





DISSERTATIONES MEDICINAE UNIVERSITATIS TARTUENSIS  
**156**

**KAI HALDRE**

Sexual health and behaviour  
of young women in Estonia



TARTU UNIVERSITY  
**PRESS**

Department of Obstetrics and Gynaecology, University of Tartu, Estonia

Dissertation is accepted for commencement of the degree of Doctor of Medical Sciences on March 18, 2009 by the Council of the Faculty of Medicine, University of Tartu, Estonia

Supervisors: Professor Helle Karro, MD, PhD  
Department of Obstetrics and Gynaecology  
University of Tartu, Estonia

Professor Mati Rahu, PhD  
Department of Epidemiology and Biostatistics  
National Institute for Health Development, Tallinn, Estonia

Reviewers: Professor Heidi-Ingrid Maaros, MD, PhD  
Department of Family Medicine  
University of Tartu, Estonia

Associate Professor Katrin Lang, MD, PhD  
Department of Public Health  
University of Tartu, Estonia

Opponent: Professor Kaye Wellings, BA, MA, MSc, FFPH, FRCOG  
Public and Environmental Health Research Unit  
Department of Public Health and Policy  
London School of Hygiene and Tropical Medicine  
University of London, UK

Commencement: June 3, 2009

Publication of this dissertation is granted by University of Tartu

ISSN 1024–395x  
ISBN 978–9949–19–109–3 (trükis)  
ISBN 978–9949–19–110–9 (PDF)

Autoriõigus Kai Haldre, 2009

Tartu Ülikooli Kirjastus  
www.tyk.ee  
Tellimuse nr. 148

# CONTENTS

LIST OF ORIGINAL PUBLICATIONS .....	7
ABBREVIATIONS .....	8
I. INTRODUCTION .....	9
II. REVIEW OF THE LITERATURE .....	11
1. Reproductive and sexual health indicators.....	11
2. Sexual initiation in developed countries .....	13
2.1. Time trends .....	14
2.2. Factors associated with early sexual initiation.....	16
2.3. Conditions of the first sexual intercourse.....	17
3. Teenage pregnancies.....	18
3.1. Trends in teenage pregnancies in developed countries .....	18
3.1.1. Births .....	19
3.1.2. Abortions .....	20
3.2. Factors associated with teenage pregnancies .....	21
3.2.1. Social factors .....	22
3.2.2. Familial factors .....	24
3.2.3. Individual factors .....	25
3.3. Challenges of teenage childbirth and motherhood.....	27
4. Pregnancy termination .....	30
4.1. Legal abortion in Estonia.....	30
4.2. Impact of pregnancy termination on subsequent pregnancy.....	32
III. AIMS OF THE STUDY .....	34
IV. MATERIALS AND METHODS .....	35
1. The Estonian Medical Birth Registry.....	35
2. The Estonian Abortion Registry.....	36
3. Interview survey.....	36
3.1. Setting.....	36
3.2. Participants .....	37
3.3. Questionnaire.....	37
4. Subjects and data analysis .....	38
5. Ethics .....	42
V. RESULTS AND DISCUSSION.....	43
1. Trends in teenage pregnancies .....	43
1.1. Results .....	43
1.2. Discussion.....	45

2. Pregnancy outcome and young maternal age .....	47
2.1. Results .....	47
2.2. Discussion .....	53
3. Individual and familial factors associated with teenage unintended pregnancies.....	55
3.1. Results .....	55
3.2. Discussion .....	58
4. Surgically induced abortion(s) and risk of complications in the third stage of labour in subsequent delivery.....	59
4.1. Results .....	59
4.2. Discussion .....	61
VI. CONCLUSIONS .....	63
APPENDIX QUESTIONNAIRE .....	64
REFERENCES .....	83
SUMMARY IN ESTONIAN .....	94
ACKNOWLEDGEMENTS .....	102
PUBLICATIONS .....	103
CURRICULUM VITAE .....	149

## LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following original publications, which are referred to in the text by their Roman numerals:

- I Haldre K, Karro H, Rahu M. 2003. Reproduktiivtervise näitajaid Eesti naistel 1992–2001. *Eesti Arst* 82:166–171.
- II Haldre K, Karro H, Rahu M, Tellmann A. 2005. Impact of rapid socio-economic changes on teenage pregnancies in Estonia during 1992–2001. *Acta Obstet Gynecol Scand* 84:425–431.
- III Haldre K, Rahu K, Karro H, Rahu M. 2007. Is a poor pregnancy outcome related to young maternal age? A study of teenagers in Estonia during the period of major socio-economic changes (from 1992 to 2002). *Eur J Obstet Gynecol Reprod Biol* 131:45–51.
- IV Haldre K, Rahu K, Rahu M, Karro H. 2009. Individual and familial factors associated with teenage pregnancy: an interview study. *Eur J Public Health* doi:10.1093/eurpub/ckn143
- V Haldre K, Rahu K, Karro H, Rahu M. 2008. Previous history of surgically induced abortion and complications of the third stage of labour in subsequent normal vaginal deliveries. *J Matern Fetal Neonatal Med* 21:884–888.

Contribution of Kai Haldre to original publications:

Paper I: collection and selection of relevant data sources, data analysis, writing the paper.

Papers II, III and V: study design, participation in data analysis, writing the paper.

Paper IV: study design, compiling the questionnaire, participation in performing the interviews and in data analysis, writing the paper.

## ABBREVIATIONS

AIDS	acquired immune deficiency syndrome
CI	confidence interval
CSHIR	Comparative Survey of Human and Intimate Relationships
EAR	Estonian Abortion Registry
EFFS	Estonian Family and Fertility Survey
EHIS	Estonian Health Interview Survey
EMBR	Estonian Medical Birth Registry
EU	European Union
EWHS	Estonian Women's Health Survey
FINSEX	National Study of Human Relations, Sexual Attitudes and Life-styles in Finland
HIV	human immunodeficiency virus
ICD	International Statistical Classification of Diseases and Related Health Problems
ICPD	International Conference on Population and Development
IPPF	International Planned Parenthood Federation
IU	international units
KISS survey	acronym of the survey from the Finnish words meaning sexual maturation, relationships, dating and sexual behaviour
OR	odds ratio
PAHO	Pan American Health Organisation
SD	standard deviation
STAKES	National Research and Development Centre for Welfare and Health in Finland
STI	sexually transmitted infection
UK	United Kingdom
UN	United Nations
US	United States
WAS	World Association for Sexual Health
WHO	World Health Organisation

## I. INTRODUCTION

Since the beginning of the 1990s the current concept of reproductive and sexual health and rights was globally introduced, promoted and developed further by many international and professional organisations (Bóasdóttir, 2007; Buse et al., 2006; Cook et al., 2003; Glasier et al., 2006; Lottes and Kontula, 2000; PAHO and WHO, 2001; WHO, 2001, 2004a). The domain of reproductive health is different from other fields of health care, depending largely on specific cultural context and sexual ideology, which in turn determines the local framework of law and health policy (Buse et al., 2006; Cook et al., 2003). Unsafe sex has been identified by the World Health Organisation (WHO) as the second most important risk factor for death, disability and morbidity in the developing world and the ninth most important one in the developed countries – despite the probable underestimates in statistics, largely due to stigma associated with sexual topics (Glasier et al., 2006). No society has been neutral on the issues of human reproduction, therefore sometimes ending up in policies and regulations detrimental to sexual and reproductive health: sexual ill-health is conditioned by cultures, laws and values (Buse et al., 2006; Cook et al., 2003; Shaw and Faúndes, 2006). Globally, the main areas of controversy have been women's right to abortion, adolescent sexual activity and adolescents' rights (to services, education), sexual activity outside of marriage (of men and women), and sexual rights of individuals rather than couples (Glasier et al., 2006). Control over women's reproduction and sexuality goes back thousands of years (Bóasdóttir, 2007; Cook et al., 2003).

The United Nations (UN) International Conference on Population and Development (ICPD), held in Cairo in 1994, and the Fourth UN World Conference on Women, held in Beijing in 1995, led governments from all over the world to recognise for the first time that the protection of reproductive and sexual health is a matter of social justice, is the basis for economic and social development of nations, and an inevitable component of an equitable society (Glasier et al., 2006; Lottes and Kontula, 2000). A new, holistic and rights-based approach to handle the problem of overpopulation was introduced (Lazarus et al., 2004).

In Cairo, for the first time, the definition of reproductive health was adopted internationally and 179 governments agreed upon the 20-year-program of action to improve sexual and reproductive health and advance sexual and reproductive rights globally (Buse et al., 2006; Cook et al., 2003; Glasier et al., 2006; Lottes and Kontula, 2000; PAHO and WHO, 2001; WHO, 2004a). In 2004 the WHO adopted the first-ever global strategy on reproductive health (WHO, 2004b).

In all these developments the most significant one was the acknowledgement of the complex system of social, economical and political forces that determine people's vulnerability to sexual ill-health (Cook et al., 2003; Shaw and Faúndes, 2006). Here an important contribution had been made previously in the writings and views expressed by feminist scholars during the preceding decades. They

showed that any consideration of human sexuality had to consider the cultural concept of “masculinity” and “femininity” (Bóasdóttir, 2007; Lottes and Kontula, 2000; PAHO and WHO, 2001). Works in feminist theological sexual ethics have reconstructed Christian teaching of sexuality, highlighting mutuality in sexual pleasure, “bodyright”, and sexual pleasure as a source of power for women (Bóasdóttir, 2007).

According to the definition of reproductive health agreed upon in Cairo, sexual health was seen as a part of reproductive health and sexual rights were recognised only in their reproductive dimension in Cairo and Beijing (Bóasdóttir, 2007; Shaw and Faúndes, 2006). Along with the emerging HIV/AIDS epidemic and growing awareness of the extent of gender-based violence and sexual dysfunction in both men and women, sexual health and rights became an area of work in its own right since the second half of the 1990s (WHO, 2004a). Moreover, reproductive health became to be conceptualised as a part of sexual health, since reproduction is one part of human sexuality, and sexual health, as a public concern, is relevant for people of all ages, not only those of reproductive age (Lottes and Kontula, 2000; Sundby, 2006; WHO, 2004a).

Human rights, including sexual and reproductive rights, are tools that direct governments, individuals, and organisations towards appropriate policies and practices (Cook et al., 2003). The WHO-convened international technical consultation in 2002 defined sexual rights as “human rights that are already recognised in national laws, international human rights documents and other consensus statements” (WHO, 2004a). For example, the WHO has identified six international consensus documents from 1974 until 2000, adopted by most governments, which are relevant in forming policies concerning safe abortion (WHO, 2003). Several organisations, like the International Planned Parenthood Federation (IPPF) and the World Association for Sexual Health (WAS), had already defined in the 1990s the list of sexual rights prerequisite for attaining sexual and reproductive health (Lottes and Kontula, 2000; PAHO and WHO, 2001; Shaw and Faúndes, 2006; WAS, 1999; WHO, 2004a). It is widely recognised that women’s sexual and reproductive health is often compromised not because of lack of medical knowledge, but because of violations of their basic human rights (Shaw and Faúndes, 2006).

Since the beginning of the 1990s major and rapid socio-economic changes, including the creation of new legislation and implementation of reforms in health care and education, took place in Estonia. Rapidly changing values and opportunities in the society, including the ones in health care, give us a unique chance to analyse how social context determines women’s sexual and reproductive behaviour and health.

## II. REVIEW OF THE LITERATURE

### 1. Reproductive and sexual health indicators

Health indicators have been defined as “markers of health status, service provision, or resource availability, designed to enable the monitoring of service performance or programme goals” (WHO, 2006).

According to the WHO (2004a), the five core components of sexual and reproductive health care are: improvement of antenatal, perinatal, postpartum, and newborn care; provision of high-quality services for family planning, including infertility services; elimination of unsafe abortions; prevention and treatment of sexually transmitted infections (STI), including HIV, reproductive tract infections, cervical cancer, and other gynaecological morbidities; promotion of healthy sexuality.

During the following years after ICPD in Cairo, international agencies agreed upon a shortlist of 17 reproductive health indicators for global monitoring of the achievement of sexual and reproductive health targets (including sexual and reproductive health services) by 2015 (WHO, 2006). In the global perspective, Estonia has reliable data on the majority of the indicators (like total fertility rate, maternal mortality ratio, antenatal care coverage etc.). At the same time there is less information available about some indicators, such as contraceptive prevalence, prevalence of infertility in women and reported incidence of urethritis in men. Yet, some of the indicators are presumably less meaningful in the Estonian context, such as reported prevalence of women with genital mutilation or availability of essential obstetric care. It has been argued that the ICPD definition of reproductive health is “too comprehensive to measure, explain, or communicate easily” (Langer, 2006).

Output indicators, like service use and obstetric care, are included in the list, since in some parts of the world reliable data on indicators of outcome would be difficult to obtain. Output indicators can only be used in cases where enough evidence of a causal link with outcomes exists (WHO, 2006).

It has been noted (Ketting, 1996) that in many developed countries, maternal and infant mortality and morbidity rates are low and complications of illegal abortions are minimal, at the same time there is much evidence of sexual problems due to the lack of information and education, unsolved sexual identity issues, and sexual violence and abuse. Sexual and reproductive health often overlap, interventions in one area are likely to have an impact on the others (Glasier et al., 2006). Men have specific sexual and reproductive health issues (Glasier et al., 2006; Lottes and Kontula, 2000).

Features of comprehensive reproductive health care have been characterised by the WHO (2006) and they include prevention and management of sexual violence, reproductive health programmes for specific groups such as adolescents, including information, education and communication services; clinical

services as well as counselling, information, education and communication in family planning; condom distribution and voluntary testing and counselling of sexually transmitted diseases (including HIV/AIDS), etc.

Recognition of sexual health as a field in its own right led to the development of an even more holistic framework and concepts of how to look upon sexual (and reproductive) health in a society (Lottes and Kontula, 2000; PAHO and WHO, 2001). The WHO has elaborated this more universal concept in many of its publications (WHO 2005a, 2005b; Wood and Aggleton, 2005). The 17 WHO reproductive health indicators have certain limitations. Lottes and Kontula (2000) have described seven sexual health components (planned and wanted pregnancies; low risk of contracting a sexually transmitted disease; no sexual coercion, abuse, harassment, assault, rape, or mutilation; lack of discrimination; sexual enjoyment and pleasure; sexual knowledge and education; reproductive health) and have defined a set of indicators for evaluating and monitoring each of these components. In this concept reproductive health is seen as one part of sexual health.

Based on different sources (Haavio-Mannila and Kontula, 2001; Katus et al., 1995; Leinsalu et al., 1999; Papp et al., 2001; Tellmann et al., 2000, 2001, 2002; Tiit et al., 2001), Paper I (the review article) gives an overview of some reproductive health indicators in Estonia during 1992–2001 and comparison with similar data from the Nordic countries is made. Timing of first sexual intercourse, contraception usage during the first intercourse, contraceptive usage among women of fertile age, time trends in pregnancy terminations and fertility, and age of parturients were analysed.

According to the 1994 Estonian Family and Fertility Survey (EFFS; Katus et al., 1995), the 1996 Estonian Health Interview Survey (EHIS; Leinsalu et al., 1999), and the 2000 Comparative Survey of Human and Intimate Relationships (CSHIR; Haavio-Mannila and Kontula, 2001), there is evidence that women started sexual intercourse at an earlier age than women in preceding decades. The age of women and men during first intercourse was almost equal in the youngest age groups in contrast with older generations, where men used to start sexual life many years earlier than women. Contraceptive usage during first intercourse was modest among 20–24 year-old women according to the 1994 EFFS and 1996 EHIS – about two thirds of the women did not use any method; around half of those who used a method in the EFFS had chosen a “traditional method” – *coitus interruptus* and/or calendar method (Katus et al., 1995). There were no systematic data about contraceptive usage among women in all age groups in Estonia. However, based on the existing data we concluded that the usage of reliable contraception had increased during the study period, since both the number of deliveries and pregnancy terminations decreased remarkably. Usage of traditional “methods” – *coitus interruptus* and calendar method – was relatively wide spread compared with data from Finland for example (Haavio-Mannila and Kontula, 2001; Lottes and Kontula, 2000). In spite of the dramatic decrease in pregnancy terminations, the abortion rate at the end of the study

period was substantially higher compared with the Nordic countries (13.0 per 1000 women of fertile age in the Nordic countries and 9.0 per 1000 in Finland in 2001) (STAKES, 2007).

As indicated by the abortion ratio, in 2000 there were for the first time in more than forty years, less pregnancy terminations than live births in Estonia – 97.6 induced abortions per 100 live births. In comparison, in 1999 the abortion ratio was 34.8 in Sweden, 24.6 in Denmark, and between 15 and 19 in Finland in the 1990s (NOMESCO, 2000; STAKES, 2007). Between 1992 and 2001 the total number of live births, total fertility rate and fertility rate per 1000 women decreased rapidly in all age groups in Estonia. The lowest level was in 1998 when the total fertility rate was 1.27 and the fertility rate among 15–49 year-old women was 35.1. Since 1999 the total number of births, total fertility rate and fertility rate have increased; in 2001 there were 12,690 deliveries (18,191 in 1992), total fertility rate was 1.33 and fertility rate among 15–49 year-old women was 36.8. The fertility rate was lowest in the county of Ida-Virumaa and in the city of Tallinn, and highest in the counties of Hiiumaa, Saaremaa and Valgamaa in 2001. Primipara age (22.7 in 1992 and 24.1 in 2001) and the average age of mothers (25.5 in 1992 and 27.1 in 2001) increased by 1.5 years during the study period. The majority of the parturients were aged 20–24 years. However, in 2001 an almost equal proportion of women belonged to the age groups 20–24 and 25–29 years. In comparison, between 1990 and 1999 the majority of parturients in Finland, Denmark, Sweden, Norway and Iceland were 25–29 years old (NOMESCO, 2000). A little more than half of the parturients in Estonia had undergone no pregnancy terminations before the delivery (57.2% in 1992 and 52.9% in 2001). A quarter of the parturients had had one abortion and a quarter had had two or more abortions before the delivery.

In some other publications (Francoeur and Noonan, 2004; Haavio-Mannila et al., 2006) a more holistic approach in analysis of sexual health indicators in Estonia has been presented, including homosexual and transgender issues, autoerotic behaviours and patterns, the development and quality of sexual health services, availability of contraceptives, men's sexual health, sexual violence and abuse of minors and women, sexuality education, and changing sexual values and legislation.

## **2. Sexual initiation in developed countries**

Although sexual initiation includes several behaviours, and sexual debut or being sexually active should not be equated with vaginal sexual intercourse (Edgardh et al., 1999), the first sexual intercourse is felt by a lot of people to be a rite of initiation and an act of entering into adulthood (Haavio-Mannila et al., 2002; Kontula and Haavio-Mannila, 1995). The age and conditions of the first intercourse among men and women is an important individual and cultural

indicator of sexual behaviour and of interest in the context of public health (Kontula, 2003; Singh et al., 2000; Wellings et al., 2001).

## 2.1. Time trends

Analysis of the national sex surveys conducted in Europe in the late 1980s and in the 1990s (Kontula, 2003) showed that in Europe the age at sexual initiation decreased first in the Nordic countries and thereafter in most of the Western and Central European countries. The mean age of women at first intercourse decreased after the 1960s by 2–3 years in all the Western European countries and the timing became equal for women and men. Since the 1980s this age has been rather stable. A similar transition started one generation (20–30 years) later in the Southern and Eastern European countries, including Estonia (Haavio-Mannila and Kontula, 2003; Kontula, 2003). It was pointed out by Kontula (2003) that a similar fall in the timing of the first sexual intercourse does not exist in the developing world.

In the second half of the 20th century sexual morals and sexual ideology changed considerably in the Nordic countries (Kontula and Haavio-Mannila, 1995) and in Western Europe (Ketting and Visser, 1994). The “sexual revolution” of the 1960s resulted in a change in the sexual behaviour of the majority of people in the 1970s and 1980s (Haavio-Mannila et al., 2005). Liberalization of sexual morals resulted in an earlier initiation of sexual life, a higher number of partners and cohabitations, more variable sexual repertoire, and higher levels of sexual satisfaction, especially for women (Haavio-Mannila and Rotkirch, 1997). In the Nordic countries this process started as a public discussion about young people’s sexuality, leading to a questioning of the existing sexual taboos and sex roles (Haavio-Mannila and Rotkirch, 1997). Public discussions in liberalized media, spread of reliable new contraceptives (the pill), sexuality enlightenment at schools and in the healthcare system, and change in gender roles towards gender equality were the features of the moral and ideological change in Finland as one example of the Western societies (Haavio-Mannila and Rotkirch, 1997). According to Ketting and Visser (1994) some of the social, cultural and political reasons for this kind of fundamental change in traditional values and family relations between 1965 and 1975 in the Netherlands were the following: rapid economic growth leading to a welfare society with a system of social security, decline in the influence of the church, increasing influence of modern mass media, rapid increase in general educational level, shift from an agricultural to an industrial society.

A similar sexual revolution in the public sphere was impossible during the same period in the former Soviet Union, including Estonia. Although there was formal gender equality in education and economic life (contributing to gender equality in sexual behaviour also), publicly articulated sexual moral attitudes remained traditional, e.g., the official attitude to premarital sex was negative

(Haavio-Mannila et al., 2005; Haavio-Mannila and Rotkirch, 1997). Additionally, research and education on sexual issues remained scarce until the 1980s (Bruyniks, 1994; Haavio-Mannila and Rotkirch, 1997; Popov et al., 1993).

Over the past one hundred years there has been a trend towards younger age at menarche (Gluckman and Hanson, 2006; Patton and Viner, 2007). In developed countries earlier age at coitarche is only partly explained by earlier maturation, more important seems to be the effect of social change (Kontula and Haavio-Mannila, 1995; Kosunen, 1996). Earlier maturation has been explained by better nutrition and living conditions (Coall and Chisholm, 2003). The declining trend in menarcheal age has levelled off at 12–13 years in the 1960s (Kosunen, 1996). It has been suggested (Gluckman and Hanson, 2006) that the age of menarche has now once again reached its evolutionarily determined range. At the same time, for the first time in human evolutionary history, biological puberty does not coincide with the age of psychosocial maturation and functioning as an adult (Gluckman and Hanson, 2006; Patton and Viner, 2007). This “mismatch” between biological and social maturation puts pressure on adolescents and it is a challenge for modern society to adjust its structures for this biology (Gluckman and Hanson, 2006). The role of early menarche in (sexual) behaviour may be more complex than being purely a sign of physical maturity – studies have shown that childhood psychosocial stress was associated with earlier menarche (Coall and Chisholm, 2003) and that early onset of menarche appeared to increase depression later in life (Harlow et al., 2004; Lien et al., 2006).

Societies differ regarding the health consequences of earlier coitarche. Premarital sex increased in the 1950s in developed countries (Kosunen, 1996). This development resulted in an increase in teenage pregnancies in the 1960s. Teenage sexual activities were looked upon primarily as an ethical and moral question in the United States (US), contrary to the Western European and Nordic countries, where health consequences were the primary concern (Kosunen, 1996). As a result, teenage pregnancy and STI rates have always been higher in the US compared with the Nordic countries for example (Darroch et al., 2001b). Traditional sexual morals and unavailability of modern contraception in the Eastern European countries (including Estonia) resulted in 3–4 times higher teenage pregnancy rates by the beginning of the 1990s compared with Western European countries (Kontula, 2003).

According to the EFFS carried out in 2004–2005 in Estonia, the proportion of women who had started intercourse by the age of 18 years was 48.5% in the 1979–1983 birth cohort and 4.4% in the 1924–1928 birth cohort. The median age of the first sexual intercourse for women in these birth cohorts was 18.0 and 22.1 years and for men 17.8 and 20.4 years, respectively (Katus et al., 2008). The EHIS from 1996 found that 39.9% of women in the age group 20–25 years and 9.7% of women in the age group 40–45 years had had intercourse by the age of 18 years (Leinsalu et al., 1999). The Youth HIV Studies carried out in 2003, 2005 and 2007 (Lõhmus et al., 2003; Lõhmus and Trummal, 2005, 2007)

among 10–29 year-olds found that about one fifth in the age group of 14–15 (boys and girls) had experienced intercourse and a little less than half of the teenagers in the age group of 16–18 years. The average age of coitarche among 25–29 year-olds was around 17.5 years for both boys and girls in all the three study years. According to the EFFS it seems that the age of coitarche equalised among boys and girls at the end of the 1980s and in the beginning of the 1990s (1969–1973 birth cohort) (Katus et al., 2008).

In Estonia, according to the KISS survey in 1999 (Papp et al., 2001), the mean age of menarche among 15-year-olds was 12.8 years, and 9% of girls had not yet had their first menstruation at the time of the study. According to the EFFS, in the 1924–1928 birth cohort 87.3% of women had reached menarche by the age of 17, whereas in the 1979–1983 birth cohort all the respondents had had menarche by this age (Katus et al., 2008). Median age at menarche was 14.9 and 13.6 years respectively.

## **2.2. Factors associated with early sexual initiation**

Early sexual debut has been described as coitarche before the age of 15 (Edgardh, 2000; Wellings et al., 2006) or 16 (Paul et al., 2000; Valle, 2005; Wellings et al., 1999, 2001). The age of consent in Estonia is 14 years (Riigikogu, 2002). First attempts to understand and describe the initiation of sexual activity among teenagers in Estonia were made at the beginning of the last century – the results of a survey conducted in the year 1910 among 333 young people aged 12–23 were published in 1929 (Madisson and Madisson, 1929).

Early initiation is more likely to be non-consensual and to be subsequently regretted (Dickson et al., 1998; Wight et al., 2000), less likely to be protected against unplanned pregnancy and infection, and associated with larger numbers of sexual partners (Edgardh, 2000; Santelli et al., 1998; Valle et al., 2005). Young age at first sexual intercourse is significantly associated with subsequent human papilloma virus infection (Kahn et al., 2002).

Factors associated with early age at first intercourse are early menarche (Andersson-Ellstrom et al., 1996; Edgardh, 2000; Wellings et al., 2001), high perceived social age (Edgardh, 2000), and belonging to lower/manual social class (Valle et al., 2005).

At the same time, early sexual initiation should not always be seen as a problem behaviour (Edgardh et al., 1999). It may indicate just a different lifestyle – a preference for raising a family rather than pursuing a career – and corresponds to earlier social maturity (Edgardh et al., 1999; Kontula, 2003).

High scores for parental monitoring, living with both biological parents, future aspirations and academic self-concept as well as low scores for depressed moods, are protective factors for early sexual initiation (Edgardh et al., 1999; Valle et al., 2005). Similarly, in Estonia, according to the Youth HIV Studies carried out in 2003, 2005 and 2007, it was found that the higher the education

by the age 25–29, the later the age of coitarche had been. This finding was similar for men and women (Lõhmus et al., 2003; Lõhmus and Trummal, 2005, 2007).

### **2.3. Conditions of the first sexual intercourse**

The relationship status of sexually active teenagers is important from the public health perspective – teenagers who are married or cohabiting may have less partners than single teenagers, who are thus more frequently exposed to possible health hazards (Kontula, 2003). In an overview of the timing of the first intercourse in 14 countries covering all the continents, it was shown that among men, most sexual relationships during the adolescent years were non-marital; among women they took place mainly in marriage (Singh et al., 2000). Traditionally, female sexual initiation in Christian culture was closely linked with marriage. It was expected that women became initiated into sex by their husbands (Kontula, 2003). Marriage, sexual initiation and first childbirth were closely linked events in Estonia until the beginning of the 1990s (Haavio-Mannila et al., 2005; Katus et al., 2002). This interlinkage had almost completely disappeared in Western Europe according to the surveys in the 1980s and 1990s (Haavio-Mannila et al., 2005; Kontula, 2003). At the same time the heterosexual “script” in the Nordic countries regards love as a prerequisite of premarital sexual relations (Edgardh, 2002; Haavio-Mannila et al., 2005; Sundby, 2006). There is some evidence from Sweden that, at least in some communities, this kind of “love script” may have recently changed to the “sex for fun” script with more openly experimental sexual attitudes and behaviour (Edgardh, 2002).

According to the CSHIR carried out in Estonia in 2000 (n=1031) among 18–74 year-olds, 85% of the men and 78% of the women accepted premarital sex (Haavio-Mannila et al., 2005). Among the younger respondents, the gender differences were less prominent compared with the older respondents in this respect. A similar study in Finland and St. Petersburg concluded that in Estonia and especially in St. Petersburg there was lack of consensus and personal certainty on the issue of premarital sex compared with Finland.

The Estonian Women’s Health Survey (EWS) 2004–2005 (n=2762) among 16–44 year-old women in Estonia showed that 11.7% of the respondents had their first sexual intercourse with a casual partner (Part et al., 2007). This was less often the case in the youngest age group of 16–17 years – 8.9% (13% among 25–34 year-old respondents). According to the Youth HIV Study among 3488 14–29 year-old respondents (Lõhmus and Trummal, 2007), the proportion of young people who had had more than one sexual partner during the last 12 months was highest in the youngest age group of 14–15 years (55.6%) and decreased with age. Girls and boys were similar in this respect only in the youngest age group; in the older age groups, men had more sexual partners than women.

Available data show that in this century in Estonia substantially more young people than in preceding decades use a condom during their first sexual intercourse. The Youth HIV Study (Lõhmus and Trummal, 2007) showed that about 2/3 of 14–15 year-old respondents (male and female) and 3/4 of 16–18 year-old respondents had used a condom during their first sexual intercourse. The results were similar according to the same studies from 2003 and 2005 (Lõhmus et al., 2003; Lõhmus and Trummal, 2005). Data from EWS 2004–2005 showed that 72% of the 16–17 year-old sexually experienced respondents had used a condom during their first intercourse, compared with 15% among 35–44 year-old women (Part et al., 2007). According to the CSHIR carried out in Estonia in 2000 and in Finland in 1999, 22% of 18–34 year-old women used a condom in their first sexual intercourse in Estonia and 79% of women of the same age in Finland (Haavio-Mannila and Kontula, 2001).

### **3. Teenage pregnancies**

According to the WHO, “adolescents” is a term used for people aged 10–19 years, “youth” describes people aged 15–24 years, the term “young people” covers both of these age ranges and is used for men and women aged 10–24 years (Ross et al., 2006; WHO, 2002). “Teenagers” is often used in Western societies in describing 13–19-year-olds (Sundby, 2006).

#### **3.1. Trends in teenage pregnancies in developed countries**

The level and trends of teenage pregnancies, abortions and childbearing varies from society to society (Singh and Darroch, 2000). It was concluded (Bearinger et al., 2007) in a global overview that adolescent birth rates were typically included in national health statistics in contrast to pregnancy rates or abortion statistics. They estimated that the worldwide average teenage birth rate was about 65 births per 1000 girls aged 15–19 years, and in some sub-Saharan countries almost all the girls deliver a child before their 20th birthday.

Declining age at menarche, increased years of schooling, availability of contraception, and poverty have been described as key elements which have influenced adolescent pregnancy in the 20th century (Treffers et al., 2001).

In order to describe variation in teenage birth, abortion and pregnancy rates in developed countries and to compare the distribution of these rates, the countries have been divided into five groups (Singh and Darroch, 2000). “Very low” is used to describe a birth rate and an abortion rate under 10 per 1000 adolescent girls, or a pregnancy rate of under 20 per 1000. “Low” indicates a birth rate and an abortion rate of 10–19 per 1000, or a pregnancy rate of 20–39 per 1000. “Moderate” describes a birth rate and an abortion rate of 20–34 per

1000, and a pregnancy rate of 40–69 per 1000. “High” describes a birth rate and an abortion rate of 35–49 per 1000, and a pregnancy rate of 70–99 per 1000. “Very high” indicates a birth rate and an abortion rate of 50 or more per 1000, and a pregnancy rate of 100 or more per 1000.

It is supposed that in developed countries a lot of teenage pregnancies are unintended and unwanted (Henshaw, 1998; Vikat et al., 2002), at the same time the beginning of the reproductive history of young women may be more complex and many pregnancies are actually desired (Seamark, 2001); it has been pointed out that there are methodological challenges in measuring pregnancy intentions (Barrett and Wellings, 2000).

In the case of an unintended pregnancy, women can either carry the pregnancy to full term and give birth or have an induced abortion. Sexual liberation in the 1960s in Western European countries resulted in a decrease in the age of sexual initiation and, as a consequence, in an increase in teenage fertility rates in some of the countries, such as England and Wales (Wellings and Kane, 1999). Along with sexual liberation, pregnancy termination was liberalized in Western Europe mainly in the 1970s. Thus the choices changed significantly in the 1970s, resulting in a growing proportion of adolescents choosing an abortion. For example, in Sweden during the 1980s and 1990s about 70% of all teenage pregnancies were terminated; this proportion was 90% among younger teenagers of 15–16 years (Edgardh, 2002). This was not the case in the Southern or Eastern European countries (Kosunen, 1996). In the Netherlands, provision of contraception and family planning services preceded the liberalization of abortion practice between 1967 and 1972, enabling thus to achieve very low adolescent pregnancy and abortion rates (Ketting and Visser, 1994). Termination of pregnancy on the woman’s request has been legally available in Estonia since 1955 according to the legislation of the Soviet Union; modern contraception was introduced and became widely available only at the beginning of the 1990s.

In most of the Western European countries decreased age at first sexual intercourse was no longer related to marriage after sexual liberalization in the 1960s (Kontula 2003, Wellings and Kane, 1999). In the Eastern European countries they were much more strongly interlinked (Kontula, 2003). Women experienced sexual initiation older, they married younger and they gave birth to their first child younger than women in the West.

### 3.1.1. Births

Singh and Darroch (2000) have compared adolescent birth rates in a global overview for the years 1970–1995 in 46 countries. It was found that during this period the trend towards lower adolescent birth and pregnancy rates occurred across the industrialized world, suggesting that the reasons for this general trend were the increased importance of education, the increased motivation of young

people to achieve higher levels of education and training, and greater centrality of goals other than motherhood and family formation.

According to this study in the mid-1990s, very low teenage birth rates were found in 10 of the 46 countries under investigation, mostly in Western, Southern and Northern Europe and in Japan. Moderate birth rates were found in many Central and Eastern European countries including Estonia; a few Western European countries belonged to this group (England and Wales, Iceland, Northern Ireland, Portugal and Scotland) and two English-speaking countries – Canada and New Zealand. Very high teenage birth rates were found in four Eastern European countries – Armenia, Georgia, Moldova and Ukraine, and in the US. Teenage birth rates were higher in 1995 than in 1970 in eight countries – all of these were in Eastern Europe – Armenia, Belarus, Estonia, Georgia, Lithuania, Macedonia, the Russian Federation and Ukraine.

Analysis of the trends in teenage fertility between 1990 and 2000 in 43 European countries (Kontula, 2003) concluded that fertility rates decreased in most Western European countries; by the year 2000 the fertility rate remained around 30 per 1000 teenage girls in the United Kingdom (UK). The lowest rates (under 8 per 1000) were found in Italy, Switzerland, the Netherlands, Sweden and Slovenia, and the second lowest rates (around 8 per 1000) in Spain and Denmark. Besides the UK, the highest teenage fertility rates were in Iceland and Portugal. At the end of the decade, after significant decline, teenage fertility rates were still high in the Eastern and Central European countries in comparison with Western European countries, the highest being in Ukraine, Moldova, Georgia, Turkey and Bulgaria. In Western European countries the percentage of 20 year-old women who had given birth ranged from 2 (Switzerland) to 13 (UK).

In a global overview of the data of teenage birth rates in the beginning of the 21st century it was found that the average birth rate among 15–19 year-olds in Europe was around 25 per 1000 girls, whereas the lowest rate was in Switzerland (5.4 in 2002) and the highest in Bulgaria (40.4 in 2003) (Bearinger et al., 2007).

### 3.1.2. Abortions

Singh and Darroch (2000) were able to analyse teenage abortion trends in 25 of the 46 countries between 1980 and 1995 and they presented abortion rates for the most recent year available in 33 of these countries. In the mid-1990s, Estonia belonged to the group of 10 countries of the developed world with moderate teenage abortion rates and complete reporting. One country – Russia, had a very high teenage abortion rate, even despite incomplete reporting. Very low adolescent abortion rates were found in four countries (Belgium, Germany, Israel and the Netherlands), which also had complete reporting. They generalized that declines in adolescent abortion rates are less prevalent than in birth

rates. It has to be noted that complete abortion data are available less often than complete data about births (Sedgh et al., 2007a, 2007b).

Sedgh et al. (2007b) have shown that by 2003 the teenage abortion rate in the US was similar to that in England and Wales and Sweden (22, 23 and 25 per 1000 15–19 year-old girls, respectively). In the mid-1990s the rate was higher in the US than in these two other countries (29, 22 and 18, respectively). This change was due to the decline of teenage abortions in the US and an increase in Sweden. The rate remained almost unchanged in England and Wales. In the English-speaking developed countries, teenage abortion rates have been higher than in other developed countries. Between 1996 and 2003 adolescent abortion rates increased in the Netherlands, Finland and Sweden by 33–65%. These changes have been attributed to the demand from ethnic minority women (in the Netherlands) and decreased funding of sexuality education (Sweden) (Sedgh et al., 2007b).

The analysis of adolescent abortion trends in the Nordic countries since the mid-1970s until 2000 (Knudsen et al., 2003) revealed that abortion rate among teenagers had continuously decreased only in Denmark. The abortion rate in the Nordic countries was lowest in Finland in the 1990s. A steady increase during the study period took place in Iceland, however, the highest rate by 2000 occurred in Sweden (Knudsen et al., 2003; Sedgh et al., 2007b). In Sweden, the abortion rate increased from 17 per 1000 in 1995 to 22.5 per 1000 teenage girls in 2001 (Edgardh, 2002). Abortion laws in all Nordic countries were liberalized in the 1970s and are regarded as some of the most liberal in the world (Knudsen et al., 2003). Obligatory pregnancy termination data collecting was established at the same time with the liberalization of abortion legislation and the abortion data are regarded as complete (Knudsen et al., 2003; Sedgh et al., 2007b).

In Estonia, until 1991, only the total number of abortions (sum of induced and spontaneous abortions) was recorded, and age-group selection was inconsistent from year to year. Therefore, age-specific abortion data are available from 1992 onwards (Karro, 1999). Estonian abortion statistics were regarded as relatively complete in 1996 and 2003 in an overview of abortion trends in 60 countries where abortion is legal (Sedgh et al., 2007b).

### **3.2. Factors associated with teenage pregnancies**

The determinants of teenage sexual health, including pregnancies, can be addressed on social, familial and individual levels (Imamura et al., 2007; Lottes and Kontula, 2000). Social systems (e.g., distribution of income and power, law, education, welfare provision), morals, and values in society (e.g., religion, attitude to women's right to choose an abortion, views on youth sexuality) influence people's lives and sexual behaviour (Daguerre and Nativel, 2006; Lottes and Kontula, 2000).

Familial and individual level determinants of sexual health are sometimes also called “micro-level” determinants of sexual health (Lottes and Kontula, 2000). In the context of teenagers, these include relations among individuals (e.g., parents, partners) and small groups (e.g., peers, schoolmates) and several individual characteristics (e.g., knowledge, self-esteem, age at first intercourse) (Imamura et al., 2007; Lottes and Kontula, 2000; Valle et al., 2005).

Selected “micro-level” factors associated with early sexual initiation, non-use of contraception and teenage pregnancy include individual psychological development and characteristics, family background, educational possibilities and goals, influences from the closest community (peers, media, etc.), socio-economic situation and access to contraceptives in every sense (Imamura et al., 2006).

Imamura et al. (2006), in the introduction of a report of the systematic review of factors associated with teenage pregnancy in the European Union (EU) countries (during 1995–2005) have classified/divided these factors into six categories:

- A. Sociodemographic factors (age, gender, socio-economic deprivation, geographic variables, e.g., urban/rural).
- B. Family (parental divorce, parental interest in education, mother (or sister) teenage pregnancy history).
- C. Educational factors (attitude to school, absent from school, school achievement, involvement and aspirations).
- D. Psychological factors (healthy lifestyle and risk behaviour, e.g., smoking, drug use, problem behaviour, depression, parent-child relations).
- E. Sexual knowledge, attitudes, behaviour (non-use of contraception, self-efficacy in condom use, number of sexual partners, preference for early motherhood).
- F. Contextual (availability and accessibility of sexual health services, service preference and acceptability, sex education).

### 3.2.1. Social factors

The sexual ideology of a particular society and culture is one of the major determinants of sexual health, including teenage pregnancy as one of its indicators. Sexual ideology can be defined as “the belief system about what is acceptable and appropriate sexual behaviour for men and women at various stages of their life and in various types of relationships” (Lottes and Kontula, 2000).

The timing of the first sexual intercourse shifted towards a younger age during the second half of the 20th century in Estonia, but in contrast to the Nordic countries this trend resulted in one of the youngest average primipara age in Europe – 22.5 years in 1990–1992 (Tiit et al., 2001). A similar change/trend can be followed in the UK in the 1960s, where the rise in teenage birth

rates can be explained by the increase in teenage sexual activity (as a result of the “sexual revolution” and changed mores). The availability of reliable contraception and termination of pregnancy since 1970 reduced the effects of increased teenage sexual activity on teenage fertility (Wellings and Kane, 1999). Women started to avoid unwanted pregnancies. Thus the need to legitimize births in wedlock diminished – marriage rates among teenage women in the UK declined from 67 in 1970 to 9 per 1000 in 1994 (Wellings and Kane, 1999).

It has been repeatedly documented that there is a higher risk of teenage pregnancy among girls from a lower socio-economic background (Imamura et al., 2007; McLeod, 2001; Vikat et al., 2002). Teenage fertility may be seen as conceptually equivalent to poverty (Kontula, 2003). A study of five developed countries – US, Great Britain, France, Sweden and Canada – showed that poorer and less educated young women were more likely to become mothers during adolescence (Singh et al., 2001). Another study (Darroch et al., 2001a) from the same five countries showed that differences in contraceptive usage are more important than differences in sexual activity in explaining differences in the levels of adolescent pregnancy and childbearing. Comparison of teenage fertility rates in several welfare states (US, New Zealand, England, Canada, France, Italy, Denmark and Norway) showed that a liberal welfare regime and less state protection leads to higher teenage pregnancy rates (Daguerre and Nativel, 2006). Teenage motherhood contributes to deprivation and is a result of it – thus it is often difficult to differentiate between the cause and the effect in the associations between teenage childbearing, educational level and material well-being (Wellings et al., 1999).

A systematic literature review of studies from 1995 until May 2005 by Imamura et al. (2007) of factors associated with teenage pregnancy in the EU countries identified five studies, all conducted in the UK, which investigated the impact of access to services in the case of teenage pregnancy. Based on this information, it was concluded that evidence that access to services in itself is a protective factor remains inconsistent. A review about the information concerning the impact of youth-friendly primary care services on health concluded that there is good knowledge in the world about what kind of services young people need and which are the barriers (Tylee et al., 2007). However, the authors argue that possibly this knowledge has not always been translated into practice in a comprehensive way. Additionally, the benefits of these services for young people’s health (beyond improving access) have not been appropriately shown.

### 3.2.2. Familial factors

When analysing trends in teenage fertility in three cohorts between 1980 and 1995, Manlove et al. (2000) found that family disruption contributed to an increase in teenage births, and a higher level of maternal education and declining family size were associated with declining trends in teenage fertility. A study from Finland (Vikat et al., 2002) concluded that girls who did not live with both parents had a higher pregnancy risk than those who did, and girls who lived in a stepfamily had a higher risk than those who lived in a one parent family. A systematic review of data from the EU countries found that disrupted family was one of the factors most consistently associated with teenage pregnancy (Imamura et al., 2007). The 1995 National Survey of Family Growth from the US showed that teenagers who lived with their both parents until at least the age 15 were less likely to become pregnant from their first sexual intercourse (Zavodny et al., 2001). Living apart from parents was associated with teenage pregnancy in a Swiss study (Narring et al., 1996).

The influence of family members on teenagers' decision about pregnancy resolution can be either direct (opinions expressed by partner, parents, sisters and friends) or indirect – behaviour is considered as a “norm” in this particular setting (Evans, 2001). The study from Australia by Evans (2001) analysed the influence of significant others on decisions about teenagers' pregnancy resolution and found that the majority of young women reported that they made their decision by themselves. Direct influence from the partner was significantly associated with the decision whether to terminate the pregnancy or deliver, while this was not the case regarding direct influence from the parents. Parents and other family members influenced the decision indirectly – giving “norms” with their own behaviour for either early motherhood or pregnancy termination.

It has been noted that there is not much evidence about the male partners involved in teenage pregnancies (Anda et al., 2002; Holmberg and Berg-Kelly, 2002). Adverse childhood treatment (sexual and other types of abuse), having had a STI, higher number of sexual partners, early age at first sexual intercourse, non-usage of contraceptives, usage of illicit drugs and alcohol (and anabolic steroids in a Swedish study) seem to be intermediate variables in an order of experiences leading to fathering teen pregnancy (Anda et al., 2002; Holmberg and Berg-Kelly, 2002).

A US study found that the higher the level of education of teenagers' mothers', the lower the likelihood of teenage pregnancy (Zavodny, 2001). Tripp and Viner (2005) have listed the following factors that are known to reduce the risk of teenage pregnancy: higher level of connectedness with school and family, long term and stable relationship with a partner, strong religious beliefs. In the case of non-marital teenage pregnancy the male partners' and teenagers' mothers' higher level of education was positively associated with abortion instead of motherhood (Zavodny, 2001). The authors of the report from the Alan Guttmacher Institute (Frost and Oslak, 1999) about teenagers' pregnancy

intentions and decision in the US in 1996 stated in their literature review that there is a lot of evidence which shows that pregnant young women who decide to bear a child more often come from economically disadvantaged families, live with only one or neither biological parent and have been sexually abused or raped, compared with teenagers who use contraception or decide to terminate the pregnancy. Childhood sexual, emotional, physical abuse or witnessing mother's abuse was a risk factor for teenage pregnancy in a study among 3753 young women from Latin America (Pallitto and Murillo, 2008). Another study showed that sexually abused girls were more likely to experience high-risk sexual behaviour (intercourse by the age of 15, not using contraception at last intercourse, having more than one sexual partner) and the association with adolescent pregnancy was the result of this high-risk behaviour (Stock et al., 1997). A retrospective cohort study from the US analysed seven categories of adverse childhood experiences and association with sexual risk behaviours in women (Hillis et al., 2001). They concluded that the chance for early sexual intercourse and having 30 or more lifetime sexual partners increased progressively when the frequency of exposure to violence during childhood increased. A literature review published in 2002 (Blinn-Pike et al., 2002) identified fifteen articles about maltreatment (sexual, physical, emotional abuse, neglect) and adolescent pregnancy. The authors concluded that because of methodological weakness and poor theoretical grounding it was not possible to prove the causal link between maltreatment and teenage pregnancy.

### 3.2.3. Individual factors

Typically, adolescence has been divided into three phases: early (10–14 years), middle (15–17 years), and late (17–19 years) adolescence. Each of these age groupings have characteristic physiological and cognitive developmental features for boys and girls (Dixon-Mueller, 2008; Short and Rosenthal, 2008). Dixon-Mueller (2008) has found that in the context of sexual relations and pregnancies it is relevant to consider age-related physiological readiness for intercourse and childbearing, cognitive ability to make safe, informed and voluntary decisions, and institutionalised concepts of the proper age for consent of sexual intercourse and family formation. By the age of 18 years brain structures for cognitive processing have developed and hormonal systems are in balance, sensation-seeking and risk-taking is in decline. However, cognitive maturation extends to early adult years, diversity in development is greatest in middle adolescence. Childhood personality type determines sexually risky behaviour in late adolescence – over controlled childhood personality prototype was associated with decrease in sexual risk-taking (Atkins, 2008). Psychological stress has been found to be associated with sexual risk behaviour, including teenage pregnancy (DiClemente et al., 2001; Narring et al., 1996).

A US study investigated the relationship between adolescents' perceived sexuality knowledge and their sexual risk behaviour (Rock et al., 2003). The authors found that teenagers who believed that they were not knowledgeable about sex were less likely to be sexually experienced than their peers with high perceived knowledge. More frequent sexual risk behaviours were reported by the subset of sexually experienced adolescents with low perceived knowledge. A study from the UK among 13–14 year-old students found that those who disliked school had similar sexual health knowledge with those who liked school, but were more likely to expect to be sexually active by the age of 16 and to be parents by the age of 20 (Bonell et al., 2003). Dislike of school reflects the educational dimension of social exclusion. It has been recognised that merely good knowledge of sexual matters does not ensure responsible behaviour and prevention of unwanted pregnancies (Marston and King, 2006; Sundby et al., 1999). Compulsory sexuality education, as a part of human studies in primary school, was introduced in Estonia only in 1996. The training of teachers started at the same time and it is possible that the level of sexuality education varies in different schools depending on the particular teacher (Wellings and Parker, 2006). It has been found that in Estonia, pupils' good sexual health knowledge was associated with both personal experience of sexual intercourse and sexuality education in 1999, but only with personal sexual experiences in 1994 (Part et al., 2008). In 2000 in CSHIR the proportion of 18–74 year-old respondents in Estonia who had received sexuality education at school was similar to the proportion in Finland at the end of the 1960s (the time when sexuality education was introduced to Finnish schools) (Haavio-Mannila and Kontula, 2001).

Quantitative research in sexual behaviour gives a lot of information for comparisons of time trends or of different cultures. Qualitative research in sexual behaviour helps to understand which are the determinants that shape individual behaviour. In a global systematic review of qualitative research about social and cultural forces that shape young people's sexual behaviour, Marston and King (2006) identified five key themes that occurred repeatedly in studies related to sexual behaviour in general and two related to condom use in particular: young people regard sexual partner as "clean" or "unclean" according to appearance or other unreliable indicators, sexual behaviour is influenced by the nature of the partnership, condoms may have additional meaning such as lack of trust or carrying a disease, social expectations are strongly determined by existing gender stereotypes (which in turn modulate sexual behaviour), penalties and rewards from wider society determine sexual behaviour, reputations are strong elements of social control and determinants of behaviour, and social expectations affect communication between partners. Tripp and Viner (2005) stressed that adolescents assess risks differently from adults and health professionals: health risks are not such a priority as the risk of being excluded from the "in-group" or the risk of being regarded as "immature".

### **3.3. Challenges of teenage childbirth and motherhood**

A systematic literature review (Cunnington, 2001) has revealed that most teenage pregnancies are low risk. Young adolescents give birth to a disproportionately large number of preterm infants considering that pregnant teenagers are in better physical condition, suffer from fewer chronic diseases, and engage in fewer health-risky behaviours than socio-economically similar pregnant adults (Stevens-Simon et al., 2002).

Teenage pregnancy is associated with social, economic and behavioural risk factors, which are also independent risk factors for adverse outcomes of pregnancy (Cunnington, 2001). Teenage childbearing has repeatedly been associated with increased risks for preterm birth (Abu-Heija et al., 2002; Conde-Agudelo et al., 2005; Cunnington, 2001; DuPleiss et al., 1997; Eure et al., 2002; Fraser et al., 1995; Gilbert et al., 2004; Gortzak-Uzan et al., 2001; Jolly et al., 2000; Otterblad Olausson et al., 1997; Usta et al., 2008), low birth weight (Conde-Agudelo et al., 2005; Cunnington, 2001; DuPleiss et al., 1997; Fraser et al., 1995; Gilbert et al., 2004), small for gestational age babies (Conde-Agudelo et al., 2005; Fraser et al., 1995; Gortzak-Uzan et al., 2001), and death in the neonatal or postneonatal periods (Conde-Agudelo et al., 2005; Cowden and Funkhouser, 2001; Gilbert et al., 2004; Orvos et al., 1999; Otterblad Olausson et al., 1997, 1999; Phipps et al., 2002a). Childbearing at an early age is strongly associated with infant homicide in a US study (Overpeck et al., 1998). Coall and Chisholm (2003) found that women who had experienced early psychosocial stress and had early menarche were more likely to deliver low-birth-weight babies. Some studies have found that pregnant teenagers suffer more often from anaemia (Conde-Agudelo et al., 2005; Usta et al., 2008) and pre-eclampsia (Eure et al., 2002; Orvos et al., 1999; Usta et al., 2008) compared with older child bearers. Conflicting evidence exists about the increased risk of pregnancy induced hypertension (Treffers et al., 2001). At the same time teenage mothers seem to have lower risk of (emergency) caesarean section (Chandra et al., 2002; Conde-Agudelo et al., 2005; Jolly et al., 2000; Lao and Ho, 1998a; Smith and Pell, 2001), instrumental delivery (Jolly et al., 2000; Lao and Ho, 1998a), and gestational diabetes (Conde-Agudelo et al., 2005; Lao and Ho, 1997).

The crucial question is whether the adverse outcomes experienced by (some) mothers and children of teenage pregnancy are causally related to the age of the mother, or whether there are other factors that lead to the adverse outcomes (Fraser et al., 1995; Lawlor and Shaw, 2002; Otterblad Olausson et al., 1997, 1999). Psychosocial variables predisposing young adolescents to preterm delivery include inadequate prenatal care, substance use, school enrolment, history of childhood abuse, stress and depression, and lack of social support (Stevens-Simon et al., 2002). A study from Turkey (Bukulmez and Deren, 2000) found that poor outcomes of teenage pregnancies were attributable to lack of adequate prenatal care and multiparity, not the young age per se. Smith and

Pell (2001) found that non-smoking teenagers who had their first birth did not have an increased risk of adverse outcomes when compared with women aged 20–24; they argued that confounding factors may be underestimated. At the same time their study showed that non-smoking teenagers who had their second birth had an increased risk of prematurity and stillbirth. Compared with older parturients, teenage mothers experience more violence by men; many fathers of children born to teenage girls have been involved in serious crime (Edgardh, 2002).

Poverty as a socio-economic variable contributes to the risk of preterm delivery through different pathways (Robinson et al., 2001; Stevens-Simon et al., 2002). Race, ethnicity and immigrant status may indicate social and economic disadvantage (Chang et al., 2003; Robinson et al., 2001; Singh et al., 2001; Stevens-Simon et al., 2002; van Enk et al., 2000). A longitudinal study of nearly 140,000 Swedish teenage mothers showed that giving birth while still a teenager is associated with socio-economic disadvantages (unemployment, single living arrangement, more than five births, dependence on social welfare) in later life (Otterblad Olausson et al., 2001b).

Physical immaturity has been found to be a key risk mostly for girls under the age of 15, but this is much less true of girls aged 17–19 (Amini et al., 1996; Daguerre and Nativel, 2006). Similarly, a large population-based cohort study by Otterblad Olausson et al. (2001a) suggested that independent of socio-economic conditions the biological effect of very young mothers may affect the risk of very preterm births. Elevated risk of delivering low birth weight, premature, and small for gestational age babies remained significant even when the analysis was limited to married teenage mothers who had adequate prenatal care and age-appropriate education (Fraser et al., 1995). Pregnancy at age 17 to 19 years seems to carry fewer health risks than delayed childbearing (Daguerre and Nativel, 2006). Maternal age less than 16 years is independently associated with a 1.2–1.7 fold increase in prematurity, low birth weight, and neonatal death (Cunnington, 2001). Otterblad Olausson et al. (1999) have found that the higher risks of neonatal and postneonatal mortality among younger teenagers may be related to their biological immaturity. The risk of infant mortality is 56% higher when the mother is 15 years old or younger compared with older teenagers aged 18–19 years (Phipps et al., 2002b).

Early childbearing has been defined as being 15 years old or younger at the time of the infant's birth (Phipps and Sowers, 2002). At the same time chronologic age per se may not be a good predictor of poor outcome; low gynaecologic age contributes to the risk of preterm delivery (Scholl et al., 1992). Low gynaecologic age, defined as conception within two completed years of menarche, has been associated with almost double the risk of preterm labour and delivery (Scholl et al., 1989; Stevens-Simon et al., 2002). The association between low gynaecological age and preterm labour is presumed to reflect an irritability of the adolescent uterus, a sensitivity to dehydration, and/or an altered hormonal milieu that promotes maternal development at the expense

of foetal well-being (Scholl et al., 1989), short cervical length related to incomplete maternal growth (Stevens-Simon et al., 2000). One study showed that the pathway of preterm delivery in adolescent mothers with low gynaecologic age was through preterm labour, not through premature rupture of membranes or medical indications for inducing the delivery (Hediger et al., 1997). A prospective study among 126 teenage mothers showed that preterm birth was significantly associated with conception within three years from menarche, body mass index below 23 kg/m<sup>2</sup>, vaginal bleeding within the first eight weeks of gestation, past history of physical or sexual abuse, and/or a father of the baby who was involved in socially deviant behaviours (Stevens-Simon et al., 1993).

A systematic literature review (Stevens-Simon et al., 2002) has shown that in the case of teenage mothers, physical and psychosocial changes of puberty and adolescence interact with traditional risk factors for preterm delivery.

The public health importance of these elevated perinatal risks depends on the prevalence of teenage pregnancies (Otterblad Olausson et al., 1997). It has been argued that poor outcomes of teenage pregnancies may reflect the attitudes towards teenage pregnancy and motherhood in the particular society (Lawlor and Shaw, 2002); experiences of teenage mothers may, to a certain extent, be a sign of the prevailing values of health care professionals and society in general (Hanna, 2001). Therefore, merely labelling teenage pregnancy and childbearing as a public health problem can be regarded as a reflection of what is considered to be – in this time and place – socially, culturally and economically acceptable and does not afford any benefit to mothers or children (Lawlor and Shaw, 2002). It may even unintentionally be part of the problem, because health care professionals and social scientists are part of the culture that considers teenage sex as problematic and laden with dangers (Furstenberg, 2003). However, a study from a conservative Islamic country, where teenage mothers are married and get full social, financial and emotional support, still showed the elevated risks for preterm delivery and low birth weight among teenage mothers compared with 20–24 year-old parturients (Mesleh et al., 2001). One prospective study found that teenage-specific antenatal clinics that have comprehensive screening policies for infection and psychosocial pathology may reduce the rate of preterm births (Quinlivan and Evans, 2004); no adverse outcomes were noted among less than 18 year-old teenagers in a study from Finland, where teenagers had high-quality maternity care with complete coverage (Raatikainen et al., 2006a).

## **4. Pregnancy termination**

In the countries where abortion is legal, pregnancy termination tends to be more safe compared with countries where abortion is restricted by law (Sedgh et al., 2007a). Safe and unsafe abortions have different public health implications and thus distinction between them is important. Globally, abortion rates are similar in developed and developing countries, in 2003 97% of unsafe abortions took place in developing world (where frequently pregnancy termination on the woman's request is not available) (Sedgh et al., 2007a).

### **4.1. Legal abortion in Estonia**

In the Republic of Estonia before World War II, the abortion law was relatively liberal, allowing pregnancy termination on the woman's request during the first three months of pregnancy. However, new legal acts banned the possibility of free abortion in 1935. This development took place along with the move towards a more autocratic state and the promotion of pronatalist policies. The abortion issue was conceptualised in the context of a person's relation with the state (e.g., public health), not looked upon as an issue of women's rights or the right for life of the embryo (Kalling, 2005).

Termination of pregnancy on the woman's request became legal again in Estonia in 1955 according to Soviet law. Until 1998, termination of pregnancy in Estonia was regulated by a regulation of the Ministry of Social Affairs. In December 1998 the Estonian Parliament passed the Termination of Pregnancy and Sterilization Act (Riigikogu, 1998). Pursuant to this, pregnancy may be terminated on the woman's request until the 11th week of pregnancy, and until the 21st week of pregnancy on medical grounds. This last regulation is similar to the previous one. Abortions in Estonia may only be performed by gynaecologists in medical institutions that have a special licence for this procedure. Since 1994, pregnancy termination on the woman's request is partially covered by the health insurance fund and partially by the woman herself. In the case of pregnancy failure or pregnancy termination for medical reasons and in cases where the woman is under 15 or over 45 years old the costs are covered by the health insurance fund. The main method of abortion in Estonia has been vacuum aspiration after dilatation (and often followed by curettage) – in more than 95% of cases (Tellmann et al., 2003). Medical abortion has been available in Estonia since 2005, this method comprised about one third of legally induced abortions in 2007 (TAI, 2008).

Historically, Tietze (1983) has described the so-called eastern and western patterns of abortion practice on the basis of abortion ratios. In the "eastern pattern" (in the Eastern part of Europe under the influence of the Soviet Union), where abortion was legalized in the second half of the 1950s and contraceptive

use was not officially encouraged until the 1990s, the abortion ratio increases with age: induced abortion is used mainly for birth spacing or after the desired number of children has been reached in the family. The “western pattern” (Nordic countries, Great Britain, US, Canada) consists of a U-shaped curve: the abortion ratio is highest among women under 20 and, on the other hand, among women over 35.

Similarly to many other countries in Eastern Europe, lack of modern contraceptives and relevant information until the 1990s made abortion the primary method of fertility regulation in Estonia during the Soviet occupation (Bruyniks, 1994; Popov et al., 1993). Thus abortion in these circumstances used to be an experience that belonged to the sexual history of the majority of women, rather than being an exceptional event in the case of contraception failure or an event adjunct to other risky behaviours. According to the 2000 CSHIR 62% of women in Estonia, aged 18–74, reported pregnancy termination compared with 17% in Finland in 1999; in the 1942–46, 1947–51 and 1952–56 birth cohorts around 80% of women reported abortion. Interestingly, only 37% of 18–74 year-old men reported that they were aware of their partner’s abortion (Haavio-Mannila and Kontula, 2001).

A systematic literature review of trend studies of women seeking pregnancy termination covering the period of 1995–2006 concluded that there was little evidence of trends in post-abortion contraceptive choices, contraception usage at the time of abortion, information about the first-ever pregnancies that ended in abortion, and referral source to the termination provider, and it was not possible to compare trends in age because of inconsistent age use in different studies (Abigail and Power, 2008).

The trends in abortion ratios in the 1990s indicate that Estonia started to approach the western pattern (Tellmann et al., 2003). The number of legally induced abortions per 100 live births was 143.3 in 1992 and 56.3 in 2007 (TAI, 2008). According to the abortion ratio, in 2000, for the first time since abortion legalization, more pregnancies ended with deliveries than with pregnancy termination (TAI, 2008; Tiit et al., 2001). Abortion rate among women of fertile age decreased remarkably, and proportionally more adolescents were among abortion patients by the end of the decade. This trend has continued in the 21st century. The rate of legally induced abortions among 15–49 year-old women decreased from 69.6 in 1992 to 26.3 in 2007 (TAI, 2008). However, the rate is still almost three times higher, for example, than in neighbouring Finland – 8.8 per 1000 women of fertile age in 2007 (STAKES, 2008). Additionally, the decrease has become very slow in all age groups since 2002.

Around 60% of pregnancy terminations in Estonia were repeat abortions in 2007 (TAI, 2008), contrary to the situation in Finland, where around one third are repeat abortions (STAKES, 2008). It has been calculated that the proportion of repeat abortions correlates with the abortion rate/overall incidence of pregnancy terminations in the particular society (Heikinheimo et al., 2008; Tietze and Jain, 1978). Young age, history of abortion and smoking, being

parous, and contraceptive choices at the time of abortion were found to be associated with the risk of repeat abortions in Finland (Heikinheimo et al., 2008). In a US study, alcohol and/or drug abuse was associated with repeat abortions (Prager et al., 2007).

## **4.2. Impact of pregnancy termination on subsequent pregnancy**

Legalizing abortion in the US and the Western Europe on broad grounds at the end of the 1960s and during the 1970s initiated research about possible health and public health consequences of pregnancy terminations (Hogue et al., 1983; Tietze, 1975, 1984).

It has been found that surgical abortion is one of the most commonly practiced gynaecological procedures and legal abortion in developed countries is impressively safe (Flett and Templeton, 2002; Virk et al., 2007). Nevertheless, as with any other procedure in medicine, complications cannot be avoided completely. Moreau et al. (2005) have pointed out that research about the impact of induced abortion on subsequent pregnancy outcome has failed to draw clear conclusions regarding the obstetric risks following induced abortion.

Studies have shown that induced abortions may increase the risk for preterm delivery (Ancel et al., 2004; Brown et al., 2008; Henriët and Kaminski, 2001; Moreau et al., 2005; Zhou et al., 1999a), low birth weight (Brown et al., 2008; Zhou et al., 2000), stillbirth (Zhou and Olsen, 2003), first-trimester miscarriage (Sun et al., 2003), and placenta previa (Johnson et al., 2003). Some of the complications depend on the interval between abortion and delivery (Zhou et al., 1999a, 2000, 2001), post-abortion infection (Zhou and Olsen, 2003), or are “dose-dependent” (Ancel et al., 2004; Henriët and Kaminski, 2001; Johnson et al., 2003). It has been argued that these associations may be due to chance, bias or confounding (Zhou et al., 2000, 2001). A study from Finland, a country with a very low level of induced abortions, did not find previous induced abortion(s) to be an independent risk factor of preterm birth or low birth weight. Women with a history of abortion more often had other behavioural risk factors also affecting pregnancy (Raatikainen et al., 2006b). A small study from Hong-Kong (Lao and Ho, 1998b) did not find an association between previous abortion and preterm delivery in a population of 118 teenagers. One long-term prospective controlled cohort study from the UK (Frank et al., 1991) did not find any important effect of previous induced abortion on non-viable outcome (spontaneous or missed miscarriage, ectopic pregnancy and stillbirth) of the subsequent pregnancy, on birth weight and the length of the gestation. No association was found between the history of induced abortion and ectopic pregnancy (Atrash et al., 1997; Skjeldestad et al., 1997). One previous pregnancy termination was associated with a slightly decreased risk of pre-eclampsia in the subsequent pregnancy (Xiong et al., 2002).

Induced abortions have been associated with an increase in the risk for prolonged third stage of labour (Zhou et al., 1999b) and placenta complications (retained placenta, placenta previa) in the subsequent pregnancy (Ananth et al., 1997; Beuker et al., 2005; Kayem et al., 2006; Zhou et al., 2001). In its turn, prolonged third stage of labour and retained placenta has been associated with significant risk for postpartum haemorrhage (Bais et al., 2004; Magann et al., 2005). Two thirds of the cases of severe maternal morbidity are related to severe haemorrhage for different reasons; previous postpartum haemorrhage is one of the main predictors of haemorrhage in the next delivery (Waterstone et al., 2001). However, many recent publications do not mention the history of surgically induced abortion as a risk factor for postpartum haemorrhage (Amy, 2006; Bais et al., 2004; B-Lynch et al., 2006; Ford et al., 2007). A study from Japan among 4685 nulliparous women with singleton pregnancies found that the history of intrauterine curettage was not associated with the risk of placenta previa and placenta accreta in the next pregnancy, and was associated with a decreased incidence of placental abruption (Suzuki, 2006). From the public health perspective the importance of induced abortion as a risk factor for retained placenta and postpartum haemorrhage may differ in different countries, depending on the incidence of induced abortions. It has been noted (Holzgreve, 2007) that international standards, based on world literature, should consider local modifiers. To our knowledge, few publications have been available from countries where access to other options of birth control has been limited and pregnancy termination has been the primary birth control method until recent decades.

Other known risk factors for postpartum haemorrhage from literature are large foetus, induction and/or augmentation of labour, instrumental delivery, mother's age 35 years or more (Amy, 2006; Bais et al., 2004; Sheiner et al., 2005). There is some evidence that abnormally adherent placenta is less frequent when the baby is a boy (Khong et al., 1991).

### **III. AIMS OF THE STUDY**

The general objective of this study was to get additional knowledge of young women's sexual health and behaviour in Estonia.

The specific objectives of the study were:

1. To examine trends in teenage pregnancies – fertility and abortion rates – in Estonia during the years of rapid socio-economic changes (Paper II).
2. To assess the risk of young maternal age on perinatal outcome – low birth weight, preterm birth, stillbirth, neonatal and postneonatal death (Paper III).
3. To investigate individual and familial factors associated with teenage unintended pregnancy (Paper IV).
4. To analyse the risk of complications in the third stage of labour in deliveries following surgically induced abortion(s) (Paper V).

## **IV. MATERIALS AND METHODS**

This study is based on the data of the Estonian Medical Birth Registry (EMBR; Papers II, III, V), the Estonian Abortion Registry (EAR; Paper II) and an interview survey (Paper IV). Data on abortions for years 1992–1995 (Paper II) were obtained from the former Estonian Medical Statistical Bureau.

### **1. The Estonian Medical Birth Registry**

The EMBR was established in 1991, and its data about births are available since 1992.

Data were gathered from all hospitals rendering obstetric services. The primary document for gathering data is a birth card, and it is legally obligatory to fill in the card for every birth (live or stillbirth) in Estonia (Tellmann et al., 2003).

The majority of the information on the birth card is collected by the doctor or midwife during the initial antenatal care visit and is based on the statements of the mother; additionally, it often combines the information reported by the mother and that of the patient file, if present, in the institution. The card is completed in the hospital where the delivery takes place and includes information on the period of up to seven days after the delivery. The majority of births in Estonia take place in hospital, less than one percent outside (Tellmann et al., 2003). In the latter case the birth card is filled in when the parent(s) comes to register the baby. In general, the EMBR database is presumably sufficiently complete and reliable; it is believed that all infants born in hospitals in Estonia are recorded. As a routine, there is continuous two-way communication with hospitals. Hospitals send the birth cards to the registry every month. In the case of an incomplete birth card, the EMBR sends an inquiry to the hospital (usually quarterly) and mistakes or missing data are corrected by going back to the original patient files. Maternity hospitals use the EMBR yearly data concerning their institution to analyse the results of their work. If the results do not match the expected values, the EMBR is contacted to find out possible mistakes. The EMBR database has previously been used in different studies (Gissler et al., 2000; Koupil et al., 2007; Koupilova et al., 2000). During the study period some changes were made to the birth card form on three occasions; these changes did not considerably affect the analysis and results of our study. There is one study (in Estonian) in which the quality of the EMBR (for the year 1997) has been analysed (Vorobjov et al., 2008). According to this study the data were reliable for the sociodemographic background, sex of the newborn, birth weight, gestational age in full weeks, and previous abortions. Data on maternal smoking, gestational age in days, duration of delivery, and pregnancy and delivery related diagnosis and procedures were considered unsatisfactory.

Since 1992, the World Health Organisation's International Statistical Classification of Diseases and Related Health Problems (ICD-9) criteria of live and stillbirth have been used in Estonia. A "live born child" is defined as a newborn with at least one characteristic of life; a stillborn is a newborn with a birth weight of at least 500 g and without any signs of life (WHO, 1977). Until 1992 the criterion was 28 weeks of pregnancy and a birth weight of 1000 g.

## **2. The Estonian Abortion Registry**

The EAR was established in 1994. Since 1996, national abortion statistics have been based on the data of the EAR (Tellmann et al., 2002). In 1998 the quality of the EAR database was impaired – period identifiers were removed from the registry and only anonymous cards have been introduced. According to Order No. 267 from 1998 of the Ministry of Social Affairs, collection of the record cards was stopped and, unfortunately, when the collection of the cards was resumed after half a year, the personal identification number of the woman was not permitted to be included (Tellmann et al., 2002; Tiit et al., 2001). As a result, possibilities for analysis became limited.

The completion and return to the EAR of an anonymous record card for each abortion is obligatory for every institution licensed to perform pregnancy terminations or which has provided medical care in the case of miscarriage. Thus the EAR collects as separate items data on legally induced abortions either on request (including so called "mini-abortions") or on medical grounds, spontaneous abortions, illegal abortions, and "other abortions". The latter covers pregnancies with abortive outcome (ectopic pregnancies excluded), i.e., hydatiform mole, other abnormal products of conception, other abortion, unspecified abortion – described under ICD-10 as codes O01, O02, O05 and O06 (WHO, 1992). Since, between 1996 and 2001, only two illegal abortions were registered among girls under 19 years of age, these abortions are not analysed separately.

## **3. Interview survey**

### **3.1. Setting**

An interview survey (Paper IV) was conducted from November 2001 until November 2003 in four medical institutions – Tartu University Hospital Women's Clinic, Tartu Youth Counselling Service, West Tallinn Central Hospital Women's Clinic, and Puru Hospital – serving three geographically separate regions (southern, northern and north-eastern parts of Estonia respectively). The two clinics and the hospital have gynaecology and delivery departments in

addition to out-patient departments. The last two institutions include a special youth counselling service.

Consent was obtained from each institution involved. Eleven interviewers were trained. After conducting a pilot study, corrections were made to the questionnaire according to the shortcomings the interviewers had noticed.

Health personnel working in the outpatient departments and youth services were regularly kept informed about the survey and were asked to invite all young women who met the criteria to participate in the survey.

### **3.2. Participants**

The inclusion criteria were as follows: 18 years old or younger (1) using contraception (hormonal and/or condom), has been sexually active (penetrative sex) for at least six months and has not had any pregnancies – contraception (reference) group; (2) came to the institution for termination of pregnancy – abortion group; (3) planned to deliver and came for prenatal care – delivery group. In the last case the interviews were conducted in the second half of the pregnancy. For the current analysis, the abortion group and delivery group were analysed together as the “pregnancy group”, since the objective was to compare teenagers with unintended pregnancy with those who used contraception and had no pregnancies.

During the initial visit to the health institution, the health care provider was instructed to ask suitable clients if they would be willing to participate in the survey and to refer them to the interviewer, who then made an appointment for carrying out the interview.

After obtaining the written consent of the participant, the interviewer asked questions and marked the selected option below each question in the questionnaire. The participants’ personal data were kept separately in a sealed envelope and questionnaires were coded to ensure confidentiality.

### **3.3. Questionnaire**

The questionnaire (Appendix) was based on questions originating from three earlier studies: (1) The National Study of Human Relations, Sexual Attitudes and Lifestyles in Finland 1991 (FINSEX; Kontula and Haavio-Mannila, 1995); (2) KISS survey (acronym from the Finnish words meaning sexual maturation, relationships, dating and sexual behaviour). The survey originates from Finland and has been conducted there (Kontula et al., 1992; Kosunen and Laippala, 1996) and in Estonia (Papp, 1997; Papp et al., 2001); (3) questions used by L. Ruusuvaara in her doctoral thesis “Teenage abortions. Family background, sexual experience and contraceptive use” (Ruusuvaara, 1986).

The questionnaire included 111 questions and was structured into seven blocks according to factors associated with teenage pregnancy: (1) knowledge and sexuality education; (2) timing and conditions of first sexual intercourse; (3) usage of and attitudes towards contraception; (4) menarche, self-perception as a teenager, future perspectives; (5) alcohol and drug use; (6) parents' characteristics, relationship with parents, parental monitoring; (7) relationship with partner.

## 4. Subjects and data analysis

Age (Papers II, III, V) was calculated as the number of whole years of age of the woman on the day of abortion or delivery.

The EMBR and the EAR include self-reported ethnicity similarly to that used in the Estonian Population Census, and for this study (Papers II, III), ethnicity was defined as Estonian and non-Estonian. The non-Estonian group consists mainly of ethnic Russians. Gestational age (Papers III, V) was based on the estimate on the EMBR birth card, which takes into consideration the last menstrual period and the results of the ultrasound examination during the routine anatomy scan before the 21st week of pregnancy. In analysis we used full weeks to describe the gestational age.

### Paper II

Number of women in the 15–19 year-old age group was obtained from the Statistical Office of Estonia (Eesti Statistikaamet, 2002). The data in this study may differ from some earlier publications, since in some sources the age was calculated as the difference between the year of abortion or birth and the subject's year of birth. Fertility rate and abortion rate per 1000 was calculated by dividing respectively, the number of live-born children or the number of legally induced abortions during the year by the mean annual number of women in the 15–19 year age group, and multiplying by 1000. Abortion ratio is defined as the number of legally induced abortions per 100 live births during one year.

### Paper III

The study population included 51,890 primiparous women aged 13–24 years who had singleton births during 1992–2002 and was arranged into three groups: ≤17 (4248 women), 18–19 (12,376 women), and 20–24 (35,266 women) years as the reference group. Primiparas were selected in order to have more similar/homogenous groups and to exclude factors that may contribute to preterm delivery in multiparous women – e.g., short interpregnancy interval (Krymko et al., 2004; Robinson et al., 2001), previous preterm birth (Robinson et al., 2001), or for which multiparous women have less risk – e.g., pre-eclampsia and eclampsia.

The outcomes studied in Paper III were preterm birth (birth at less than 37 completed weeks of gestation), low birth weight (less than 2500 g), stillbirth, neonatal (0–27 days after birth) and postneonatal (28–364 days after birth) death.

Data of stillbirths were obtained from the EMBR. Using the child's unique personal identification number, the data of EMBR 1992–2001 were linked to the Estonian Mortality Database 1992–2002 to ascertain all neonatal and postneonatal deaths. We were not permitted to link our data with the Estonian Population Registry to get information about emigration in order to identify how many deaths could have been missed through linkage. Presumably the number of mothers emigrating with newborns who subsequently died abroad during their first year of life is marginal.

Data on ethnicity, marital status, place of residence (urban or rural), smoking during pregnancy, and number of antenatal visits were obtained from the EMBR. If the mother came from one of the five largest cities in Estonia – Tallinn, Tartu, Kohtla-Järve, Narva and Pärnu, her place of residence was regarded as urban; all other residence was considered as rural. To evaluate the adequacy of antenatal care, we created an antenatal care index. Antenatal care was considered inadequate if the number of antenatal visits was less than the mandatory number after taking into account the length of gestation – by the 25th week of gestation there should have been at least two visits, by week 26–29, at least three visits, by week 30–33, at least four visits and by week 34 or more, at least five visits.

We evaluated trends over time with respect to the age groups regarding the following variables: ethnicity, marital status, place of residence, smoking and adequacy of antenatal care.

Multiple logistic regression analysis was performed to estimate the effect of young maternal age on the outcomes listed above. Crude and adjusted odds ratios (OR) with 95% confidence intervals (CI) were computed. Adjustments were made for ethnicity, marital status, place of residence, calendar year, adequacy of antenatal care, and smoking. Possible interactions between age group and calendar year were assessed. Models for neonatal and postneonatal deaths were additionally adjusted for the gestational age. In logistic regression models, 1699 women were excluded from the analysis of the risk of stillbirths, because of missing ethnicity, marital status, place of residence, adequacy of antenatal care, or smoking status. In other cases, different numbers of subjects were excluded additionally, depending on the variables used.

#### Paper IV

To investigate individual and familial factors associated with adolescent pregnancy we carried out an interview survey among teenagers.

In the interview survey, out of 616 girls, 22 refused to participate, thus we have data from 594 interviews. The findings presented in this study are based on 279 interviews carried out in Tartu. The decision to analyse the more

homogenous group from Tartu in order to reduce the selection bias was made basically for two reasons. First, the majority, 148 girls out of the 249 participants belonging to the whole control group (contraception group from the initial participants of 594 girls), lived in Tartu County (including Tartu). Second, Tartu is a university city with a more highly educated population compared with other parts of Estonia. This could have an effect on our results, since our aim was to control for the role of education. In accordance with the study objective, all teenagers in the pregnancy group are those with an unintended pregnancy. Before the main analysis, 11 questionnaires were excluded from this group because the mother's education was unknown, which means that the data of 268 subjects (146 in the contraception group and 122 in the pregnancy group) were used.

Selected individual characteristics analysed in Paper IV included age at the time of the interview ( $<17$  and  $\geq 17$  years), early ( $<16$  years) coitarche, score of knowledge about functioning of reproductive organs and contraception, attitude to going to school, and importance of religion in one's life. To describe the level of knowledge, we asked eight questions, each right answer giving one point. The median – five points – was used to divide the group into two ( $<$ median,  $\geq$ median).

The selected family characteristic was the teenager's mother's education, which was divided into two levels – university/professional higher, and secondary special/secondary or less.

Family functioning was analysed using questions about alcohol abuse by family members, physical punishment at home, informing parents about going out, and the parents' acceptance of the teenager's sexual relationships.

Firstly, univariate analysis was used to explore associations between variables responsible for teenage pregnancy that were relevant in the context of Estonia or known from literature. After that, multivariate logistic regression analysis was applied. Possible interactions between the variables were tested, and there were no statistically significant interactions observed (presumably partly due to the small number of cases). In the case of strong association between variables (e.g., menarche and coitarche, alcohol abuse in the family and physical violence), only one variable was selected for model fitting. Later, it was investigated whether these associations were sustained after adjusting for other variables. The final regression model was chosen as a result of theoretical considerations based on different model construction results, generally attempting to balance local relevance, recognition and statistical significance in variable choice. Crude ORs, adjusted ORs and their 95% CIs were estimated, with the girls having no pregnancies as the reference group.

## Paper V

When analysing the possible impact of induced abortions on subsequent pregnancy outcome we used the EMBR data on abortions – data on spontaneous,

therapeutic, legal and other abortions are collected as separate items on the registry card.

During 1994–2002, there were 56,298 primiparous women with singleton delivery live births in Estonia. Primiparas were selected in order to have more homogenous groups and to exclude factors that may contribute to postpartum haemorrhage – e.g., previous history of postpartum haemorrhage (Magann et al., 2005) and history of caesarean section (Kayem et al., 2006).

The outcomes studied in Paper V were problems in the third stage of labour or during the woman's stay in hospital, described on the birth card as manual removal of placenta, manual revision of uterine cavity, and curettage of uterine cavity (to remove retained tissue). As a general rule, manual revision of the uterine cavity and manual removal of placenta is performed in the case of bleeding, and manual removal of placenta when there is no bleeding and the third stage of labour has already lasted  $\geq 30$  minutes (maximum permitted waiting time according to the Estonian Gynaecologists' Society guidelines is 60 minutes) (Eesti Naistearstide Selts, 2002). In agreement with the guidelines all parturients are entitled to 10 IU of intravenous oxytocin after the delivery of the baby.

Newborns' birth weight was divided into three groups (<2500, 2500–4499,  $\geq 4500$  g). We excluded from our analysis cases where the mother's abortion status was not known (five cases) and 5928 deliveries where an abortion had taken place but was described as a spontaneous abortion, other abortion, or therapeutic abortion (also additionally to legal abortion(s)). Therapeutic abortion was excluded since the majority are performed after the 12th week of pregnancy. Then we excluded from our analysis 6378 women who had delivered by caesarean section and additionally, to make the study population more homogenous, 1619 women who had had vaginal instrumental delivery (vacuum or forceps).

The study population (42,368 women) was stratified into three groups, where 32,652 women had not had any abortions (reference group) before delivery, 7333 women had had one legally induced abortion and 2383 women had had two or more legally induced abortions before their first delivery.

We excluded from the analysis five cases where the mother's age was unknown and nine cases where the newborn's birth weight was missing. Thus 42,354 women were included in the final model. Crude ORs, adjusted ORs and their 95% CIs were estimated, with women having no abortions as the reference group. When estimating ORs, multiple logistic regression analysis was performed. The effect of one or multiple abortions before the first delivery was calculated after adjustment for maternal age, sex and weight of infant, and labour induction/augmentation.

Statistical analysis was performed with Stata 8.0 (Papers III, IV, V) (Stata Statistical Software: Release 8.0, 2003).

## **5. Ethics**

The study was approved by the Ethics Review Committee on Human Research of the University of Tartu (approvals no 100/31, 107/65, 126/13).

## **V. RESULTS AND DISCUSSION**

### **1. Trends in teenage pregnancies**

#### **1.1. Results**

Between 1992 and 2001 the total number of live births, total fertility rate and fertility rate per 1000 women decreased rapidly in all age groups in Estonia (Table 1).

In the 15–19 year-old age group the decline in childbearing was even more pronounced – both the total number of live births and the fertility rate decreased more than two times, the latter from 49.7 per 1000 in 1992 to 23.8 per 1000 in 2001 (Table 1). The decrease in the total number of live births was 30% in all age groups, and 53% in those through 19 years. The percentage of teenage mothers from all parturients had decreased steadily (Table 1), being 14.6 in 1992 and 9.7 in 2001. Younger teenagers, through 17 years, constituted about 22–25% of teenage parturients.

The total number of legal abortions (Table 2) and the abortion rate per 1000 women aged 15–49 years had decreased remarkably during the decade – more than twofold. The abortion rate was 69.6 in 1992 and 34.0 in 2001; the total number of legally induced abortions was 25,803 and 11,656 respectively.

Abortion rate among teenagers had decreased somewhat less strikingly – from 55.5 in 1992 to 30.4 in 2001 (Table 2). The percentage of teenage abortion patients has increased from 11.4 of all abortion patients in 1992 to 13.5 in 2001. Younger teenagers, those through age 17, comprised 35–39% of all teenage abortion patients between 1996 and 2001. About 2/3 of all pregnancies in teenagers end in abortion – either legally induced abortion (legal abortion and therapeutic abortion) or spontaneous abortion. This proportion has remained almost constant during 1996–2001. More thorough analysis is not possible for earlier years.

Abortion ratio has changed during the study decade. Compared to the female population aged 20 years and above, the abortion ratio shows that, at the beginning of the decade, in the case of pregnancy, teenagers decided more often to have a baby, and that, at the end of the decade, they decided more often to terminate the pregnancy (Figure 1). According to abortion ratio, in the case of pregnancy, non-Estonian teenagers tended to terminate pregnancy more often than Estonian teenagers. In 2001, the abortion ratio was 116.4 among ethnic Estonians and 147.9 among non-Estonians. The same trend can also be seen in other age groups. Abortion ratio and the abortion rate per 1000 women of fertile age according to the place of residence have always been much higher in the north-eastern, mostly Russian-speaking part of Estonia.

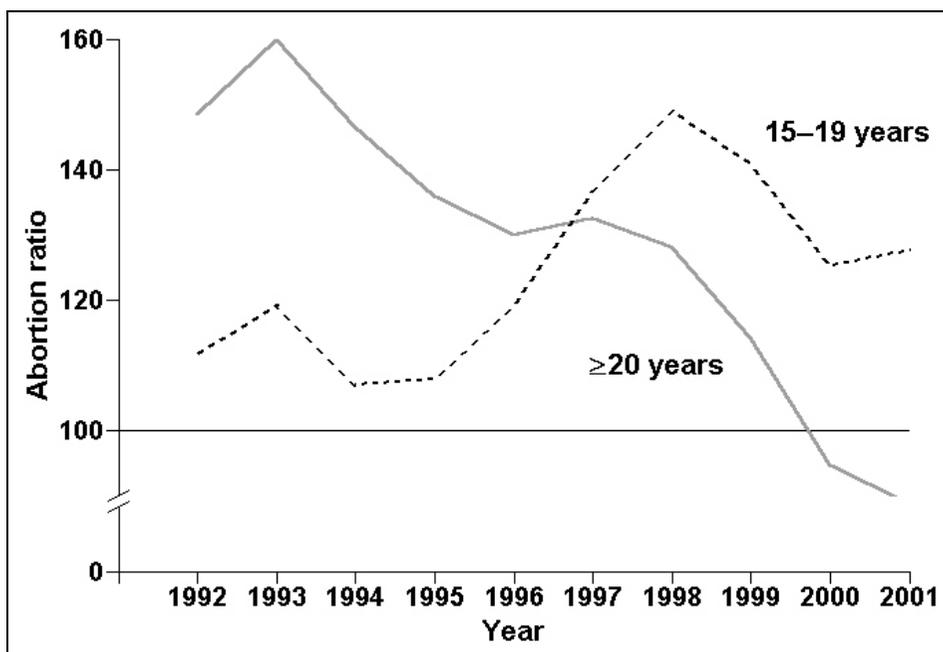
**Table 1.** Number of live births by age groups, Estonia, 1992–2001

Year	Number of live births by age (in years)					% of live births, age 15–19 years, of total number of live births	Fertility rate per 1000 females in age 15–19 years
	15–49	–14	15–17	18–19	15–19		
1992	18012	8	580	2043	2623	14.6	49.7
1993	15122	1	518	1713	2231	14.8	42.9
1994	14030	5	459	1540	1999	14.2	38.6
1995	13381	5	416	1419	1835	13.7	35.5
1996	13124	4	434	1284	1718	13.1	33.4
1997	12484	7	404	1091	1495	12.0	29.0
1998	12112	1	340	1003	1343	11.1	25.8
1999	12386	3	322	996	1318	10.6	25.0
2000	13054	4	345	957	1302	10.0	25.5
2001	12621	3	291	938	1229	9.7	23.8

**Table 2.** Number of legally induced abortions by age groups, Estonia, 1992–2001

Year	Number of legally induced abortions by age (in years)					% of legally induced abortions, age 15–19 years, of total number	Abortion rate per 1000 females in age 15–19 years
	15–49	–14	15–17	18–19	15–19		
1992	25803	u	u	u	2931	11.4	55.5
1993	23284	u	u	u	2660	11.4	51.1
1994	19784	19	u	u	2141	10.8	41.3
1995	17671	15	u	u	1981	11.2	38.4
1996	16887	27	700	1352	2052	12.3	39.8
1997	16615	27	718	1329	2047	12.7	39.7
1998	15798	25	712	1290	2002	12.7	38.5
1999	14503	31	710	1150	1860	12.8	35.2
2000	12745	20	614	1017	1631	12.8	32.0
2001	11656	13	550	1018	1568	13.5	30.4

u – unavailable



**Figure 1.** Abortion ratio among teenagers and in the 20 years and older age group, Estonia, 1992–2001

## 1.2. Discussion

During the period of rapid socio-economic changes in Estonia, both teenage births and abortions declined remarkably. At the end of the period, a greater proportion of teenagers chose to terminate their pregnancies than at the beginning of the 1990s.

Ketting (1994) has outlined four main strategies for the successful prevention of teenage pregnancy – sexuality education, open discussions on sexuality in the mass media, educational campaigns, and low-barrier services. During the study period all these areas have improved dramatically in Estonia.

Birth rate per 1000 women of fertile age (15–49 years) in Estonia was stable since the 1970s until 1987, and then started to decrease (Tiit et al., 2001). The rapid decrease in fertility rate at the beginning of the 1990s reflects also the decision to postpone the second and third child.

In Estonia, as in the rest of Europe, the first decline in the age of mothers at first delivery took place immediately after World War II. Subsequently, by 1958, and probably due to political and socio-economic reasons, the age of primiparas in Estonia increased to its highest point, which was 26 years. Average age of mothers at first delivery decreased until the beginning of the 1980s, to 23 years. After a small increase, the next decline took place in 1990–

1992, taking the average age to 22.5 years. It remained one of the youngest in Europe for the next couple of years (Tiit et al., 2001). Therefore, starting motherhood as a teenager or in ones early twenties had been a cultural norm and economically affordable for many decades. The current reality, that parenthood at a young age is not desirable or affordable for young people, has even caused some tensions and confusion (pronatalist claims) in a society with a very low total fertility rate.

In 2001, the average age of mothers at first delivery was 24.1, being 1.4 years higher than in 1992 (Tellmann et al., 2002). In comparison, in Finland the mean age for primiparas was 27.0 years in 1992 and 27.6 in 2000 (Gissler et al., 2000, 2002). The trend towards childbearing at an older age, witnessed during the last decade in Estonia, reflects, as in other industrialized countries during the last quarter of the 20th century, an increase in the importance of education, an increase in the motivation of young people to achieve higher levels of education and training, and a shift in young women's priorities away from motherhood and family formation (Singh and Darroch, 2000). Children in early and middle adolescence (10–16 years of age) have not completed their cognitive and psychosocial development. Therefore, as a group, it is likely that they will engage in more risk-taking behaviour (Strasburger and Brown, 1998). About a quarter of deliveries and a little more than one third of teenage abortions occur among the younger age group (up to 17 years). This proportion has remained almost constant throughout the study period. It indicates that education and counselling should be made available to the youngest teenagers, tailored to suit their level of development.

According to the available data (Haavio-Mannila and Kontula, 2001; Katus et al., 1995; Leinsalu et al., 1999) we know that the age at first sexual intercourse has dropped and more teenagers had experienced penetrative sex at the end of the study period in comparison with the beginning of the 1990s. Knowing this, we can deduce that the actual decline in abortion rate among sexually active teenagers is even more pronounced than that which has been registered in the whole 15–19 year-old age group.

The abortion ratio has been interpreted as a good indicator of the intensity of the desire to avoid childbearing and is also related to ease of access to abortion services (Singh and Darroch, 2000). In Estonia, the ratio in all age groups increased until 1974. At the beginning of the 1970s, following sexual liberation and in conditions of continued lack of family planning methods and education, the abortion ratio reached its peak, with almost two out of three pregnancies ending in termination (Tiit et al., 2001). From then until 1990 the ratio decreased due to an increase in childbirth, which reached a peak at the end of the 1980s. Thereafter, the ratio began to increase once again, now due to a rapid decrease in deliveries (Tiit et al., 2001). A decline in both abortion rate and birth rate indicates, despite the lack of relevant statistics, that there has to have been a pronounced increase in the usage of contraceptive methods in Estonia.

Concerning teenage pregnancies, statistics seldom provide information on ethnic background (Kontula, 2003). In Estonia, according to the data on abortion ratio, Russian speaking populations have tended to have more unplanned pregnancies (Tellmann et al., 2000, 2002). One study, which investigated the characteristics of women who had legal abortions in Estonia in 1991, concluded that, while abortion is often a backup to contraceptive failure among Estonians, more often it is the primary method of fertility regulation among non-Estonians. Estonians are more likely than Russians to have used some contraceptive method to try to avoid the pregnancy that resulted in abortion (Anderson et al., 1993).

In conclusion, similarly to prior research findings, the Estonian data shows that the availability of information, contraceptives, services, education, and alternative life choices and goals, besides childbearing, have an impact on teenage fertility and abortion rates. Furthermore, the relative impact of these factors may influence young women in different ways, since an “abortion culture” was introduced decades before contraceptive use became acceptable and popular. Rapid socio-economic changes have impact on reproductive health and behaviour. Successful health promotion activities should take ethnic differences between the native Estonian and Russian speaking communities into consideration.

## **2. Pregnancy outcome and young maternal age**

### **2.1. Results**

Among the total of 51,890 primiparous women aged 24 years or less between 1992 and 2002, 4248 (8.2%) were 13–17 years old and 12,376 (23.9%) were 18–19 years old at delivery. During 1992–2002, 99.5% of deliveries among teenagers took place in hospital and 0.5% out of hospital. About one third of the study group were non-Estonians, mainly ethnic Russians (29.5% Russians, 1.7% Ukrainians, less than 1% other nationalities).

Compared to mothers aged 20–24 years, the group of teenage mothers were less often married or cohabiting, more often smoked during pregnancy, and were more likely to come from a rural area and more often their antenatal care was regarded as inadequate (Table 3). A little less than half of younger teenagers had undergone ultrasound examination before the 21st week of pregnancy, compared with two thirds of mothers in the reference group (Table 3).

Proportions of low-birth-weight deliveries, preterm births, neonatal and postneonatal deaths were highest among the infants of mothers aged 17 years or less (Table 4).

The mean birth weight among the youngest parturient group was 3329 g (standard deviation (SD) 552 g), 3379 g (SD 539 g) in the 18–19-year-old age-group, and 3435g (SD 519 g) in the reference group.

The crude ORs for low birth weight and preterm birth were higher among teenagers, compared with women aged 20–24 years (Table 5). After adjusting for the effects of marital status, ethnicity, place of residence, calendar year, adequacy of antenatal care and smoking, the risk of low birth weight and the risk of preterm birth remained higher for both the younger and the elder teenagers.

The risk of very low birth weight (<1500 g) was not increased among teenagers – adjusted OR being 1.03 (95% CI 0.82–1.29). The risk of very preterm birth (<33 weeks) was increased among teenagers – adjusted OR being 1.44 (95% CI 1.22–1.70). Adjustment was made for ethnicity, marital status, place of residence, calendar year, adequacy of antenatal care, and smoking.

Compared with women aged 20–24 years, the risk of neonatal death was higher among both younger and older teenagers. After adjusting for the effects of ethnicity, marital status, place of residence, calendar year, adequacy of antenatal care, and smoking it remained higher among the younger teenagers. After adjusting additionally for gestational age, this risk became nonsignificant.

The risk of postneonatal death was raised only among younger teenagers, 17 years of age and less (Table 5). After adjusting for the effects of ethnicity, marital status, place of residence, calendar year, adequacy of antenatal care, and smoking, the risk of postneonatal death remained higher for the younger teenagers than for the reference group; after adjusting additionally for gestational age, this risk became nonsignificant (Table 5).

The crude OR and adjusted OR for stillbirths showed no difference in teenagers compared to women of age 20–24 years (Table 5).

There was no effect of calendar year in the adjusted models on low birth weight (OR 0.99; 95% CI 0.98–1.01) and preterm birth (OR 0.99; 95% CI 0.98–1.00). The risk of stillbirth (OR 0.92; 95% CI 0.89–0.96), neonatal (OR 0.87; 95% CI 0.83–0.92) and postneonatal death (OR 0.89; 95% CI 0.85–0.94) decreased during the study period. No interactions were observed between age group and calendar year.

Evaluation of frequency trends over time with respect to age groups for different characteristics of mothers showed that the trends were similar in teenagers and the control group concerning adequacy of antenatal care and smoking habits (Figure 2). There was a slightly higher proportion of Estonians in the teenage group after 1996. The decline in married or cohabiting primiparas was more prominent among teenagers than in the reference group; the proportion of urban primiparas increased slightly in the control group (Figure 2).

**Table 3.** Characteristics of mothers (singletons, primiparas) aged  $\leq 24$  years by age at delivery, Estonia, 1992–2002

Characteristic	Maternal age (in years)		
	$\leq 17$ N (%)	18–19 N (%)	20–24 N (%)
Ethnicity			
Estonian	2875 (67.7)	8245 (66.6)	23237 (65.9)
Non-Estonian	1367 (32.2)	4120 (33.3)	12003 (34.0)
Missing	6 ( 0.1)	11 ( 0.1)	26 ( 0.1)
Marital status			
Married	826 (19.4)	4634 (37.4)	16334 (46.3)
Cohabiting	2125 (50.0)	5619 (45.4)	15062 (42.7)
Other	1287 (30.3)	2107 (17.0)	3844 (10.9)
Missing	10 ( 0.2)	16 ( 0.1)	26 ( 0.1)
Place of residence			
Urban	1598 (37.6)	5179 (41.8)	18202 (51.6)
Rural	2648 (62.3)	7196 (58.1)	17057 (48.4)
Missing	2 (0.0)	1 ( 0.0)	7 ( 0.0)
Smoking during pregnancy			
Did not	3518 (82.8)	10738 (86.8)	31806 (90.2)
Gave up	156 ( 3.7)	391 ( 3.2)	888 ( 2.5)
Smoked	403 ( 9.5)	919 ( 7.4)	1600 ( 4.5)
Missing	171 ( 4.0)	328 ( 2.7)	972 ( 2.8)
Inadequate antenatal care			
No	3634 (85.5)	11602 (93.7)	34299 (97.3)
Yes	594 (14.0)	731 ( 5.9)	885 ( 2.5)
Missing	20 ( 0.5)	43 ( 0.3)	82 ( 0.2)
Ultrasound before 21 <sup>st</sup> week of gestation <sup>a</sup>			
Yes	2000 (47.1)	6940 (56.1)	23453 (66.5)
No	2248 (52.9)	5436 (43.9)	11813 (33.5)

<sup>a</sup> “Missing” as an option is not given, it is not possible to distinguish between “missing” and “no”.

**Table 4.** Pregnancy outcomes of mothers (singletons, primiparas) aged  $\leq 24$  years by age at delivery, Estonia, 1992–2002

Pregnancy outcome	Maternal age (in years)		
	$\leq 17$ N (%)	18–19 N (%)	20–24 N (%)
Low birth weight (g)			
$\leq 1499$	43 (1.01)	104 (0.84)	241 (0.68)
1500–2499	215 (5.06)	480 (3.88)	1039 (2.95)
Preterm birth (weeks)			
$\leq 32$	102 (2.40)	197 (1.59)	366 (1.04)
33–36	283 (6.66)	579 (4.68)	1348 (3.82)
Stillbirth	23 (0.54)	78 (0.63)	217 (0.62)
Neonatal death <sup>a</sup>	41 (1.04)	88 (0.76)	178 (0.55)
Postneonatal death <sup>b</sup>	36 (0.92)	65 (0.57)	158 (0.49)

<sup>a</sup> Born 1992–2001, follow-up to 2002, % of live births.

<sup>b</sup> Born 1992–2001, follow-up to 2002, % of newborns survived the first 27 days.

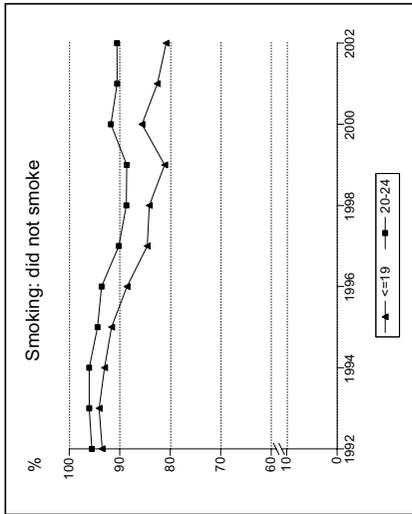
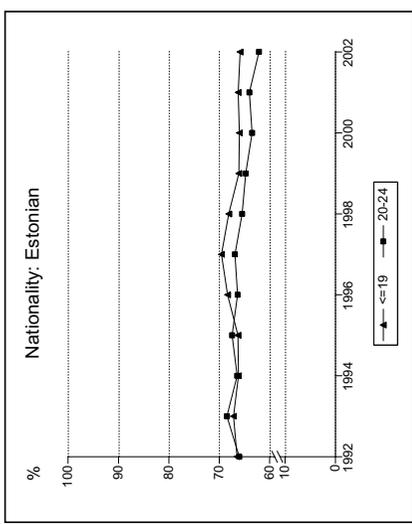
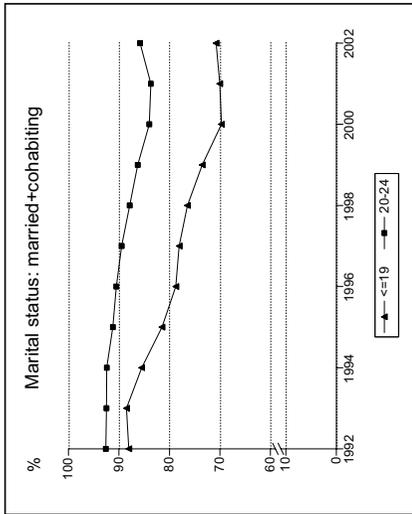
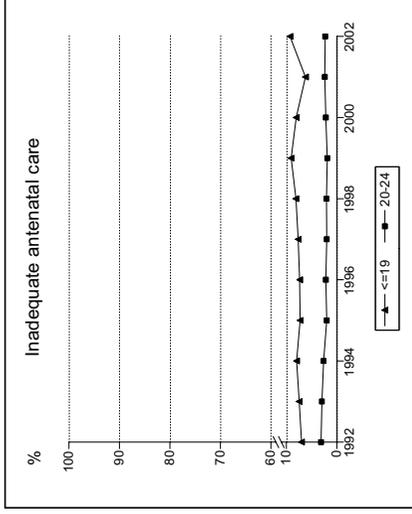
**Table 5.** Odds ratios (OR) and 95% confidence intervals (CI) for pregnancy outcomes of teenage mothers compared to mothers aged 20–24: singletons, primiparas, Estonia, 1992–2002

Pregnancy outcome	Crude OR (95% CI)	Adjusted OR (95% CI)		
		Social characteristics, calendar year <sup>a</sup>	+Adequacy of antenatal care	+Smoking +Gestational age <sup>b</sup>
<b>Low birth weight (&lt;2500 g)</b>				
<b>Maternal age (years)</b>				
≤17	1.66 (1.44–1.91)	1.41 (1.22–1.64)	1.20 (1.03–1.40)	1.19 (1.02–1.39)
18–19	1.32 (1.19–1.46)	1.25 (1.13–1.38)	1.19 (1.07–1.32)	1.17 (1.05–1.30)
<b>Preterm birth (&lt;37 weeks)</b>				
<b>Maternal age (years)</b>				
≤17	1.86 (1.65–2.09)	1.62 (1.43–1.84)	1.37 (1.20–1.56)	1.36 (1.20–1.55)
18–19	1.29 (1.18–1.41)	1.23 (1.12–1.35)	1.17 (1.06–1.28)	1.16 (1.06–1.27)
<b>Stillbirth</b>				
<b>Maternal age (years)</b>				
≤17	0.74 (0.46–1.21)	0.63 (0.38–1.03)	0.52 (0.32–0.86)	0.52 (0.32–0.86)
18–19	1.01 (0.77–1.32)	0.94 (0.71–1.23)	0.89 (0.68–1.17)	0.87 (0.66–1.15)
<b>Neonatal death<sup>c</sup></b>				
<b>Maternal age (years)</b>				
≤17	1.92 (1.35–2.74)	1.79 (1.24–2.57)	1.48 (1.02–2.15)	1.47 (1.01–2.14)
18–19	1.41 (1.08–1.83)	1.34 (1.03–1.75)	1.28 (0.98–1.67)	1.26 (0.97–1.65)
<b>Postneonatal death<sup>c</sup></b>				
<b>Maternal age (years)</b>				
≤17	1.94 (1.35–2.80)	1.62 (1.11–2.35)	1.54 (1.05–2.25)	1.51 (1.03–2.21)
18–19	1.15 (0.86–1.55)	1.06 (0.79–1.42)	1.04 (0.78–1.40)	1.03 (0.76–1.38)
				0.99 (0.74–1.33)

<sup>a</sup> Ethnicity, marital status, place of residence, calendar year.

<sup>b</sup> Categorised as ≤32, 33–36 and ≥37 weeks.

<sup>c</sup> Born 1992–2001, follow-up to 2002



**Figure 2.** Trends in covariates (nationality, marital status, place of residence, smoking, adequacy of antenatal care) among teenage mothers compared to mothers aged 20–24: singletons, primiparas, Estonia, 1992–2002.

## 2.2. Discussion

Our results provide support for the hypothesis that low maternal age, independently from socio-economic conditions, may increase the risk of low birth weight and preterm birth. Increased risks in neonatal and postneonatal death among younger teenagers seem to be a result of prematurity.

Our study differs from many others because rapid and profound socio-economic changes (market economy instead of planned economy, health care reform, stratification, etc.) took place in Estonia during the study period, while birth rate, pregnancy rate, and perinatal mortality rate decreased sharply in all age groups. The advantage of the study is that it is based on data from a uniformly organised reporting system.

Although it is difficult to measure, one can assume that due to a rapid reduction in teenage pregnancies during the study period, a self-selection of a higher risk cohort/socially disadvantaged group of early childbearers is probable, assuming that social effects become stronger as teenage pregnancy becomes less socially acceptable. It was not possible to analyse the effect of socio-economic status in our study, as has been done by other researchers (Otterblad Olausson et al., 1997). It is even problematic to define socio-economic status in our case, due to profoundly changing value systems and income levels during the study period. The increased proportion of single mothers during the study period may indirectly reflect young women's priorities away from motherhood and family formation and/or the changed meaning of cohabitation and marriage among young generations. The transition period has been especially hard for non-Estonians (Vetik, 2002). During the second half of the study period the proportion of non-Estonian teenage parturients decreased in comparison with the control group.

Many researchers have discussed whether the poorer outcomes of teenage pregnancy are partly attributable to the anthropometric status of teenagers, or are the consequence of their unfavourable socio-economic status (Otterblad Olausson et al., 1997, 1999; van Enk et al., 2000). It has been found (Otterblad Olausson et al., 1999) that the higher risks of neonatal and postneonatal mortality among younger teenagers may be related to their biological immaturity. The subdivision of teenagers in our study into younger – less than 17 years of age – and elder teenagers is arbitrary, and the younger age-group may be heterogeneous, thus not enabling the possible biological risks due to young age to be demonstrated completely.

The EMBR does not include data on menarche, so we were not able to analyse this indicator of maturity. In Estonia, according to EFFS (Katus et al., 2008) the median age at menarche was 13.6 in the 1974–1978 and 1979–1983 birth cohorts.

Smoking is associated with preterm labour (Shah and Bracken, 2000) and reduced foetal growth (Ananth and Platt, 2004) and was included in the logistic regression model as a confounding variable. The EMBR data on smoking is

based on the statements of the mother. Our data show that, during the study period, smoking became more common in both groups, among teenagers and among the control group. At the same time, it is known that self-reported data on smoking in pregnant women in Estonia underestimate the real prevalence and that the youngest age group is more likely to misclassify current smoking (Pärna et al., 2005). Maternal smoking may indicate the presence of other adverse health behaviours (Mäkikyrö et al., 2004; Paavola et al., 2004), which may also have an impact on adverse pregnancy outcomes.

According to the available data it is known that the incidence of STIs increased dramatically in Estonia during the 1990s and started to decrease at the end of that decade (Uusküla, 2001). This may have an impact on our outcomes concerning the risk of preterm birth if we compare our data with similar data from countries with a low STI rate.

Antenatal, obstetric and postpartum care is free of charge and generally available in Estonia; it is unlikely that access to or quality of care differs among age groups in Estonia. Therefore differences in adequacy of antenatal care reflect foremost the decision to use the services or not. During the study period inadequate antenatal care remained constantly more frequent among teenagers. Of all the variables it had the strongest association with low birth weight and preterm birth, we therefore adjusted for the effect of inadequate antenatal care in the analysis, but the risk of low birth weight and preterm birth related to maternal age remained essentially unchanged.

Analysing trends in antenatal and obstetric care in 1992–2001 in Estonia, two parallel developments can be noticed – on the one hand, medical care became more client-friendly, families became involved in prenatal care, the independent role of midwives has been promoted; on the other hand, specialists are better educated, principles of evidence-based medicine have been implemented, hospitals are equipped with modern technology that enables the provision of better diagnosis and increases the need for interventions (Gissler et al., 2000; Rohtmets et al., 2003). Perinatal mortality rate per 1000 births was 20.1 in 1992 and 8.1 in 2002 (Tellmann et al., 2003). Our results show that during the study period, year by year the risk of neonatal and postneonatal death decreased, reflecting improvements in the care of preterm babies. Despite the decrease in these risks, they remained higher among younger teenagers of age 17 years or less.

### **3. Individual and familial factors associated with teenage unintended pregnancies**

#### **3.1. Results**

Table 6 shows the distribution of the selected characteristics in the pregnancy group and in the contraception (reference) group. Younger girls were more likely to belong to the pregnancy group. The girls in the pregnancy group had started sexual intercourse earlier than the girls in the contraception group. More than half of the girls in the pregnancy group had a low score of knowledge, compared with a little more than one fifth in the contraception group. Importance of religion was similar in both groups. Alcohol abuse by family members, physical punishment at home and not informing parents when going out was reported more frequently by the girls in the pregnancy group. Parents accepted their daughter's sexual relations more often in the contraception group than in the pregnancy group. Mothers in the reference group were more likely to have higher education.

In the logistic regression analysis, risk factors associated with teenage pregnancy that remained statistically significant after adjustment were: low score of knowledge about functioning of reproductive organs and contraception, dislike of school, and reporting of alcohol abuse by family members (Table 7). Adjustment for mother's education was carried out separately – the results remained the same.

**Table 6.** Selected characteristics of teenage girls in contraception and unintended pregnancy groups in an interview survey in Estonia, 2001–2003

Characteristic	Contraception group		Pregnancy group	
	N	%	N	%
<i>Age at the time of the interview</i>				
≥17 years	129	87.2	97	74.0
<17 years	19	12.8	34	26.0
<i>Individual characteristic</i>				
<i>Age at coitarche</i>				
≥16 years	81	54.7	53	40.5
<16 years	67	45.3	78	59.5
<i>Score of knowledge</i>				
≥5 points	116	78.4	61	46.6
<5 points	32	21.6	70	53.4
<i>Liking for going to school</i>				
Like	115	77.7	76	58.0
Dislike/Can't say	33	22.3	55	42.0
<i>Importance of religion in my life</i>				
Important	26	17.6	22	16.8
Not important/Don't know	122	82.4	109	83.2
<i>Family functioning</i>				
<i>Alcohol abuse by a family member</i>				
No	107	72.3	69	52.7
Yes	41	27.7	62	47.3
<i>Physically punished at home</i>				
No	139	93.9	115	87.8
Yes	9	6.1	16	12.1
<i>I inform parents where I go</i>				
Yes	139	93.9	99	75.6
No	9	6.1	32	24.4
<i>Parents accept sexual relations</i>				
Yes	106	71.6	67	51.1
No/Don't know	42	28.4	64	48.9
<i>Family characteristic</i>				
<i>Mother's education</i>				
University/professional higher	59	39.9	27	20.6
Secondary special/secondary or less	87	58.8	95	72.5
Don't know	2	1.4	9	6.9

**Table 7.** Odds ratios (OR) with 95% confidence intervals (CI) for unintended teenage pregnancy according to related characteristics in an interview survey in Estonia, 2001–2003

Characteristic	Crude OR (95% CI)	Adjusted (95% CI)	OR <sup>a</sup>	Adjusted OR <sup>b</sup> (95% CI)
<i>Age at the time of the interview</i>				
≥17 years	1	1		1
<17 years	2.37 (1.27–4.46)	1.70 (0.83–3.49)		1.85 (0.89–3.86)
<i>Individual characteristics</i>				
<i>Age at coitarche</i>				
≥16 years	1	1		1
<16 years	1.75 (1.07–2.84)	1.27 (0.73–2.23)		1.27 (0.72–2.24)
<i>Score of knowledge</i>				
≥5 points	1	1		1
<5 points	4.00 (2.34–6.83)	3.35 (1.90–5.90)		3.07 (1.73–5.46)
<i>Liking for going to school</i>				
Like	1	1		1
Dislike/Can't say	2.56 (1.50–4.36)	2.04 (1.13–3.67)		1.96 (1.08–3.54)
<i>Family functioning</i>				
<i>Alcohol abuse by a family member</i>				
No	1	1		1
Yes	2.40 (1.45–3.98)	2.13 (1.23–3.70)		2.03 (1.16–3.54)
<i>Parents accept sexual relations</i>				
Yes	1	1		1
No/Don't know	2.10 (1.27–3.48)	1.39 (0.78–2.45)		1.34 (0.75–2.38)
<i>Family characteristic</i>				
<i>Mother's education</i>				
University/professional higher	1			1
Secondary special/secondary or less	2.39 (1.39–4.10)			1.66 (0.91–3.02)

<sup>a</sup>Adjusted for all other characteristics in the table except mother's education.

<sup>b</sup>Adjusted for all other characteristics in the table.3.2. Discussion

### 3.2. Discussion

In our study, certain individual characteristics (low level of knowledge about the functioning of reproductive organs and contraception, and dislike of school) and the reporting of alcohol abuse by family members, as a family characteristic, were associated with risk of unintended teenage pregnancy.

As in other similar studies, our data are based on reported behaviour and so are susceptible to biases associated with recall and veracity.

Despite our efforts to minimize selection bias, we did not succeed in involving in the study all the pregnant or contraceptive using teenagers who visited the selected medical institutions during the study period. Additionally, teenagers who did not come for antenatal care at all and came only to deliver a baby were not included in the study. This situation happens very seldom, and presumably did not influence our results, but those teenagers may differ in respect to family background and individual characteristics from the pregnant teenagers we included in the study.

The success of a particular institution in involving teenagers in the study depended on the individual motivation and attitude towards the study of all the medical personnel coming into contact with the teenagers in that institution (they were supposed to invite the teenagers to participate in the survey and refer them to the interviewer). Our experience showed that the willingness to contribute to the study varied between institutions and among different colleagues.

Another limitation of the study is that the small study size does not enable other important associations to be checked. The questionnaire included questions about contraception use, attitudes towards contraception, type of partnership, partner's characteristics, number of partners, communication with the partner, depressive moods, future perspectives, and many more. We did not consider these questions in this study, since the aim was to analyse individual and family characteristics. Adjusting the results to other variables known to be associated with teenage unintended pregnancies can have an effect on study results.

Belonging to a racial or ethnic minority group may have a strong link with socio-economic disadvantage (Singh et al., 2001) or advantage (Vikat et al., 2002). The vast majority of our sample were Estonians. For this reason we did not use ethnicity in our model.

Early sexual experience and poor educational attainment are each independently associated with teenage pregnancy (Wellings et al., 1999), and early age (under 16 years) at first intercourse has been found to be independently associated with both motherhood and abortion before the age of 18 years (Wellings et al., 2001). In our study, sexual knowledge and dislike of school were related to teenage pregnancy; the effect of early coitarche became nonsignificant after adjustment.

Dislike of school has been found to be associated with a young person's belief in becoming a parent before the age of 20 (Bonell et al., 2003). In

contrast with the mentioned study, in our sample the association between the score of sexual health knowledge remained a significant factor associated with teenage pregnancy after adjusting for dislike of school and other factors.

Because of rapid socio-economic changes, it is difficult in Estonia to use any income-based indicator of teenagers' parents' social class or to divide them into manual/non-manual workers, as has been done in studies investigating adolescents' behaviour (Valle et al., 2005; Wellings et al., 2001). Social status is believed to be best described in Estonia by educational level. Fathers' employment has been used in some studies (Valle et al., 2005). In our study, we did not use fathers' education, because 21.1% of the respondents either did not know their father's education or had not answered the question; the majority of them were from the pregnancy group (versus 3.9% of the respondents who did not know their mother's education); instead we used mother's education. This finding may indirectly reflect poor communication between daughters and fathers.

A higher occurrence of teenage motherhood has been found among those whose parents were least strict and most strict, and the lowest occurrence among those whose parents were moderately strict (Wellings et al., 1999). Parents' non-acceptance of their child's sexual relationship was associated with teenage pregnancy in our study; this association became non-significant after adjusting for other variables.

It is often not possible to distinguish between direct cause and effect in the associations linked to teenage pregnancy – e.g., the mother's low educational level may be linked with the daughter's dislike of school and poor knowledge of sexual matters.

In the current study we have analysed together those girls who plan to deliver and those who plan to terminate their pregnancy. Further analysis will show whether the associations are different for these two groups compared with the girls with no pregnancies.

## **4. Surgically induced abortion(s) and risk of complications in the third stage of labour in subsequent delivery**

### **4.1. Results**

In our sample almost one quarter of the parturients were teenagers. In the group of two or more abortions they accounted for 6.5%. One percent of women were 35 or more years old; they composed 2.2% of the multiple abortion group (Table 8).

1.1% of the newborns had a birth weight of 4500 g or more. Labour induction and/or augmentation took place more often in both abortion groups compared with the control group.

Among women with a history of surgically induced abortion the risk of complications in the third stage of labour in subsequent normal vaginal delivery (leading to manual removal of the placenta, or manual revision of the uterine cavity, and retained tissue needing curettage during the post-partum stay in hospital) was increased in both abortion groups compared with the reference group. We did not observe differences between women with one or multiple abortions. The crude ORs were 1.25 (95% CI 1.12–1.40) and 1.28 (95% CI 1.06–1.53) and the adjusted ORs 1.23 (95% CI 1.10–1.38) and 1.24 (95% CI 1.03–1.49) among women with a history of one or multiple induced abortions, respectively.

**Table 8.** Characteristics of mothers (singletons, live births, primiparas) according to number of induced abortions before the delivery, Estonia, 1994–2002

Characteristic	Number of previous induced abortions						Total N (%)
	0		1		≥2		
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
<b>Maternal age</b>							
<20	9 006	(27.6)	1 174	(16.0)	154	(6.5)	10 334 (24.4)
20–34	23 357	(71.5)	6 088	(83.0)	2 176	(91.3)	31 621 (74.6)
>34	284	(0.9)	71	(1.0)	53	(2.2)	408 (1.0)
Unknown	5	(0.0)	0		0		5 (0.0)
<b>Sex of newborn</b>							
Male	16 646	(51.0)	3 583	(48.9)	1 210	(50.8)	21 439 (50.6)
Female	16 006	(49.0)	3 750	(51.1)	1 173	(49.2)	20 929 (49.4)
<b>Birth weight</b>							
<2500	1 067	(3.3)	221	(3.0)	77	(3.2)	1 365 (3.2)
2500–4499	31 232	(95.7)	7 025	(95.8)	2 274	(95.4)	40 531 (95.7)
>4499	344	(1.1)	87	(1.2)	32	(1.3)	463 (1.1)
Unknown	9	(0.0)	0		0		9 (0.0)
<b>Length of gestation</b>							
<37	1 458	(4.5)	330	(4.5)	133	(5.6)	1 921 (4.5)
37–41	30 131	(92.3)	6 770	(92.3)	2 172	(91.1)	39 073 (92.2)
>41	1 035	(3.2)	231	(3.2)	78	(3.3)	1 344 (3.2)
Unknown	28	(0.1)	2	(0.0)	0		30 (0.1)
<b>Labour induction/augmentation</b>							
No	23 891	(73.2)	5 102	(69.6)	1 568	(65.8)	30 561 (72.1)
Yes	8 761	(26.8)	2 231	(30.4)	815	(34.2)	11 807 (27.9)
<b>Manual removal of placenta/manual revision of uterine cavity/curettage</b>							
No	31 208	(95.6)	6 931	(94.5)	2 250	(94.4)	40 389 (95.3)
Yes	1 444	(4.4)	402	(5.5)	133	(5.6)	1 979 (4.7)

## 4.2. Discussion

Our findings suggest a positive association between one or more first trimester surgically induced abortions and the risk of complications in the third stage of labour in subsequent singleton delivery.

The main advantage of our study is its size and that it is based on data from a uniformly organised reporting system in a country with a relatively high abortion rate.

Misclassification of previous induced abortions is expected to occur since the EMBR data are based on women's reports. The bias is expected to be towards null values, but probably is not present to any important degree, since generally women in Estonia are willing to reveal previous induced abortions in order to have the best possible antenatal care. Results of a validation survey of abortion in Tallinn in 1992 showed that more than 80% of the respondents reported their abortions (Anderson et al., 1994). One can assume that women may be more motivated to report their abortions when they come for antenatal care, like in our study, than in the case of a survey.

A slightly higher risk of placenta complications in deliveries following abortion has been found, being more prominent in cases where the interpregnancy interval was more than six months (Zhou et al., 2001). One study showed an increased risk of prolonged third stage of labour (more than 30 minutes) (Zhou et al., 1999b). In our study, the complications of the third stage of labour considered were either retained placenta needing manual extraction, or haemorrhage for different reasons, and need for manual revision of uterine cavity. Additionally we included uterine curettage, which took place during the post-partum stay in hospital. In this case an ultrasound examination is usually performed before curettage to identify retained tissue.

In the literature, ethnicity has been found to be a risk factor for postpartum haemorrhage (Combs et al., 1991; Magann et al., 2005; Petersen et al., 2002). Ethnicity found in Estonia is homogenous – Caucasians, therefore no adjustment was made for ethnicity.

It has been proposed that if induced abortions cause placenta complications in subsequent pregnancies, the mechanism is most likely through injury (Beuker et al., 2005; Zhou et al., 2001).

One study has shown that increased risk in the prolonged third stage of labour may depend on whether the surgical abortion took place in the early (less than eight weeks of pregnancy) or late stage of the first trimester (Zhou et al., 1999b). We were not able to distinguish between early or late first trimester abortions in our study. According to the data of the Estonian Abortion Registry, 31–49% of induced abortions were performed at a gestational age of less than eight weeks of pregnancy during 1996–2002 (Tellmann et al., 2003).

Termination of pregnancy remains the right of women. There is no country where pregnancy terminations do not take place. The importance of induced abortion as a risk factor for retained placenta and postpartum haemorrhage may

differ in different countries, depending on the incidence of induced abortions. Our “natural experiment” reminds us that, in the countries with a similar history, induced abortion should be considered for inclusion in guidelines and should be taken into consideration as a risk factor for postpartum haemorrhage and/or placenta complications when estimating individual risks.

Information about the risks associated with surgical abortion allows comparison to be made with medically induced abortion, which has recently become an option in many countries, including Estonia.

## VI. CONCLUSIONS

1. Both the number and rates of teenage births and abortions declined remarkably in Estonia during the years of rapid socio-economic changes (1992–2001). In the case of pregnancy, at the end of the period, a greater proportion of teenagers chose to terminate their pregnancies than at the beginning of the 1990s; non-Estonian teenagers were more likely to terminate the pregnancy than Estonian teenagers.

2. Mother's age of 19 years and less may be a risk factor for low birth weight and preterm births. Risk of stillbirths is not higher among teenagers. The risk of neonatal and postneonatal death of the newborn child is higher among younger teenagers aged 17 years and less, presumably due to increased risks in preterm birth. Despite changes leading to better antenatal, obstetric and neonatal care and a growth in incomes, teenagers remained a higher risk group compared with women aged 20–24 years.

3. Low level of knowledge about the functioning of reproductive organs and contraception, and dislike of school (individual factors), as well as the reporting of alcohol abuse by family members (familial factor), were associated with higher risk of unintended teenage pregnancy.

4. A positive association was observed between one or more first trimester surgically induced abortions and the risk of complications in the third stage of labour (retained placenta and/or tissue and/or haemorrhage needing manual revision of uterine cavity or curettage) in subsequent singleton vaginal delivery. We did not observe differences in these elevated risks between women with one or multiple abortions.

# APPENDIX QUESTIONNAIRE

--	--	--	--	--

Kuupäev: .....  
Algus: .....  
Lõpp: .....  
Rühm: K S A

1. **Elukoht** (vald, linn).....

## 2. Sünnikoht

- 1 Eesti
- 2 Väljaspool Eestit

## 3. Sünniaeg

 (pp/kk/aaaa)

--	--	--	--	--	--	--	--

4. **Rahvus** .....

## 5. Haridus (lõpetatud klass/kursus)

- 1 Põhikooli ..... klass
- 2 Keskkooli/gümnaasiumi ..... klass
- 3 Kutseõppeasutuse ..... kursus
- 4 Rakenduskõrgkooli ..... kursus
- 5 Ülikooli ..... kursus
- 6 Muu ..... (täpsustage)

## 6. Tavategevusala

- 1 Töötav
- 2 Töötu
- 3 Ajateenija
- 4 Kinnipeetav
- 5 Õpilane
- 6 Üliõpilane
- 7 Töövõimetu
- 8 Kodune

## 7. Hinded viimasel tunnistusel

- 1 Kõik viied
- 2 Neljad-viied
- 3 Mõni üksik kolm
- 4 Peamiselt kolmed
- 5 Kolmed-kahed

8. Kas Teile meeldib koolis käia? Milline vastus iseloomustab kõige enam Teie tunnet?

- 1 Väga meeldib
- 2 Pigem meeldib
- 3 Pigem ei meeldi
- 4 Üldse ei meeldi
- 5 Ei oska öelda

**9. Millise hariduse planeerite omandada?**

- 1 Ülikoolihariduse
- 2 Rakenduskõrghariduse
- 3 Keskerihariduse
- 4 Keskkoolihariduse
- 5 Põhihariduse
- 6 Ei planeeri rohkem midagi
- 7 Ei tea

10. Kui tähtsaks Te peate oma elus usku (religiooni)?

- 1 Väga tähtsaks
- 2 Küllalt tähtsaks
- 3 Mitte eriti tähtsaks
- 4 Üldse mitte tähtsaks
- 5 Ei oska öelda

**11. Milline on (oli) Teie pere majanduslik olukord võrreldes klassikaaslaste omaga?**

- 1 Halvem kui enamikul kaasõpilastel
- 2 Sarnane enamiku kaasõpilaste omaga
- 3 Parem kui enamikul kaasõpilastel
- 4 Ei tea

*Neile, kes on rasedad*

12. Kas Teil on olnud varem rasedusi?

- 1 Ei => jätkake küsimus 14
- 2 Jah

*Neile, kes on rasedad*

13. Kuidas rasedused lõppesid? **(Vajadusel valige mitu vastust)**

- 1 Sünnitusega ..... (Mitu?)
- 2 Abordiga ..... (Mitu?)
- 3 Iseenesliku raseduse katkemisega ..... (Mitu?)

## **I. Teadmised**

14. Kas kool andis seksuaalharidust?

- 1 Sain teada kõik, mis mind huvitas
- 2 Suur osa minu küsimustest said tundides vastuse
- 3 Tundides sain vastuse mõnele mind huvitanud küsimusele
- 4 Tunnid olid, aga ma ei saanud vastuseid mind huvitanud küsimustele
- 5 Peaaegu üldse mitte

15. Kas Teie lapsepõlvkodus räägiti seksuaalsusega seonduvast (sh rasedusest, rasestumisvastastest vahenditest, suhetest)?

- 1 Rohkem kui oleksin soovinud (negatiivses mõttes)
- 2 Piisavalt
- 3 Liiga vähe
- 4 Ei räägitud üldse => jätkake küsimusega 17

**16. Kui vanemad rääkisid Teiega seksist, siis nad pigem ...**

(vajadusel valige mitu vastust)

- 1 julgustasid
- 2 jagasid informatsiooni (nt kontratseptsioonist, nõustamiskeskusest jne)
- 3 hoiatasid halbade tagajärgede eest
- 4 keelasid vastassugupoolega suhtlemast
- 5 halvustasid

17. Kas olete seksuaalsuhteid ja sellega seonduvat arutanud oma sõprade ja tuttavatega (v.a seksuaalpartner)?

- 1 Tihti
- 2 Vahetevahel
- 3 Mitte kunagi

**18. Märkige õige vastus:**

**Kunas on kõige tõenäolisem aeg rasestuda?**

- 1 Vahetult enne menstruatsiooni
- 2 Menstruatsiooni ajal
- 3 Kohe pärast menstruatsiooni
- 4 Kaks nädalat enne oodatavat menstruatsiooni
- 5 Pole mingit erinevust
- 6 Ei tea

**19. Märkige õige vastus:**

**Kas naine võib rasestuda ...**

- 1 esimesest vahekorrast
- 2 kui tilk spermat satub naise suguelunditele
- 3 kui ollakse vahekorras menstruatsiooni ajal
- 4 kõigil eespoolnimetatud juhtudel

20. Kas järgnevad väited on õiged või valed?

	Õige	Vale	Ei tea
Menstruatsioonide algamine näitab, et tütarlaps võib rasedaks jääda	1	2	3
Kõikidest rasestumisvastastest vahenditest kaitsevad ainult kondoomid sugulisel teel levivate haiguste eest	1	2	3
Kliitoris on munarakke tootev organ	1	2	3
Seemnepurseste algamine tähendab, et poiss võib isaks saada	1	2	3
Suguühtejärgseid pille saab tarvitada 5 päeva jooksul pärast kaitsmata vahekorda	1	2	3

21. Mil viisil kaitsevad suukaudsed hormonaalsed pillid raseduse eest?

- 1 Purustavad munaraku
- 2 Takistavad munaraku küpsemist ja vabanemist munasarjast
- 3 Lõhuvad spermatoosidid
- 4 Ei tea

## **II. Seksuaalelu alustamine ja partnerite arv**

(Seksuaalvahekord tähendab siin vaginaalset vahekorda (mehe suguti naise tupes))

22. Kui vana Te olite esimese seksuaalvahekorra ajal?

..... aastane

23. Kas Te soovisite esimest seksuaalvahekorda sel ajal, kui see toimus?

- 1 Jah, väga
- 2 Jah, enam-vähem
- 3 Ei, ma oleksin soovinud alustada hiljem
- 4 Ei, ma ei soovinud seda üldse

**24. Kas Te kasutasite rasestumisvastast vahendit esimese seksuaalvahekorra ajal (k.a kalendermeetod)?**

- 1 Ei => jätkake küsimusega 27
- 2 Jah

25. Millist vahendit Te kasutasite esimese vahekorra ajal?

**(Vajadusel valige mitu vastust)**

- 1 Kondoomi
- 2 Paikseid vahendeid (kreem, küünal jne)
- 3 Katkestatud suguühet
- 4 Kalendermeetodit
- 5 Pille
- 6 Süstitavaid vahendeid
- 7 Spiraali
- 8 Suguühtejärgset pilli
- 9 Muud ..... (täpsustage)

26. Kelle algatusel Te kasutasite rasestumisvastast vahendit?

- 1 Minu
- 2 Partneri
- 3 Võrdselt mõlema
- 4 Ei mäleta

27. Mitu seksuaalpartnerit Teil on olnud?

..... partnerit

**28. Miks Te alustasite seksuaalelu?**

(Valige järgnevast ainult üks, kõige enam sobiv vastus)

- 1 Tundsin, et see kuulub poisiga “käimise” juurde (on üks lähedussuhte/käimise osa)
- 2 Partner soovis seda
- 3 Tundsin end üksikuna ja see oli hea leevendus
- 4 Olime väga armunud ja mõlemad soovisime seda
- 5 Tahtsin lähedussuhet kellegagi
- 6 Kõik teised seksisid
- 7 Polnudki õiget põhjust
- 8 Tahtsin jääda rasedaks
- 9 Tahtsin tunda end täiskasvanuna
- 10 Kartsin, et ei meeldi oma partnerile, kui ütlen “ei”
- 11 Lustist, mõnust
- 12 Muul põhjusel ..... (Täpsustage)

**29. Millisena Te mäletate oma esimest seksuaalvahekorda?**

- 1 Nautisin seda väga
- 2 Olin rahul
- 3 Ma ei tundnud midagi erilist, jättis ükskõikseks
- 4 Oli väga ebameeldiv
- 5 Ei mäleta

30. Kui sageli Te seksisite viimase poole aasta jooksul?

- 1 1 kord
- 2 Vahel harva
- 3 Umbes kord kuus
- 4 2–3 korda kuus
- 5 Kord nädalas
- 6 2–3 korda nädalas
- 7 Üle 3 korra nädalas

31. Kas Te naudite seksimist?

- 1 Alati
- 2 Peaaegu alati
- 3 Mõnikord
- 4 Harva
- 5 Mitte kunagi
- 6 Raske öelda

32. Kuidas Teie vanemad suhtuvad/suhtuksid sellesse, et elate seksuaalelu?

- 1 Nad on/oleksid selle vastu
- 2 Nad aktsepteerivad/aktsepteeriks seda
- 3 Üks on/oleks poolt ja teine vastu
- 4 Ei tea

*Neile, kes on rasedad*

33. Käesolev rasedus oli:

- 1 planeeritud ja soovitud
- 2 planeerimata, kuid soovitud
- 3 planeerimata ja soovimata

### **III. Suhtumine kontratseptsiooni kasutamisse**

**34. Kas Te olete oma partneriga arutanud raseduse vältimise abinõusid?**

- 1 Ei
- 2 Jah

**35. Kuidas hindate oma teadmisi rasestumisvastaste vahendite kohta?**

- 1 Tean nendest piisavalt
- 2 Tean ühtteist
- 3 Ei tea nendest eriti midagi

**36. Kas mõni asjaolu järgnevas loendis on olnud Teile probleemiks?**

(Vajadusel valige mitu vastust)

- 1 Rasestumisvastastel vahenditel on kõrge hind
- 2 Vahendite hankimiseks/retsepti saamiseks peab külastama arsti
- 3 Rasestumisvastaste vahendite ostmine on piinlikusttekitav
- 4 Rasestumisvastaseid vahendeid on keeruline hankida
- 5 Tean liiga vähe erinevatest võimalustest
- 6 Olen mures halbade kõrvalmõjude pärast tervisele
- 7 Partner leiab, et mina/meie ei peaks neid kasutama
- 8 Mõni teine probleem ..... (täpsustage)

**37. Kas Te olete kunagi kasutanud mõnda rasestumisvastast vahendit**

(k.a kalendermeetod)?

- 1 Ei => jätkake küsimusega 39
- 2 Jah

**38. Millist rasestumisvastast vahendit olete kasutanud?**

(Vajadusel valige mitu vastust)

- 1 Kondoomi
- 2 Paikseid vahendeid (kreem, küünal jne)
- 3 Katkestatud suguühet
- 4 Kalendermeetodit
- 5 Pille
- 6 Süstitavaid vahendeid
- 7 Spiraali
- 8 Suguühtejärgset pilli
- 9 Muud ..... (täpsustage)

**39. Kas Te kasutasite rasestumisvastast vahendit viimase seksuaalvahekorra ajal / enne rasestumist (k.a kalendermeetod)?**

- 1 Ei => jätkake küsimus 42 (rasedad) või 43
- 2 Jah

**40. Millist vahendit Te kasutasite viimase seksuaalvahekorra ajal / enne rasestumist?**

(Vajadusel valige mitu vastust)

- 1 Kondoomi
- 2 Paikseid vahendeid (kreem, küünal jne)
- 3 Katkestatud suguühet
- 4 Kalendermeetodit
- 5 Pille
- 6 Süstitavaid vahendeid
- 7 Spiraali
- 8 Suguühtejärgset pilli
- 9 Muud ..... (täpsustage)

**41. Kuidas olete rahul rasestumisvastase vahendiga, mida viimati kasutasite?**

- 1 Väga rahul
- 2 Pigem rahul
- 3 Ei rahulolematu ega rahul
- 4 Pigem rahulolematu
- 5 Väga rahulolematu

*Neile, kes on rasedad*

**42. Miks Te ei kasutanud rasestumisvastast vahendit enne rasestumist?**

- 1 Planeerisin rasedust
- 2 Lihtsalt ei mõelnud rasedusele
- 3 Lootsin, et ehk ei jää rasedaks
- 4 Arvasin, et soovimatu raseduse saab alati katkestada
- 5 Partner ei tahtnud/lubanud rasestumisvastaseid vahendeid kasutada
- 6 Olen otsustanud, et ei kasuta rasestumisvastaseid vahendeid, sest need on kahjulikud tervisele
- 7 Kasutasin, aga jäin ikkagi rasedaks ..... (Mida kasutasite?)
- 8 Arvasin, et rasestumisvastased vahendid on ebamugavad
- 9 Arvasin, et rasestumisvastased vahendid rikuvad vahekorra spontaansuse, soovi vahekorraks
- 10 Ei teadnud rasestumisvastaste vahendite olemasolust midagi / ei teadnud, kuidas kasutada
- 11 Muu põhjus ..... (Täpsustage)

**IV. Enesehinnang, depressiivsed seisundid ja tulevikuperspektiivi tunnetamine**

**43. Kuidas Te hindate oma praegust elu?**

- 1 Väga õnnelik
- 2 Pigem õnnelik
- 3 Ei õnnelik ega õnnetu
- 4 Pigem õnnetu
- 5 Väga õnnetu

**44. Teismeliseeas toimuvad kiired muutused nii kasvus, kehakujus kui ka mõtlemises ja tundeelus. Kuidas Te olete tunnetanud oma teismeiga?**

- 1 Teismeeas ei ole tekitanud mulle probleeme
- 2 Olen teadvustanud teismee probleeme ja saanud nendega hakkama
- 3 On olnud palju probleeme nii koolis kui kodus
- 4 Olen olnud konfliktis iseenda ja teistega

**45. Kas Teil on harrastusi?**

- 1 Ei
- 2 Jah ..... (Täpsustage)

**46. Millised tunded Teil olid seoses esimese menstruatsiooniga?**

- 1 Ma ootasin, et see algaks
- 2 Ma kartsin selle algamist
- 3 Ma ei teadnud midagi menstruatsioonist enne, kui see algas
- 4 Ei mäleta

**47. Kui vanalt Teil oli esimene menstruatsioon?**

..... aastasel

**48. Kas teismeeas pani/paneb Teid kannatama ...**

(Vajadusel valige mitu vastust)

- 1 akne
- 2 kaalutõus
- 3 karvakasv
- 4 mõne kehaosa liigne või liiga vähene areng
- 5 muu ..... (täpsustage)
- 6 Tundsin/tunnen end alati hästi

**49. Kas Te tunnete ennast masendatuna?**

- 1 Mitte kunagi
- 2 Mõnikord
- 3 Tihti

**50. Kas Te olete kunagi soovinud, et oleksite poiss?**

- 1 Mitte kunagi
- 2 Mõnikord
- 3 Tihti

**51. Kui sageli Te käite pidudel, baarides, ööklubides?**

- 1 Üliharva (mitte kunagi)
- 2 Vahel (korra kuus või harvem)
- 3 Üsna sageli (mõned korrad kuus)
- 4 Sageli (vähemalt korra nädalas)

**52. Kas Teil on lähedasi sõpru (v.a partner), kellega saate arutada pea kõiki asju, mis Teid ennast puudutavad?**

- 1 Mul on mitu sõpra
- 2 Mul on üks lähedane sõber
- 3 Mul ei ole ühtegi lähedast sõpra

**53. Kui tähtsaks Te hindate järgnevat?**

	Väga tähtis	Pigem tähtis	Raske öelda	Pole eriti tähtis	Pole üldse tähtis
Head suhted vanematega	1	2	3	4	5
Hea tervis ja füüsiline vorm	1	2	3	4	5
Sõpradega koos olemine	1	2	3	4	5
Ilusa ja/või populaarse poiss-sõbra olemasolu	1	2	3	4	5
Edukus koolis (head hinded)	1	2	3	4	5
Rohkem raha kulutamiseks	1	2	3	4	5
Populaarsus eakaaslaste hulgas	1	2	3	4	5
Seksuaalne nauding	1	2	3	4	5

**54. Kas Te usute, et on keegi, kes Teid sügavalt armastab (ka perekonnaliige, sugulane, mitte ainult partner)?**

- 1 Ei
- 2 Jah

#### **V. Alkoholi ja narkootiliste ainete tarvitamine**

**55. Milline vastus järgnevas loetelus kajastab Teie suhet suitsetamisega kõige täpsemalt?**

- 1 Ma pole kunagi suitsetanud
- 2 Jätsin suitsetamise maha ..... (mitu?) kuud tagasi
- 3 Suitsetan vähem kui kord nädalas
- 4 Suitsetan kord nädalas, vahel ka sagedamini, aga mitte iga päev
- 5 Suitsetan iga päev umbes ..... (mitu?) sigaretti

**56. Kui sageli Te tarvitate alkoholi? Palun valige vastus, mis kõige enam kirjeldab Teie harjumusi. Arvestage ka need korrad, kui jõite minimaalselt, näiteks siidrit, pool pudelit õlut või pisut veini.**

- 1 Ma ei tarvita üldse alkoholi => jätkake küsimusega 58
- 2 Kord aastas või veelgi harvem
- 3 3–4 korda aastas
- 4 Üks kord paari kuu jooksul
- 5 Üks kord kuus
- 6 Paar korda kuus
- 7 Üks kord nädalas
- 8 Paar korda nädalas
- 9 Iga päev

**57. Kui sageli Te joote end purju?**

- 1 Mitte kunagi
- 2 Kord aastas või veelgi harvem
- 3 3–4 korda aastas
- 4 Üks kord paari kuu jooksul
- 5 Üks kord kuus
- 6 Paar korda kuus
- 7 Üks kord nädalas
- 8 Paar korda nädalas
- 9 Iga päev

**58. Kas Te teate oma lähemas tutvusringkonnas inimesi, kes tarvitavad narkootikume (nt hašiš või tabletid) või nuusutavad mitmesuguseid aineid joobe saavutamiseks?**

- 1 Ei => jätkake küsimus 60
- 2 Jah, umbes ..... (mitu?) inimest

**59. Millised järgnevatest ainetest on Teie teada kasutusel Teie sõprade ja lähemate kaaslaste seas, eesmärgiga saavutada joovet?**

(Vajadusel valige mitu vastust)

- 1 Ravimid
- 2 Liimid jt ained, mida hingatakse sisse
- 3 Kanep
- 4 Hašiš
- 5 Marihuaana
- 6 Morfiin
- 7 Heroiin
- 8 LSD
- 9 Amfetamiin
- 10 Kokaiin
- 11 Muu, mulle teadmata aine
- 12 Muu ..... (täpsustage)

**60. Kas Te olete kunagi tarvitanud narkootikume joobe saavutamiseks (mitte uudishimust)?**

- 1 Ei => jätkake küsimus 62
- 2 Jah ..... (Täpsustage)

**61. Kas Te olete viimase poole aasta jooksul tarvitanud narkootikume joobe saavutamiseks?**

- 1 Ei
- 2 Jah .....(täpsustage)

**VI. Vanemate olemasolu, vanemate mõju ja suhted vanematega**

(Lapsepõlv on siin tinglikult vanus kuni 16. eluaastani)

**62. Millisesse perekonda Te sündisite?**

- 1 Perekonda, kus ema ja isa elasid koos (vabaabielus/abielus)
- 2 Perekonda, kus ema ja isa ei elanud koos

**63. Kui vana oli Teie ema, kui Te sündisite?**

..... aastane

**64. Kas Teie vanemad elasid kogu Teie lapsepõlve aja koos?**

- 1 Jah => jätkake küsimus 67
- 2 Ema/isa suri, kui olin ..... (mitme?)aastane => jätkake küsimusega 66
- 3 Vanemad lahutasid, kui olin ..... (mitme?)aastane

**65. Kui tihti Te kohtute vanemaga, kes elab eraldi?**

- 1 Kord nädalas
- 2 Kord kuus
- 3 Paar korda aasta-paari jooksul
- 4 Mitte kunagi
- 5 Ma ei tea temast midagi

**66. Milline oli Teie lapseõlve perekond pärast ema/isa surma või lahutust?**

- 1 Ema koos uue elukaaslasega
- 2 Isa koos uue elukaaslasega
- 3 Ema üksi
- 4 Isa üksi
- 5 Kasvasin lastekodus
- 6 Kasvasin sugulaste juures/tugiperes
- 7 Muu ..... (täpsustage)

**67. Ema haridus**

- 1 Põhiharidus või vähem
- 2 Keskkharidus
- 3 Keskeriharidus
- 4 Rakenduslik kõrgharidus
- 5 Ülikooliharidus
- 6 Teaduskraad
- 7 Ei tea

**68. Ema tavategevusala**

- 1 Töötav
- 2 Töötu
- 3 Kinnipeetav
- 4 Pensionär
- 5 Töövõimetu
- 6 Kodune
- 7 Ei tea

**69. Kuidas ema Teisse suhtub?**

- 1 On minu eest alati hästi hoolitsenud ja ma tunnen, et ta armastab mind
- 2 Ei hoolitse minu eest, kuid mulle tundub, et ta armastab mind
- 3 Hoolitseb minu eest hästi, kuid mulle tundub, et ta ei armasta mind
- 4 Ei hoolitse minu eest ega armasta mind
- 5 Ei tea

**70. Milline oli ema peamiselt Teie kasvatamisel?**

- 1 Õrn, heatahtlik, usalduslik ja lubas teha kõike, mida tahtsin
- 2 Õrn, heatahtlik, usalduslik, kuid seadis kindlad piirid minu tegemistele
- 3 Nõudlik
- 4 Väga karm, ülirange
- 5 Ükskõikne
- 6 Ei tea

**71. Isa haridus**

- 1 Põhiharidus või vähem
- 2 Keskkharidus
- 3 Keskeriharidus
- 4 Rakenduslik kõrgharidus
- 5 Ülikooliharidus
- 6 Teaduskraad
- 7 Ei tea

### 72. Isa tavategevusala

- 1 Töötav
- 2 Töötü
- 3 Kinnipeetav
- 4 Pensionär
- 5 Töövõimetu
- 6 Kodune
- 7 Ei tea

### 73. Kuidas isa Teisse suhtub?

- 1 On minu eest alati hästi hoolitsenud ja ma tunnen, et ta armastab mind
- 2 Ei hoolitse minu eest, kuid mulle tundub, et ta armastab mind
- 3 Hoolitseb minu eest hästi, kuid mulle tundub, et ta ei armasta mind
- 4 Ei hoolitse minu eest ega armasta mind
- 5 Ei tea

### 74. Milline oli isa peamiselt Teie kasvatamisel?

- 1 Õrn, heatahtlik, usalduslik ja lubas teha kõike, mida tahtsin
- 2 Õrn, heatahtlik, usalduslik, kuid seadis kindlad piirid minu tegemistele
- 3 Nõudlik
- 4 Väga karm, ülirange
- 5 Ükskõikne
- 6 Ei tea

### 75. Kasuvanema haridus

- 1 Põhiharidus või vähem
- 2 Keskkharidus
- 3 Keskeriharidus
- 4 Rakenduslik kõrgharidus
- 5 Ülikooliharidus
- 6 Teaduskraad
- 7 Ei tea

### 76. Kasuvanema tavategevusala

- 1 Töötav
- 2 Töötü
- 3 Kinnipeetav
- 4 Pensionär
- 5 Töövõimetu
- 6 Kodune
- 7 Ei tea

### 77. Kuidas kasuvanem Teisse suhtub?

- 1 On minu eest alati hästi hoolitsenud ja ma tunnen, et ta armastab mind
- 2 Ei hoolitse minu eest, kuid mulle tundub, et ta armastab mind
- 3 Hoolitseb minu eest hästi, kuid mulle tundub, et ta ei armasta mind
- 4 Ei hoolitse minu eest ega armasta mind
- 5 Ei tea

**78. Milline oli kasuvanem peamiselt Teie kasvatamisel?**

- 1 Õrn, heatahtlik, usalduslik ja lubas teha kõike, mida tahtsin
- 2 Õrn, heatahtlik, usalduslik, kuid seadis kindlad piirid minu tegemistele
- 3 Nõudlik
- 4 Väga karm, ülirange
- 5 Ükskõikne
- 6 Ei tea

**79. Kas Teie perekonnal on olnud ühiseid ettevõtmisi?**

- 1 Sageli
- 2 Vahetevahel
- 3 Mitte kunagi

**80. Kes oli lapsepõlves Teile kõige lähedasem?**

- 1 Ema
- 2 Isa
- 3 Kasuema/ naissoost hooldaja
- 4 Kasuisa/ meessoost hooldaja
- 5 Õde
- 6 Vend
- 7 Sõber
- 8 Muu ..... (kes?)
- 9 Polnud kedagi lähedast
- 10 Ei oska öelda

**81. Kas Te tavaliselt ütlete/ütlesite vanematele/hooldajatele, kuhu ja kui kauaks Te kodust ära lähete/ läksite (külla, peole jne)?**

- 1 Peaaegu alati
- 2 Ma ei ütle, kuigi nad küsivad
- 3 Nad ei küsi ja ma ei ütle

**82. Milline oli Teie lapsepõlvekodu?****Püüdke hinnata järgnevalt toodud omadusi:**

	Täiesti nõus	Pigem nõus	Raske öelda	Pigem ei ole nõus	Üldse ei ole nõus
Kõik olid üksteise vastu sõbralikud	1	2	3	4	5
Rikas	1	2	3	4	5
Tundeid näidati alati välja	1	2	3	4	5
Õnnelik	1	2	3	4	5
Usklik	1	2	3	4	5
Sain alati vanematega oma muredest, tunnetest ja plaanidest rääkida (nad mõistsid mind alati ja elasid kaasa)	1	2	3	4	5
Keegi ei häbenenud midagi, kõik seksiga seotu oli avalik ja kõigile teada	1	2	3	4	5

**83. Kas Teie vanemad/hooldajad on Teid viimase kolme aasta jooksul füüsiliselt karistanud (lõõnud, peksnud jne)?**

- 1 Ei
- 2 Jah ..... (Kui sageli?)

**84. Kas Teie vanemad/hooldajad on Teile viimase kolme aasta jooksul psüühiliselt ülekohtu teinud (mõnitanud, alavääristanud jne)?**

- 1 Ei
- 2 Jah ..... (Kui sageli?)

**85. Kas Teie lähedastest perekonnaliikmetest on keegi sageli purjus?**

- 1 Ei => jätkake küsimusega 88
- 2 Jah

**86. Kes Teie lähedastest perekonnaliikmetest on purjus?**  
(vajadusel valige mitu vastust)

- 1 Ema
- 2 Isa
- 3 Kasuema/ naissoost hooldaja
- 4 Kasuisa/ meessoost hooldaja
- 5 Õde
- 6 Vend
- 7 Vanaema
- 8 Vanaisa
- 9 Tädi
- 10 Onu
- 11 Muu ..... (Kes?)

**87. Kui sageli on see inimene / need inimesed purjus?**  
(Valige vastus, mis kõige enam kirjeldab tema/nende harjumusi)

- 1 Iga päev
- 2 Paar korda nädalas
- 3 Üks kord nädalas
- 4 Paar korda kuus
- 5 Üks kord kuus
- 6 Üks kord paari kuu jooksul

**88. Kas Teid on seksuaalselt ära kasutatud (s.o jõuga ähvardamisel oraalne, vaginaalne või anaalne vahekord, seksuaalse sisuga puudutused vastu Teie tahtmist)?**

- 1 Ei => jätkake küsimusega 90
- 2 Jah

**89. Kes see oli?** (vajadusel valige mitu vastust)

- 1 Vanem võõras mees
- 2 Meessoost tuttav
- 3 Vanem võõras naine
- 4 Naissoost tuttav
- 5 Võõras meessoost eakaaslane
- 6 Võõras naissoost eakaaslane
- 7 Isa/kasuisa/vanaisa/ meessoost hooldaja
- 8 Ema/kasuema/vanaema/ naissoost hooldaja

**90. Kas Teie lähisugulastel või sõbrannadel on olnud rasedusi vanuses kuni 18 aastat (18 k.a)?**

- 1 Ei => jätkake küsimusega 92
- 2 Jah

**91. Millega rasedused lõppesid?** (Vajadusel valige mitu vastust)

- 1 Abordiga
- 2 Sünnitusega

## **VII. Partnerlussuhte tähendus ja mõju**

**92. Kas Te elate koos oma seksuaalpartneriga?**

- 1 Ei
- 2 Jah

**93. Kuidas Te hindate oma praegust partnerlussuhet?**

- 1 Väga õnnelik
- 2 Pigem õnnelik
- 3 Ei õnnelik ega õnnetu
- 4 Pigem õnnetu
- 5 Väga õnnetu

**94. Kas oma partneriga seksist rääkimine on raske?**

- 1 Üldse mitte raske, räägime avameelselt ja kompleksideta
- 2 Mitte eriti raske, kui me juba kord seda teemat alustame
- 3 Üsna raske ja piinlikkusttekitav
- 4 Väga raske, peaaegu võimatu

**95. Kui tähtsaks Te peate seksuaalelu oma partnerlussuhtes (et tunneksite end õnnelikuna)?**

- 1 Väga tähtsaks
- 2 Tähtsaks
- 3 Mitte väga tähtsaks
- 4 Üldse mitte tähtsaks
- 5 Ei oska öelda

**96. Kas Teie partner on Teid kunagi ähvardanud füüsilise vägivallega või löönud?**

- 1 Ei
- 2 Jah ..... (Kui sageli?)

**97. Kui palju on Teie lähisuhtes (Teie ja seksuaalpartneri vahel) hellitusi, puudutusi ja kehalist lähedalolekut?**

- 1 Piisavalt
- 2 Liiga vähe
- 3 Üldse mitte
- 4 Rohkem kui sooviksin (negatiivses mõttes)

**98. Kui kogenud on Teie partner (püsipartner või kellest jäite rasedaks) seksuaalsuhtes?**

- 1 Sama kogenud kui mina
- 2 Palju kogenum kui mina
- 3 Kogenematum kui mina
- 4 Ei tea

**99. Kui vana on Teie partner?**

..... aastane

**100. Partneri haridus**

- 1 Põhiharidus või vähem
- 2 Keskkharidus
- 3 Keskeriharidus
- 4 Rakenduslik kõrgharidus
- 5 Ülikooliharidus
- 6 Teaduskraad
- 7 Ei tea

**101. Partneri tavategevusala**

- 1 Töötav
- 2 Töotu
- 3 Ajateenija
- 4 Kinnipeetav
- 5 Õpilane
- 6 Üliõpilane
- 7 Pensionär
- 8 Töövõimetu
- 9 Kodune
- 10 Ei tea

**102. Milline on Teie seisukoht järgnevate väidete suhtes?**

	Täiesti nõus	Pigem nõus	Raske öelda	Pigem ei ole nõus	Üldse ei ole nõus
Soovi korral võib naine üles näidata initsiatiivi seksuaalvahekorda astumiseks	1	2	3	4	5
Seksuaalsuhtes on loomulik, et meestele on rohkem lubatud	1	2	3	4	5
Seksuaalsuhtes on loomulik, et naistele on rohkem lubatud	1	2	3	4	5
Seksuaalsuhtes peaksid nii naistel kui meestel olema samad võimalused nii suhte alustamise kui partnerite arvu osas	1	2	3	4	5
Rasestumisvastaste vahendite kasutamine on peamiselt naise otsustada	1	2	3	4	5
Rasestumisvastaste vahendite kasutamine on peamiselt mehe otsustada	1	2	3	4	5
Rasestumisvastaste vahendite kasutamine peaks olema mõlema partneri ühine otsus	1	2	3	4	5

*Neile, kes on rasedad*

**103. Kui kaua Te olite “käänud” oma partneriga, enne kui rasedaks jäite?**

- 1 Rohkem kui aasta
- 2 7–12 kuud
- 3 2–6 kuud
- 4 Umbes kuu
- 5 Umbes nädal
- 6 See oli juhuslik vahekord
- 7 Ma ei tea, kellest rasedaks jäin

*Neile, kes on rasedad*

**104. Mida Te tunnete partneri suhtes, kellest rasedaks jäite?**

- 1 Armastan teda
- 2 Pean teda sõbraks
- 3 Tunnen teda vähe
- 4 Ei tundnud teda üldse

*Neile, kes on rasedad*

**105. Kas Te jätkate suhet oma partneriga?**

- 1 Ei
- 2 Jah
- 3 Ei tea

*Neile, kes on rasedad*

**106. Kas Te olete arutanud kellegagi raseduse katkestamise võimalust?**

- 1 Ei => jätkake küsimusega 108
- 2 Jah

*Neile, kes on rasedad*

**107. Kellega Te arutasite võimalust rasedus katkestada?**

(Vajadusel valige mitu vastust)

- 1 Oma partneriga
- 2 Isaga
- 3 Emaga
- 4 Mõne teise perekonnaliikmega ..... (Kellega?)
- 5 Sõbrannaga
- 6 Kellegi muuga ..... (Kellega?)

*Neile, kes on rasedad*

**108. Kas keegi soovitas Teil rasedus katkestada / veenis Teid rasedust katkestama?**

- 1 Ei => jätkake küsimusega 110
- 2 Jah

*Neile, kes on rasedad*

**109. Kes soovitas Teil rasedus katkestada / veenis Teid rasedust katkestama?**

- 1 Partner
- 2 Isa
- 3 Ema
- 4 Mõni teine perekonnaliige
- 5 Sõbranna
- 6 Keegi muu ..... (Kes?)

*Neile, kes on rasedad*

**110. Kui Te planeerite raseduse katkestada, siis mis on selle põhjus?**

- 1 Olen liiga noor sünnitamiseks
- 2 Lapse isa pole see, kellega tahaksin alatiseks kokku jääda
- 3 Soovin jätkata õpinguid
- 4 Majanduslik olukord ei luba sünnitada
- 5 Partner soovis nii
- 6 Muu põhjus ..... (Mis?)

*Neile, kes on rasedad:*

**111. Kui Te planeerite sünnitada, siis mis on selle põhjus?**

- 1 Soovin emaks saada
- 2 Siis oleks mul oma perekond
- 3 Abort on vastuolus minu põhimõtetega
- 4 Planeerisin raseduse katkestada, aga enam ei saanud
- 5 Vanemad veensid
- 6 Muu põhjus ..... (Mis?)

**SUUR TÄNU VASTUSTE EEST!**

## REFERENCES

- Abigail W, Power C. 2008. A systematic review of trend studies of women seeking termination of pregnancy. *J Clin Nurs* 17:2951–2962.
- Abu-Heija A, Ali AM, Al-Dakheil S. 2002. Obstetrics and perinatal outcome of adolescent nulliparous pregnant women. *Gynecol Obstet Invest* 53:90–92.
- Amini SB, Catalano PM, Dierker LJ, et al. 1996. Births to teenagers: Trends and obstetric outcomes. *Obstet Gynecol* 87:668–674.
- Amy JJ. 2006. Management of severe postpartum haemorrhage: an updated protocol. *Eur Clinics Obstet Gynaecol* 2:146–155.
- Ananth CV, Platt RW. 2004. Reexamining the effects of gestational age, fetal growth, and maternal smoking on neonatal mortality. *BMC Pregnancy Childbirth* 4:22.
- Ananth CV, Smulian JC, Vintzileos AM. 1997. The association of placenta previa with history of cesarean delivery and abortion: a metaanalysis. *Am J Obstet Gynecol* 177:1071–1078.
- Ancel PY, Lelong N, Papiernik E, et al. 2004. History of induced abortion as a risk factor for preterm birth in European countries: results of the EUROPOP survey. *Hum Reprod* 19:734–740.
- Anda RF, Chapman DP, Felitti VJ, et al. 2002. Adverse childhood experiences and risk of paternity in teen pregnancy. *Obstet Gynecol* 100:37–45.
- Anderson B, Katus K, Puur A, et al. 1993. Characteristics of women having abortions in Estonia. *International Population Conference Vol 1*. Montreal: IUSSP.
- Anderson B, Katus K, Puur A, et al. 1994. The validity of survey responses on abortion: evidence from Estonia. *Demography* 31:115–131.
- Andersson-Ellstrom A, Forssman L, Milsom I. 1996. Age of sexual debut related to life-style and reproductive health factors in a group of Swedish teenage girls. *Acta Obstet Gynecol Scand* 75:484–489.
- Atkins R. 2008. The association of childhood personality on sexual risk taking during adolescence. *J Sch Health* 78:594–600.
- Atrash HK, Strauss LT, Kendrick JS, et al. 1997. The relation between induced abortion and ectopic pregnancy. *Obstet Gynecol* 89:512–518.
- Bais JMJ, Eskes M, Pel M, et al. 2004. Postpartum haemorrhage in nulliparous women: incidence and risk factors in low and high risk women. A Dutch population-based cohort study on standard ( $\geq 500$  ml) and severe ( $\geq 1000$  ml) postpartum haemorrhage. *Eur J Obstet Gynecol Reprod Biol* 115:166–172.
- Barrett G, Wellings K. 2000. Understanding pregnancy intentions: a problem in evidence everywhere. *Fam Plann Perspect* 32:194.
- Bearinger LH, Sieving RE, Ferguson J, et al. 2007. Adolescent health 2 – Global perspectives on the sexual and reproductive health of adolescents: patterns, prevention, and potential. *Lancet* 369:1220–1231.
- Beuker JM, Erwich JJHM, Khong TY. 2005. Is endomyometrial injury during termination of pregnancy or curettage following miscarriage the precursor to placenta accreta? *J Clin Pathol* 58:273–275.
- Blinn-Pike L, Berger T, Dixon D, et al. 2002. Is there a causal link between maltreatment and adolescent pregnancy? A literature review. *Perspect Sex Reprod Health* 34:68–75.

- B-Lynch C, Keith LG, Lalonde AB, et al., editors. 2006. A textbook of postpartum hemorrhage. A comprehensive guide to evaluation, management and surgical intervention. Duncow: Sapiens Publishing.
- Bóasdóttir SA. 2007. Pleasure and health. Feminist theological discourse on sexuality, religion and ethics. *Journal of the European Society of Women in Theological Research* 15:89–102.
- Bonell CP, Strange VJ, Stephenson JM, et al. 2003. Effect of social exclusion on the risk of teenage pregnancy: development of hypotheses using baseline data from a randomised trial of sex education. *J Epidemiol Community Health* 57:871–876.
- Brown JS, Adera T, Masho SW. 2008. Previous abortion and the risk of low birth weight and preterm births. *J Epidemiol Community Health* 62:16–22.
- Bruyniks NP. 1994. Reproductive health in central and eastern Europe: priorities and needs. *Patient Educ Couns* 23:203–215.
- Bukulmez O, Deren O. 2000. Perinatal outcome in adolescent pregnancies: a case-control study from a Turkish university hospital. *Eur J Obstet Gynecol Reprod Biol* 88:207–212.
- Buse K, Martin-Hilber A, Widyantoro N, et al. 2006. Management of the politics of evidence-based sexual and reproductive health policy. *Lancet* 368:2101–2103.
- Chandra PC, Schiavello HJ, Ravi B, et al. 2002. Pregnancy outcomes in urban teenagers. *Int J Gynaecol Obstet* 79:117–122.
- Chang SC, O'Brien KO, Nathanson MS, et al. 2003. Characteristics and risk factors for adverse birth outcomes in pregnant black adolescents. *J Pediatr* 143:250–257.
- Coall DA, Chisholm JS. 2003. Evolutionary perspectives on pregnancy: maternal age at menarche and infant birth weight. *Soc Sci Med* 57:1771–1781.
- Combs CA, Murphy EL, Laros RK Jr. 1991. Factors associated with postpartum hemorrhage with vaginal birth. *Obstet Gynecol* 77:69–76.
- Conde-Agudelo A, Belizán JM, Lammers C. 2005. Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. *Am J Obstet Gynecol* 192:342–349.
- Cook RJ, Dickens BM, Fathalla MF. 2003. Reproductive health and human rights. Integrating medicine, ethics and law. New York: Oxford University Press.
- Cowden AJ, Funkhouser E. 2001. Adolescent pregnancy, infant mortality, and source of payment for birth: Alabama residential live births, 1991–1994. *J Adolesc Health* 29:37–45.
- Cunnington A. 2001. What's so bad about teenage pregnancy? *J Fam Plann Reprod Health Care* 27:36–41.
- Daguerre A, Nativel C, editors. 2006. When children become parents. Welfare state responses to teenage pregnancy. Bristol: The Policy Press.
- Darroch JE, Singh S, Frost JJ, et al. 2001a. Differences in teenage pregnancy rates among five developed countries: the roles of sexual activity and contraceptive use. *Fam Plann Perspect* 33:244–250, 281.
- Darroch JE, Frost JJ, Singh S, et al. 2001b. Teenage sexual and reproductive behavior in developed countries. Can more progress be made? Occasional report No 3. The Alan Guttmacher Institute.
- Dickson N, Paul C, Herbison P, et al. 1998. First intercourse: age, coercion and later regrets reported by a birth cohort. *BMJ* 316:29–33.
- DiClemente RJ, Wingood GM, Crosby RA, et al. 2001. A prospective study of psychological distress and sexual risk behavior among black adolescent females. *Pediatrics* 108:e85.

- Dixon-Mueller R. 2008. How young is “too young”? Comparative perspectives on adolescent sexual, marital, and reproductive transitions. *Stud Fam Plann* 39:247–262.
- DuPleissis M, Bell R, Richards T. 1997. Adolescent pregnancy: understanding the impact of age and race on outcomes. *J Adolesc Health* 20:187–197.
- Edgardh K. 2000. Sexual behaviour and early coitarche in a national sample of 17-year-old Swedish girls. *Sex Transm Infect* 76:98–102.
- Edgardh K. 2002. Adolescent sexual health in Sweden. *Sex Transm Infect* 78:352–356.
- Edgardh K, Lewin B, Nilsson BR. 1999. Sexual experience and behaviour as reported by 17-year-old girls and boys in Sweden. *Scand J Sex* 2:41–60.
- Eesti Naistearstide Selts. 2002. [Estonian Gynaecologists’ Society.] (In Estonian) <http://www.ens.ee>
- Eesti Statistikaamet. 2002. 2000. aasta rahva ja eluruumide loendus [Statistical Office of Estonia. 2000 Population and Housing Census.] (In Estonian) <http://gatekeeper.stat.ee:8000/pxweb.2001/dialog/statfilere.asp>
- Eure CR, Lindsay MK, Graves WL. 2002. Risk of adverse pregnancy outcomes in young adolescent parturients in an inner-city hospital. *Am J Obstet Gynecol* 186:918–920.
- Evans A. 2001. The influence of significant others on Australian teenagers’ decisions about pregnancy resolution. *Fam Plann Perspect* 33:224–230.
- Flett GMM, Templeton A. 2002. Surgical abortion. *Best Pract Res Clin Obstet Gynaecol* 16:247–261.
- Ford JB, Roberts CL, Simpson JM, et al. 2007. Increased postpartum hemorrhage rates in Australia. *Int J Gynecol Obstet* 98:237–243.
- Francoeur RT, Noonan RJ, editors. 2003. *World Encyclopedia of Sexuality*. New York, London: The Continuum International Publishing Group.
- Frank PI, McNamee R, Hannaford PC, et al. 1991. The effect of induced abortion on subsequent pregnancy outcome. *Br J Obstet Gynaecol* 98:1015–1024.
- Fraser AM, Brockert JE, Ward RH. 1995. Association of young maternal age with adverse reproductive outcomes. *N Engl J Med* 332:1113–1117.
- Frost J, Oslak S. 1999. Teenagers’ pregnancy intentions and decisions: a study of young women in California choosing to give birth. The Alan Guttmacher Institute.
- Furstenberg FF. 2003. Teenage childbearing as a public issue and private concern. *Annu Rev Sociol* 29:23–39.
- Gilbert WM, Jandial D, Field NT, et al. 2004. Birth outcomes in teenage pregnancies. *J Matern Fetal Neonatal Med* 16:265–270.
- Gissler M, Karro H, Tellmann A, et al. 2000. Births in Finland and Estonia from 1992–1996: convergent differences? *Br J Obstet Gynaecol* 107:179–185.
- Gissler M, Vuori E, Rasimus A, et al. 2002. *Lisääntymistilastot 2000. Statistikkiraport*. Helsinki: STAKES.
- Glasier A, Gulmezoglu AM, Schmid GP, et al. 2006. Sexual and reproductive health 1 – Sexual and reproductive health: a matter of life and death. *Lancet* 368:1595–1607.
- Gluckman PD, Hanson MA. 2006. Evolution, development and timing of puberty. *Trends Endocrinol Metab* 17:7–12.
- Gortzak-Uzan L, Hallak M, Press F, et al. 2001. Teenage pregnancy: risk factors for adverse perinatal outcome. *J Matern Fetal Med* 10:393–397.
- Haavio-Mannila E, Kontula O. 2001. *Seksin trendit meillä ja naapureissa*. (In Finnish) Helsinki: Werner Söderström OY.

- Haavio-Mannila E, Kontula O. 2003. Single and double sexual standards in Finland, Estonia, and St. Petersburg. *J Sex Res* 40:36–49.
- Haavio-Mannila E, Rotkirch A. 1997. Generational and gender differences in sexual life in St. Petersburg and urban Finland. *Yearb Popul Res Finl* 34:133–160.
- Haavio-Mannila E, Kontula O, Rotkirch A. 2002. Sexual lifestyles in the twentieth century. A research study. Hampshire, New York: Palgrave.
- Haavio-Mannila E, Rotkirch A, Kontula O. 2005. Contradictory trends in sexual life in St. Petersburg, Estonia, and Finland. In: Stulhofer A, Sandfort T, editors. *Sexuality and gender in postcommunist eastern Europe and Russia*. New York, London, Oxford: The Haworth Press.
- Haavio-Mannila E, Kontula O, Poolamets O, et al., editors. 2006. *Seksuuaalsus Eestis. Ajalugu. Tänapäev. Arengud [Sexuality in Estonia. History. Present. Developments.]* (In Estonian) Tallinn: Eesti Akadeemiline Seksoloogia Selts.
- Hanna B. 2001. Negotiating motherhood: the struggles of teenage mothers. *J Adv Nurs* 34:456–464.
- Harlow BL, Cohen LS, Otto MW, et al. 2004. Early life menstrual characteristics and pregnancy experiences among women with and without major depression: the Harvard study of moods and cycles. *J Affect Disord* 79:167–176.
- Hediger ML, Scholl TO, Schall JI, et al. 1997. Young maternal age and preterm labor. *Ann Epidemiol* 7:400–406.
- Heikinheimo O, Gissler M, Suhonen S. 2008. Age, parity, history of abortion and contraceptive choices affect the risk of repeat abortion. *Contraception* 78:149–154.
- Henriet L, Kaminski M. 2001. Impact of induced abortions on subsequent pregnancy outcome: the 1995 French national perinatal survey. *Br J Obstet Gynaecol* 108:1036–1042.
- Henshaw SK. 1998. Unintended pregnancy in the United States. *Fam Plann Perspect* 30:24–29, 46.
- Hillis SD, Anda RF, Felitti VJ, et al. 2001. Adverse childhood experiences and sexual risk behaviors in women: a retrospective cohort study. *Fam Plann Perspect* 33:206–211.
- Hogue CJR, Cates W, Tietze C. 1983. Impact of vacuum aspiration abortion on future childbearing: a review. *Fam Plann Perspect* 15:119–126.
- Holmberg L, Berg-Kelly K. 2002. Health, health-compromising behaviour, sexuality and involvement in pregnancy among 18-year-old Swedish males: a cross-sectional survey. *Acta Paediatr* 91:838–843.
- Holzgrevé W. 2007. Obstetrics in a globalized world. *Int J Gynecol Obstet* 98:203–204.
- Imamura M, Tucker J, Hannaford P, et al. 2006. REPROSTAT 2: a systematic review of factors associated with teenage pregnancy in the European Union. University of Aberdeen.
- Imamura M, Tucker J, Hannaford P, et al. 2007. Factors associated with teenage pregnancy in the European Union countries: a systematic review. *Eur J Public Health* 17:630–6.
- Johnson LG, Mueller BA, Daling JR. 2003. The relationship of placenta previa and history of induced abortion. *Int J Gynaecol Obstet* 81:191–198.
- Jolly MC, Sebire N, Harris J, et al. 2000. Obstetric risks of pregnancy in women less than 18 years old. *Obstet Gynecol* 96:962–966.
- Kahn JA, Rosenthal SL, Succop PA, et al. 2002. Mediators of the association between age of first sexual intercourse and subsequent human papillomavirus infection. *Pediatrics* 109:e5.

- Kalling K. 2005. Abort sõjaeelses Eestis – legaliseerimisest keelustamiseni. [Abortions in pre-war Estonia – from legalisation to prohibition.] (in Estonian with English summary) *Eesti Arst* 84:359–365.
- Karro H. 1999. Reproductive health and pregnancy outcome in Estonia: association with different factors. *Dissertationes medicinae universitatis Tartuensis* 57. Tartu: Tartu University.
- Katus K, Puur A, Sakkeus L. 1995. Estonian Family and Fertility Survey. Standard tabulations. Tallinn: Estonian Interuniversity Population Research Center.
- Katus K, Puur A, Põldma A. 2002. Cohort population development in Estonia. Tallinn: Estonian Interuniversity Population Research Center.
- Katus K, Puur A, Põldma A. 2008. Estonian Family and Fertility Survey. Second round. Standard tabulations. Tallinn: Estonian Interuniversity Population Research Center.
- Kayem G, Grange G, Schmitz T. 2006. Clinical aspects and management of morbidly adherent placenta. *Eur Clinics Obstet Gynaecol* 2:139–145.
- Ketting, E. 1996. Sexual health is something different. *Choices* 25:2.
- Ketting E, Visser AP. 1994. Contraception in the Netherlands: the low abortion rate explained. *Patient Educ Couns* 23:161–171.
- Khong TY, Healy DL, McCloud PI. 1991. Pregnancies complicated by abnormally adherent placenta and sex ratio at birth. *BMJ* 302:625–626.
- Knudsen LB, Gissler M, Bender SS, et al. 2003. Induced abortion in the Nordic countries: special emphasis on young women. *Acta Obstet Gynecol Scand* 82:257–268.
- Kontula O. 2003. Trends in teenage sexual behaviour: pregnancies, sexually transmitted infections and HIV infections in Europe. *European Population Papers Series No 14*. Strasbourg: Council of Europe. The European Population Committee.
- Kontula O, Haavio-Mannila E. 1995. *Sexual pleasures. Enhancement of sex life in Finland, 1971–1992*. Aldershot: Dartmouth Publishing Company.
- Kontula O, Rimpelä M, Ojanlatva A. 1992. Sexual knowledge, attitudes, fears and behaviours of adolescents in Finland (the KISS-study). *Health Educ Res* 7:69–76.
- Kosunen E. 1996. Adolescent reproductive health in Finland: oral contraception, pregnancies and abortions from the 1980s to the 1990s. Academic dissertation. Tampere: University of Tampere.
- Kosunen E, Laippala P. 1996. Factors related to choosing oral contraception at age 15. *Health Educ Res* 11:443–451.
- Koupil I, Rahu K, Rahu M, et al. 2007. Major improvements, but persisting inequalities in infant survival in Estonia 1992–2002. *Eur J Public Health* 17:8–16.
- Koupilova I, Rahu K, Rahu M, et al. 2000. Social determinants of birthweight and length of gestation in Estonia during the transition to democracy. *Int J Epidemiol* 29:118–124.
- Krymko H, Bashiri A, Smolin A et al. 2004. Risk factors for recurrent preterm delivery. *Eur J Obstet Gynecol Reprod Biol* 113:160–163.
- Langer A. 2006. Cairo after 12 years: successes, setbacks and challenges. *Lancet* 368:1552–1554.
- Lao TT, Ho LF. 1997. The obstetric implications of teenage pregnancy. *Hum Reprod* 12:2303–2305.
- Lao TT, Ho LF. 1998a. Obstetric outcome of teenage pregnancies. *Hum Reprod* 13:3228–3232.
- Lao TT, Ho LF. 1998b. Induced abortion is not a cause of subsequent preterm delivery in teenage pregnancies. *Hum Reprod* 13:758–761.

- Lawlor DA, Shaw M. 2002. Too much too young? Teenage pregnancy is not a public health problem. *Int J Epidemiol* 31:552–554.
- Lazarus JV, Nadisauskiene RJ, Liljestrand J. 2004. Observations on reproductive health programs in the Baltic states. *Int J Gynaecol Obstet* 87:277–280.
- Leinsalu M, Grintšak M, Noorkõiv R. 1999. Estonian Health Interview Survey. Tables. Tallinn: Institute of Experimental and Clinical Medicine.
- Lien L, Dalgard F, Heyerdahl S, et al. 2006. The relationship between age of menarche and mental distress in Norwegian adolescent girls and girls from different immigrant groups in Norway: results from an urban city cross-sectional survey. *Soc Sci Med* 63:285–295.
- Lõhmus L, Trummal A. 2005. Knowledge, attitudes and behaviour related to HIV/AIDS among Estonian youth. Survey report. (In Estonian) Tallinn: National Institute for Health Development.
- Lõhmus L, Trummal A. 2007. Knowledge, attitudes and behaviour related to HIV/AIDS among Estonian youth. Survey report. (In Estonian) Tallinn: National Institute for Health Development.
- Lõhmus L, Trummal A, Harro M. 2003. Knowledge, attitudes and behaviour related to HIV/AIDS among Estonian youth. Survey report. Tallinn: National Institute for Health Development.
- Lottes I, Kontula O, editors. 2000. New views on sexual health: the case of Finland. Helsinki: The Population Research Institute – The Family Federation of Finland.
- Madisson H, Madisson O. 1929. Sugemeid meie noorsoo suguelu algusest. Seksuaalküsimuse selgitamine lastele. [About the beginning of sexual life of our youth. How to explain sexuality-related issues to our children.] (In Estonian) Tartu: Eesti Tervishoiu Muuseum.
- Magann EF, Evans S, Chauhan SP, et al. 2005. The length of the third stage of labor and the risk of postpartum haemorrhage. *Obstet Gynecol* 105:290–293.
- Mäkikyrö T, Hakko H, Timonen MJ, et al. 2004. Smoking and suicidality among adolescent psychiatric patients. *J Adolesc Health* 34:250–253.
- Manlove J, Terry E, Gitelson L, et al. 2000. Explaining demographic trends in teenage fertility, 1980–1995. *Fam Plann Perspect* 32:166–175.
- Marston C, King E. 2006. Factors that shape young people's sexual behaviour: a systematic review. *Lancet* 368:1581–1586.
- McLeod A. 2001. Changing patterns of teenage pregnancy: population based study of small areas. *BMJ* 323:199–203.
- Mesleh RA, Al-Aql AS, Kurdi AM. 2001. Teenage pregnancy. *Saudi Med J* 22:864–867.
- Moreau C, Kaminski M, Ancel PY, et al. 2005. Previous induced abortions and the risk of very preterm delivery: results of the EPIPAGE study. *Br J Obstet Gynaecol* 112:430–437.
- Narring F, Michaud PA, Sharma V. 1996. Demographic and behavioral factors associated with adolescent pregnancy in Switzerland. *Fam Plann Perspect* 28:232–236.
- NOMESCO. 2000. Nordic/Baltic health statistics 1999. Copenhagen: NOMESCO.
- Orvos H, Nyirati I, Hajdu J, et al. 1999. Is adolescent pregnancy associated with adverse perinatal outcome? *J Perinat Med* 27:199–203.
- Otterblad Olausson P, Cnattingius S, Goldenberg RL. 1997. Determinants of poor pregnancy outcomes among teenagers in Sweden. *Obstet Gynecol* 89:451–457.

- Otterblad Olausson P, Cnattingius S, Haglund B. 1999. Teenage pregnancies and risk of late fetal death and infant mortality. *Br J Obstet Gynaecol* 106:116–121.
- Otterblad Olausson P, Cnattingius S, Haglund B. 2001a. Does the increased risk of preterm delivery in teenagers persist in pregnancies after the teenage period? *Br J Obstet Gynaecol* 108:721–725.
- Otterblad Olausson P, Haglund B, Ringbäck G, et al. 2001b. Teenage childbearing and long-term socio-economic consequences: a case study in Sweden. *Fam Plann Perspect* 33:70–74.
- Overpeck MD, Brenner RA, Trumble AC, et al. 1998. Risk factors for infant homicide in the United States. *N Engl J Med* 339:1211–1216.
- Paavola M, Vartiainen E, Haukkala A. 2004. Smoking, alcohol use, and physical activity: a 13-year longitudinal study ranging from adolescence into adulthood. *J Adolesc Health* 35:238–244.
- PAHO, WHO. 2001. Promotion of sexual health. Recommendations for action.
- Pallitto CC, Murillo V. 2008. Childhood abuse as a risk factor for adolescent pregnancy in El Salvador. *J Adolesc Health* 42:580–586.
- Papp K. 1997. Knowledge of sexual issues, moral beliefs and sexual experiences among adolescents in Estonia and Finland. Academic dissertation. Jyväskylä: STAKES.
- Papp K, Part K, Tõrik S. 2001. Noorsoouuring KISS. [The Youth Sexual Maturation Survey KISS.] (In Estonian with English summary) Tartu: Estonian Family Planning Association.
- Pärna K, Rahu M, Youngman LD, et al. 2005. Self-reported and serum cotinine-validated smoking in pregnant women in Estonia. *Matern Child Health J* 4:385–392.
- Part K, Laanpere M, Rahu K, et al. 2007. Estonian women's health: sexual and reproductive health, health behavior, attitudes and use of health care services. Survey report. Tartu: University of Tartu. Department of Obstetrics and Gynaecology.
- Part K, Rahu K, Rahu M, et al. 2008. Factors associated with Estonian adolescents' sexuality-related knowledge: Findings from the 1994 and 1999 KISS studies. *Eur J Contracept Reprod Health Care* 13:173–81.
- Patton GC, Viner R. 2007. Adolescent health 1 – Pubertal transitions in health. *Lancet* 369:1130–1139.
- Paul C, Fitzjohn J, Herbison P, et al. 2000. The determinants of sexual intercourse before age 16. *J Adolesc Health* 27:136–147.
- Petersen LA, Lindner DS, Kleiber CM, et al. 2002. Factors that predict low hematocrit levels in the postpartum patient after vaginal delivery. *Am J Obstet Gynecol* 186:737–744.
- Phipps MG, Sowers M. 2002. Defining early adolescent childbearing. *Am J Public Health* 92:125–128.
- Phipps MG, Blume JD, DeMonner SM. 2002a. Young maternal age associated with increased risk of postneonatal death. *Obstet Gynecol* 100:481–486.
- Phipps MG, Sowers M, Demonner SM. 2002b. The risk for infant mortality among adolescent childbearing groups. *J Womens Health* 11:889–897.
- Popov AA, Visser AP, Ketting E. 1993. Contraceptive knowledge, attitudes, and practice in Russia during the 1980s. *Stud Fam Plann* 24:227–235.
- Prager SW, Steinauer JE, Foster DG, et al. 2007. Risk factors for repeat elective abortion. *Am J Obstet Gynecol* 197:575.e1–575.e6.
- Quinlivan JA, Evans SF. 2004. Teenage antenatal clinics may reduce the rate of preterm birth: a prospective study. *Br J Obstet Gynaecol* 111:571–578.

- Raatikainen K, Heiskanen N, Verkasalo PK, et al. 2006a. Good outcome of teenage pregnancies in high-quality maternity care. *Eur J Public Health* 16:157–161.
- Raatikainen K, Heiskanen N, Heinonen S. 2006b. Induced abortion: not an independent risk factor for pregnancy outcome, but a challenge for health counseling. *Ann Epidemiol* 16:587–592.
- Riigikogu. 1998. Raseduse katkestamise ja steriliseerimise seadus. [Termination of pregnancy and sterilization act.] Elektrooniline Riigi Teataja. <http://www.riigiteataja.ee/ert/act.jsp?id=13111320>
- Riigikogu. 2002. Karistusseadustik. [Punishment legislation.] Elektrooniline Riigi Teataja. <http://www.riigiteataja.ee/ert/act.jsp?id=184411>
- Robinson JN, Regan JA, Norwitz ER. 2001. The epidemiology of preterm labor. *Semin Perinatol* 25:204–214.
- Rock EM, Ireland M, Resnick MD. 2003. To know that we know what we know: perceived knowledge and adolescent sexual risk behavior. *J Adolesc Health* 32:146–147.
- Rohtmets A, Karro H, Baburin A, et al. 2003. Eesti sünnitusabi suundumused 1992–2001 [Trends in promoting maternal and neonate health condition 1992–2001.] (In Estonian with English summary) *Eesti Arst* 82:234–238.
- Ross D, Dick B, Ferguson J, editors. 2006. Preventing HIV/AIDS in young people: a systematic review of the evidence from developing countries: UNAIDS interagency task team on HIV and young people. Geneva: WHO.
- Ruusuvaara LR. 1986. Teenage abortions. Family background, sexual experience and contraceptive use. Academic dissertation. Helsinki: Departments I and II of Obstetrics and Gynaecology University Central Hospital.
- Santelli JS, Brener ND, Lowry R, et al. 1998. Multiple sexual partners among US adolescents and young adults. *Fam Plann Perspect* 30:271–275.
- Scholl TO, Hediger ML, Salmon RW, et al. 1989. Association between low gynaecological age and preterm birth. *Paediatr Perinat Epidemiol* 3:357–366.
- Scholl TO, Hediger ML, Huang J, et al. 1992. Young maternal age and parity. Influences on pregnancy outcome. *Ann Epidemiol* 2:565–575.
- Seamark C. 2001. Design or accident? The natural history of teenage pregnancy. *J R Soc Med* 94:282–285.
- Sedgh G, Henshaw S, Singh S, et al. 2007a. Induced abortion: estimated rates and trends worldwide. *Lancet* 370:1338–1345.
- Sedgh G, Henshaw SK, Singh S, et al. 2007b. Legal abortion worldwide: Incidence and recent trends. *Int Fam Plan Perspect* 33:106–116.
- Shah NR, Bracken MB. 2000. A systematic review and meta-analysis of prospective studies on the association between maternal cigarette smoking and preterm delivery. *Am J Obstet Gynecol* 182:465–472.
- Shaw D, Faundes A. 2006. What is the relevance of women's sexual and reproductive rights to the practising obstetrician/gynaecologist? *Best Pract Res Clin Obstet Gynaecol* 20:299–309.
- Sheiner E, Sarid L, Levy A, et al. 2005. Obstetric risk factors and outcome of pregnancies complicated with early postpartum hemorrhage: a population-based study. *J Matern Fetal Neonatal Med* 18:149–154.
- Short MB, Rosenthal SL. 2008. Psychosocial development and puberty. *Ann N Y Acad Sci* 1135:36–42.
- Singh S, Darroch JE. 2000. Adolescent pregnancy and childbearing: levels and trends in developed countries. *Fam Plann Perspect* 32:14–23.

- Singh S, Wulf D, Samara R, et al. 2000. Gender differences in the timing of first intercourse: data from 14 countries. *Int Fam Plan Perspect* 26:21–28, 43.
- Singh S, Darroch JE, Frost JJ, et al. 2001. Socio-economic disadvantage and adolescent women's sexual and reproductive behavior: the case of five developed countries. *Fam Plann Perspect* 33:251–258, 289.
- Skjeldestad FE, Gargiullo PM, Kendrick JS. 1997. Multiple induced abortions as risk factor for ectopic pregnancy. *Acta Obstet Gynecol Scand* 76:691–696.
- Smith GCS, Pell JP. 2001. Teenage pregnancy and risk of adverse perinatal outcomes associated with first and second births: population based retrospective cohort study. *BMJ* 323:476–479.
- STAKES. 2007. Nordic statistics on induced abortions 2005. Statistical Summary 1/2007. <http://www.stakes.fi/EN/tilastot/statisticsbytopic/reproduction/nordabortions.htm>
- STAKES. 2008. Induced abortions and sterilisations 2007 – preliminary data. [http://www.stakes.fi/tilastot/tilastotiedotteet/2008/Tt12\\_08.pdf](http://www.stakes.fi/tilastot/tilastotiedotteet/2008/Tt12_08.pdf)
- Stata Statistical Software: Release 8.0. 2003. College Station, TX: Stata Corporation.
- Stevens-Simon C, Kaplan DW, McAnarney ER. 1993. Factors associated with preterm delivery among pregnant adolescents. *J Adolesc Health* 14:340–342.
- Stevens-Simon C, Barrett J, McGregor JA, et al. 2000. Short cervix: a cause of preterm delivery in young adolescents? *J Matern Fetal Med* 9:342–347.
- Stevens-Simon C, Beach RK, McGregor JA. 2002. Does incomplete growth and development predispose teenagers to preterm delivery? A template for research. *J Perinatol* 22:315–323.
- Stock JL, Bell MA, Boyer DK, et al. 1997. Adolescent pregnancy and sexual risk-taking among sexually abused girls. *Fam Plann Perspect* 29:200–203, 227.
- Strasburger VC, Brown RT. 1998. Adolescent medicine: a practical guide. Philadelphia: Lippincott-Raven Publishers.
- Sun YL, Che Y, Gao ES, et al. 2003. Induced abortion and risk of subsequent miscarriage. *Int J Epidemiol* 32: 449–454.
- Sundby J. 2006. Young people's sexual and reproductive health rights. *Best Pract Res Clin Obstet Gynaecol* 20:355–368.
- Sundby J, Svanemyr J, Maehre T. 1999. Avoiding unwanted pregnancy – the role of communication, information and knowledge in the use of contraception among young Norwegian women. *Patient Educ Couns* 38:11–19.
- Suzuki S. 2006. History of intrauterine curettage and placental complications. *J Matern Fetal Neonatal Med* 19:753–754.
- TAI. 2008. Raseduskatkestusandmekogu. [Pregnancy Termination Database.] <http://www.tai.ee/?id=3797>
- Tellmann A, Karro H, Serkina V. 2000. Estonian Medical Birth Registry 1992–1999. Estonian Abortion Registry 1996–1999. Tallinn: EKMI.
- Tellmann A, Karro H, Serkina V. 2001. Estonian Medical Birth Registry 1992–2000. Estonian Abortion Registry 1996–2000. Tallinn: EKMI.
- Tellmann A, Karro H, Serkina V. 2002. Estonian Medical Birth Registry 1992–2001. Estonian Abortion Registry 1996–2001. Tallinn: EKMI.
- Tellmann A, Karro H, Serkina V. 2003. Estonian Medical Birth Registry 1992–2002. Estonian Abortion Registry 1996–2002. Tallinn: National Institute for Health Development.
- Tietze C. 1975. The effect of legalization of abortion on population growth and public health. *Fam Plann Perspect* 7:123–127.

- Tietze C. 1983. Induced abortion: a world review, 1983. New York: The Population Council.
- Tietze C. 1984. The public health effects of legal abortion in the United States. *Fam Plann Perspect* 16:26–28.
- Tietze C, Jain AK. 1978. The mathematics of repeat abortion: explaining the increase. *Stud Fam Plann* 9:294–299.
- Tiit E-M, Käärik E, Tellmann A. 2001. Eesti elanike seksuaal- ja reproduktiivkäitumine. Uurimisprojekti lõpparuanne. [Sexual and reproductive behaviour of the Estonians. Final report of a research project.] (In Estonian) Tartu.
- Treffers PE, Olukoya AA, Ferguson BJ, et al. 2001. Care for adolescent pregnancy and childbirth. *Int J Gynaecol Obstet* 75:111–121.
- Tripp J, Viner R. 2005. Sexual health, contraception, and teenage pregnancy. *BMJ* 330:590–593.
- Tylee A, Haller DM, Graham T, et al. 2007. Youth-friendly primary-care services: how are we doing and what more needs to be done? *Lancet* 369:1565–1573.
- Usta IM, Zoorob D, Abu-Musa A, et al. 2008. Obstetric outcome of teenage pregnancies compared with adult pregnancies. *Acta Obstet Gynecol Scand* 87:178–183.
- Uusküla A. 2001. Epidemiology of sexually transmitted diseases in Estonia in 1990–2000. *Dissertationes medicinae Universitatis Tartuensis*. Tartu: University of Tartu.
- Valle AK, Torgersen L, Røysanb E, et al. 2005. Social class, gender and psychosocial predictors for early sexual debut among 16 year olds in Oslo. *Eur J Public Health* 15:185–194.
- van Enk WJJ, Gorissen WHM, van Enk A. 2000. Teenage pregnancy and ethnicity in the Netherlands: frequency and obstetric outcome. *Eur J Contracept Reprod Health Care* 5:77–84.
- Vetik R, editor. 2002. Estonian Human Development Report 2002. <http://www.iiss.ee/nhdr/2002>
- Vikat A, Rimpelä A, Kosunen E, et al. 2002. Sociodemographic differences in the occurrence of teenage pregnancies in Finland in 1987–1998: a follow up study. *J Epidemiol Community Health* 56:659–668.
- Virk J, Zhang J, Olsen J. 2007. Medical abortion and the risk of subsequent adverse pregnancy outcomes. *N Engl J Med* 357:648–653.
- Vorobjov S, Rahu M, Rahu K, et al. 2008. Eesti Meditsiinilise Sünniregistri andmete kvaliteet. [Data quality in the Estonian Medical Birth Registry.] (In Estonian with English summary) *Eesti Arst* 87:608–614.
- WAS. 1999. Declaration of sexual rights. <http://www.worldsexology.org>
- Waterstone W, Bewley S, Wolfe C. 2001. Incidence and predictors of severe obstetric morbidity: case-control study. *BMJ* 322:1089–1094.
- Wellings K, Kane R. 1999. Trends in teenage pregnancy in England and Wales: how can we explain them? *J R Soc Med* 92:277–282.
- Wellings K, Parker R. 2006. Sexuality education in Europe – a reference guide to policies and practices. Brussels: IPPF European Network.
- Wellings K, Wadsworth J, Johnson A, et al. 1999. Teenage fertility and life chances. *Rev Reprod* 4:184–190.
- Wellings K, Nanchahal K, Macdowall W, et al. 2001. Sexual behaviour in Britain: early heterosexual experience. *Lancet* 358:1843–1850.
- Wellings K, Collumbien M, Slaymaker E, et al. 2006. Sexual and reproductive health 2 – Sexual behaviour in context: a global perspective. *Lancet* 368:1706–1728.

- WHO. 1977. International Classification of Diseases. Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death. Ninth Revision. Geneva: WHO.
- WHO. 1992. International Statistical Classification of Diseases and Related Health Problems. Tenth Revision, Vol. 2. Geneva: WHO.
- WHO. 2001. WHO European regional strategy on sexual and reproductive health. Copenhagen: WHO.
- WHO. 2002. Adolescent friendly health services. An agenda for change. Geneva: WHO.
- WHO. 2003. Safe abortion: technical and policy guidance for health systems. Geneva: WHO.
- WHO. 2004a. Progress in reproductive health research. No 76. Geneva: WHO.
- WHO. 2004b. Reproductive health strategy to accelerate progress towards the attainment of international development goals and targets. Geneva: WHO.
- WHO. 2005a. Defining sexual health. Report of a technical consultation on Sexual Health. Geneva: WHO.
- WHO. 2005b. Integrating sexual health interventions into reproductive health programmes: experiences from developing countries. Geneva: WHO.
- WHO. 2006. Reproductive health indicators: guidelines for their generation, interpretation and analysis for global monitoring. Geneva: WHO.
- Wight D, Henderson M, Raab G, et al. 2000. Extent of regretted first intercourse among young teenagers in Scotland: a cross sectional survey. *BMJ* 44:1245–1344.
- Wood K, Aggleton P. 2005. A conceptual framework for sexual health programming. Geneva: WHO.
- Xiong X, Fraser WD, Demianczuk NN. 2002. History of abortion, preterm, term birth, and risk of preeclampsia: a population-based study. *Am J Obstet Gynecol* 187:1013–1018.
- Zavodny M. 2001. The effect of partners' characteristics on teenage pregnancy and its resolution. *Fam Plann Perspect* 33:192–199, 205.
- Zhou W, Olsen J. 2003. Are complications after an induced abortion associated with reproductive failures in a subsequent pregnancy? *Acta Obstet Gynecol Scand* 82:177–181.
- Zhou W, Sørensen HT, Olsen J. 1999a. Induced abortion and subsequent pregnancy duration. *Obstet Gynecol* 94:948–953.
- Zhou W, Gao E, Che Y, et al. 1999b. Induced abortion and duration of third stage labour in a subsequent pregnancy. *J Obstet Gynaecol* 19:349–354.
- Zhou W, Sørensen HT, Olsen J. 2000. Induced abortion and low birthweight in the following pregnancy. *Int J Epidemiol* 29:100–106.
- Zhou W, Nielsen GL, Larsen H, et al. 2001. Induced abortion and placenta complications in the subsequent pregnancy. *Acta Obstet Gynecol Scand* 80:1115–1120.

## SUMMARY IN ESTONIAN

### Noorte naiste seksuaaltervis ja -käitumine Eestis

#### Sissejuhatus

Reproduktiivtervise (RT) definitsiooni võtsid vastu 179 riigi valitsusdelegatsioonid 1994. aastal ÜRO rahvusvahelisel rahvastiku- ja arengukonverentsil Kairos. See konverents ja 1995. aasta ÜRO ülemaailmne naistekonverents Pekingis olid oluliseks murdepunktiks seksuaal- ja reproduktiivtervise (SRT) käsitlemisel. Pärast mõlemat konverentsi seadsid mitmed maailma juhtivad SRT edendamise tegelevad rahvusvahelised organisatsioonid – Maailma Seksuoloogia Assotsiatsioon, Rahvusvaheline Sünnitusabiarstide ja Günekoloogide Föderatsioon, Rahvusvaheline Pereplaneerimise Föderatsioon, Maailma Terviseorganisatsioon (MTO) – oma tegevuse prioriteedid vastavalt nende foorumite seisukohtadele. 2004. aastal võttis MTO vastu oma esimese globaalse RT strateegia. RT olukorda ja tegevuskavu hinnatakse kogu maailmas rahvusvaheliselt kokku lepitud 17 RT indikaatori põhjal.

Esmakordselt tunnistati sellise kaaluga rahvusvaheliste ürituste lõppdokumentides, et SRT ja vastavate inimõiguste (reproduktiivsete ja seksuaalsete õiguste) järgimine on otseselt seotud globaalsete rahvastikuküsimustega, nende tagamine on rahvastikupoliitika vältimatu osa ning ühiskonna majandusliku ja sotsiaalse arengu eeltingimus.

SRT valdkond erineb teistest tervise valdkondadest, sest sõltub parasjagu valdavast (seksuaal)kultuuri kontekstist ja seksuaalideoloogiast, millest omakorda oleneb kehtivate seaduste ja tervise poliitikate sisu. Globaalselt on (seksuaal)poliitikas põhjutanud enim vastuolulisust naiste õigus ja ligipääs turvalisele abordile, teismeliste seksuaalsusega seonduv ja teismeliste seksuaalsed õigused (sh õigus haridusele ja teenustele), seksuaalsuhted abielu eelset ja traditsioonilisest abielust erinevates kooseluvormides (sh samasooliste inimeste kooselu) ning indiviidi seksuaalsed õigused. Ajalooliselt on seksuaalideoloogiate kujunemist enim mõjutanud religioon.

Sotsioloog Evert Ketting (1996) leiab, et RT probleemid on eelkõige “meditsiinilised probleemid, mis on seotud raseduse, laste sünnitamise ja vastsündinuga”, samas kätkevad seksuaaltervise (ST) küsimused “protsessi, mis aitab inimestel ise otsustada oma seksuaalsuse üle ja mis aitab igal indiviidil aktsepteerida ja nautida oma seksuaalset potentsiaali. See haarab eelkõige teadmisi, enesehinnangut, identiteeti, partneriga suhtlemist ja sellega seonduvat, mitte aga diagnostikat, ravi ja meditsiinilist sekkumist”. Erinevalt Kairo definitsioonist ja tegevusprogrammist on RT-d hakatud järjest enam käsitlema seksuaaltervise (ST) osana, sest laste saamine on vaid üks seksuaalsuse osa ning ST teemad puudutavad kõiki vanuserühmi ja nii mehi kui naisi. Suure osa arenenud maade peamiseks probleemiks ei ole enam emade ja laste haigestumus ja suremus, illegaalsed abordid ega traditsioonilised suguhaigused, vaid seksuaalprob-

leemid, mis tulenevad paljuski informatsiooni ja teadmiste puudumisest (nt seksuaalse identiteedi küsimused, suhted partneriga, seksuaalne vägivald, ära kasutamine jm).

Ühiskonna tasandil määravad inimese seksuaalkäitumise ja SRT olukorra valitsev seksuaalideoloogia ja seksuaalkultuur, seksuaalhariduse ja informatsiooni olemasolu ning SRT teenuste olemasolu, kättesaadavus ja tase. Üksikisiku tasandil on seksuaalses riskikäitumises määravaks inimeste suhted perekonnas ja lähikonnas.

On leitud, et varases nooruses emakssaamine ei ole arenenud maades sotsiaalseks normiks. Teismeliste sünnitajate arv on pöördvõrdelises seoses ühiskonna rikkusega. Rikaste riikide võrdluses on näha, et mida liberaalsemad on majandussuhted ja mida väiksem on sotsiaalne toetus perekondadele, seda enam on teismelistel rasedusi ja sünnitusi. Soovimatute raseduste ja abortide väikese arvu tagavad heatasemeline seksuaalharidus, rasestumisvastaste vahendite kättesaadavus, hästi ligipääsetavad nõustamisteenused ning suhtumine abordisse kui välditavasse sündmusesse.

Enamikul teismelistel rasedatel on hea tervis ja neil ei ole kõrgenenud riske raseduse kandmiseks ja sünnituseks, võrreldes vanemate sünnitajatega. Samas on paljude uuringute andmetel teismelistel (eriti noorematel teismelistel) mitmed sünnitusnäitajad halvemad kui täiskasvanutel – enneaegse sünnituse riski tõus ja suurenenud lapsesurmarisk neonataalses ja postneonataalses perioodis. Rasedus teismeeas on seotud sotsiaalsete, majanduslike ja käitumuslike riskiteguritega, samad tegurid on ka iseseisvalt seotud enneaegsuse ja lapsesurmaga. Siit tõstatub küsimus, kui suur on nendes riskides vanuse ja kui suur sotsiaalse tausta osa.

Perekondlik taust (mõlema vanema olemasolu, ema haridus, pere sotsiaal-majanduslik olukord), noore hariduspüüdlused ja -võimalused, teadmiste tase, individuaalne psühholoogiline/kognitiivne areng ja enesehinnang, rasestumisvastaste vahendite kättesaadavus on need isiklikud ja lähikondlikud tegurid, mis on seotud seksuaalelu alustamise aja, kontratseptsiooni kasutamise ja rasedusega teismeeas.

Sarnaselt paljude teiste Ida-Euroopa maadega polnud Eestis kuni 1990. aastateni kättesaadavad tõhusad rasestumisvastased vahendid, informatsioon nende kohta ja vastavate teenuste kvaliteet oli puudulik. See oli põhjuseks, et viljakuse kontrolli peamiseks meetodiks kujunes soovimatu raseduse katkestamine. Seega oli abordil naise elus mõneti teistsugune tähendus – abort kuulus enamiku naiste (seksuaal)ellu – kui madala aborditasemega maades. Õigus soovimatu rasedus ohutult katkestada on üks naiste seksuaalsetest õigustest. Abort on üks sagedasemaid ja legaalsel tingimustel ka ohutumaid kirurgilisi protseduure günekoloogias. Samas pole ükski kirurgiline sekkumine täiesti ilma tüsistusteta. Olemasolevate uuringute põhjal ei saa teha lõplikke järeldusi abordi mõjust järgneva sünnitusega seotud riskidele. Rahva tervise seisukohast on nende riskide tähtsus madala ja kõrge aborditasemega maades ilmselt erinev.

Alates 1991. aastast on Eestis aset leidnud märkimisväärsed sotsiaal-majanduslikud muutused ning tervishoiu- ja haridusreform. Erinevalt varasematest kümnenditest on toimunud mitmed soodsad arengud, mis mõjutavad inimeste seksuaalkäitumist ja -tervist. Koolides on alates 1996. aastast inimeseõpetuse programmi raames kohustuslikud seksuaalkasvatuse tunnid, homoseksuaalsus on dekriminaliseeritud, kättesaadavad on tänapäevased tõhusad rasestumisvastased vahendid, hormonaalsed kontratseptiivid on haigekassa 50%lise soodustusega ravimite nimekirjas, hädaabipillid on (alates aastast 2003) apteegis saadaval ilma arsti retseptita, paranenud on SRT teenuste kasutamise võimalus, sünnitusabi ja neonataalne abi on tänapäevaselt ümber korraldatud. Samas on süvenenud ühiskonna polariseerumine. Nendel muutustel on olnud SRT-le nii positiivne kui negatiivne mõju. Märkimisväärselt on suurenenud esmasseksuaalvahekorras kondoomi kasutanute hulk. Nii abortide üldarv kui abortiivsuskordaja on alates taasiseseisvumisest vähenenud enam kui poole võrra, perinataalsuremuskordaja on vähenenud üle kolme korra. Jätkuv väljakutse on HIV-epideemia. Nii nagu muudes tervise valdkondades, määrab inimese seksuaal(tervise)käitumise ja SRT olukorra inimese sotsiaalne staatus – milline on tema enda ja tema perekonna hariduslik ning sotsiaal-majanduslik taust.

Eestis on alates 1990. aastate algusest rutiinselt kogutud teavet mitmete SRT indikaatorite kohta (seksuaalsel teel levivad haigused, sh HIV, abortide üldarv, sünnitusabinäitajad, teismeliste rasedused jm). Vähem teatakse mitmetest teistest olulistest valdkondadest (kontratseptsiooni kasutamine, viljatuse epidemioloogia, seksuaalvägivald, seksuaalhäired, rahulolu teenuste kättesaadavuse ja kvaliteediga, teguritest, mis mõjutavad teismeliste seksuaalkäitumist jm). SRT küsimused ei puuduta üksnes naisi – inimese seksuaalsus avaldub peaaesjalikult paarisuhtes ning selle võimalik mõju inimese tervisele sõltub mõlema partneri hoiakutest ja käitumisest.

## Töö eesmärk

Töö üldeesmärk oli saada lisateadmisi noorte naiste seksuaaltervise ja -käitumise kohta Eestis.

Uurimistöö erieesmärgid olid järgmised.

1. Analüüsida suundumusi teismeliste raseduste – sünnituste ja indutseeritud abortide – esinemises kiirete sotsiaal-majanduslike muutustega perioodil aastatel 1992–2001 (artikkel II).
2. Hinnata teismelise sünnitaja vanuse efekti perinataalsele tulemile – lapse madalale sünnikaalule, enneaegsele sünnitusele, surnultsünnile, lapse neonataalsele ja postneonataalsele surmale (artikkel III).
3. Uurida teismeliste planeerimata rasedustega seotud individuaalseid ja perekondlikke tegureid (artikkel IV).
4. Hinnata eelneva indutseeritud aborti seost platsentaarperioodi tüsistustega (artikkel V).

## Materjalid ja meetodid

Käesolev töö põhineb Eesti Meditsiinilise Sünniregistri (EMSR; artiklid II, III, V), Eesti Abordiregistri (EAR; alates 1998 Raseduskatkestusandmekogu; artikkel II) ja küsitlusuuringu (artikkel IV) andmetel. Teismeliste abordi- statistika aastatel 1992–1995 pärineb endisest Eesti Meditsiinistatistika Büroost.

EMSR loodi 1991. aastal, selle andmed on kasutatavad alates 1992. aastast. EMSRi andmebaasi aluseks on sünniregistri kaart, mille täitmine (nii elus- kui surnultsündide kohta) on kohustuslik kõigile asutustele, kus sünnid toimuvad. Sünniregistri kaardile kantud informatsioon põhineb naise anamneesil, tervisekaardil (kui see on rasedat ambulatoorselt jälgivas asutuses olemas) ja meditsiinidokumentatsioonil, kuhu talletatakse sünnituse ja vastsündinuga seotud informatsioon. Sünniregistri kaardile kantakse andmed ema ja vastsündinu kohta sünnitusele järgneva seitsme päeva jooksul.

EAR loodi 1994. aastal, alates 1996. aastast põhineb Eesti abordistatistika EARi andmetel. Kõik Eesti territooriumil rasedusi katkestavad või katkenud rasedusega naistele arstiabi osutavad tervishoiuasutused ja eraarstid on kohustatud täitma anonüümse abordiregistri kaardi ja saatma andmed registrisse. Kaart tuleb täita kõikide abortlõppega raseduste kohta, v.a emakaväline rasedus.

Teismeliste raseduste trendide (aastatel 1992–2001) analüüsimisel kajastasime sünnituste ja legaalselt indutseeritud abortide üldarvu, abordimäära muutust teismelistel ja üle 20aastastel, eestlastel ja mitte-eestlastel ning arvasime vanusekordajad 1000 tütarlapse kohta vanuses 15–19 aastat.

Uuriti ema vanuse efekti järgmistele sünnitusabi näitajatele: enneaegne sünnitus (enne 37. täisrasedusnädalat), madal sünnikaal (alla 2500 g), surnultsünd, neonataalne (0–27 päeva jooksul pärast sündi) ja postneonataalne (28–364 päeva jooksul pärast sündi) surm.

EMSRi andmetel oli 1992.–2002. aastal 51 890 üksikrasedusega 13–24aastast esmassünnitajat. Uuritavad jaotati kolme vanuserühma: (1) ≤17aastased (4248), (2) 18–19aastased (12 376) ja (3) 20–24aastased (35 266). Viimased moodustasid uuringu võrdlusrühma.

Andmed surnultsündide kohta pärinesid EMSRist. Neonataalsete ja postneonataalsete surmade leidmiseks lingiti EMSRi 1992.–2001. aasta andmed surmade registri 1992.–2002. aasta andmetega.

Et hinnata vanuse efekti eespooltoodud sünnitusabinäitajatele, teostasime mitmese logistilise regressioonanalüüsi. Arvutasime üldise ja kohandatud šansisuhte ning selle 95%lise usaldusvahemiku. Kohandamine teostati rahvuse, perekonnaseisu, elukoha, sündmuse toimumise aasta, antenataalse jälgimise indeksi ja suitsetamise osas. Hindasime uuringuaasta ja vanuse võimalikku koosmõju. Neonataalse ja postneonataalse surma riski hindamisel kohandati mudelit veel raseduskestusele.

EMSRi andmebaasi analüüsid uurisime, kas kirurgiline abort esmassünnitajal anamneesis on seotud sünnituse platsentaarperioodi tüsistustega (platsenta manuaalne eemaldamine, emakaõõne manuaalne revisioon, emakaõõne

abrasioon). EMSRi andmetel oli aastatel 1994–2002 üksikrasedusega naistel 56 298 elussündi. Töös kasutasime 42 368 naise andmeid. Uuritavad jaotati kolme rühma: (1) 7333 naist, kellel oli anamneesis üks kirurgiline abort; (2) 2383 naist, kellel oli anamneesis kaks või enam raseduse katkestamist, ning (3) 32 652 naist, kellel polnud anamneesis raseduse katkemisi ega katkestamisi, moodustasid kontrollrühma.

Kirurgilise aborti mõju hindamiseks teostati mitmene logistiline regressioonanalüüs. Analüüsi mudelis sai kasutada 42 354 naise andmeid. Ühe või mitme aborti efekti hindamiseks järgneva sünnituse platsentaarperioodi tüsistuste riskile, võrreldes kontrollrühmaga, arvutasime üldise ja kohandatud šansisuhte ning selle 95%lise usaldusvahemiku. Kohandamine sai tehtud ema vanusele, lapse soole ja sünnikaalule ning sünnituse induktsioonile ja/või sünnitustegevuse stimulatsioonile.

Et analüüsida individuaalseid ja perekondlikke tegureid, mis on seotud teismelise planeerimata rasedusega, tegime neljas asutuses (Tartu Ülikooli Kliinikumi naistekliinik, Tartu Noorte Nõustamiskeskus, Lääne-Tallinna Keskaigla naistekliinik ja Puru Haigla (kahe viimatinimetatud asutuse koosseisu kuuluvad samuti noorte nõustamiskeskused)) novembrist 2001 kuni novembrini 2003 küsitlusuuringu.

Uuringusse kaasamise kriteeriumiks oli vanus pöördumisel 18 aastat või vähem. Rühmad koostati järgnevate kriteeriumite alusel: (1) seksuaalselt aktiivne (penetratiivne vahekord) vähemalt kuue kuu jooksul, kasutab rasestumisvastast vahendit (hormonaalne/kondoom), rasedusi pole olnud (võrdlusrühm); (2) rase, pöördunud ravisutusse sooviga rasedus katkestada (abortirühm); (3) rase, pöördunud ravisutusse antenataalseks jälgimiseks (sünnitajate rühm). Käesolevas töös on aborti- ja sünnitajate rühma analüüsitud koos (rasedate rühm). Eelnevalt instrueeritud intervjuerijaid oli kokku 11. Intervjuudeks kasutati valikvastustega küsimustikku. Selle koostamise aluseks olid kolm varem tehtud uuringut: (1) *The National Study of Human Relations, Sexual Attitudes and Lifestyles in Finland 1991*; (2) KISS-uuring; (3) küsimustik, millel põhineb L. Ruusuvaara doktoridissertatsioon “Teismeliste rasedused. Perekondlik taust, seksuaalkogemused ja rasestumisvastaste vahendite kasutamine”.

Küsimustik sisaldas 111 küsimust, mis olid jaotatud seitsmesse ossa vastavalt teadaolevatele teguritele, millel on seos rasedustega teismeeas: (1) seksuaalharidus ja teadmised; (2) esimese seksuaalvahekorra ajastus ja tingimused; (3) rasestumisvastaste vahendite kasutamine ja hoiakud nende suhtes; (4) menarhe aeg, puberteedieaga seotud mured, tulevikuperspektiivi tunnetamine; (5) alkoholi ja teiste mõnuainete tarbimine; (6) vanemate iseloomustus, suhted vanematega, vanemate kaasamine; (7) partneri omadused ja suhted partneriga.

Individaalsed omadused, mille suhtes rühmi võrreldi, olid järgmised: vanus (<17 ja ≥17 aasta) intervjuu ajal, varane (<16 aastat) seksuaalelu alustamine, teadmiste tase suguorganite talitluse ja rasestumisvastaste vahendite kohta,

suhtumine kooliskäimisse ja religiooni tähtsus noore elus. Perekondliku tegurina võrdlesime ema haridust. Perekonna toimimise hindamiseks kasutasime küsimusi alkoholi tarbimise kohta lähedaste poolt, füüsilisest karistamisest kodus, vanemate teavitamisest kodust lahkudes ja vanematepoolsest noore seksuaalsuhete tunnustamisest. Käesolevas töös esitatud tulemused põhinevad 279 intervjuul, mis tehti Tartus. Analüüsida saime 268 küsimustiku andmeid, nendest 146 kuulusid võrdlusrühma ja 122 rasedate rühma. Tulemuste analüüsiks koostasime mitmese logistilise regressioonanalüüsi mudeli. Analüüsitava tunnu kollideerumise korral valisime mudelisse ühe tunnustest. Riski hindamiseks kontrollrühmaga võrreldes arvutasime üldise ja kohandatud šansisuhte ning selle 95%lise usaldusvahemiku.

Käesolev uurimistöö oli kinnitatud Tartu Ülikooli Inimuuringute Eetika-komitees (protokollid 100/31, 107/65, 126/13).

## Tulemused

Aastatel 1992–2001 vähenes Eestis nii teismeliste abortide kui ka sünituste arv.

Kui kõigis vanuserühmades kokku vähenes sel perioodil elussündide arv 30%, siis 15–19aastastel 53%. 1992. aastal sai emaks 2623 noort vanuses 15–19 aastat ja 2001. aastal 1229. Elussündide arv 1000 15–19aastase neiu kohta oli 1992. a 49,7 ja 2001. a 23,8. Kõigist sünitajatest Eestis 1992. aastal moodustasid teismelised 14,6% ja 2001. aastal 9,7%. Legaalsete indutseeritud abortide arv vähenes 15–19aastaste noorte hulgas pea poole võrra: 1992. aastal oli see 2931 ja 2001. aastal 1568. Abortiivsuskordaja 1000 15–19aastase neiu kohta oli 1992. aastal 55,5 ja 2001. aastal 30,4. Üldise abortide arvu vähenemise taustal oli kõigi abordipatsientide hulgas teismeliste osakaal suurenenud: 1992. aastal moodustas see 11,4% ja 2001. a 13,5%.

Abordimäära analüüs näitab trendi, et 1990. aastate alguses otsustasid teismelised raseduse korral sagedamini sünitada kui 2001. aastal. Üle 20aastased aga, vastupidi, otsustasid 2001. aastal sünitamise kasuks sagedamini kui 1990. aastate alguses.

Võrreldes 20–24aastaste sünitajatega oli nii noorematel kui vanematel teismelistel enneaegse sünituse ja madala sünitajaluga lapse süni risk suurenenud. Risk jäi alles ka pärast kohandamist perekonnaseisule, rahvusele, uuringuaastale, antenataalse jälgimise adekvaatsusele ja suitsetamisele.

Võrreldes kontrollrühmaga oli teismelistel suurenenud lapse neonataalse surma risk. Pärast kohandamist samadele, eespoolmainitud teguritele jäi see risk suuremaks noorematel teismelistel. Kui siinjuures sai lisaks tehtud kohandamine raseduskestusele, polnud riski tõus enam statistiliselt oluline.

Postneonataalse surma risk oli suurem vaid 17aastastel ja noorematel teismelistel, võrreldes kontrollrühmaga. Kohandatud mudelis jäi riski tõus alles, risk polnud enam statistiliselt oluline pärast kohandamist raseduskestusele.

Surnultsündide osas ei olnud teismelistel risk tõusnud.

Võrreldes 20–24aastaste rasedatega, suitsetasid teismelised raseduse ajal rohkem, olid sagedamini pärit maalt, elasid harvem koos lapse isaga ja kogu uuringuperioodil oli nende antenataalne jälgimine sagedamini ebaadekvaatne.

Teismeliste planeerimata rasedustega seotud individuaalsete ja perekondlike tegurite analüüs näitas, et rasedate rühma kuulusid nooremad teismelised sagedamini kui kontrollrühma omad. Rasedate rühmas oli seksuaalelu alustatud varem, teadmiste tase rasestumisvastastest vahenditest ja suguorganite talitlusest oli madalam kui kontratseptsiooni kasutajate rühmas, sagedamini anti teada, et ei meeldi koolis käia. Religiooni tähtsus noorele nii rasedate rühmas kui ka kontrollrühmas oli sarnane. Rasedate rühma kuulujad ütlesid sagedamini, et nende perekonnas on keegi lähedastest purjus, et kodus karistatakse kehaliselt ja et nad ei informeerinud vanemaid, kui kodust lahkuvad. Kontrollrühma tütarlaste vanemad aktsepteerisid sagedamini oma lapse seksuaalsuhet ja emadel oli sagedamini kõrgharidus.

Logistilises regressioonanalüüsis (kohandatud mudelis) olid teismeliste statistiliselt olulised planeerimata raseduse riskitegurid järgmised: teismelisel madal teadmiste tase rasestumisvastaste vahendite ja suguorganite talitluse kohta, negatiivne hoiak kooliskäimise suhtes (“ei meeldi koolis käia”) ja alkoholi sage kasutamine lähedas(t)e perekonnaliikme(te) poolt.

Analüüsidest abordi efekti sünnituse platsentaarperioodile, leidsime, et võrreldes esmassünnitajatega, kellel polnud anamneesis (kirurgilist) raseduse katkestamist, oli aborti teinud naistel tõusnud sünnituse kolmanda perioodi tüsistuste risk, mis vajasid kas emaka manuaalset revisiooni, platsenta manuaalset eemaldamist või emakaõõne abrasiooni. Selle riski suurus ei sõltunud eelnenud abortide arvust.

## Järeldused

1. Kiirete sotsiaal-majanduslike muutuste perioodil Eestis aastatel 1992–2001 vähenes märgatavalt nii teismeliste sünnituste kui indutseeritud abortide üldarv, samuti abortiivsus- ja sündimuskordajad 1000 teismelise kohta. Perioodi lõpuks oli toimunud muutus, kus raseduse korral otsustas teismeline sagedamini raseduse katkestamise kasuks kui perioodi alguses. Kogu perioodi vältel otsustasid mitte-eestlased raseduse katkestamise kasuks sagedamini kui eestlased.
2. 19aastastel ja noorematel emadel oli suurenenud enneaegsuse ja madala sünnikaaluga lapse sünni risk. Surnultsünni risk polnud teismelistel emadel suurem. Emadel, kes olid 17aastased või nooremad, oli suurenenud lapse surma risk neonataalses ja postneonataalses perioodis, s.o esimese eluaasta jooksul. Selle riski põhjus tulenes eeskätt enneaegsusest. Hoolimata antenataalse, sünnitus- ja neonataalse abi kvaliteedi olulisest paranemisest, jäid teismelised, võrreldes 20–24aastaste emadega, nimetatud perinataalsete näitajate osas riskirühmaks.

3. Planeerimata raseduse risk teismeeas oli seotud madala teadmiste tasemega rasestumisvastaste vahendite ja suguorganite talitluse kohta ning negatiivse hoiakuga kooliskäimise suhtes (individuaalsed tegurid) ja alkoholi sagedase kasutamisega pereliikmete poolt (perekondlik tegur).
4. Esimese trimestri kirurgiline abort anamneesis oli esmassünnitajatel seotud tüsistuste (emakaõõne manuaalne revisioon, platsenta manuaalne eemaldamine, emakaõõne abrasioon) riski tõusuga sünnituse platsentaarperioodis. Riski tõusu ulatus ei sõltunud abortide arvust.

## ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to:

Professor Helle Karro, MD, my supervisor, who encouraged me to start this research, for her creativity and great ideas, patience, and supportive and positive attitude during the whole study.

Professor Mati Rahu, my supervisor, for his guidance, support, help, stimulating criticism, and ever-friendly attitude towards my work.

Kaja Rahu, MSc, for data analysis, for being a co-author and for introducing me to the world of statistics, for her creativity, commitment and punctuality.

Alvi Tellmann, MD, for being my co-author, for her interest and contribution to my work.

The interviewers, Inna Burd, Mairi Kaha, Maie Larens, Anneli Linnamägi, Aira Peri, Triin Raudsepp, Piia Reisman, Mari-Liis Riibak, Rebeca Saral, Karin Tamm, Ilona Telnova for their excellent work through the two years of data collection.

All the interviewees, almost 600 young women, who agreed to share their thoughts and life history for the sake of my study.

Ilmar Part, for his linguistic advice and careful revision of the language of my thesis.

Professor Heidi-Ingrid Maaroo, MD, and Associate Professor Katrin Lang, MD, for reviewing the dissertation and for their valuable comments.

My family, Herkki and Mirjam, for their understanding and support during these long years.

My father, Docent Emeritus Jüri Samarütel, MD, who already decades ago unintentionally set the standards for striving to belong to the “dying breed of physician-scientist”.

This study was financed by the Estonian Science Foundation grants 3899 and 5456 (Papers I–V) and by the Estonian Ministry of Education and Science target funding SF 01921112s02 (Papers II, III), SF 0182641s04 (Papers IV, V), and SF 0940026s07 (Papers IV, V).

# CURRICULUM VITAE

## Kai Haldre, MD

Place and time of birth: 24.05.1965 Tartu, Estonia  
Address: Tuulemurru 2–4, 76401 Laagri, Saue vald, Harjumaa, Eesti  
Phone: +372 511 2170; +372 670 8065  
e-mail: kai.haldre@kliinikum.ee  
Employment: physician (obs&gyn)  
West Tallinn Central Hospital Women’s Clinic, Tallinn, Estonia;  
Sexual Health Clinic of the Estonian Sexual Health Association, Tallinn, Estonia

## Education

1972–1983 M. Härma Tartu Secondary School No. 2, Tartu, Estonia  
1983–1989 University of Tartu, Medical Faculty, MD  
1989 exchange student in Meilahti Hospital, Helsinki University, Finland  
1989–1990 internship year, obstetrics and gynaecology, Pelgulinna Maternity Hospital, Tallinn, Estonia  
2000–2005 doctoral student in University of Tartu, Estonia

## Languages

Advanced English, Russian, elementary French and Finnish.

## Work Experience

1984–1988 nurse in Children Intensive Care Unit, Children’s Hospital, University of Tartu, Estonia  
1988–1989 midwife in Delivery Dept., University of Tartu, Estonia  
1990– physician (obs&gyn) in Pelgulinna Maternity Hospital (currently West Tallinn Central Hospital Women’s Clinic), Tallinn, Estonia  
1993–1994 physician (obs&gyn) in Keila District Hospital, Keila, Estonia

1994–2001	executive director of the Family Planning Association of Estonia (member of the International Planned Parenthood Federation; currently the Estonian Sexual Health Association)
2003–	physician (obs&gyn) Sexual Health Clinic of the Estonian Sexual Health Association, Tallinn, Estonia

### Academic interests

1. Sexual behaviour and sexual and reproductive health in different social contexts/circumstances/environments.
2. Factors associated with teenagers' sexual behaviour.
3. Sexual dysfunction and satisfaction in women, association with different factors.

Four publications CC and Medline-cited, one publication in *Eesti Arst*, 16 publications in popular science literature (in Estonian and in English), 13 presentations on international conferences.

# CURRICULUM VITAE

## Kai Haldre, MD

Sünni aeg ja koht: 24.05.1965, Tartu  
Aadress: Tuulemuru 2–4, 76401 Laagri alevik, Saue vald, Harjumaa  
Telefon: +372 511 2170; +372 670 8065  
e-mail: kai.haldre@kliinikum.ee  
Praegune töökoht, amet: naistearst  
AS Lääne-Tallinna Keskhaigla naistekliinik  
Eesti Seksuaaltervise Liidu Seksuaaltervise Kliinik

## Haridus

1972–1983 M. Härma nimeline Tartu 2. Keskkool  
1983–1989 Tartu Riiklik Ülikool, arstiteaduskond, ravi eriala  
1989 vahetusüliõpilane, Helsingi Ülikool, Meilahti Haigla, Soome  
1989–1990 internatuur sünnitusabi ja günekoloogia erialal, Tallinna Pelgulinna Haigla Sünnitusmaja  
2000–2005 doktorantuur Tartu Ülikooli arstiteaduskonnas  
Keelteoskus: inglise keel, vene keel – valdan vabalt  
prantsuse keel, soome keel – suuliselt vähesel määral, loen sõnaraamatuga

## Töökogemused

1984–1988 meditsiiniõde Tartu Lastehaigla intensiivravi osakonnas  
1988–1989 ämmaemand Tartu Sünnitusmajas  
1990– naistearst Tallinna Pelgulinna Haigla Sünnitusmajas (nüüd AS Lääne-Tallinna Keskhaigla naistekliinik)  
1993–1994 naistearst Keila Haiglas  
1994–2001 MTÜ Eesti Pereplaneerimise Liit (Rahvusvahelise Pereplaneerimise Föderatsiooni liige, praeguse nimega Eesti Seksuaaltervise Liit) tegevdirektor  
2003– Eesti Seksuaaltervise Liidu Seksuaaltervise Kliiniku naistearst

## Teadus- ja arendustegevus

Peamised uurimisvaldkonnad

1. Sotsiaalse konteksti mõju inimeste seksuaalkäitumisele ning seksuaal- ja reproduktiivtervisele.
2. Teismeliste seksuaalkäitumist mõjutavad tegurid.
3. Seksuaalhäired naistel, seos erisuguste teguritega. Seksuaalse rahulolu seos erisuguste teguritega.

Avaldanud neli teaduspublikatsiooni (viidatud *CC* ja *Medline*'i andmebaasides), ühe artikli ajakirjas *Eesti Arst*, 16 populaarteaduslikku publikatsiooni (nii eesti kui inglise keeles), 13 ettekannet rahvusvahelistel konverentsidel.

## DISSERTATIONES MEDICINAE UNIVERSITATIS TARTUENSIS

1. **Heidi-Ingrid Maaroo**s. The natural course of gastric ulcer in connection with chronic gastritis and *Helicobacter pylori*. Tartu, 1991.
2. **Mihkel Zilmer**. Na-pump in normal and tumorous brain tissues: Structural, functional and tumorigenesis aspects. Tartu, 1991.
3. **Eero Vasar**. Role of cholecystokinin receptors in the regulation of behaviour and in the action of haloperidol and diazepam. Tartu, 1992.
4. **Tiina Talvik**. Hypoxic-ischaemic brain damage in neonates (clinical, biochemical and brain computed tomographical investigation). Tartu, 1992.
5. **Ants Peetsalu**. Vagotomy in duodenal ulcer disease: A study of gastric acidity, serum pepsinogen I, gastric mucosal histology and *Helicobacter pylori*. Tartu, 1992.
6. **Mariika Mikelsaar**. Evaluation of the gastrointestinal microbial ecosystem in health and disease. Tartu, 1992.
7. **Hele Everaus**. Immuno-hormonal interactions in chronic lymphocytic leukaemia and multiple myeloma. Tartu, 1993.
8. **Ruth Mikelsaar**. Etiological factors of diseases in genetically consulted children and newborn screening: dissertation for the commencement of the degree of doctor of medical sciences. Tartu, 1993.
9. **Agu Tamm**. On metabolic action of intestinal microflora: clinical aspects. Tartu, 1993.
10. **Katrin Gross**. Multiple sclerosis in South-Estonia (epidemiological and computed tomographical investigations). Tartu, 1993.
11. **Oivi Uiibo**. Childhood coeliac disease in Estonia: occurrence, screening, diagnosis and clinical characterization. Tartu, 1994.
12. **Viiu Tuulik**. The functional disorders of central nervous system of chemistry workers. Tartu, 1994.
13. **Margus Viigimaa**. Primary haemostasis, antiaggregative and anticoagulant treatment of acute myocardial infarction. Tartu, 1994.
14. **Rein Kolk**. Atrial versus ventricular pacing in patients with sick sinus syndrome. Tartu, 1994.
15. **Toomas Podar**. Incidence of childhood onset type 1 diabetes mellitus in Estonia. Tartu, 1994.
16. **Kiira Subi**. The laboratory surveillance of the acute respiratory viral infections in Estonia. Tartu, 1995.
17. **Irja Lutsar**. Infections of the central nervous system in children (epidemiologic, diagnostic and therapeutic aspects, long term outcome). Tartu, 1995.
18. **Aavo Lang**. The role of dopamine, 5-hydroxytryptamine, sigma and NMDA receptors in the action of antipsychotic drugs. Tartu, 1995.
19. **Andrus Arak**. Factors influencing the survival of patients after radical surgery for gastric cancer. Tartu, 1996.

20. **Tõnis Karki.** Quantitative composition of the human lactoflora and method for its examination. Tartu, 1996.
21. **Reet Mändar.** Vaginal microflora during pregnancy and its transmission to newborn. Tartu, 1996.
22. **Triin Remmel.** Primary biliary cirrhosis in Estonia: epidemiology, clinical characterization and prognostication of the course of the disease. Tartu, 1996.
23. **Toomas Kivastik.** Mechanisms of drug addiction: focus on positive reinforcing properties of morphine. Tartu, 1996.
24. **Paavo Pokk.** Stress due to sleep deprivation: focus on GABA<sub>A</sub> receptor-chloride ionophore complex. Tartu, 1996.
25. **Kristina Allikmets.** Renin system activity in essential hypertension. Associations with atherothrombogenic cardiovascular risk factors and with the efficacy of calcium antagonist treatment. Tartu, 1996.
26. **Triin Parik.** Oxidative stress in essential hypertension: Associations with metabolic disturbances and the effects of calcium antagonist treatment. Tartu, 1996.
27. **Svetlana Päi.** Factors promoting heterogeneity of the course of rheumatoid arthritis. Tartu, 1997.
28. **Maarike Sallo.** Studies on habitual physical activity and aerobic fitness in 4 to 10 years old children. Tartu, 1997.
29. **Paul Naaber.** *Clostridium difficile* infection and intestinal microbial ecology. Tartu, 1997.
30. **Rein Pähkla.** Studies in pinoline pharmacology. Tartu, 1997.
31. **Andrus Juhan Voitk.** Outpatient laparoscopic cholecystectomy. Tartu, 1997.
32. **Joel Starkopf.** Oxidative stress and ischaemia-reperfusion of the heart. Tartu, 1997.
33. **Janika Kõrv.** Incidence, case-fatality and outcome of stroke. Tartu, 1998.
34. **Ülla Linnamägi.** Changes in local cerebral blood flow and lipid peroxidation following lead exposure in experiment. Tartu, 1998.
35. **Ave Minajeva.** Sarcoplasmic reticulum function: comparison of atrial and ventricular myocardium. Tartu, 1998.
36. **Oleg Milenin.** Reconstruction of cervical part of esophagus by revascularised ileal autografts in dogs. A new complex multistage method. Tartu, 1998.
37. **Sergei Pakriev.** Prevalence of depression, harmful use of alcohol and alcohol dependence among rural population in Udmurtia. Tartu, 1998.
38. **Allen Kaasik.** Thyroid hormone control over  $\beta$ -adrenergic signalling system in rat atria. Tartu, 1998.
39. **Vallo Matto.** Pharmacological studies on anxiogenic and antiaggressive properties of antidepressants. Tartu, 1998.
40. **Maire Vasar.** Allergic diseases and bronchial hyperreactivity in Estonian children in relation to environmental influences. Tartu, 1998.

41. **Kaja Julge.** Humoral immune responses to allergens in early childhood. Tartu, 1998.
42. **Heli Grünberg.** The cardiovascular risk of Estonian schoolchildren. A cross-sectional study of 9-, 12- and 15-year-old children. Tartu, 1998.
43. **Epp Sepp.** Formation of intestinal microbial ecosystem in children. Tartu, 1998.
44. **Mai Ots.** Characteristics of the progression of human and experimental glomerulopathies. Tartu, 1998.
45. **Tiina Ristimäe.** Heart rate variability in patients with coronary artery disease. Tartu, 1998.
46. **Leho Kõiv.** Reaction of the sympatho-adrenal and hypothalamo-pituitary-adrenocortical system in the acute stage of head injury. Tartu, 1998.
47. **Bela Adojaan.** Immune and genetic factors of childhood onset IDDM in Estonia. An epidemiological study. Tartu, 1999.
48. **Jakov Shlik.** Psychophysiological effects of cholecystokinin in humans. Tartu, 1999.
49. **Kai Kisand.** Autoantibodies against dehydrogenases of  $\alpha$ -ketoacids. Tartu, 1999.
50. **Toomas Marandi.** Drug treatment of depression in Estonia. Tartu, 1999.
51. **Ants Kask.** Behavioural studies on neuropeptide Y. Tartu, 1999.
52. **Ello-Rahel Karelson.** Modulation of adenylate cyclase activity in the rat hippocampus by neuropeptide galanin and its chimeric analogs. Tartu, 1999.
53. **Tanel Laisaar.** Treatment of pleural empyema — special reference to intrapleural therapy with streptokinase and surgical treatment modalities. Tartu, 1999.
54. **Eve Pihl.** Cardiovascular risk factors in middle-aged former athletes. Tartu, 1999.
55. **Katrin Õunap.** Phenylketonuria in Estonia: incidence, newborn screening, diagnosis, clinical characterization and genotype/phenotype correlation. Tartu, 1999.
56. **Siiri Kõljalg.** *Acinetobacter* – an important nosocomial pathogen. Tartu, 1999.
57. **Helle Karro.** Reproductive health and pregnancy outcome in Estonia: association with different factors. Tartu, 1999.
58. **Heili Varendi.** Behavioral effects observed in human newborns during exposure to naturally occurring odors. Tartu, 1999.
59. **Anneli Beilmann.** Epidemiology of epilepsy in children and adolescents in Estonia. Prevalence, incidence, and clinical characteristics. Tartu, 1999.
60. **Vallo Volke.** Pharmacological and biochemical studies on nitric oxide in the regulation of behaviour. Tartu, 1999.
61. **Pilvi Ilves.** Hypoxic-ischaemic encephalopathy in asphyxiated term infants. A prospective clinical, biochemical, ultrasonographical study. Tartu, 1999.

62. **Anti Kalda.** Oxygen-glucose deprivation-induced neuronal death and its pharmacological prevention in cerebellar granule cells. Tartu, 1999.
63. **Eve-Irene Lepist.** Oral peptide prodrugs – studies on stability and absorption. Tartu, 2000.
64. **Jana Kivastik.** Lung function in Estonian schoolchildren: relationship with anthropometric indices and respiratory symptoms, reference values for dynamic spirometry. Tartu, 2000.
65. **Karin Kull.** Inflammatory bowel disease: an immunogenetic study. Tartu, 2000.
66. **Kaire Innos.** Epidemiological resources in Estonia: data sources, their quality and feasibility of cohort studies. Tartu, 2000.
67. **Tamara Vorobjova.** Immune response to *Helicobacter pylori* and its association with dynamics of chronic gastritis and epithelial cell turnover in antrum and corpus. Tartu, 2001.
68. **Ruth Kalda.** Structure and outcome of family practice quality in the changing health care system of Estonia. Tartu, 2001.
69. **Annika Krüüner.** *Mycobacterium tuberculosis* – spread and drug resistance in Estonia. Tartu, 2001.
70. **Marlit Veldi.** Obstructive Sleep Apnoea: Computerized Endopharyngeal Myotonometry of the Soft Palate and Lingual Musculature. Tartu, 2001.
71. **Anneli Uusküla.** Epidemiology of sexually transmitted diseases in Estonia in 1990–2000. Tartu, 2001.
72. **Ade Kallas.** Characterization of antibodies to coagulation factor VIII. Tartu, 2002.
73. **Heidi Annuk.** Selection of medicinal plants and intestinal lactobacilli as antimicrobial components for functional foods. Tartu, 2002.
74. **Aet Lukmann.** Early rehabilitation of patients with ischaemic heart disease after surgical revascularization of the myocardium: assessment of health-related quality of life, cardiopulmonary reserve and oxidative stress. A clinical study. Tartu, 2002.
75. **Maigi Eisen.** Pathogenesis of Contact Dermatitis: participation of Oxidative Stress. A clinical – biochemical study. Tartu, 2002.
76. **Piret Hussar.** Histology of the post-traumatic bone repair in rats. Elaboration and use of a new standardized experimental model – bicortical perforation of tibia compared to internal fracture and resection osteotomy. Tartu, 2002.
77. **Tõnu Rätsep.** Aneurysmal subarachnoid haemorrhage: Noninvasive monitoring of cerebral haemodynamics. Tartu, 2002.
78. **Marju Herodes.** Quality of life of people with epilepsy in Estonia. Tartu, 2003.
79. **Katre Maasalu.** Changes in bone quality due to age and genetic disorders and their clinical expressions in Estonia. Tartu, 2003.

80. **Toomas Sillakivi.** Perforated peptic ulcer in Estonia: epidemiology, risk factors and relations with *Helicobacter pylori*. Tartu, 2003.
81. **Leena Puksa.** Late responses in motor nerve conduction studies. F and A waves in normal subjects and patients with neuropathies. Tartu, 2003.
82. **Krista Lõivukene.** *Helicobacter pylori* in gastric microbial ecology and its antimicrobial susceptibility pattern. Tartu, 2003.
83. **Helgi Kolk.** Dyspepsia and *Helicobacter pylori* infection: the diagnostic value of symptoms, treatment and follow-up of patients referred for upper gastrointestinal endoscopy by family physicians. Tartu, 2003.
84. **Helena Soomer.** Validation of identification and age estimation methods in forensic odontology. Tartu, 2003.
85. **Kersti Oselin.** Studies on the human MDR1, MRP1, and MRP2 ABC transporters: functional relevance of the genetic polymorphisms in the *MDR1* and *MRP1* gene. Tartu, 2003.
86. **Jaan Soplepmann.** Peptic ulcer haemorrhage in Estonia: epidemiology, prognostic factors, treatment and outcome. Tartu, 2003.
87. **Margot Peetsalu.** Long-term follow-up after vagotomy in duodenal ulcer disease: recurrent ulcer, changes in the function, morphology and *Helicobacter pylori* colonisation of the gastric mucosa. Tartu, 2003.
88. **Kersti Klaamas.** Humoral immune response to *Helicobacter pylori* a study of host-dependent and microbial factors. Tartu, 2003.
89. **Pille Taba.** Epidemiology of Parkinson's disease in Tartu, Estonia. Prevalence, incidence, clinical characteristics, and pharmacoepidemiology. Tartu, 2003.
90. **Alar Veraksitš.** Characterization of behavioural and biochemical phenotype of cholecystikinin-2 receptor deficient mice: changes in the function of the dopamine and endopioidergic system. Tartu, 2003.
91. **Ingrid Kalev.** CC-chemokine receptor 5 (CCR5) gene polymorphism in Estonians and in patients with Type I and Type II diabetes mellitus. Tartu, 2003.
92. **Lumme Kadaja.** Molecular approach to the regulation of mitochondrial function in oxidative muscle cells. Tartu, 2003.
93. **Aive Liigant.** Epidemiology of primary central nervous system tumours in Estonia from 1986 to 1996. Clinical characteristics, incidence, survival and prognostic factors. Tartu, 2004.
94. **Andres, Kulla.** Molecular characteristics of mesenchymal stroma in human astrocytic gliomas. Tartu, 2004.
95. **Mari Järvelaid.** Health damaging risk behaviours in adolescence. Tartu, 2004.
96. **Ülle Pechter.** Progression prevention strategies in chronic renal failure and hypertension. An experimental and clinical study. Tartu, 2004.

97. **Gunnar Tasa.** Polymorphic glutathione S-transferases – biology and role in modifying genetic susceptibility to senile cataract and primary open angle glaucoma. Tartu, 2004.
98. **Tuuli Käämbre.** Intracellular energetic unit: structural and functional aspects. Tartu, 2004.
99. **Vitali Vassiljev.** Influence of nitric oxide synthase inhibitors on the effects of ethanol after acute and chronic ethanol administration and withdrawal. Tartu, 2004.
100. **Aune Rehemä.** Assessment of nonhaem ferrous iron and glutathione redox ratio as markers of pathogeneticity of oxidative stress in different clinical groups. Tartu, 2004.
101. **Evelin Seppet.** Interaction of mitochondria and ATPases in oxidative muscle cells in normal and pathological conditions. Tartu, 2004.
102. **Eduard Maron.** Serotonin function in panic disorder: from clinical experiments to brain imaging and genetics. Tartu, 2004.
103. **Marje Oona.** *Helicobacter pylori* infection in children: epidemiological and therapeutic aspects. Tartu, 2004.
104. **Kersti Kokk.** Regulation of active and passive molecular transport in the testis. Tartu, 2005.
105. **Vladimir Järv.** Cross-sectional imaging for pretreatment evaluation and follow-up of pelvic malignant tumours. Tartu, 2005.
106. **Andre Õun.** Epidemiology of adult epilepsy in Tartu, Estonia. Incidence, prevalence and medical treatment. Tartu, 2005.
107. **Piibe Muda.** Homocysteine and hypertension: associations between homocysteine and essential hypertension in treated and untreated hypertensive patients with and without coronary artery disease. Tartu, 2005.
108. **Küllü Kingo.** The interleukin-10 family cytokines gene polymorphisms in plaque psoriasis. Tartu, 2005.
109. **Mati Merila.** Anatomy and clinical relevance of the glenohumeral joint capsule and ligaments. Tartu, 2005.
110. **Epp Songisepp.** Evaluation of technological and functional properties of the new probiotic *Lactobacillus fermentum* ME-3. Tartu, 2005.
111. **Tiia Ainla.** Acute myocardial infarction in Estonia: clinical characteristics, management and outcome. Tartu, 2005.
112. **Andres Sell.** Determining the minimum local anaesthetic requirements for hip replacement surgery under spinal anaesthesia – a study employing a spinal catheter. Tartu, 2005.
113. **Tiia Tamme.** Epidemiology of odontogenic tumours in Estonia. Pathogenesis and clinical behaviour of ameloblastoma. Tartu, 2005.
114. **Triine Annus.** Allergy in Estonian schoolchildren: time trends and characteristics. Tartu, 2005.
115. **Tiia Voor.** Microorganisms in infancy and development of allergy: comparison of Estonian and Swedish children. Tartu, 2005.

116. **Priit Kasenõmm.** Indicators for tonsillectomy in adults with recurrent tonsillitis – clinical, microbiological and pathomorphological investigations. Tartu, 2005.
117. **Eva Zusinaite.** Hepatitis C virus: genotype identification and interactions between viral proteases. Tartu, 2005.
118. **Piret Kõll.** Oral lactoflora in chronic periodontitis and periodontal health. Tartu, 2006.
119. **Tiina Stelmach.** Epidemiology of cerebral palsy and unfavourable neuro-developmental outcome in child population of Tartu city and county, Estonia Prevalence, clinical features and risk factors. Tartu, 2006.
120. **Katrin Pudersell.** Tropane alkaloid production and riboflavine excretion in the field and tissue cultures of henbane (*Hyoscyamus niger* L.). Tartu, 2006.
121. **Küllli Jaako.** Studies on the role of neurogenesis in brain plasticity. Tartu, 2006.
122. **Aare Märtsen.** Lower limb lengthening: experimental studies of bone regeneration and long-term clinical results. Tartu, 2006.
123. **Heli Tähepõld.** Patient consultation in family medicine. Tartu, 2006.
124. **Stanislav Liskmann.** Peri-implant disease: pathogenesis, diagnosis and treatment in view of both inflammation and oxidative stress profiling. Tartu, 2006.
125. **Ruth Rudissaar.** Neuropharmacology of atypical antipsychotics and an animal model of psychosis. Tartu, 2006.
126. **Helena Andreson.** Diversity of *Helicobacter pylori* genotypes in Estonian patients with chronic inflammatory gastric diseases. Tartu, 2006.
127. **Katrin Pruus.** Mechanism of action of antidepressants: aspects of serotonergic system and its interaction with glutamate. Tartu, 2006.
128. **Priit Põder.** Clinical and experimental investigation: relationship of ischaemia/reperfusion injury with oxidative stress in abdominal aortic aneurysm repair and in extracranial brain artery endarterectomy and possibilities of protection against ischaemia using a glutathione analogue in a rat model of global brain ischaemia. Tartu, 2006.
129. **Marika Tammaru.** Patient-reported outcome measurement in rheumatoid arthritis. Tartu, 2006.
130. **Tiia Reimand.** Down syndrome in Estonia. Tartu, 2006.
131. **Diva Eensoo.** Risk-taking in traffic and Markers of Risk-Taking Behaviour in Schoolchildren and Car Drivers. Tartu, 2007.
132. **Riina Vibo.** The third stroke registry in Tartu, Estonia from 2001 to 2003: incidence, case-fatality, risk factors and long-term outcome. Tartu, 2007.
133. **Chris Pruunsild.** Juvenile idiopathic arthritis in children in Estonia. Tartu, 2007.
134. **Eve Õiglane-Šlik.** Angelman and Prader-Willi syndromes in Estonia. Tartu, 2007.

135. **Kadri Haller.** Antibodies to follicle stimulating hormone. Significance in female infertility. Tartu, 2007.
136. **Pille Ööpik.** Management of depression in family medicine. Tartu, 2007.
137. **Jaak Kals.** Endothelial function and arterial stiffness in patients with atherosclerosis and in healthy subjects. Tartu, 2007.
138. **Priit Kampus.** Impact of inflammation, oxidative stress and age on arterial stiffness and carotid artery intima-media thickness. Tartu, 2007.
139. **Margus Punab.** Male fertility and its risk factors in Estonia. Tartu, 2007.
140. **Alar Toom.** Heterotopic ossification after total hip arthroplasty: clinical and pathogenetic investigation. Tartu, 2007.
141. **Lea Pehme.** Epidemiology of tuberculosis in Estonia 1991–2003 with special regard to extrapulmonary tuberculosis and delay in diagnosis of pulmonary tuberculosis. Tartu, 2007.
142. **Juri Karjagin.** The pharmacokinetics of metronidazole and meropenem in septic shock. Tartu, 2007.
143. **Inga Talvik.** Inflicted traumatic brain injury shaken baby syndrome in Estonia – epidemiology and outcome. Tartu, 2007.
144. **Tarvo Rajasalu.** Autoimmune diabetes: an immunological study of type 1 diabetes in humans and in a model of experimental diabetes (in RIP-B7.1 mice). Tartu, 2007.
145. **Inga Karu.** Ischaemia-reperfusion injury of the heart during coronary surgery: a clinical study investigating the effect of hyperoxia. Tartu, 2007.
146. **Peeter Padrik.** Renal cell carcinoma: Changes in natural history and treatment of metastatic disease. Tartu, 2007.
147. **Neve Vendt.** Iron deficiency and iron deficiency anaemia in infants aged 9 to 12 months in Estonia. Tartu, 2008.
148. **Lenne-Triin Heidmets.** The effects of neurotoxins on brain plasticity: focus on neural Cell Adhesion Molecule. Tartu, 2008.
149. **Paul Korrovits.** Asymptomatic inflammatory prostatitis: prevalence, etiological factors, diagnostic tools. Tartu, 2008.
150. **Annika Reintam.** Gastrointestinal failure in intensive care patients. Tartu, 2008.
151. **Kristiina Roots.** Cationic regulation of Na-pump in the normal, Alzheimer's and CCK<sub>2</sub> receptor-deficient brain. Tartu, 2008.
152. **Helen Puusepp.** The genetic causes of mental retardation in Estonia: fragile X syndrome and creatine transporter defect. Tartu, 2009.
153. **Kristiina Rull.** Human chorionic gonadotropin beta genes and recurrent miscarriage: expression and variation study. Tartu, 2009.
154. **Margus Eimre.** Organization of energy transfer and feedback regulation in oxidative muscle cells. Tartu, 2009.
155. **Maire Link.** Transcription factors FoxP3 and AIRE: autoantibody associations. Tartu, 2009.