in the Nordic countries (women age <15 included in 15-19 gr, age >49 included in 45-49 gr).</p> <p><u>Exclusion criteria:</u> Not specified (anonymous data).</p> <p><u>Inclusion criteria:</u> Registered in national prescription database.</p> <p><u>Main outcome:</u> Contraceptive use, abortions, birth + country.</p> <p><u>Main exposure:</u> Different types of hormonal contraception (CHC, POP, injection, implant, LNG-IUS, Cu-IUD).</p> <p><u>Explanatory variables:</u> Financial assistance regarding cost of contraception, availability of clinical guidelines, abortion legislation, (parental leave for both parents, accessible and affordable child care).</p>	<p>* Higher income rate in Norway.</p> <p>* Fertility rates stable, 1.8 in Norway (2013).</p> <p>* Stable birth rate (ca. 60/1000 women 15-44 y.o.).</p> <p>* Stable abortion rate (ca. 16/1000).</p> <p>* No clear correlation between contraceptive user rates and abortion rates.</p> <p>* LNG-IUS use higher among older women, younger relied on user-dependent methods.</p> <p>* Total abortion rates lower in Nordic countries than overall rate in the developed world (24/1000 women and year in '08).</p> <p>CONTRACEPTION 2008-2013</p> <p>* Overall use in NOR 33-34% (lower than DEN, SWE, FIN).</p> <p>* Lowest use of IUDs in NOR → Cu-IUD 1%, LNG-IUS 8%.</p> <p><u>15-19 y.o.:</u> 37-36% in NOR (less than DEN, SWE).</p> <p>* CHC most common (ALL).</p> <p>* Decrease in birth+abortion rate from '08-'13 (ALL).</p> <p>* Decline in teenage birth: 9/1000 → 6/1000 (NOR).</p> <p>* Steepest decline in abortion 18 → 10/1000 (NOR).</p> <p><u>20-24 y.o.:</u> 53-57% in NOR (less than DEN, more than SWE).</p> <p>* CHC most common (ALL).</p> <p>* Higher birth rate than 15-19 y.o., but declined in NOR (and DEN) from '08-'13.</p> <p>* Abortion rate higher than all other age gr (ALL).</p> <p><u>25-29 y.o.:</u> 38-42% in NOR (less than DEN, more than SWE).</p> <p>* Total HC use decreased, doubled birth rate (ALL).</p> <p>* HCH still high but increasing LNG-IUS use.</p> <p>* POP more used in NOR and SWE than DEN.</p> <p>* Higher birth rates+lower abortion rates than 20-24 gr. (ALL).</p>	<p>Sjekkliste:</p> <p>Er formålet klart formulert? JA.</p> <p>Var studien basert på et tilfeldig utvalg fra en egnet pasientgruppe? NEI, hele kv. befolkn. 15-49</p> <p>Var det sikret at utvalget ikke var selektert? JA.</p> <p>Var inklusjonskriteriene for utvalget klart definert? JA, alle kvinner i aktuelle aldre er med.</p> <p>Er svarprosenten høy nok? Irrelevant.</p> <p>Var alle pasientene i utvalget i samme stadium av sykdom? Irrelevant.</p> <p>Var oppfølgingen tilstrekkelig (type/omfang/tid) for å synliggjøre endepunktene? NEI.</p> <p>Ble objektive kriterier benyttet for å vurdere/validere endepunktene? JA for fødsel og abort, «JA» for prevensjon, men ikke validert.</p> <p>Ved sammenlikninger av pasientserier, er seriene tilstrekkelig beskrevet og prognostiske faktorer fordeling beskrevet? JA (mellom landene/alder).</p> <p>Var registrering av data prospektiv? NEI, historisk prospektiv.</p> <p>Hva diskuterer forfatterne som.</p> <p>Styrke: Use of national register data that included all women of reproductive age – highly reliable.</p> <p>Svakhet: Lack of age-specific data on Cu-IUDs, and age-specific contraceptive use for FIN and ICE. Lack of data in other contraceptive methods.</p> <p>Viser forfatterne til annen litteratur som styrker/svekker resultatene? JA</p>
Konklusjon			
<i>Rates in the Nordic countries remain high and stable despite high contraceptive use and liberal access to abortion on women's request.</i>			
Land			
Norway, Sweden, Denmark, Iceland, Finland			
År data innsamling			
1975-2013			

Referanse: Skjeldestad FE. Prevensjonsbruken i Norge i 2005. Tidsskr Nor Lægeforen 2007;127: 2803-5		Design: Pasientserier	
		Dokumentasjonsnivå IIb	
		GRADE	
		1-2	
Formål	Materiale og metode	Resultater	Diskusjon/kommentarer
<p>Data over nye prevensjonsvaner i Norge.</p> <p>«Siden det i de senere år er kommet flere nye administrasjonsformer for hormonell prevensjon og egenandelen for kvinnelig sterilisering er blitt høyere, er det ønskelig med data over nye prevensjonsvaner i Norge.»</p> <p>Konklusjon</p> <p>Flere brukere av hormonell prevensjon, først og fremst p-piller. Stabil andel spiralbrukere, overvekt av hormonspiral. Færre steriliserte kvinner.</p>	<p>Population: 1575 fertile kvinner i alderen 20-44 år.</p> <p>Excluded: Kvinner alder 15-19 år, ikke seksuelt aktiv siste 3 mnd, graviditetsønske.</p> <p>Included: Tilfeldig utvalgte 5000 kvinner fra et webpanel på 50 000 deltakere → svar 2127 → eksklusjon → 1575 kvinner.</p> <p>- 20-24 år: 23.5% - 25-29 år: 20.8% - 30-34 år: 17.3% - 35-39 år: 21.3% - 40-44 år: 17.1%</p> <p>Main outcome: Prev.bruk siste 3 mnd.</p> <p>Main exposure: Hormonell prev., Cu-IUD, kondom, samleieavh.met., sterilisering kvinne.</p>	<ul style="list-style-type: none"> • Hormonell prev.bruk dominerer blant kvinner <35 år. • Spiral brukes av ≥35 år. • ¼ seksuelt aktive 20-24 år har brukt hormonell prev. siste tre mnd. • Hormonell prev.bruk synker med stigende alder. • Spiral og sterilisering øker med alder (1/5 i alder 40-44 år er sterilisert). • Dobbelt så høy brukerrate for LNG-IUD vs Cu-IUD i alle grupper >25 år. <p>HORMONELL PREVENSJON</p> <p>20-24 år: totalt 75.1% COC dominerer (65.9%) → VR (3.8%) → plaster (3.2%) → POP/implantat (2.4%) → IUD (Cu- og LNG-) (1.1%).</p> <p>25-29 år: totalt 59.9% COC dominerer (49.5%) → LNG-IUD (6.1%) → POP/implantat (4.0%) → VR (3.7%) → plaster og Cu-IUD (2.8%).</p> <p>ØVRIG</p> <p>20-24 år og 25-29 år:</p> <ul style="list-style-type: none"> - Flere brukte ingen prevensjonsmetode blant 25-29 år. - Flere brukte samleieavh.metoder blant 25-29 år. - Kondombruk relativt lik, men flest i alder 25-29 år. - Flere brukte hormonell prev. blant 20-24 år. - Ca. 3.5 x høyere spiralbruk blant 25-29 år. 	<p>Sjekkliste:</p> <p>Er formålet klart formulert? JA.</p> <p>Var studien basert på et tilfeldig utvalg fra en egnet pasientgruppe? JA.</p> <p>Var det sikret at utvalget ikke var selektert? JA.</p> <p>Var inklusjonskriteriene for utvalget klart definert? JA.</p> <p>Er svarprosenten høy nok? NEI (41%).</p> <p>Var alle pasientene i utvalget i samme stadium av sykdom? Irrelevant.</p> <p>Var oppfølgingen tilstrekkelig (type/omfang/tid) for å synliggjøre endepunktene? Irrelevant.</p> <p>Ble objektive kriterier benyttet for å vurdere/validere endepunktene? JA.</p> <p>Ved sammenlikninger av pasientserier, er seriene tilstrekkelig beskrevet og prognostiske faktorer fordelt beskrevet? JA – tidl. undersøkelser.</p> <p>Var registreringen av data prospektiv? NEI.</p> <p>Hva diskuterer forfatterne som. Sværke: Representativt utvalg</p> <p>Svakhet: Ufullstendig data for sivilstand, barnetall og utdanning. Lav responsrate. Ikke reg. mannlige sterilisering el. p-sprøye.</p> <p>Viser forfatterne til annen litteratur som styrker/svekker resultatene? JA</p>
Land	Norge		
År data innsamling	2005		

Referanse: Lindh I, Ellström AA, Blohm F, Milsom I. A longitudinal study of contraception and pregnancies in the same women followed for a quarter of a century. Hum Reprod 2010; 25(6):1415-22.		Design: Kohortestudie	
		Dokumentasjonsnivå	IIb
		GRADE	2
Formål	Materiale og metode	Resultater	Diskusjon/kommentarer
<p>Describe contraceptive use and pregnancies.</p> <p>"Describe contraceptive use and pregnancies in the same women followed prospectively from 19 to 44 years old of age."</p> <p>Konklusjon</p> <p>"Choice of contraception was strongly related to age and parity, and the cumulative total number of pregnancies at 44 years of age, and contraceptive choice was related to age at first pregnancy."</p>	<p>"In 1981, a postal questionnaire about contraception, pregnancies and reproductive health was sent to a random sample (n = 656) of 19-year-old women resident in Gothenburg, Sweden. The responders were contacted again every fifth year."</p> <p>Population: 656 women born in 1962 living in Gothenburg.</p> <p>Exclusion criteria: Random sample of every fourth woman of 2621 residents. Excluded if no reply after reminder (2 and 4 weeks).</p> <p>Inclusion criteria: Women born in 1962 and 19 y.o. residing in Gothenburg.</p> <p>Main outcome: Contraceptive use and pregnancies.</p> <p>Main exposure: Contraception (COC, condom, Cu-IUD, LNG-IUD, POP, depot gestagen/implant, other), reproductive history.</p> <p>Explanatory variables: Smoking, height, weight, BMI.</p>	<p>The questionnaire was completed and returned on all six occasions by 286 women which constituted 44% of the original sample of 656 women.</p> <p>CONTRACEPTIVE USE</p> <p>19 y.o.: 91% response rate.</p> <ul style="list-style-type: none"> - No contraception = 35%. - COC = 48%. - COC+condom = 1%. - Only condom = 14%. - Cu-IUD = 1%. - POP = 4%. - LNG-IUS, IUD+condom, depot gestagen/implant, other method = 0%. - Birth = 5%. <p>24 y.o.: 81% response rate.</p> <ul style="list-style-type: none"> - No contraception = 24%. - COC = 51%. - Only condom = 12%. - Cu-IUD = 11%. - POP = 2%. - COC+condom, LNG-IUS, IUD+condom, depot gestagen/implant, other method = 0%. <p>29 y.o.: 90% response rate.</p> <ul style="list-style-type: none"> - No contraception = 26%. - COC = 22%. - COC+condom = 3%. - Only condom = 24%. - Cu-IUD = 19%. - POP = 3%. - Depot gestagen/implant = 3%. - Other method = 19%. - IUD+condom = 0%. 	<p>Sjekkliste:</p> <p>Er formålet klart formulert? JA.</p> <p>Var gruppene sammenliknbare i forhold til viktige bakgrunnsfaktorer? JA.</p> <p>Er gruppene rekruttert fra samme populasjon/befolkningsgruppe? JA (kvinner).</p> <p>Var de eksponerte individene representative for en definert befolkningsgruppe/populasjon? JA.</p> <p>Var studien prospektiv? JA.</p> <p>Ble eksposisjon og utfall målt likt og pålitelig i de to gruppene? JA – 6 aldersgrupper.</p> <p>Ble mange nok personer i kohorten fulgt opp? JA (>80% responsrate hvert år, men kun 44% svart ved hver anledning).</p> <p>Er det utført frafallsanalyser? JA.</p> <p>Var oppfølgingstiden lang nok til å påvise positive og/eller negative utfall? JA.</p> <p>Er det tatt hensyn til viktige konfunderende faktorer i design/gjennomføring? JA.</p> <p>Er den som vurderte resultatene (endepunktene) blindet gruppetilhørighet? Irrelevant.</p> <p>Hva diskuterer forfatterne som.</p> <p>Styrke –</p> <p>Svakhet Unable to assess contraception compliance, adherence to therapy and persistence of use.</p> <p>Viser forfatterne til annen litteratur som styrker/svekker resultatene? JA.</p>
Land	Sweden		
År data innsamling	1981-2006		

Referanse: Cea-Soriano L, García Rodríguez LA, Machlitt A, Wallander M-A. Use of prescription contraceptive methods in the UK general population: a primary care study. BJOG 2014;121:53–61.		Design: Pasientserier	
		Dokumentasjonsnivå IIb	
		GRADE 1-2	
Formål	Materiale og metode	Resultater	Diskusjon/kommentarer
To determine prescription contraceptive use in the UK.	Population: Women in The Health Improvement Network (THIN) aged 12-49 years in 2008, registered with their primary care doctor for at least 5 years, and with a prescription history of at least 1 year were included. Covering 6.2% of the UK population.	COCs were used by the greatest proportion of women (16.2%); POPS – 5.6%; Cu-IUDs – 4.5%; LNG-IUS – 4.2%; progestogen-only injections – 2.4%; progestogen-only implants – 1.5%; patches had the lowest prevalence (0.1%). New users of COCs were younger, with a mean age of 19.2 years. New users of IUDs had the highest mean age, with 35.2 years for Cu-IUD and 38.4 years for LNG-IUS. Within 1 year, 9.8% of new COC users switched to alternative COCs, and 9.0% switched to a different method. Among new COC users who did not switch method, 34.8% did not continue use beyond 3 months, and 50.1% discontinued use after 6 months. Similar pattern with POPS. Prior users of contraceptives were more likely to switch to an alternative method than to a different brand of COCs. Among users of LARCs, first-timers had higher continuation rates, mostly LNG-IUS. Those using progestogen-only injections were least likely to use only that method.	Sjekkliste: * Er formålet klart formulert? JA * Var studien basert på et tilfeldig utvalg fra en egnet pasientgruppe? JA * Var det sikret at utvalget ikke var selektert? NEI – selektert. * Var inklusjonskriteriene for utvalget klart definert? JA * Er svarprosenten høy nok? NEI (33.8%) * Var alle pasientene i utvalget i samme stadium av sykdom? Irrelevant * Var oppfølgingen tilstrekkelig (type/omfang/tid) for å synliggjøre endepunktene? Irrelevant * Ble objektive kriterier benyttet for å vurdere/validere endepunktene? JA * Ved sammenlikninger av pasientserier, er seriene tilstrekkelig beskrevet og prognostiske faktorer fordeling beskrevet? Irrelevant * Var registreringen av data prospektiv? NEI
Konklusjon <i>«Among users of oral contraceptives who did not switch method, over one-third did not continue use beyond 3 months. This supports current UK guidelines recommending a follow-up consultation with a healthcare professional 3 months after the first prescription of COCs.»</i>	574 185 women aged 12-49 years with ≥5 years registered with PCD and ≥1 year computerised prescription history. 194 054 women identified as user of the relevant contraceptive methods during the study period. These women were stratified according to previous use of prescription contraceptives: Past users (n = 160 996) and new users (n = 33 058), whereas new users were stratified into two subgroups consisting of prior contraceptive users (n = 18 597) and first-time users (n = 14 461). Exclusion criteria: Individuals with two or more concurrent prescriptions at the start date or who switched to the use of two contraceptive methods during the study were excluded. There were two exclusion criteria considering LARCs: 1 Record of having had the device removed and/or record of using a different type of LARC from the one detected at first use during follow-up. 2 More than two prescriptions for contraceptive methods other than a LARC.		Hva diskuterer forfatterne som. Styrke: Representative for the UK (with respect to age, sex and demographic), use of THIN – more reliable than patient surveys. Svakhet: Some LNG-IUS users misclassified as Cu-IUD users, inclusion criteria excluded geographically mobile women – 10-15% smaller sample size, just based on prescriptions issued and not actual use, some hormonal contraception issued for non-contraceptive use.
Land	United Kingdom		Viser forfatterne til annen litteratur som styrker/svekker resultatene? JA
Ar data innsamling	Included: Female; age 12-49; registered with a PCD last 5 years; computerised prescription history last 1 year – in a period from 1 January to 31 December 2008. Main outcome: Prevalence, switching and duration of prescriptions. Main exposure: Different contraceptive methods. Explanatory variables: Age, BMI, smoking.	For all except one method, the majority who switched methods changed to an oral contraception. The exception was first-time Cu-IUDs, whom switched to LNG-IUS.	
1 Jan – 31 Dec 2008			

Appendix 2 – Spesifisering arbeidsoppgaver

See next page.

Spesifisering arbeidsoppgaver for masteroppgave

mellom stud. med. Helene Marie Agejeva Jensen
og
hovedveileder Finn Egil Skjeldestad, ISM, UiT
for prosjektet

Postponing parenthood: Use of hormonal contraception before first childbirth

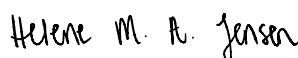
Tabellen angir arbeidsoppgaver avtalt mellom student og veiledere i starfasen av prosjektet.

Oppgave	Studenter	Veiledere
Ide		x
Litteratursøk	x	(x)
Litteraturevaluering	x	(x)
Prosjektbeskrivelse	x	(x)
Protokol	Inngår som delprosjekt	x
Søknad REK/NSD (DPIA)/FHI (Reseptregisteret/MFR)		x
Andre søknader; finansiering		x
Lage "case-report-form"	Ikke aktuelt	
Identifisere deltakere		x
Rammer for datainnsamling - logistikk		x
Datainnsamling		x
Korrektur, samordne sjekklister	Ikke aktuelt	
Dataregistrering	Ikke aktuelt	
Korrektur data		x
Analyseplan	x	(x)
Analyser	(x)	x
Rapport/hovedoppgave (alle faser)	x	((x))
Andre oppgaver		Ikke spesifisert
Helene Marie Agejeva Jensen låner data fra prosjektet "Use of hormonal contraception in the Nordic countries" til mastersoppgaven. Masteroppgavestudenten er innforstått med at hun ikke har eierskap til data. Forfatterskapsrettigheter kvalifiserer hun seg for gjennom dette arbeidet og senere omskriving til artikkel. Nærmere avtale om publisering gjøres etter at oppgaven er innlevert.		

Tegnforklaring: x:hovedansvarlig; (x):med hjelp; ((x)):med noe hjelp

Tromsø 30.04.2020

Helene Marie Agejeva Jensen
Stude med.



Finn Egil Skjeldestad
Hovedveileder



