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II Part K, Rahu K, Rahu M, Karro H. Factors associated with Estonian adolescents' sexuality-related knowledge: Findings from the 1994 and 1999 KISS studies. *Eur J Contracep Repr* 2008;13:173–181.

III Part K, Rahu K, Rahu M, Karro H. Gender differences in factors associated with sexual intercourse among Estonian adolescents. *Scan J Public Healt* 2011;39:389–395.

IV Part K, Ringmets I, Laanpere M, Rahu M, Karro H. Contraceptive use among young women in Estonia: association with contraceptive services. *Eur J Contracep Repr* 2015 (early online: 1–9).

Contribution of Kai Part to the original publications:

Paper I: participation in the design of the current study, data analysis and interpretation of the data, writing the first draft of the manuscript and preparation of the final revisions.

Paper II and III: participation in the design and execution of the KISS study (1999), proposing the research questions, participation in the data analysis, writing the first draft of the manuscript and preparation of the final revisions.

Paper IV: participation in the design and execution of Estonian Women's Health survey, proposing the research idea, participation in the data analysis, writing the first draft of the manuscript and preparation of the final revisions.

ABBREVIATIONS

AOR	adjusted odds ratio
CHC	combined hormonal contraceptives
CI	confidence interval
HBSC study	Health Behavior in School-aged Children study
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
HSE	holistic sexuality education
IUD	copper-releasing intrauterine device
KISS study	Youth Sexual Maturation, Relationships, Dating and sexual Behavior study
POR	prevalence odds ratio
RCTs	randomized controlled trials
REPROSTAT study	State of Sexual and Reproductive Health and Fertility in the European Union study
RH	reproductive health
SD	standard deviation
SE	sexuality education
SH	sexual health
SRH	sexual and reproductive health
SRHR	sexual and reproductive health and rights
STI	sexually transmitted infection
UN	United Nations
WHO	World Health Organization
YFC	youth-friendly clinic/ youth-friendly counseling centre

1. INTRODUCTION

Adolescence, the period of transition from childhood to adulthood has only relatively recently, during the last century, emerged as a new phase of life in industrialized countries. Before this time the beginning of puberty marked the end of childhood and the beginning of adulthood. The decreasing age at pubertal maturation and earlier onset of sexual activity witnessed in the second half of the 20th century [1], on one hand, and the later completion of education and beginning of cohabitation and childbearing, on the other hand, means that young people in developed countries nowadays are sexually active, while wishing to stay healthy and avoid pregnancy for a longer period of time than before [2–4].

Sexual health (SH) is defined as a "state of physical, emotional, mental and social well-being in relation to sexuality" [5]. Young people have the right to develop safely into adulthood and to gradually become adults with good SH [6]. To empower and enable young people to adopt healthy behavior or reduce risky practices, they need accurate information, skills and access to health services in order to make healthy, informed choices [6].

The individual risk and protective factors of young people's SH have been extensively investigated in the past, but over the past two decades the focus of understanding and enhancing young people's SH has shifted from individual factors to social contexts [7]. Scientific research aiming to identify social determinants of health, defined by the World Health Organization as "the conditions in which people are born, grow, live, work and age" [8], has contributed to a better understanding of how three fundamental social determinants of SH – recognition of sexual rights, sexuality education, and confidential high-quality SH services – influence SH outcomes, especially those of young people [4, 9]. For example, Darroch et al. [10] analyzed teenage pregnancies in five developed countries and concluded that national differences in socio-economic disadvantage and contraceptive use, rather than differences in individuals' sexual activity, influence cross-country variations in teenage pregnancy rates. Similarly, dominant sexuality-related attitudes and norms accepted by a society appear to be one of the major social determinants of SH among young people, influencing the motivation to become sexually involved and sexual decision-making [11].

In Estonia, unique changes in the society took place in the 1990s that may have influenced adolescents' SH. In 1996, mandatory school-based sexuality education (SE) was introduced in the school curriculum. By 2004, SE was nearly universally implemented [12]. Since 1991, youth-friendly counseling centers (YFC) have provided free contraception counseling, testing of sexually transmitted infections (STI)/ human immunodeficiency virus (HIV), and SE lectures, and have expanded into a network of service providers [13]. On the other hand, although sexuality-related topics were more often and more openly discussed in public, the amount and quality of media sources covering topics on

sexuality and health increased, and it may have been difficult for adolescents to choose between the rapidly expanding information sources. It is known that during 1990–2009, there was a trend towards younger age at first sexual intercourse, but at the same time considerable improvements took place in the teenage pregnancy rate, the use of contraception and condoms, registered STI cases and sexuality-related knowledge in Estonia [14]. Less is still known about if and how these improvements were influenced by the interlinked innovations of school-based SE and YFCs. No data exist about gender- and sexuality-related attitudes of young people and the linkage of these with their sexual behavior.

The current research focuses on factors in the social context that may have influenced SH indicators of young people, such as teenage pregnancies, contraceptive prevalence, sexuality-related knowledge and attitudes. Special attention is paid to the role of school-based SE and YFCs in the improvement of sexuality-related knowledge and the use of contraception among young people in Estonia in a period of major social changes. The possible role of gender attitudes in the sexual behavior of young people is explored. The results of this research will support decision-makers at all levels with evidence-based data about modifiable social context factors that support safe and healthy sexual development of young people.

2. REVIEW OF THE LITERATURE

2.1. Sexual health of young people

2.1.1. Defining young people

The term "young people" generally refers to the age range of 10–24 years, marking the period of transition from childhood to adulthood. The United Nations (UN) defines "youth" as persons between the ages of 15 and 24 years [15]. Stemming from the UN definition, children are defined as those under the age of 15, while, according to the Convention of the Rights of the Child [16] and the Estonian Child Protection Act [17], children are those under the age of 18. The term "teenagers" was first used in the USA in the 1920s and became widely used to denote 13- to 19-year-olds [1]. The World Health Organization (WHO) defines "adolescents" as those young people who are between 10–19 years [18]. In data reporting, the 10- to 24-year age range is often divided into three categories: 10–14 years (early adolescence), 15–19 years (late adolescence), and 20–24 years (young adulthood) [1]. Separately, the term "puberty" is used to refer to the activation of the neuroendocrine hypothalamic-pituitary-gonadal axis that culminates in gonadal maturation and secondary sexual characteristics [19, 20].

The period of adolescence has only relatively recently emerged as a new life phase. Until the industrial revolution in the 1800s, adolescence was unknown and young people married soon after they became physically mature. Even until the beginning of the last century, the time period between physical maturation and socio-economic independence (completion of education, employment, marriage and childbearing) was very short in industrialized countries [1]. At present, the gap between puberty and childbearing has expanded due to two trends that have taken place in almost every society [4, 21]. First, there has been a trend towards earlier onset of biological maturation. The mean age of menarche has declined significantly over the last 150 years up to the 1960s, most likely due to improved nutrition and living standards [22, 23]. In different countries these advances have occurred at a consistent rate of around 3 years for every hundred years (3.6 months/decade) [23]. Although these trends have been less marked and heterogeneous among countries after the 1960s, except in conditions of under-nutrition, the studies that show further decline of age at puberty relate this to factors such as obesity and endocrine-disrupting chemicals, but also to social environment factors such as stress within the family [20, 22–24]. According to population-based studies in Estonia, the mean age of menarche was 13.2 years in 2004 [12] and 13.1 years in 2014 [25]. It is known that the timing of puberty rather than chronological age is associated with an increase in health-related behaviors that are linked to readiness to develop intimate relationships [26, 27]. Second, due to broader educational opportunities for girls and longer education in general, young people in developed countries nowadays are economically dependent on adults for longer, marry later in life

and give birth to their first child later, while being sexually active and wishing to postpone pregnancies [1]. The trend towards an increase in the prevalence in premarital sex has taken place in most countries, especially in developed countries [28].

2.1.2. Healthy sexuality development

Sexuality is essential in human life and "encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction; sexuality is experienced and expressed in thoughts, fantasies, feelings, desires, beliefs, attitudes, values, behaviors, practices, roles and relationships" [5]. Developmental psychology has shown that children are born as sexual beings and that their sexuality develops by stages that are linked to general development [29]. Healthy sexual outcome during adulthood is largely dependent on sexual learning process during adolescence [30].

Although sexuality is an integral feature of healthy adolescent development [31], many perspectives on sexuality development during adolescence have narrowly focused on risks – the timing of sexual initiation; association of sexual activity with substance use; STI, including HIV, acquisition; unplanned pregnancy and sexual coercion – rather than positive aspects of sexual development, such as sexual well-being, love and subjective experiences of enjoyment [31–33]. While data about risky sexual behavior during sexuality development support useful arguments to justify policy, public health and clinical interventions, such a problem-centered approach does not give full understanding of healthy developmental processes [32]. Therefore, conceptualization of sexuality as a normative aspect of adolescent general development, which is not automatically dangerous and risky, and recognition of sexual rights as the foundation of SH of young people, has increasingly been adopted during the recent decades [21, 30, 34].

To acquire the necessary knowledge and skills that youth need in order to develop as healthy sexual and emotional beings, adolescents have to learn about their sexual feelings, recognize and talk about their sexual wishes and boundaries (sexual autonomy), moving gradually on their developmental stages, assessing their desires and comfort level on every developmental stage before moving to the next [34, 35]. Sexual autonomy gives adolescents self-efficacy in resisting unwanted sexual experiences and using protection in wanted sexual intercourse [20]. Building rewarding intimate relationships is a second component of healthy sexual development. This encompasses getting to know each other, building trust over time, dealing with solving conflicts and power equality [34]. Serial romantic and sexual relationships (serial monogamy) are characteristic to adolescence, and not necessarily leading to cohabitation or marriage [31]. Individual and partnered sexual behaviors including masturbation; kissing; breast and genital touching; oral, penile-vaginal intercourse and sometimes penile-anal intercourse are each developmentally appropriate

events occurring within specific contexts and relationships. Sexual experiences during a young age are important for the discovery of an individual's sexuality and the formation of sexual identity [36]. Third, adolescents' sexual development does not happen separately from the social context, they need connectedness with parents and other grown-ups (health professionals, teachers), and access to good quality SE and confidential health services [31, 34]. At a time when sexual feelings and behaviors are beginning, gender norms are also consolidating, potentially influencing SH during adolescence and later in life [37].

Adolescents, more than children and adults, need "higher levels of stimulation and novelty" [38], which can be gained from risk-taking behaviors. Recently, more evidence has been found to help understand how brain development is associated with risk-taking behavior during adolescence. Development of limbic reward and pleasure-seeking systems relative to prefrontal cortex control systems takes place at a different speed [39], maturing only in the mid-20s [27]. This may biologically drive risk-taking, especially in mid-adolescence. Individual differences in brain development may help to explain, why some individuals are prone to (sexual) risk-taking, substance use and addiction [27, 39], and may also explain why changing the context in which risk-taking takes place (for example, raising the price and limiting the sale of cigarettes and alcohol to young people, raising the driving age, expanding access to education and contraceptive services) may be more effective in reducing risk-taking than attempting to change adolescents' individual behavior [27].

2.1.3. Sexual health and rights

Sexual health and reproductive health (RH) are relatively new concepts [40]. RH was first defined at the UN International Conference on Population and Development in Cairo in 1994, when a 20-year Program of Action was adopted by many world states [41]. Initially, SH was seen as an integral part of RH, but there was a strong tendency to regard SH as a separate issue from RH and thus refer to "sexual and reproductive health" (SRH) [40]. Because international consensus exists for a rights-based approach to SRH, the acronym SRHR is often used in the meaning of sexual and reproductive health and rights [40].

SH is defined by the WHO Technical Consultation working group in 2002 as follows:

> "Sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. SH requires a positive, respectful approach to sexuality and sexual relationships and the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For SH to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled" [5].

Many international organizations and health professionals handle SH as a broader concept that is a necessary precondition for RH [42]. Contemporary concept of SH includes areas of both SH and RH: safe and pleasurable sexual life; fertility regulation; healthy childbearing and preventing HIV/STIs – all influenced by a socio-cultural context [6]. In this research, the short term "sexual health" is used in the meaning of SRHR.

SH is primarily positive, and does not automatically relate to disease or illness [40]. Therefore, the required actions need not be diagnostic and curative, but instead have to provide information and education, counseling and advice. The SH field is related to laws and regulations, a healthy environment, health promotion, and health prevention, requiring multidisciplinary action [40].

SH requires respect, protection and fulfillment of certain human rights [43]. Sexual rights, defined by many international organizations after the Cairo conference [5, 41, 44–48], embrace human rights that are increasingly being recognized in international human rights documents, national laws, principles of ethics and medicine [21, 42]. Fundamental rights are the right to life, liberty, security, privacy and autonomy; the right to equity and non-discrimination; the right to the highest attainable standard of (sexual) health; to decide whether to be sexually active or not; to have consensual sexual relations; to decide whether or not to marry and plan a family; to decide whether or when to have children; to pursue a satisfying, safe and pleasurable sexual life; and the right to information, education and SRH health care [5, 43, 48]. The International Planned Parenthood Federation has defined sexual rights for young people, including, among others, the right to be free from harm, to privacy and personal autonomy, the right to know and learn [44]. The concept of sexual rights is associated with responsibility and obligations. On the part of individuals, the responsible exercise of sexual rights requires that all persons respect the rights of other persons. On the part of the societies, individuals have to be equipped with power and resources to make informed and safe decisions about their SH [42].

Sexual rights apply universally to all individuals, including young people. For example, adults as well as young people have the right to decide about their fertility. In a young person's case, it may be the right to postpone childbearing during teenage years and having the means and support to do so [49]. However, children and young people are especially vulnerable to sexual rights violation, because of the need to both protect and empower young people [44]. One of the most fundamental challenges is to recognize both young people's right to be protected and their right to decide upon their sexuality [37, 44, 50]. Since each young person develops at an individual pace, there is no chronological age at which certain sexual rights and protections gain or lose importance [44, 49]. The balance between protection and autonomy should be based on the "evolving individual capacities" of young people, which stem from the UN Convention on the Rights of the Child [16], to progressively take full responsibility for their actions and decisions [44, 51]. The evolving capacity of

young people, even if under the age of 18, to make decisions about their health and wellbeing must be recognized, while at the same time guaranteeing protection from harm when young people lack the necessary knowledge, skills and experience to protect themselves [44, 49, 50].

2.2. Sexual health indicators

SH indicators can be used to monitor and evaluate SH and associated health care across populations, geographical areas or time [5]. In 2006, WHO proposed 17 RH indicators that were mostly related to fertility, maternity and perinatal health, but the list contained also indicators such as contraceptive prevalence, prevalence of HIV/STI during pregnancy, infertility and knowledge on HIV [52]. In a search for more feasible RH indicators and indicators that would better enable the measurement of the wider concept of SH, a more comprehensive set of 13 core indicators for EU member states was developed in the REPOROSTAT (State of Sexual and Reproductive Health and Fertility in the EU) project in 2006 [53]. These included: acceptance of testing and HIV seroprevalence of pregnant women; chlamydia prevalence; reported condom use at last high-risk sexual intercourse; median age at first intercourse; proportion of contraceptive use at first sexual intercourse; age-specific birth rates in teenagers; contraceptive prevalence; maternal age at first childbirth; total fertility rate; proportion of women trying to get pregnant for one year or more; proportion of deliveries associated with assisted reproductive technology; frequency of induced abortions and proportion of women aged 50 and above who have had hysterectomy [53]. WHO/United Nations Population Fund technical consultation in 2007 further expanded the set of SH indicators and classified them as follows: policy and social indicators; access to services: availability, information and demand, quality; use of services; outcome and impact indicators [54, 55]. Some SH indicators are routinely collected in many countries (health and population statistics and registries), and these data are generally available, reliable and comparable in developed countries [56]. In most developing countries, however, there is a lack of reliable data collection systems. Therefore, data collection is often dependent on population-based health surveys, and international comparability may be undermined by variations in availability, data collection methods, inclusion criteria and question wording in the surveys [5, 56].

In the following, an overview of four SH indicators of young people that were considered most relevant (teenage pregnancies, age at sexual initiation, contraceptive prevalence and condom use, and sexuality-related knowledge), and their determinants in Estonia and elsewhere, is presented.

2.2.1. Teenage pregnancies

Teenage pregnancies are associated with poor social and economic conditions and prospects, being both a result of such conditions and also an underlying cause of them [57, 58]. Childbearing during teenage years is associated with increased risks for adverse pregnancy outcomes, such as preterm birth, low birth weight [59, 60], anemia and neonatal admission [60], which is related to non-utilization of prenatal care rather than young biological age [60]. Patterns of early childbearing tend to be repeated in the following generations [57, 58]. In a global perspective, teenage pregnancy is a leading cause of death for young women, with complications of childbirth and unsafe abortion being the major factors [61].

The well-recognized individual factors associated with teenage pregnancies in developed countries are socioeconomic disadvantage [62, 63], disrupted family structure [62] and low educational level and aspiration [62, 64]. In addition, substance use [2, 62] and early sexual activity [2, 64–66] have been associated with teenage pregnancies and tend to co-occur. A few studies in Europe have found that ethnic minorities have higher teenage pregnancy rates, but this association is generally confounded by socioeconomic deprivation [62].

In recent decades, teenage pregnancies have increasingly been conceptualized as a social problem [4]. As concluded already by Darroch et al. [10], who analyzed adolescent pregnancies in the USA, Canada, Sweden, France and Great Britain, national differences in contraceptive use rather than differences in sexual activity influence variations in teenage pregnancy rates in developed countries. Furthermore, socioeconomic disadvantage and adolescent sexual behavior are interrelated, since being a disadvantaged youth in the USA, for example, is associated with a higher likelihood of teenage pregnancy compared to other countries [63]. The European approach to young people's sexual activity, on the other hand, has resulted in the promotion of use of contraception through access to SE and youth-friendly SH services, leading to low teenage pregnancy rates [67].

While information on teenage births is essentially complete and accurate, there are limitations in the availability and quality of abortion data [53, 56, 67–69].

Teenage births and abortions in other countries than Estonia

National health statistics typically include number of births for 15- to 19-year-olds [4], but the data may be derived also from population censuses and population-based surveys. The term "age-specific teenage birth rate" [53, 56, 68] has been used in the same meaning as "age-specific teenage fertility rate" [5], and is derived when the number of births in a year to women aged 15–19 years are expressed per 1000 women of the same age, using female mid-year population numbers [5, 53, 68]. It is common to add births to girls less than 15 years of age to the 15- to 19-year age group [5].

The worldwide average of teenage birth rate is 65, due to high rates in developing countries [4]. Teenage birth rates declined substantially in 1970–1995 in most of the 46 industrialized countries analyzed, but remained high in the USA and Eastern European countries [67]. Teenage birth rates further declined since the mid-1990s in most developed countries, but again remained exceptionally high in the USA (34/1000 in 2010); whereas among the Western, Northern and Southern European countries, the birth rate was the lowest in Switzerland (2/1000) and the highest in Scotland (23/1000), and England and Wales (21/1000) [68]. The general trend of declining teenage fertility is part of an overall decline in childbearing across industrialized countries, explained by complex shifts in gender norms, timing of childbearing, widespread distribution of SE, and provision of confidential and accessible SH services [67]. A different trend occurred before the 1990s in many Eastern European countries with historically young age at marriage, where the teenage birth rate increased at the same time when general childbearing decreased. Teenage birth rate began to decline in some of these countries only after 1990, when political liberalization and considerable social changes took place [67], followed by improved access to modern contraception [70].

The age-specific teenage abortion rate is the number of induced abortions per 1000 women aged 15–19 years [52]. The induced abortion ratio to 100 live births reflects the intensity of the desire to avoid childbearing, but also access to abortion services [67]. The proportion of teenage pregnancies ending in abortion varies widely across countries [68]. In Europe, pregnancies in women aged 15–19 years are most commonly unplanned [2]. The decision to pursue or terminate an unplanned pregnancy mostly reflects young women's living conditions, changing social norms (goals other than motherhood and family formation), and educational and employment perspectives, but also access to legal abortion, reliable contraception and confidential SH services [67]. The legal status of abortion in a particular country influences the availability and reliability of official abortion data [67]. In some countries, the registration of legally induced abortions is reliable; in others, numbers are based on estimates [4, 67, 68]. Data may also be derived from population-based surveys, although the latter may achieve only up to 80–85% completeness in reporting [71].

A decline in teenage abortion rate from 1970 to 1995 in developed countries was noticeable, although this was less marked than the decline in teenage birth-rate, because reliable data on abortions were lacking in 13 out of the 46 countries analyzed [67]. Teenage abortion rates further declined since the mid-1990s up to 2011 in the majority of the countries with complete abortion data [68]. Among countries with complete abortion data, adolescent abortion rate was highest in England and Wales (20/1000) and Sweden (20/1000); it was 15/1000 in the United States; and in about half of the countries, the rate was between 8 and 17 per 1000. The proportion of teenage pregnancies that ended in abortion varied widely across the countries with complete data; in half of the countries, 35% to 55% of pregnancies ended in abortion [68].

Teenage pregnancy rate is the sum of live births and induced abortions per 1000 teenage girls [68]. Teenage pregnancy rates declined in 1995–2011 in the majority of the 16 countries with complete abortion data; the steepest yearly percentage change occurred in Estonia (4% per year) [68].

Teenage births and abortions in Estonia

The Estonian Medical Birth Registry was founded in 1991 and the Estonian Abortion Registry in 1994. The registries enable reliable data about age-specific births and pregnancy terminations to be sourced since 1992 and 1996, respectively [72, 73]. The quality of the data recorded both in the birth registry [74] and the abortion registry is considered reliable [68, 75].

As shown in Figure 1, teenage birth rate declined from 50.5 in 1992 to 16.4 in 2013, and teenage abortion rate declined from 42.4 in 1996 to 16.8 in 2013 [73]. The decline in teenage birth and abortion rate was most rapid in the 1990s [76, 77], but continued to decline thereafter, although at a slower pace [14].

The data of teenage birth and abortion rates distinguished by self-defined ethnicity is available since 1996. As shown in Figure 2, non-Estonian teenagers tended to terminate pregnancy more often than Estonian teenagers, but the gap in abortion rates disappeared since 2009 [73]. Birth rates began to decline first among Estonian teenagers, but the differences in birth rates have been minor [73] (Figure 3).

The percentage of teenage mothers from all parturients decreased from 14.6 in 1992 to 9.7 in 2001 [77]. Teenage induced abortions accounted for 11.4% of all induced abortions in 1992 [77] and 9.7% in 2011 [75]. The trend in teenage abortion ratio showed that while in 1992, in case of a pregnancy, teenagers decided more often to have a baby, then in 2001 they decided more often to terminate their pregnancy [77].

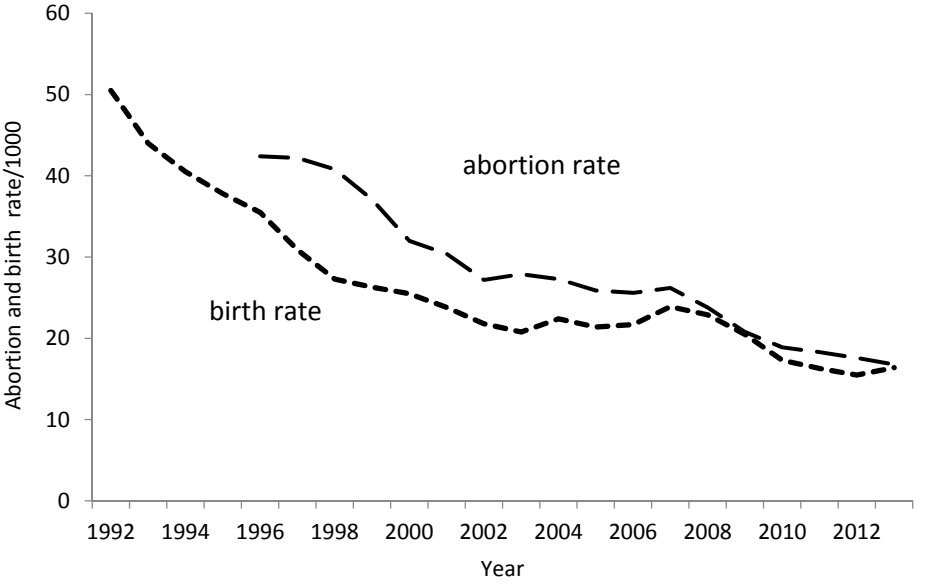


Figure 1. Birth rates in 1992–2013 and induced abortion rates in 1996–2013 among 15- to 19-year-old teenagers, Estonia. *Source: Estonian Medical Birth Registry and Estonian Abortion Registry.*

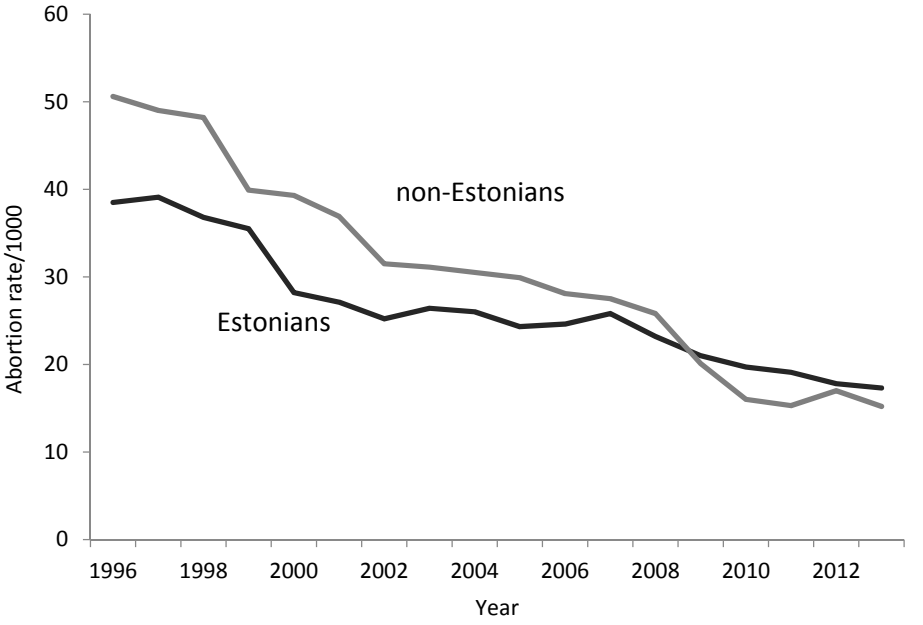


Figure 2. Induced abortion rates among 15- to 19-year-old Estonian and non-Estonian teenagers, Estonia, 1996–2013. *Source: Estonian Medical Birth Registry and Estonian Abortion Registry.*

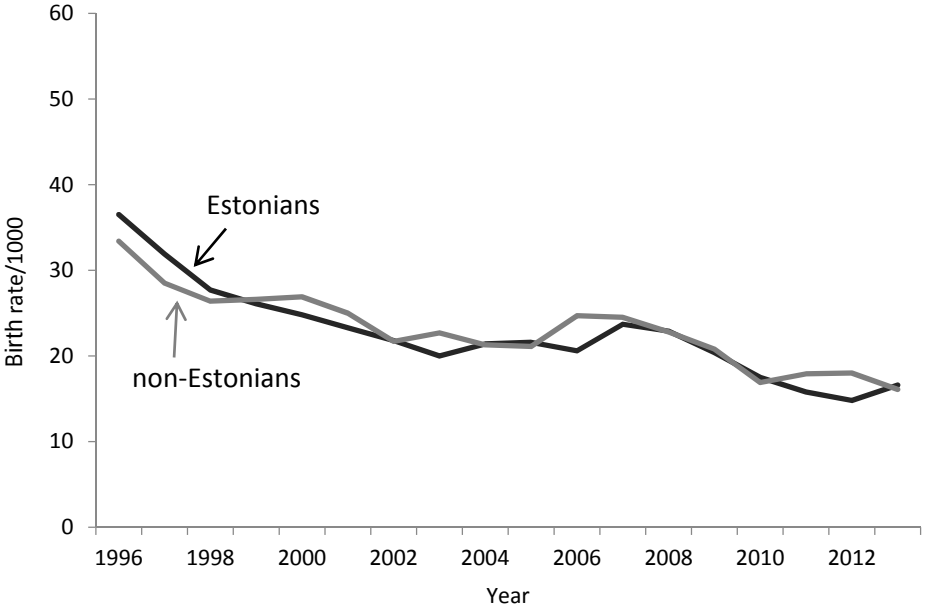


Figure 3. Birth rates among 15- to 19-year-old Estonian and non-Estonian teenagers, Estonia, 1996–2013. *Source: Estonian Medical Birth Registry and Estonian Abortion Registry.*

2.2.2. Age at sexual initiation

Median age at first sexual intercourse is defined as the median age of first penetrative sexual intercourse among people in a defined age group and can only be collected via population based surveys. Median age is preferably collected, rather than mean age, to reflect the skewed nature of this indicator [53].

The proportion of young people who have experienced early sexual intercourse, usually defined as sexual intercourse before 15 [55, 78] or 16 years [64], has been identified as an indicator that predicts a range of risky behaviors and adverse outcomes. Early sexual intercourse is associated with negative outcomes such as unplanned pregnancy during teenage years and later [2, 64–66], increased lifetime prevalence of sexual partners [28, 79, 80] and sexually transmitted diseases [66, 79, 81], non-use of contraception [81, 82] and self-reported depression in middle adolescence [83].

Early sexual intercourse has been associated with risk factors such as substance use [79, 80, 84], lower academic achievement [79, 85], childhood behavior problems [86], earlier pubertal timing [65, 66, 87, 88], and it is more likely to be non-consensual [28].

It must be remembered that initiating sexual intercourse during adolescence is a normal part of an adolescent's general development and should not be considered to be a problem even if it takes place relatively early, provided that it

is consensual and that contraception is used. Darroch et al [10] have concluded that use of contraception is more important than sexual activity in explaining differences in levels of adolescent pregnancy and childbearing between countries.

Age at sexual initiation in other countries than Estonia

There is no universal trend towards sex at a young age globally [28]. Most men and women begin sexual activity during teenage years, but regional diversity and variations between men and women are considerable [28]. In developing countries, women's age at first intercourse is linked to early marriage. Men in these countries generally start to have sexual intercourse later than do women [28]. In developed countries, men and women generally start sexual intercourse at the same age or with little age gap [28].

In Europe, liberalization of sexual norms and an increase in female sexual autonomy led to a decrease in median age at first intercourse since the late 1960s, more quickly among women than men, and first in Northern European countries and thereafter in most of the Western and Central European countries [2, 70, 89]. In Northern and Western Europe, the median age at first sexual intercourse has been fairly stable since the 1980s, although in some countries a further decrease occurred in the 1990s. In the Netherlands the median age of first sexual intercourse was 17 years in 2011 [90]. In Great Britain this age is further decreasing and is currently 16 years [91]. A similar decrease in age at first sexual intercourse started twenty to thirty years later in Southern and Eastern European countries, including Estonia [70].

The age gap between men's and women's first sexual intercourse narrowed since the 1960s [70, 89]. According to the Nordic pattern of sexual initiation, girls initiate sexual intercourse at the same or slightly earlier age than boys [70, 92, 93]. For example, the mean age for the first sexual intercourse among 18- to 24-year-olds in Sweden was 16.5 for women and 16.8 for men in 2000 [94].

Early sexual intercourse has become more common among women [28] and men [79] in some developed countries in recent decades, although the prevalence is still lower than in developing countries and the increase is not significant [28]. According to the Health Behaviour in School-aged Children (HBSC) study, experience of sexual intercourse among 15-year-old adolescents was on average more prevalent among boys (29%) than girls (23%), when 36 countries were analyzed in 2009/2010. The greatest gender disparity, with more boys having early sexual experience than girls, was observed in Eastern and Southern European countries. Higher prevalence among girls was reported mainly in Northern and Western countries [92].

Age at sexual initiation in Estonia

In Estonia, the median age at first sexual intercourse decreased from about 20 years in the 1970s to 18 years in the late 1980s [95]; to 17 in the beginning of the 2000s, and stabilized thereafter [96].

The timing of sexual initiation for boys and girls became equal during the 1990s [95, 96]. While sexual intercourse among 9th grade pupils (aged 14–16 years) was experienced by 13% of the boys and 5% of the girls in 1994 [97], then by 1999, the prevalence was 15% among boys and 13% among girls [98].

The results of the HBSC study indicate that in 2001/2002, 20% of 15-year-old boys and 16% of girls in Estonia had experienced sexual intercourse [93], whereas the comparable percentages in 2009/2010 were 23% and 21%, respectively [92]. Estonia belonged to the ten countries where 15-year-olds were the least sexually experienced [92]. In line with these results, the youth HIV studies in 2003, 2005, 2007 and 2010 showed that the proportion of 14- to 15-year-olds with sexual intercourse experience remained stable during the 2000s – about one in five 14- to 15-year-olds had been engaged in early sexual intercourse [96].

2.2.3. Contraceptive prevalence and condom use

Consistent and correct use of contraception is an effective means of reducing unplanned pregnancy [99]. Contraceptive methods can be categorized into modern (supply, clinic) methods and traditional (non-supply) methods. Methods are also distinguished based on their efficacy. The Pearl index (number of failures of a contraceptive method per 100 woman years of exposure) and life-table estimates (probability of cumulative failure for a standard period of time) are two methods of measuring contraceptive failure [100]. Effectiveness of every method is dependent, among other factors, on its correct and consistent use. The Pearl indices are classified as either "perfect use" of a contraceptive method that reflects correct and consistent method use and "typical use" reflecting how effective methods are for the average person who does not always use methods correctly and consistently [101]. The most effective contraceptives, in descending order, are sterilization and long-acting hormonal contraceptives (implant and hormone-releasing intrauterine system); copper-releasing intra-uterine device (IUD) and short acting hormonal contraceptives (injectable, oral contraceptives, transdermal patch and vaginal ring); male and female condoms. The least effective methods are vaginal barrier methods (diaphragm, cervical cap and spermicidal agents) and traditional methods, including rhythm method, withdrawal and lactational amenorrhea [100, 101].

No contraceptive method, with the exception of male and female sterilization, is medically contraindicated solely on the grounds of age [9, 99]. While there may be some risks associated with different methods, the benefits associated with the prevention of unplanned pregnancy and STIs among adolescents are greater [99].

Condoms are well-suited contraception for adolescents, offering protection from STIs, being widely available and requiring little planning for their use. However, condoms offer less protection against pregnancy compared to hormonal methods and IUDs, their use is coital related, influenced by alcohol and drug use, possible embarrassment and one has to learn how to use them properly [9, 99]. The other barriers may be cost, perceived reduction in sexual pleasure and intimacy, being in a steady and trustful partnership, not believing that the partner has HIV, and using other contraceptive methods [102]. It is recommendable that condom use should not be stopped before it is reasonably certain that the partner is STI-negative [9].

Combined hormonal contraceptives (CHC) can be safely used from the age of menarche onwards. CHC are highly effective against pregnancy when used consistently and correctly. They are not coitally related, safe and well tolerated in majority of healthy adolescents, offering several health benefits such as improvement of acne, dysmenorrhea and heavy menstruations [103]. However, CHCs do not protect against STIs, one has to attend a service to obtain them and a lack of routine can make correct pill use difficult [99].

Condom users have been found to be significantly younger than non-users, whereas with increasing age and entering a more stable relationship, adolescents tend to switch to hormonal methods [9, 99], mainly the CHCs. Although young people most commonly use condoms and CHCs, it is known that women aged 15–24 years are more likely to experience contraceptive failure in relation to condom and CHC use than women aged 25–34 years [104], and that young people are more likely to be sporadic contraceptive users than older women. For this reason, the use of long-acting reversible contraceptive methods, including IUDs and implants, are increasingly recommended for teenagers and young women [99, 105].

Importantly, contraception for adolescents needs to include prevention of both STIs and pregnancy [9], in order to prevent, in addition to unintended pregnancies, also pelvic inflammatory disease, infertility and ectopic pregnancy [99]. Therefore, dual method or "Double Dutch" method use (the use of condoms with another highly effective contraceptive) is the best approach for young people, but, except in the Netherlands, not largely used [9, 99].

Young women's and men's use or non-use of a method is influenced by many factors, including knowledge, information, socio-economic status, educational background, lifestyle, need, age, religion, ethnicity, perceptions (their own and others), anxiety and embarrassment [3]. Oral contraceptive use has been associated with frequency of intercourse and parents' acceptance of sexual relationships [106]. The feeling that their sexuality is socially unacceptable may discourage young people's use of contraception [63]. Non-use of contraceptive methods is strongly associated with substance use [82, 107], early age at first sexual intercourse [82] and multiple partners [82]. The cost of contraceptives, confidentiality and the accessibility of SH services are all determining factors in the use of contraceptives by young people [63].

Contraceptive prevalence and condom use in other countries than Estonia

Contraceptive prevalence is a complementary output indicator to teenage birth and abortion rate. It is calculated as the proportion of women of reproductive age or their partners who are using a contraceptive method at a given point in time [5, 53, 55], for example, during first or last sexual intercourse, or during the last month. The indicator is relevant to assess the coverage of contraceptive services, personal knowledge and reimbursement policies [53]. Often contraceptive prevalence is calculated for women at risk of pregnancy, meaning women who are sexually active and not infertile, not pregnant and not planning a pregnancy. Data for contraceptive prevalence may be derived mainly from population-based or smaller-scale surveys.

The indicator of reported condom use reflects risk reduction behavior. Condom use at last high-risk sex, defined as "penetrative sex with a non-marital, non-cohabitating partner" or condom use at first or most recent sexual intercourse, or consistent condom use may be used as indicators [53, 55].

Comparative data on young people's prevalence of contraception use are scarce [108]. The HBSC study has been the sole cross-national survey collecting information on condom use and contraceptive prevalence among 15-year-olds who have engaged in sexual intercourse [92, 93]. In 2009/2010, condom was most frequently used by sexually active 15-year-olds, ranging from 64% in Sweden to 90% in Estonia [92]. The use of contraceptive pills was most frequent among girls in Northern and Western Europe, in countries such as Germany (62%), Belgium (55%), Denmark (56%) and Netherlands (54%), but less frequent in Eastern and Southern European countries, such as Greece (2%), Lithuania (7%) and Romania (9%) [92]. Last intercourse was not protected or poorly protected among 17% of 15-year-old students in 2002/2003, ranging from 6% in the Netherlands to 27% in Poland. [109]. The Netherlands is a country with one of the highest young people's contraceptive prevalence in the world. In 2011, nine out of ten adolescents used contraceptives at first intercourse: almost three quarters used a condom, 58% of girls used the pill or another form of contraceptive, and dual method (using both condoms and oral contraceptives) was used by 34% of boys and 41% of girls. Contraceptives were always used with their last sexual partner by four out of five sexually experienced adolescents [90].

Contraceptive prevalence and condom use in Estonia

In Estonia, the use of condoms and effective contraceptive methods has markedly increased among young people from 2000 onwards [14].

The results concerning condom use at first and last sexual intercourse from different studies in Estonia are presented in Table 1.

Table 1. Condom use at first and last sexual intercourse, Estonia

Study	Study year	Respon-dents' gender	Age group (in years)	Condom use at first sexual inter-course (%)	Condom use at last sexual inter-course (%)	Condom use at last high-risk sexual inter-course (%)
Papp et al. [97]	1994	M, F	14–16	51[a]	54	
Leinsalu et al. [95]	1996/97	M, F	25–29	14		
Papp et al. [98]	1999	M, F	14–16	51[a]	58[a]	
Lõhmus et al. [110]	2003	M, F	14–15	59	81	
			16–18	59	65	
			19–24	39	44	
Part et al. [12]	2004	F	16–17	72	62	
			18–24	61	41	
Lõhmus et al. [110]	2005	M, F	14–15	62	70	63
			16–18	72	75	81
			19–24	57	48	61
Trummal et al. [96]	2007	M, F	14–15	69	76	70
			16–18	75	72	77
			19–24	54	52	68
Trummal et al. [96]	2010	M, F	14–15	77	79	79
			16–18	78	73	80
			19–24	63	54	66
Aasvee et al [111]	2005/2006	M, F	15		81	
	2009/2010		15		90	
	2013/2014		15		74	
Lippus et al. [25]	2014	F	16–17	89	61	
			18–24	86	47	

F, female; M, male.
[a] percentage calculated based on small number (21–39) of respondents.

Data about contraceptive prevalence in the 1990s among young people in Estonia are scarce. In 1994, 67% of 20- to 24-year-old respondents did not use contraceptives during first sexual intercourse and about half of them had chosen ineffective methods (calendar method and withdrawal); 58% used some contraceptive method during the last month, such as condom (21%), pills (5%), IUD (20%), withdrawal (9%) and 34% did not need contraception [112]. In 1996, similar results were achieved [95]. Slightly more than half of the 9th grade pupils (aged 14–16 years) used some effective contraceptive method, most frequently condom, during their first sexual intercourse, both in 1994 and 1999 [97, 98]. There is enough evidence, however, that since the 2000s, effective contraceptive prevalence among teenagers and young adults increased, although ineffective methods were still widely used in the 2000s [12, 96, 110, 111]. In

2010, 83% of 14- to 15-year-olds, 81% of 16- to 18-year-olds and 71% of 19- to 24-year-olds used effective contraceptive methods at their last sexual intercourse [96].

2.2.4. Sexuality-related knowledge

Although knowledge alone is not sufficient to ensure the conduct of safer sexual behavior [62], good sexuality-related knowledge is one of the mediating factors of behavior [113], a prerequisite for developing skills related to safe sex and helping to prevent fears and myths related to sexuality [114]. For example, knowledge about the human body, reproductive physiology and anatomy, the menstrual cycle, conception and pregnancy relates to understanding the mechanism of action of different contraceptive methods. Knowledge about how to use methods correctly or what to do if the effectiveness of a contraceptive method is compromised is essential for correct and consistent use of contraceptives [3]. The main reason that sexually active young people give for not using contraception or condom is the false belief that they cannot get pregnant or acquire a STI [99].

Trends in knowledge should therefore be evaluated in parallel with trends in related behavior. WHO defined knowledge of HIV-related prevention practices as a separate RH indicator, meaning "the percentage of population-based survey respondents who correctly identify three major ways of preventing sexual transmission of HIV, and major related misconceptions" [5]. In addition, knowledge of wider sexuality-related topics may be used as an independent indicator.

In a systematic review about knowledge of STIs among school-going adolescents in Europe, it was found that in 1990–2010, the studies reported generally low levels of awareness and knowledge of STIs, with the exception of HIV/AIDS. Good HIV/AIDS related knowledge may be linked to the fact that since the mid-1980s, extensive awareness campaigns on this topic have been conducted globally [115]. Good sexuality-related knowledge is associated with older age [116], being female [115, 116], receiving SE at school [115, 117–119], and visiting an YFC [116].

Only a few earlier studies have investigated adolescents' sexuality-related knowledge in Estonia. As far back as in 1979, only one fifth of 15- to 16-year-old adolescents knew where the ovum is fertilized and the majority of boys thought that masturbation causes impotence [120]. In 1993, the majority of 14- to 16-year-old adolescents did not know *Chlamydia trachomatis* infection and one-fifth believed that having had an STI offers immunity to other STIs [121]. There is evidence that by 2005, however, the vast majority of youths had good knowledge in safe sex, HIV/AIDS and STIs [96]. Furthermore, the level of knowledge about HIV transmission, STIs, and condom use was better among respondents who had received SE at school [96]. In a comparative study in 2005–2006 in four EU countries with divergent cultural backgrounds, the highest percentage of 16- to 19-year-old respondents who had heard about

Chlamydia trachomatis infection was in Estonia (51.3%), followed by Belgium (30.9%), the Czech Republic (29.3%) and Portugal (11.8%) [122]. At the same time, there is evidence that good knowledge reduced the odds for unplanned pregnancy among teenagers in Estonia [76].

2.3. Social determinants of sexual health of young people

Over the past two decades the focus in understanding and improving SH has moved to modifiable social (macro, environmental, structural) determinants, rather than individual risk or protective (micro) factors [4, 7, 10, 28, 37, 42]. Social determinants of (sexual) health are social conditions in which people live that affect their health and wellbeing – including laws and policies, distribution of political and economic resources, access to (sexuality) education, access to (sexual and reproductive) health services, ethnic inequalities, as well as family and school environment, peer relations, gender and sexual norms, and health behaviors, including smoking and substance use [42, 123].

There is evidence that improvements in SH have followed the implementation of a combination of different measures [4, 28, 124, 125]. Hence interventions have to be comprehensive, attempt to modify social norms and tackle the structural social determinants of (sexual) health [4, 28]. For example, it is important that SE programs are linked to SH services and other initiatives that simultaneously address topics such as gender equality, youth empowerment and health-seeking behavior [126].

WHO [123] has proposed a framework of five key domains in the social context that influence individuals' SH, which are also areas for SH promotion strategies: laws, policies and human rights; education; society and culture; economics; health systems. Following this framework, key determinants in the social context of the SH of young people, addressed in this research (laws and policies, access to SE and SH services, sexual ideology and substance use), are introduced.

2.3.1. Laws and policies

There has been considerable progress in enacting national laws related to sexuality and SH in line with human rights during the recent two decades [127]. A movement from the ideology of crime and punishment to health and welfare and further to human rights has occurred in the legislation [21]. However, there are still laws that expose barriers to SRHR in many countries [21, 123, 127]. Some rights-based legal principles that govern SH and the related care of young people are discussed next.

Free consent to medical care

Laws generally recognize the evolving capacity of young people less than 18 years of age to give their consent for receiving medical care [21, 128]. Even if authorization of parents or other adults is required in some countries for provision of medical services such as contraceptive care, STI testing and abortion to minors, there are usually parallel laws that oblige parents to provide their dependent children with health care services that are medically indicated [21]. However, there is evidence that a requirement for parental consent for induced abortion in the case of a minor may be a serious barrier in seeking help from available services, and may also violate adolescents' rights to non-discrimination, to health and to privacy [129, 130]. It has been shown that teenage pregnancies decrease with increases in their legal access to abortion [131] and contraceptives without parental consent [131, 132].

Confidentiality

Confidentiality is the duty of health care providers to keep secret the private information they gain about patients [21]. Young people's right to maintain confidentiality even from their parents or guardians, if they have the evolving capacity to claim it, is among the essential sexual rights of young people [45]. For example, if teenagers who are sexually active fear that their confidentiality will not be maintained and their parents will be informed, they may decide not to access services they need [21]. In the situations where there is conflict between the young person's wishes and the parents' wish to know, the health care personnel has to act in the minor's best interests [49]. There are exceptions to the rule of confidentiality, when there is an immediate or future risk to the health and life of the patient and others [21]. This is especially needed in the situations where young people may need protection against their parents, for example when the parent has abused the child.

Age of consent

In many liberal developed countries it is acceptable for young people to be sexually active and enjoy sex when they are sufficiently mature and it is safe, but it is not acceptable for an adult to be in sexual intercourse with a minor [49]. As a result, there are laws that make consensual sexual intercourse with adolescents below a given age a criminal offense, in order to protect minors from sexual encounters [21], whereas consensual sex between older adolescents is not criminalized [127]. In the majority of European countries the legal age of consent is between 14 and 16 years [128, 133]. Laws regulating age of consent were not associated with prevalence of early sexual intercourse for both boys and girls in a recent study that engaged 17 European countries [78]. Paradoxically, the minimum legal age of consent for sexual intercourse may be

handled as a barrier to giving contraceptive counseling or prescribing contraceptives to minors [49, 128], although such laws do not judge adolescents, but only those who have intercourse with them [21]. Therefore, age of consent laws should not be used to limit access to SRH services and information [128].

Abortion laws

The worldwide trend toward liberalization of abortion laws has been observed in recent decades [134]. However, the availability of legal abortion varies even across Europe due to legal obstacles in some countries or restrictive laws that may impose stringent gestational limits, parental consent and delays due to compulsory waiting time [135]. Furthermore, reports of deteriorating access in some Eastern and Central European countries due to legislative barriers, geographical disparities and increased costs of services are undermining young women's ability to access safe abortion services [136].

Legal barriers have no effect on the need for abortion, but instead, increase the risk of unsafe abortions. The consequences of unsafe abortions are among the four main causes of world maternal mortality and morbidity [21, 129, 134]. If safe abortion is not available, especially poor and young women are more likely than others to face the health consequences, including mortality, of unsafe abortion [127]. They may have problems in finding the opportunities for abortion, either in their own or other countries; they may turn to unskilled providers; they may self-use misoprostol. In addition to legal restrictions, young women may suffer from other policy barriers to safe abortion, such as lack of information, requirement of third-party (parental) authorization, inability to pay, delays in seeking-health care and provider's conscientious objection [129]. On the other hand, where abortion is legal on broad socioeconomic grounds and on a woman's request, and where safe services are accessible, both unsafe abortion and related mortality and morbidity are infrequent [129]. Therefore, if young people, in case of an accidental pregnancy, resort to abortion, the abortion must be accessible, safe and legal, from both health and rights perspective.

Laws and policies in Estonia

Estonia has signed the UN Convention on the Rights of the Child and has a children's ombudsman in place. Evolving capacity of young people less than 18 years of age to give their consent for receiving medical care is recognized in the law.

The age of consent for sexual intercourse is 14 years.

Since the beginning of the early 1990s, solidarity-based, compulsory national health insurance was introduced, which covers 95% of the population, including all those younger than 19 years and pregnant women [137].

Abortion has been legal in Estonia since 1955. During the Soviet period, abortion was readily available, free of charge and the number of illegal abortions was small [72]. At present, abortion is regulated by the Termination of Pregnancy and Sterilization Act adopted by the Parliament of Estonia in 1998 [138]. Women can legally request abortion until the 12th week of pregnancy, and on medical grounds (including age less than 15 years and over 45 years) until the 22nd week of pregnancy. Socioeconomic reasons alone are not an indication for terminating the pregnancy from the 12th week of pregnancy onwards [138]. Parental consent for abortion to minors less than 16 years of age was required in 1992–1998 [72]. In 1999–2009 the law did not regulate this issue. In 2009, parental consent for minors under the age of 18 was again made a legal requirement, but was abolished in 2015 after heated debates. Medical abortion has been available since 2005, and by 2013, half of the induced abortions were medical [73]. Legal abortion was free of charge until 1994. Since then, all women having health insurance have to pay up to 50% of the actual charge [72], 35–44 euros in 2015, starting from the age 15 years. In the case of pregnancy termination for medical reason the cost is fully covered by the health insurance fund. Although some religious organizations have insisted on parental consent and questioned women's right to abortion, the public debates have mostly supported the right for safe abortion. For example, the majority of the respondents (71%) in a population-based womens's survey agreed with the statement that abortion on a woman's request has to be legally available [25].

2.3.2. Sexuality education

Sexuality education may be formal (delivered in schools) and informal (delivered within the family, peer group, extra-curricular activities and media). There is strong evidence for the importance of promoting SE through school-based programs [123]. While informal sources are important for learning about human relationships and sexuality, especially for younger age groups, these are often insufficient, because of the complexity of knowledge and skills required for topics related to sexuality. In addition, globalization, migration, the rapid spread of new media, the emergence of HIV and AIDS, increasing concerns about the sexual abuse of children and adolescents and, not least, changing attitudes towards sexuality and changing sexual behavior among young people require effective strategies to enable young people to deal with their sexuality in a safe and satisfactory manner [139]. Formal SE, as opposed to peer education and extracurricular activities, is well placed to reach a majority of children and young people [139]. Moreover, young people often prefer to learn from school about sexuality rather than from parents [25, 117].

The concepts of sexuality education

The concepts of SE have developed differently in different countries. The European approach to SE emphasizes human rights, the right to self-determination, gender equality and acceptance of diversity [126]. The concept of "holistic sexuality education" (HSE) was defined by the European Expert Group on Sexuality Education in 2010 as follows:

> "HSE is learning about the cognitive, emotional, social, interactive and physical aspects of sexuality Sexuality education starts early in childhood and progresses through adolescence and adulthood. It aims at supporting and protecting sexual development. It gradually equips and empowers children and young people with information, skills and positive values to understand and enjoy their sexuality, have safe and fulfilling relationships and take responsibility for their own and other people's sexual health and well-being" [139].

The focus of HSE is on supporting development, rather than on behavior change. Instead of attempting to change young people, it enables them to develop, understand and enjoy their sexuality [126]. The history of HSE has been an evolutionary process [140] that started in Sweden in 1955, when SE became mandatory in elementary schools [94], followed by many other Western European countries in the 1970s and 1980s, and Eastern European countries in the 1990s and 2000s. In 2006, most of the 26 countries in Europe had mandatory SE in school, but it still remained very diverse in content and quality [133]. However, in 2012, there were laws in place requiring SE in the formal school curriculum in 9 out of 18 reviewed European countries [128]. Currently, there are many examples of HSE programs in Europe, such as in Sweden, Norway, Austria, the Netherlands, Belgium [140] and Estonia [140, 141], which are characterized by a positive and development-appropriate approach towards sexuality, rather than a health risk-centered one. HSE does not aim to prevent young people from starting sexual relationships, but accepts that they will engage in loving relationships that may gradually include sexual behavior [140]. HSE aims to guide young people throughout life, supporting their ability to learn and make conscious, satisfactory, healthy and respectful choices regarding relationships and sexuality. HSE at younger ages differs from HSE at older ages – while younger children learn about proper names of body parts and about friendship, then later, themes such as biology of reproduction, love and romantic relationships, ways to prevent pregnancy and STIs, sexual diversity and sexuality in the media are discussed [140].

The right to age and development-appropriate sexuality-related information and education, acknowledged in the Convention of the Rights of the Child and other human rights documents [127] has, however, been an area of conflict in various countries. Traditional moralistic viewpoints, cultural and gender norms, and religious commitments may condemn SE, arguing that sex only belongs in marriage and one should not teach alternative views [49]. "Abstinence-only SE", dominant in recent decades particularly in the USA, focuses on delaying

sexual intercourse until marriage, and it does not include information on safe sexual behavior [34]. In the era of HIV/AIDS, however, public health and rights-based arguments have emerged that insist that young people have to be provided with the opportunities to obtain the knowledge, life skills and positive values they need to make informed decisions about their sexuality [43, 128]. The focus of SE has changed from the initial aim of prevention of unintended pregnancy to the prevention of HIV, and further to awareness of sexual abuse, homophobia and gender inequality as important parts of SE.

Another alternative to HSE is "comprehensive SE", which is not universally defined and is thus interpreted differently [140]. It varies from "abstinence-plus" programs, where information on contraception is added to the abstinence-only approach, to fully comprehensive approaches [117, 142, 143] that are identical to the holistic approach of SE [139]. For example, comprehensive SE is defined as an "age-appropriate, curriculum-based, right-based and gender-focused education that aims to equip children and young people with the knowledge, skills, attitudes and values that will enable them to develop a positive view of their sexuality and make informed decisions regarding their sexuality and sexual behavior" [126].

Evaluating the impact of sexuality education

The evaluation criteria depend on the characteristics of a program [140]. So far, current evaluation practice is dominated by studies that have investigated short-term outcomes of SE (changes in knowledge, skills, attitudes, and behavioral intentions). Two comprehensive reviews have been performed in this area. Kirby et al [113] reviewed 83 studies, 77 from the USA and six from Europe, that measured the impact of school-based SE on sexual behavior and mediating factors, and concluded that two thirds of the programs significantly improved one or more sexual behaviors; most programs increased knowledge about HIV, STIs, and pregnancy; the programs did not hasten or increase sexual behavior, but instead some programs delayed sexual behaviors; half of the programs increased condom use and none decreased condom use. Another review commissioned by the United Nations Educational, Scientific and Cultural Organization reviewed the results of 87 studies (29 from developing countries, 47 from the USA and 11 from other developed countries) concluded that most of the curriculum-based SE programs, in combination with access to health services and relevant policy frameworks, demonstrated an increase in knowledge and positive results on behavior [117]. At the same time, there is no evidence that abstinence-only programs affect the incidence of unprotected sex, number of partners, condom use or sexual initiation among young people in developed countries [144], but instead, are associated with higher teenage pregnancy rates [145]. Thus the programs have to be comprehensive or holistic, in order to be effective.

Evaluating the possible impact of SE on health-related outcomes (unintended pregnancy; STI/HIV) has so far dominated in the scientific literature. Very limited data exist that evaluate the impact of SE on positive aspects of sexuality, such as self-efficacy or the ability to communicate about feelings and wishes, or empathy and attitudes towards sexual diversity [140]. The impact of SE has been evaluated in terms of behavior change that is considered to influence health indicators (age at first sexual intercourse, use of condoms, use of contraception), although that behavior usually takes place several years later and is additionally influenced by other factors. Therefore, using randomized controlled trials (RCTs) to demonstrate causality is often inappropriate. Ketting [140] has described additional reasons why RTCs, although in general well suited to demonstrate a cause-and-effect relationship, are not best suited to demonstrate causal effects of SE programs. First, in most SE evaluation studies the participants are aware of the group to which they have been assigned, which may generate reporting bias. Second, in many European countries there are national SE programs, and it is impossible to create a control group of people who do not receive SE. And third, good SE programs last for years, and there is usually no baseline information available about children's knowledge about topics such as sexual intercourse [140]. In addition, there is very little European experience published in international scientific literature, because SE in Europe is integrated in the national curricula, which does not allow the use of an experimental or quasi-experimental design to measure the impact [140].

Taking the abovementioned aspects into consideration, there is a need for complementing and triangulating different mixed methods and data sources in evaluating SE (document analysis, qualitative methods, quasi-experimental designs, epidemiological time series analyses, population-based surveys), and looking at the medium to long-term positive health outcomes of SE [126, 140]. Recently, epidemiological overviews on the youth SH improvement in Estonia [14] and fluctuations of teenage abortions and births in Finland [146], both in the context of SE and youth-friendly services, have been published in line with these suggestions [140].

Sexuality education in Estonia

The engagement in general education is high in Estonia: 92% of 10- to 19-year-olds and 51% of 20- to 24-year-olds were studying in an educational institution in 2014 [147].

There was no mandatory SE in school programs during the Soviet period. Some enthusiastic teachers, however, talked about sexuality-related topics in "Personal Hygiene" lessons. Since 1989, a lesson called "Family Studies" was introduced at the gymnasium level, where pupils were, for example, recommended to avoid sexual intercourse, and STIs and unwanted pregnancies were warningly discussed. Rare initiatives in the area of SE were insufficient and ineffective [148].

In 1996, a mandatory course called “Human Studies” was introduced in the new national school curriculum [149]. This covered wide range of topics about human reproduction and sexuality [141, 148]. The aim of Human Studies was “to develop pupils’ communication and decision-making skills, promote humanistic values, appreciate one’s family and health, and promote motivation to achieve a healthy lifestyle” [141]. The training of future teachers in the universities was implemented since 1996, and the post-graduate training of the teachers was more intensive since 2005 [148].

The national curriculum has been updated twice (in 2002 and 2010) [150, 151]. The reasons for updating the curriculum have been, among others, the need to increase schools’ input in health promotion and intention to respond to serious changes in society (e.g., HIV epidemic) [141, 148].

The nature of the school-based SE in the national curriculum has remained “holistic” from the start [141, 148] according to the definition of WHO standards for SE in Europe [139, 140]. Human sexuality is considered primarily as a source of personal growth and happiness rather than as risky or dangerous, although prevention is included [141, 151, 152]. For example, there are lessons on friendship, intimate romantic relationships, healthy sexual development and love. The development of knowledge and skills and the shaping of attitudes at the same time is considered important. The current Human Studies course includes 35 lessons a year in Grades 2–3 and 5–8 (pupils between the ages of 8 and 15 years), and includes SE topics together with communication skills, drug prevention, nutrition and physical activity topics [151]. Approximately 18% of the topics in Human Studies are dedicated to SE in primary school. Teaching social skills that support young people to develop healthy and equal relationships is additionally integrated in other parts of the curriculum, such as Citizenship and History courses [152]. In addition, some SE topics are included in the Biology course in Grade 8 and in gymnasium [151].

There is reason to believe that due to prevention measures (including SE and SH services) that have led to the decrease in sexual risk behaviors and STI rates among the general population, especially among young people, the concentrated HIV epidemic that started among injecting drug users in 2001 and has been slowly but steadily declining, will not develop into a generalized epidemic [153]. The decline in new HIV cases has been especially prominent among young people: when in 2000–2001, 78% of all new cases were diagnosed among 15- to 24-year-olds (n=1402), then this age group accounted for only 21% (n=78) of all new cases in 2010 [153]. Despite the decline, Estonia has one of the highest HIV prevalences among other European countries, estimated to be 1.3% in 2013 [154].

2.3.3. Sexual health services

The focus of SH services in general has undergone profound changes in recent decades. Since the 1980s, there has been a conceptual shift in the goals of SH services from a narrow focus on family planning and maternal and child health to a wider rights-based focus on SRH for people of all ages [40, 43]. The main integrated elements of comprehensive SH services for all ages are: contraceptive care; preventing, diagnosis and treatment for STIs, including HIV; abortion care; identification and referral for victims of sexual and other forms of violence; diagnosis and treatment of infertility; services addressing psychological and sexual problems [43, 155]. The integration of services does not mean that all the core elements of SH care must be provided within one site, but it does require that healthcare providers have the knowledge and skills to provide an appropriate range of services and refer patients for other necessary services, either within the same facility or another site [43].

The concept of youth-friendly services

Young people need youth-friendly models of health services that are sensitive to their unique developmental needs [51, 61, 156]. Historically, SH services for adolescents were delivered through pediatric and adult services, but with the growing need for such services and the mounting evidence regarding barriers to accessing traditional health services [51], this approach was considered inadequate. Adolescents may be unwilling to visit health care services providing contraception because they perceive them as unfriendly [156]. In the UK, for example, the most significant concern for young people is the preservation of anonymity and confidentiality in SH services, and the fear of staff being critical or unfriendly [157]. Thus, the needs of adolescents differ from those of adults. High quality care of adolescents calls for special services for young people [9]. Models of SH service provision for young people include establishing dedicated youth clinics; making existing gynecological, family planning or maternity health facilities youth-friendly; making primary healthcare more responsive to young people's needs; and providing counseling and services in schools [43, 51, 61, 155].

There is growing evidence of the importance of making SH services friendly for young people, which means removing the barriers of availability, accessibility, acceptability and equity of services [51]. The characteristics of youth-friendly SH services include: availability without additional restrictions; easy access; convenient opening hours; drop-in services and short waiting times; availability in various settings; no or low cost; integrated services; interaction with providers in terms of privacy and confidentiality, respect and friendliness; youth-friendly and non-judgmental attitudes; sufficient length of the visit; informed choice; no fear of unpleasant procedures; quick referral when needed; and continuity of care; telephone and e-mail counseling available [51, 61, 128,

155, 156]. Youth-friendly service providers should aim to strengthen young people's self-esteem and contribute to a feeling that one's body and sexuality are valuable, need to be protected and not risked with [9].

Although examples of good practice exist [13, 40, 155], the implementation of youth-friendly SH services remains unequal across Europe [40, 128].

Quality of sexual health services

Quality of care of health services in general means the "degree to which the services for individuals increase the likelihood of desired health outcomes and are consistent with current professional knowledge" [158].

Bertrand and colleagues [159] developed a conceptual approach, according to which access to services, quality of care, and medical barriers are interrelated and equally important key characteristics of a broader concept of quality of care that supports the individual in choosing a healthy behavior, for example, choosing a contraceptive method and using the method sustainably. The concept of *access* – geographic, economic, administrative, cognitive and psychological – reflects the extent to which an appropriate package of services is available to clients [159]. Examples of barriers when accessing services include difficulties in reaching the far-located services, high cost of the service, long waiting time, unnecessary rules and regulations that inhibit obtaining the services, awareness of the services that are available, and difficulties in making an appointment. According to Bertrand, *quality of care* reflects the process of service delivery that influences the client's decision to adopt and sustain certain behavior [159]. The Bruce framework [160] is the central paradigm for the quality of family planning services, which reveals the importance of provider-client interaction [160]. The original Bruce framework identified six essential elements of quality in the process of service delivery: choice of (contraceptive) methods, information given to clients, provider's competence, client-provider interaction, mechanisms to ensure follow-up and continuity, appropriate constellation of services [160]. The patient's satisfaction or rating of client–provider interaction (for example, respect, friendliness, confidentiality, quality of information exchange, adequate consultation time and personalized attention) is important in providing a good-quality service. The third category in Bertrand's concept that can inhibit the use of SH services is *medical barriers*. These are scientifically unjustifiable policies or practices that inappropriately prevent clients from receiving or using a contraceptive method or achieving behavior of their choice [159].

While access to a service determines the contact of an individual with the service ("reaching the door"), then once the individual moves "inside the door" of the service, quality of care and medical barriers will be the key factors that influence the client's decision to adopt and continue with a safe and appropriate health behavior [159].

Evaluating the impact of sexual health services on young people's health

Research on the effectiveness of (youth-friendly) SH services and the quality of these services on young people's health has shown positive results but is limited [51, 125, 161–165]. For example, high quality communication between providers and clients, as well as emphasis on client choice was found to have a positive effect on contraceptive use [162]. Similarly, community-based interventions that aimed to increase knowledge and access to SH services among 15- to 24-year-old Chinese youth had long-term effects on the use of contraception [163]. Finding an effective methodology with which to evaluate the independent effect of SH services for young people is challenging [163, 164, 166]. It is likely that methodological limitations similar to those affecting SE affect the evaluation of SH services [140].

Youth-friendly services in Estonia

During the Soviet era, effective contraceptive methods were chronically unavailable, and ineffective methods such as the rhythm method, vaginal douches and withdrawal were widely used. Condoms were of poor quality and with high failure rate [167]. IUDs were used by 18.3% and hormonal contraception by only 2.6% of women aged 15–49 in Estonia in 1990, according to the official data [72]. The low prevalence of effective contraceptive methods was associated with very high incidence of induced abortion [72, 168]. Although contraceptive pills were available since 1974, their use was limited due to lack of knowledge and negative public opinion (concerning their reliability and safety for health), often shared by officials and doctors [72]. As a result, myths and misconceptions about modern contraceptive methods were maintained, and the use of ineffective methods was sustained.

Availability of modern contraceptive methods increased remarkably since the beginning of the 1990s. In 1993, a reimbursement system for prescription pharmaceuticals was introduced [169]. Hormonal contraception and IUDs were imbursed 90% for all full-time students, women during the first year after delivery and three months after abortion [72] until 2000, when these benefits were replaced by universal reimbursement of 50% for all contraceptives requiring prescription. At present, all contraceptive methods are available in Estonia, except female condom. Hormonal contraceptive methods and IUDs are subsidized and are prescribed by doctors and midwives, and one needs to visit a service provider in order to start using these methods. Copper IUDs are reimbursed 100% during one year after delivery. Condoms are easily accessible without prescription in a variety of settings. Emergency contraceptive pills became available on prescription in the 1990s, and over the counter since 2003. Parental consent is not needed for adolescents to acquire contraceptives.

Traditionally, contraceptive counseling was provided by gynecologists in women's outpatient clinics. Since the mid-1990s, new health care services,

offering contraceptive counseling among other responsibilities, became available in Estonia: private gynecological practices, a family doctor system, and a network of youth-friendly counseling services (in Estonian, *noorte nõustamiskeskused*), hereafter used in the same meaning as youth-friendly clinics (YFC). Recently, midwives and family nurses have become responsible for contraceptive counseling as well.

YFCs are specially designed to meet the needs of young women and men up to 25 years of age, providing contraception counseling, testing for HIV and STIs, counseling in case of an unexpected pregnancy, and a chance to talk about psychosexual problems with a professional [13]. The first YFCs were established in the beginning of the 1990s by local enthusiasts, in response to low use of reliable contraceptive methods and a high rate of teenage pregnancies and STIs [170]. During the following decade a network of 18 YFCs was established by 2004 under the advocacy and coordination of the Estonian Sexual Health Association. A set of quality standards was collectively developed [171] that included the following youth-friendly work principles: helping young people to recognize their needs and rights; providing trustworthy information and counseling; offering a friendly, welcome and respectful atmosphere, confidentiality and privacy; an integrated set of SH services; a teamwork between a specially trained doctor, midwife/nurse, and in some places psychologist; convenient location and opening times; services free of charge; drop-in hours available and short waiting times, continuity of care. The highest service volume was reached in 2008 (33 700 visits) [13]. The services in YFCs are sustainably funded by the Estonian Health Insurance Fund since 2002 [13].

In addition, YFCs provide SE lectures in their premises and at schools. At first, it was thought that YFCs temporarily fill the gap in school-based SE until the latter would be fully established. At present, when SE takes place in most of the schools [25], the demand for lectures is still there. It has been estimated that approximately 40% of 10- to 19-year-olds visit YFCs in order to participate in SE lectures [172]. YFCs acknowledge the school's leading role in delivering SE, but offer the teachers help in handling difficult topics. Another aim is that pupils get acquainted with the place where they could come back later for individual counseling. YFCs are also involved in youth SH internet counseling (www.amor.ee), run by the Estonian Sexual Health Association.

A recent unique cost analysis study of Estonian YFCs showed that sustainable funding is particularly important, without it the YFCs would not have been scaled up on the national level [173]. Only 3.6% of the total budget of YFCs was used for Estonian Sexual Health Association coordination, which is a small portion when taking into account the substantial contributions to development, training, quality improvements and representation of the YFCs [173].

2.3.4. Sexual ideology

The dominant sexual ideology accepted by a society is one of the major social determinants of SH [11, 42]. Sexual ideology means "values and norms what is acceptable and appropriate sexual behavior for men and women at various stages of their life and in various types of relationships" [42].

Gender norms

Gender norms are important factors in SRH decision-making [174]. From a social constructionist perspective, gender socialization is a developmental process that begins in early childhood, when boys and girls start to internalize gender-specific norms by observing their families, peer groups, and social institutions, and regulating their behaviors and attitudes in accordance [175]. Although gender norms (social expectations for appropriate behaviors of men and women) are promoted in specific cultural settings, individuals adhere to a different degree to these norms [176]. Despite of the trend of increasing equality between genders, traditional gender norms still influence sexual behavior of young people [11, 28, 36, 37, 43]. Traditional gender norms are associated with poor SH of both sexes, influencing the motivation to become sexually involved, sexual decision-making, unwanted sexual intercourse, sexual coercion and violence, and less frequent condom use [11, 174, 176, 177].

Marston and King [11] found in their review of qualitative studies that gender norms were surprisingly similar in different countries studied. Frequently identified stereotypic expectations were that men are expected to be highly heterosexually active, and women chaste; men are expected to seek physical pleasure, but women desiring sex can be branded as with loose morality; men should initiate the process of developing sexual relationships, but women should be passive, or at least not too assertive, particularly early in a relationship [11]. They concluded that programs that provide only information and condoms without addressing the social norms are only tackling part of the problem and may remain ineffective [11].

To the author's knowledge, the only information available about gender attitudes among young people in Estonia, before this study, originates from the KISS study carried out in 1994 [97]. According to this study, 9th grade girls more often (54%) than boys (28%) expressed traditional gender attitudes by agreeing with the statement that "The initiative regarding sexual relations always rests with the male partner" [97]. According to the KISS study carried out in 1999 the situation had changed: more girls had progressive gender attitudes than boys [98]. The comparison of Finnish 1992 and Estonian 1994 KISS studies shows that considerably more Estonian girls held traditional gender attitudes than Finnish girls, and that there were similar differences between boys, although not so clearly pronounced [178]. Similar results were achieved in 2003 in Estonia, when gender attitudes of 16- to 19-year-old

adolescents were analyzed in the context of partnership violence: significantly more Estonian adolescents held traditional gender attitudes than Swedish adolescents, and Estonian girls' gender attitudes were more liberal compared to boys' attitudes [179].

Attitudes towards young people's sexual initiation

Societies differ in how they view young people's sexual initiation, although most young people in Western cultures become sexually active during their teenage years [84]. In Europe, especially in Northern Europe, it is accepted that young people engage in loving relationships, which may also include sexual intercourse [40]. The case of Sweden shows that premarital sexual activity is socially accepted and the norm is to love and have sex with a stable partner while young [94]. Attitudes towards permissiveness of young people's sexual intercourse have been studied since the 1960s, when Ira Reiss introduced his original Premarital Sexual Permissiveness Scale [180]. While the majority of high school students in the 1960s endorsed abstinence from premarital intercourse [180], attitudes toward premarital sex have become permissive over time for both men and women [181].

In Estonia, the only information available about attitudes towards young people's sexual initiation originates from the KISS study carried out in 1994 [97]. According to this study, the majority of girls (60%) and boys (57%) considered being in love or liking each other as a precondition of sexual intercourse between young people, but more girls (28%) than boys (16%) approved of sexual intercourse only if the partners are cohabiting or married, or intend to marry. In addition, less girls (1%) than boys (8%) approved of sexual intercourse between strangers [97]. Comparing these results with the KISS study carried out five years later (in 1999), a significant trend towards liberalization of attitudes was observable, especially among girls [98]. Comparison of Finnish 1992 and Estonian 1994 KISS data showed that Finnish adolescents connected sexual intercourse with couple relationships to a greater extent than did Estonians [178]. Sexual attitudes and behavior of adolescents largely reflect the society in which they occur. Taking into consideration that sexuality related topics were taboo in Estonia before the regaining of independence, the prevalence of liberal attitudes in 1999 is quite expected. It has been suggested that in newly liberated countries there were two distinguishable processes in the 1990s: 1) liberalization of sexual attitudes and 2) gender polarization (instead of gender equalization), which together did not lead to a substantial decrease in sexual risk behavior [182].

2.3.5. Substance use

Substance use and risky sexual behavior are both parts of a broader spectrum of risky health behaviors [38, 82, 183], constrained or facilitated, among other factors, by national policies (availability of substances) and cultural norms [7, 184].

Smoking behavior is typically established during adolescence. Adolescents may perceive tobacco use as adult behavior [184]. Smoking is associated with alcohol consumption [185], early sexual intercourse [65, 66, 80, 84], and higher number of sexual partners [185]. The changing gendered pattern of smoking in time and between countries may be explained by different trends in the general smoking epidemic curve. Western European countries were previously in a stage in which smoking prevalence was declining or stabilizing among adolescent boys and increasing among girls, but since the second half of the 1990s there was a decline in both boys' and girls' smoking [186]. Eastern European countries were generally in a stage characterized by high smoking rates among adolescent boys, but moved towards a stage where boys' smoking was decreasing or stagnating, whereas that of girls was increasing in the same period [187]. Most effective tobacco control measures targeting adolescents are obtained through a mandatory national ban on smoking in schools, restricted sale of tobacco to young people [187] and tobacco prevention programs [188, 189].

Overwhelming evidence indicates that alcohol use and risky sexual behavior are linked, although mechanisms remain unclear [190]. Alcohol may reduce sexual inhibitions and compromise on adolescent's already vulnerable decision-making processes [38], especially among boys [84]. Harmful alcohol consumption, including frequent drinking and drunkenness, have been associated with early sexual intercourse [38, 65, 66, 84, 183], sexual decision-making (intentions to engage in unprotected sex) [191] and STIs [192]. A recent longitudinal study showed that the association between harmful alcohol use and risky sexual behavior are bidirectional – high levels of involvement in either behavior during adolescence had lasting adverse effects on involvement in the other behavior during early adulthood, suggesting that effective interventions need to address both sexual behavior and alcohol use simultaneously [190]. Policy measures that contribute to reductions in alcohol use among young people are raising taxes on alcohol, restricted sale and increasing the minimum legal drinking age [126], school-based intervention programs [126, 189, 193], and family interventions in delaying alcohol initiation [194].

Estonian 15-year-old adolescents are characterized by young onset of smoking compared to other countries [92]. According to a HBCS study, slightly more 15-year-old boys (17%) than girls (14%) smoke at least once a week [111]. The prevalence of cigarette smoking increased in 1993–2002, when a trend towards gender equalization took place [195], but has stabilized and decreased thereafter [111]. The proportion of 15-year-olds who report their first drunkenness at the age 13 or younger was high in Estonia in a cross-national

comparison [92]. Both weekly drinking of any alcoholic beverage and two or three episodes of drunkenness experience during lifespan increased considerably in 1993–2002, especially among girls [196]. Since 2009, the prevalence of drunkenness has decreased, and is currently nearly equal among 15-year-old boys and girls [111]. Among Estonian 15- to 16-year-old pupils, higher prevalence of heavy episodic drinking and higher volumes of consumed alcohol was evident compared with European averages [197].

In Estonia, male life expectancy (72.6 years in 2013) is nearly 10 years shorter than female life expectancy (81.1 years in 2013). This is contributed to, among other factors, a significant proportion of premature deaths attributed to injuries and external causes among men [169], largely due to harmful alcohol use [198].

Although the laws nowadays prevent consumption of tobacco and alcohol among minors, and limit consumption in public places, including schools, this was not the case in the 1990s. In addition, the laws and policies regulating production, advertising and sale of alcohol in Estonia are liberal and alcohol consumption is among the highest in Europe [198].

3. AIMS OF THE RESEARCH

The general objective of this research was to provide evidence on social determinants of sexual health of young people in Estonia.

The specific objectives were:

1. To investigate cross-country and regional variations and time trends in reported teenage pregnancies in the EU, in the context of abortion laws and youth sexual health services (Paper I).
2. To evaluate the possible influence of school-based sexuality education by exploring its associations with (a) good sexuality-related knowledge among adolescent boys and girls (Paper II), and (b) the use of effective contraceptive methods among women (Paper IV).
3. To study the associations between experience of early sexual intercourse and smoking, alcohol use and individual gender- and sexuality-related attitudes among adolescent boys and girls (Paper III).
4. To explore the association between access of youth-friendly counselling services and the use of effective contraceptive methods among young women, and to describe the contraceptive prevalence, obstacles and satisfaction when accessing contraceptive services (Paper IV).

4. MATERIALS AND METHODS

4.1. Data sources and collection

The data for this research were sourced and collected from the international REPROSTAT study (Paper I), the school KISS studies 1994 and 1999 (Paper II), KISS study 1999 (Paper III) and the cross-sectional Estonian Women's Health survey (Paper IV).

4.1.1. REPROSTAT study

The REPROSTAT study, funded by the EU in 2008–2013, comprised a group of experts with at least one representative from each of the 27 EU member states. The project was a follow-up of two previous research projects that developed a comprehensive set of RH indicators in order to assist EU member states to monitor and evaluate RH and associated health care services [53, 56]. A systematic review was undertaken reviewing factors associated with teenage pregnancies in the EU [62] and a youth reproductive health survey was piloted for use by selected member states [122].

The aim of the REPROSTAT study was to analyze the current state of RH within the EU, in order to promote an integrated RH strategy and identify inequalities in RH and associated public policies. The five areas of study were: (a) teenage RH; (b) use of contraception and associated policies; (c) child-bearing support and public policies; (d) assisted reproductive technologies; (e) induced abortions and related policies. A set of indicators was identified for each of the five areas under study. A form was completed using descriptive data from international and national databases. Reliable national and international data sources were used (Eurostat, European Community Health Indicator Monitoring, European Society of Human Reproduction and Embryology, WHO Health for All Database and the Council of Europe). Experts identified and collected relevant information (including laws, public policies, scientific papers and/or book chapters, non-governmental organizations' position papers and guidelines, lay press articles), commented on data quality and completed missing data. The critical analysis of the data was performed by the research team. Suggestions were made to member states for creating or reformulating public policies and laws that promote RH in the EU. The data comprised in the REPROSTAT study are presented in a report [199].

Data on the annual numbers of reported live births among women aged <20 years in 27 EU member states were obtained from international statistical databases [200, 201]. Seven experts provided updated national data, which were in accordance (<1% difference) with international data. Data on the annual numbers of reported legally induced abortions among women aged <20 years in 27 EU member states were obtained from international statistical databases [200, 201]. Updated national data for France and Finland were used. Data on

the mid-year age-specific female population estimates were obtained from the Eurostat database [200]. The data were obtained from 2001 up to the most recent year available.

Data about abortion laws for teenagers, including the requirement of parental consent for induced abortions for minors were collected by experts and complemented with published reports [134, 135, 202, 203]. Data about information on the organization, location, and affordability of youth SH services and the availability of free or subsidized contraceptives for young people were collected by the experts and complemented with published reports [40, 203]. Completeness of abortion reporting was evaluated according to the published literature [69].

4.1.2. KISS study

The KISS study is a self-completed questionnaire survey that was conducted in 1994 and 1999 in Estonian schools. The survey originates from Finland where it has been conducted in 1986 [204], 1988 and 1992 [205–207]. The target population was primary school 9th grade pupils (aged 14–16 years). The 9th grade was selected, because (a) after graduating the 9th grade, a portion of pupils start employment and another portion continue their education in secondary or vocational schools, which means that pupils in primary school have more heterogeneous characteristics than those in secondary school, and (b) all the primary schools follow a uniform curriculum, which enables curriculum-related variables, such as level of knowledge, to be assessed. The original Finnish questionnaire was translated into Estonian in 1994; only few changes in terminology were made. In 1999, some non-relevant questions were excluded (questions about chronic diseases and treatment) and questions about the use of contraception were added (Appendix I). In addition, the questionnaire was translated into Russian. The research instrument comparing the 1994 and 1999 surveys contained only the questions that were identical in both study years.

The structured self-administered questionnaire consisted of 102 questions in 1994 and 101 questions in 1999, covering the following domains:

1. Socio-demographic characteristics.
2. Relationships in the family, school and friends.
3. Hobbies and leisure-time activities.
4. Value estimations.
5. Use of substances.
6. Sexuality-related knowledge and sources of information.
7. Age of sexual maturation.
8. Intimate relationships.
9. Use of contraception.
10. Sexuality-related fears and attitudes.

No formal sample size calculations were done for the studies. The sample size decisions for the original samples were based on good practice from a previous study [121] and financial considerations. In 1994, due to limited resources, a convenience sample was selected on the basis of a list of primary school Estonian-language 9th grade classes in spring 1994 (12 214 pupils) and on the ratio of the urban (71%) and rural populations of the 1st of January 1993, presented by the Statistical Office of Estonia. The sample was selected so that the main geographical regions of Estonia were covered, and different types of primary schools were selected. The sample included 1223 pupils of Estonian-language schools.

In 1999, the study sample was randomly selected from the national lists of primary school Estonian- (12 248 pupils) and Russian-language 9th grade (6102 pupils) classes in 1999, except special needs classes, presented by the Estonian Ministry of Education. For schools in each language group, classes were stratified into clusters by the number of pupils in the class: small (≤15), medium (16–25) and large size classes (≥26). Classes were selected at random in each cluster. The sample included 1413 pupils of Estonian-language schools and 547 pupils of Russian-language schools.

The data collection was carried out in schools in March 1994, and in March 1999 when the same stage in the curriculum had presumably been reached. The pre-tested self-administered questionnaire was completed during a 45-minute lesson. A research assistant gave information to the pupils about the anonymity of the survey and completion of the questionnaire. The questionnaires were sealed in envelopes by the respondents. School staff members did not participate in any stage of the study.

The data of the 1994 study are presented in a doctoral dissertation of Krista Papp [178] and a study report [97]. The data of the 1999 study are presented in a study report [98].

4.1.3. Estonian Women's Health survey

Estonian Women's Health survey is a cross-sectional postal survey that was conducted in the framework of the international research consortium REFER (Reproductive Health and Fertility Patterns – A Comparative Approach), which investigated reproductive health, fertility patterns and family formation in Russia, Estonia and Finland [208].

The questionnaire used in the survey was compiled jointly by Estonian, St. Petersburg and Finnish researches from REFER. Panels of researchers negotiated a "best fit" for the translated questionnaires into target languages; each language version (English, Estonian and Russian) was compared with the others to ensure comparability. The master copy of the questionnaire was in English, later translated into Estonian and Russian. The survey instrument originated from the SH survey conducted in Finland in 1994 [209], and later in 2000 and

2002 [210–212]. The survey instrument used in Estonia contained also site specific questions.

The structured self-administered questionnaire (Appendix II) consisted of 128 questions covering the following domains:

1. Socio-demographic characteristics.
2. Intimate relationships and sexuality.
3. Pregnancies and children.
4. Use of pregnancy and delivery-related health care services.
5. Contraceptive methods.
6. Plans for having children.
7. Health and use of health-care services.

The target population was the whole Estonian female population aged 16–44 (n=289 830). Sample size calculations were based on (a) the percentage of sexually active women in a previous Estonian Family and Fertility survey [112], according to which 32.8% of women in age 16–25, 66.5% in age 26–35 and 57.5% in age 36–44 had regular sexual intercourse (a conservative estimate), and (b) the response rate of 41.2% in a previous Human and Intimate Relationship survey in 2000 [213]. It was estimated that if the response rate in all age groups would be the same, then in order to reach statistically significant (significance level = 0,05; two-sided test; power 0,80; ratio of the group under consideration to an comparable group = 1:1) prevalence odds ratio of 2.5 in *each* age group when the variable (exposure) prevalence in the comparable group is 0.10 (10%), the sample should be, by age groups: 16–25 years – 2515, 26–35 years – 1240 and 36–44 years – 1435 persons. The total sample size 5190 guaranteed that among responders there would be 340 sexually active women in each age group whose data would be further analyzed in the study. The program *POWER*, Epicenter Software, Pasadena, CA, USA was used for calculations.

A random sample stratified by the age of women (16−25, 26−35 and 36−44 years) was obtained from the Estonian Population Registry. A package mailed to each participant contained an information letter, a self-administered questionnaire and a pre-paid, pre-addressed envelope. Anonymity of the respondents was ensured by sending an assigned study code, which the respondent sent back to the research team separately from the questionnaire. Data were collected from May 2004 to February 2005. A total of 5190 questionnaires (by age group: 2515 questionnaires among 16−25-year-old, 1240 questionnaires among 26−35-year-old and 1435 questionnaires among 36−44-year-old women), 3472 in the Estonian and 1718 in the Russian language, were posted. As an incentive, there was a lottery between the participants, with three participants winning a 3-day health package (worth 60 euros). Of the sample, 95 women did not live at the address recorded in the population registry, one was dead and seven did not respond for health-related reasons. For non-responders to the first mailing (n=3113), the questionnaire was sent a second time after 10−12 weeks. Out of the 5087 potential respondents, 2335 did not return the questionnaire, 13 refused

to answer, four questionnaires were completed unsatisfactorily. Total response rate was 53.8% (n=2735). The data are presented in a survey report [12].

4.2. Study subjects

Paper I

The study subjects were 15- to 19-year-old female teenagers. In 2001–2010, the average annual number of mid-year 15- to 19-year-old female teenagers in 27 EU states was 14 841 439 [200]. In 2009, there were 206 315 teenage live births and 158 450 teenage abortions recorded in the EU [200, 201].

Papers II and III

The study subjects were 9th grade pupils aged 14−16 years from Estonian-language schools in 1994 and 1999.

A sample of Russian-language schools in 1999 was not used in Paper II, which compared the data of 1994 and 1999, because the corresponding data were not collected in 1994. In addition, these data were not used in Paper III, due to the small number of Russian-language school respondents (n=434).

In 1994, 123 pupils and in 1999, 161 pupils were absent on the study day. Total response rate was 89.9% in 1994 and 88.6% in 1999. In 1994, 20 questionnaires and in 1999, 10 questionnaires were discarded due to unsatisfactory completion (defined as questionnaires with answers to less than two-thirds of the questions or that were completed jokingly).

For Paper II, respondents aged more than 16 years and less than 14 years (n=58) or of unknown age (n=8) were excluded from the analysis. The data of 1069 pupils in 1994 and 1187 pupils in 1999 were analyzed for the purposes of Paper II.

For Paper III, respondents aged more than 16 years and less than 15 years (n=150) and respondents with unknown age and sexual intercourse experience (n=48) were excluded from the analysis. The data of 1048 pupils in 1999 were analyzed for the purposes of Paper III.

Paper IV

The data on study subjects in Paper IV (numbers, inclusion and exclusion criteria) are presented on Figure 4. Of 1262 16- to 24-year-old female respondents included in the study, data on 868 were used in the analysis.

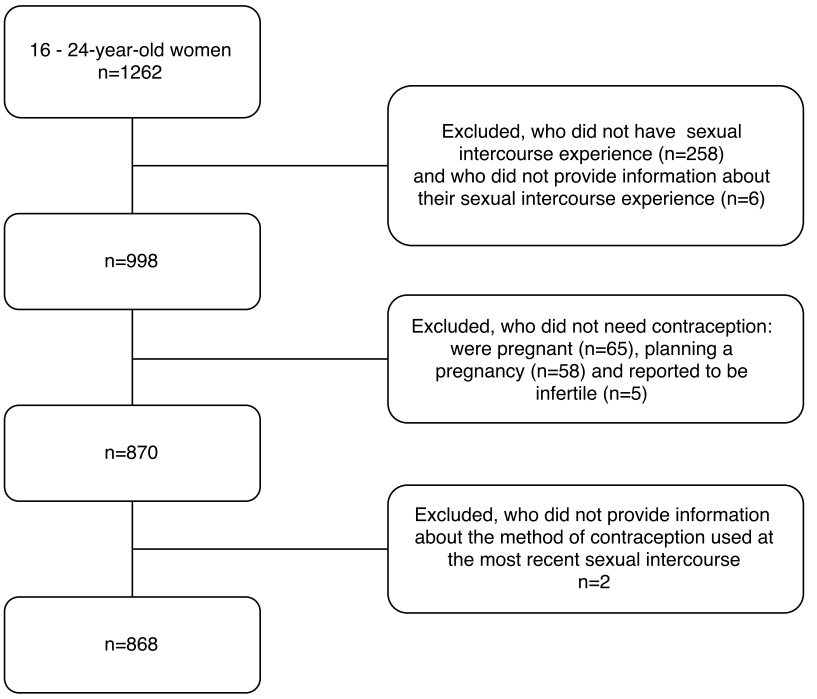


Figure 4. Study subject selection for the analysis in Paper IV.

4.3. Statistical analysis methods

Paper I

The following indicators were calculated for each EU member state:

1) teenage birth rate (the annual number of reported live births among women aged 15–19 years per 1000 women aged 15–19 years, using the mid-year female population estimates);
2) teenage abortion rate (the annual number of reported induced abortions among women aged <20 years per 1000 women aged 15–19 years, using the mid-year female population estimates);
3) teenage pregnancy rate (including annual numbers of reported teenage live births and induced abortions per 1000 women aged 15–19 years, using the mid-year female population estimates). The numbers of miscarriages and ectopic pregnancies were not available and therefore were not included in the calculation of pregnancy rates;
4) proportion of teenage births to all live births;
5) proportion of teenage abortions to all induced abortions;
6) proportion of teenage pregnancies ending in abortion.

Teenage birth and abortion rates were classified as very low (below 10.0), low (10.0–19.9), moderate (20.0–34.9), high (35.0–49.9) and very high (50.0 and more), and pregnancy rates as very low (below 20.0), low (20.0–39.9), moderate (40.0–69.9), high (70.0–99.9) and very high (100.0 or more), according to a comparative analysis of adolescent pregnancies in developed countries [66].

To analyze change in teenage birth, abortion and pregnancy rates over time, trends since 2001 up to the most recent year available were presented (in most cases, this was 2010). The average percentage change during this period was calculated. The year 2001 was selected, because a previous similar analysis in teenage pregnancy trends covered the years 1990–2000 [70].

To analyze possible regional variations, the member states were divided into four groups according to the UN classification of countries [214]:

1) Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia;
2) Northern Europe: Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Sweden and the United Kingdom;
3) Southern Europe: Cyprus, Greece, Italy, Malta, Portugal, Slovenia and Spain;
4) Western Europe: Austria, Belgium, France, Germany, Luxembourg and the Netherlands.

To analyze possible differences in teenage birth, abortion and pregnancy rates between countries requiring parental consent for abortion and countries with no such requirement, average rates for respective groups of countries were presented.

Papers II–IV

In order to explore the associations of interest the following **dependent variables** were created in the logistic regression analyses.

Sexuality-related knowledge (Paper II)

Sexuality-related knowledge status was determined from responses to 16 statements and questions (see Table 2; Appendix I, Q 27–30, 33, 39, 40). The responses to these questions served as a basis for categorizing respondents as pupils with good knowledge (those who scored correctly on nine or more questions) and pupils with poor knowledge (those who scored correctly on less than nine questions).

Table 2. Sexuality-related knowledge items that served for determining the 9th grade pupils' sexuality-related knowledge status in the 1994 and 1999 KISS study, Estonia

Knowledge item	Correct answer
Contraception and STIs	
Contraceptive pills protect against STIs	False
Name as many contraceptive methods as you know	≥3 methods named
Condom is the only contraceptive protecting against STIs	True
Name as many STIs as you know	≥3 STIs named
Sexual development and conception	
A girl who has started menstruating can become pregnant	True
A boy who has started to have ejaculations can have children	True
A woman cannot become pregnant during the first sexual intercourse	False
Even a drop of semen on a woman's genitals may cause pregnancy	True
When is the most fertile time in the menstrual cycle?	Middle of the cycle
Sexual intercourse and sexuality	
Orgasm means that a spermatozoid meets with an ovum	False
Abortion is the termination of a pregnancy	True
The clitoris releases ova	False
A homosexual is a person who wants to change gender	False
Impotence means that a man does not ejaculate sperm	False
Incest refers to all kinds of child sexual abuse	False
Age of consent	
What is the age of consent according to Estonian law?	14 years

Early sexual intercourse (Paper III)

The experience of early sexual intercourse was determined from responses of 15–16-year-old respondents to a question: "Have you ever experienced sexual intercourse?" (Appendix I, Q 63). The answer options were: yes (age when experienced for the first time)/no.

Use of effective contraception (Paper IV)

The use of effective contraceptive methods during the last sexual intercourse was determined from responses to a question: "Which contraceptive method did you use during your last sexual intercourse?" (Appendix II, Q 70). Respondents could choose one or more contraceptive methods from the list of different methods. Based on the efficacy of contraceptive method (Pearl index) [99],

respondents who had used hormonal methods (pill, patch, injectable), male condom or IUD (the questionnaire did not distinguish between hormone-releasing intra-uterine system and copper IUD) were considered to have used an effective contraceptive method; respondents who had used the rhythm method, withdrawal, spermicides, emergency contraceptive pill, some other method, and those who had not used any contraceptive method were considered to have used an ineffective contraceptive method. The vaginal combined contraceptive ring, hormonal implant and female condom were not available in Estonia at the time of the study. When a participant had used a condom in combination with a hormonal method or IUD, them she was defined as a dual method ("Double Dutch") user, categorized together with effective contraceptive users. When a participant had used some other combination of methods, the categorization of a method was based on the most effective method reported.

The following **independent variables** were created for the analysis.

Gender: male and female (Papers II and III) (Appendix I, Q 1).

The following *ages and age groups* were used – paper II: 14/15/16; paper III: 15/16; paper IV: 16–19, 20–22 and 23–24 full years. In paper III, 14-year-old respondents were excluded from the analysis, because of a small number of respondents with sexual intercourse experience. In paper IV, the categorization into age groups aimed to capture different patterns in the use of contraception in different age groups.

Native language was used to categorize the respondents into different ethnic groups in paper IV, according to respondents' self-report of Estonian and non-Estonian native language (Appendix II, Q 5).

Discussions about sexuality with parents was assessed by the question "Have you discussed the following topics with your parents during the last year?" in paper II; five sexuality-related topics were listed and the responses were: no/yes (often, sometimes) (Appendix I, Q 9).

School sexuality education was assessed by the question "Have issues concerning intimate relationships, contraception and other sexuality-related questions been discussed in school lessons?" in paper II, and the responses were: no/yes (Appendix I, Q 42). In paper IV, receiving school-based sexuality education was assessed by the question: "Were sexuality-related topics discussed at school?" (Appendix II, Q 36). The original five answer options were divided into two: yes (yes, even too much; yes, sufficiently; yes, too little); and no (no, but I would have wished it; no, I would not have wished it).

Experience of sexual intercourse was assessed by the question "Have you experienced sexual intercourse?" in paper II, and the answer options were yes (age when experienced for the first time)/no (Appendix I, Q 63).

Pubertal timing was assessed by the questions "At what age did you have your first menstruation?" (Appendix I, Q 52) and "At what age did you have your first ejaculation?" (Appendix I, Q 49) in paper III, with answer options yes, at (specified) age/ I have not had one. The answers were categorized as earlier (menarche ≤12 years, spermarche ≤13 years) and later (menarche >12 years/not occurred, spermarche >13 years/not occurred).

Gender attitudes in paper III were assessed by agreement/disagreement with the statement "The initiative regarding sexual relations always rests with the male partner" (Appendix I, Q 99), with the answer options: I agree/hard to say/ I do not agree. The agreement was categorized as a traditional gender attitude, and disagreement as progressive attitude. The respondents who answered "hard to say" to this statement were categorized separately.

Attitudes towards sexual intercourse among young people in paper III were assessed by the question "When in your opinion is sexual intercourse between young people permissible?" (Appendix I, Q 100). The answer options measured the degree of acquaintanceship during dating stages. The categorization into conservative attitudes included answer options: partners are married or live together/are engaged or intend to marry/are in love with each other/like each other, and liberal attitudes included answer options: partners know each other/do not know each other.

Smoking in paper III was categorized into nonsmoking status (including answer options: I do not smoke/ I have smoked formerly, but not now) and smoking status (including answer options: I smoke less than once a week/ I smoke once a week or more frequently, but not every day/ I smoke every day (number of) cigarettes) (Appendix I, Q 20).

Alcohol consumption was determined by asking the respondents "If and how often have you used alcohol up to drunkenness during the last year?" (Appendix I, Q 22). The answer options were categorized into two: yes (yes, often; yes, sometimes) and no (never). To assess the interaction between smoking and alcohol consumption, *a combined variable* was created: non-smoker and not been drunk/ non-smoker and been drunk/ smoker and not been drunk/ smoker and been drunk.

Type of contraceptive service most recently used was assessed by the question: "Which health care service did you last visit in order to receive contraceptive counseling/prescription?" in paper IV (Appendix, Q 78a). The answer options

were: no visit, women's outpatient clinic, YFC, private gynecology clinic, and family doctor.

In Table 3, independent and dependent variables included in papers II–IV are presented.

Table 3. Independent and dependent variables included in papers II–IV

Paper	Independent variables	Dependent variables
II	Gender, age, discussions about sexuality with parents, school sexuality education and experience of sexual intercourse	Sexuality-related knowledge
III	Age, pubertal timing, gender attitudes, attitudes towards sexual intercourse, combined variable of smoking and alcohol consumption	Experiencing early sexual intercourse
IV	Age, native language, type of contraceptive service, school sexuality education	Use of effective contraception at last sexual intercourse

In order to describe the *accessibility-related obstacles* that might have influenced the respondents regarding visiting a doctor for contraception, the following question was asked: "Have some of the following impeded you in visiting a doctor for contraception during the last year?" (Appendix II, Q 79a). The original eight answer options were categorized into five: (1) difficulties in making an appointment/ getting an appointment, not knowing how to find a gynecologist, wishing to visit someone else than one's own doctor; (2) long journey and poor transport connections; (3) previous negative experience; (4) being ashamed to visit a gynecologist; and (5) being afraid of the gynecological examination. Having had no problems with such visits was also an answer option.

In order to describe how women rated the contraceptive services, *satisfaction* with the provider's friendliness, competence, confidentiality/reliability and length of the visit was asked by a question: "Evaluate how well the following aspects of care were carried out during your last visit for contraception?" (Appendix II, Q 79). The answer options were: very/quite unsatisfied and very/quite satisfied.

Descriptive statistics (absolute and relative frequencies) for sub-samples of interest, such as study years (Paper II), sex (Paper III), age groups (Paper IV), and different contraceptive services (Paper IV) are presented. Correlates for dependent variables were explored using the chi-square test for proportions, Fisher's exact test for small cell expected values (<5) and univariate analysis.

Multiple logistic regression analysis was used to assess confounding and interaction between variables. Factors with $p<0.05$ in univariable analysis were entered in a multivariable comparison. Prevalence odds ratios (PORs) from univariable and adjusted odds ratios (AORs) from multivariable analysis, together with 95% confidence intervals (CI) were presented. The variable's subgroup that presumably had the lowest odds for the dependent outcome was taken as a reference category for other subgroups of the same variable.

In paper II, multiple logistic regression analysis was conducted for both study years to explore factors associated with good sexuality-related knowledge. Crude PORs and AORs for good sexuality-related knowledge and the corresponding 95% CIs were calculated, adjusting for all variables: gender, age, discussions about sexuality with parents, school sexuality education and experience of sexual intercourse. Only questionnaires that contained answers to all questions used in the multiple logistic regression models were included in the analyses: a total of 870 questionnaires in 1994 and 1113 questionnaires in 1999 were used in the models.

In paper III, multiple logistic regression analysis was conducted for boys and girls to explore factors associated with early sexual intercourse experience. Crude PORs and AORs for early sexual intercourse experience and the corresponding 95% CIs were calculated, adjusting for all variables: age, pubertal timing, gender attitudes and attitudes towards sexual intercourse, in model I, and additionally for the combined smoking and alcohol consumption variable in model II. Only questionnaires that contained answers to all questions used in the multiple logistic regression models were included in the analyses, including, as an exception, the large proportion of boys who did not answer to the question about their pubertal timing (27.0%) who were categorized as having unknown pubertal timing. A total of 959 questionnaires, from 451 boys and 508 girls, were used in the models.

In paper IV, multiple logistic regression analysis was conducted in two models to explore factors associated with effective contraceptive use. First, crude PORs and AORs for the use of effective contraceptive methods (hormonal methods, condom, IUD) at last sexual intercourse and the corresponding 95% CIs were calculated in a subgroup of respondents who had accessed contraceptive services, adjusting for age, native language, type of contraceptive service and receipt of school-based sexuality education (model I). Second, in order to analyze more specifically the possible association between the use of different contraceptive services and clients' use of effective contraception, only users of methods requiring an initial visit to a contraceptive service provider and a prescription (hormonal methods) were included in a second model; for this reason, users of the male condom and IUDs were left out of the analysis. Similarly, PORs and AORs were calculated for hormonal contraceptive methods at last sexual intercourse among a subgroup of service users, adjusting for the above-mentioned factors (model II). Only questionnaires that contained answers

to all questions used in the multiple logistic regression models were included in the analyses: a total of 588 in model I and 412 in model II.

The data of paper I were analyzed using Excel (Microsoft Excel), Papers II, III, IV by using Stata software, versions 8 and 10 (StataCorp LP, College Station, Texas, USA).

4.4. Ethics

The Ethics Review Committee of Human Research of the University of Tartu approved the study protocols of the KISS study (approvals no. 19/1, March 3, 1994; no. 67/5, January 19, 1999 and no. 69/10, February 22, 1999) and Estonian Women's Health survey (no. 107/65, August 26, 2002). Prior to the KISS study, the consent of the principals of the schools was obtained. All schools expressed their support for the study.

5. RESULTS

5.1. Teenage pregnancies in the European Union (Paper I)

5.1.1. Teenage births, abortions and pregnancies

As shown in Table 4, the average teenage birth rate in the EU was 15.0 in 2009, ranging from 5.3/1000 in the Netherlands to 46.7/1000 in Bulgaria. Eastern Europe had, on average, the highest teenage birth rate, mainly due to high rates in Bulgaria and Romania. In Northern Europe, teenage birth rates were moderate in the UK, Latvia and Estonia, and low/very low in rest of the countries. Teenage birth rates in Southern and Western Europe were mostly low/very low. The proportion of teenage mothers was highest in Eastern Europe.

Data on teenage abortions were not available for Austria, Cyprus and Luxembourg, which lack national registration systems. Countries with restricted or no access to abortion reported no teenage abortions (Ireland, Malta and Poland). In the rest of the 21 member states, the average teenage abortion rate was 12.2 in 2009. In Northern Europe, moderate rates were observed in Sweden, the UK and Estonia, and low rates in the rest of that region. Eastern European countries reported mostly low and Southern and Western Europe very low abortion rate. Teenage abortions represented in most cases a higher proportion of all abortions in Northern Europe than in other regions (Table 4).

Teenage pregnancy rate could be calculated for 21 member states, corresponding to an average rate of 27.8 in 2009. Eastern Europe (41.7/1000) and Northern Europe (30.7/1000) had higher teenage pregnancy rates than the other two regions (Table 4).

Sixty percent or more of teenage pregnancies ended in abortions in Sweden, Denmark, France, Finland, the Netherlands, and less than 30% in Lithuania, Bulgaria, Slovakia and Greece (Table 4).

Figure 5 presents the decreasing trends in teenage birth and abortion rates since 2001 in all the EU regions studied. The decline was greatest in Northern Europe (–23%), mainly due to substantial reductions in Estonia, Latvia and Lithuania. Western European countries witnessed a decline by 20% on average, and Southern Europe by 10%. Eastern Europe, which on average had the highest teenage birth rate in the EU, witnessed the smallest reduction (–2%). For example, in Bulgaria and Romania, an increase in teenage birth rate occurred until 2009, with a reversal observed in 2010. In 17 countries with complete data, the teenage abortion rates decreased in all regions: in Eastern Europe by 16%, followed by Northern (–8%), Western (–7%) and Southern Europe (–3%).

Table 4. Teenage annual live births, legally induced abortions and pregnancies, rates per 1000 women aged 15–19 years, proportion of teenage live births and abortions in all live births and abortions, and abortion ratio in the EU in 2009[a]

	Live births			Legally induced abortions			Pregnancies		% of
	n[b]	Rate per 1000	% of all live births	n[c]	Rate per 1000	% of all induced abortions	n[d]	Rate per 1000	pregnancies ending in abortion
Northern Europe									
Denmark	922	5.5	1.5	2 830	16.7	17.0	3 752	22.2	75
Estonia	851	20.4	5.4	875	21.0	11.6	1 726	41.5	51
Finland	1 387	8.5	2.3	2 101	12.8	20.2	3 488	21.3	60
Ireland	2 218	16.3	3.0	0[g]	0.0[g]	NA	NA	NA	NA
Latvia	1 534	20.8	7.1	800[h]	10.9[h]	9.0[h]	2 334[h]	31.7[h]	34[h]
Lithuania	2 041	16.9	5.6	630[h]	5.2[h]	7.9[h]	2 671[h]	22.1[h]	24[h]
Sweden	1 829	5.9	1.6	7 007	22.5	18.7	8 836	28.4	79
The United Kingdom[e]	48 372	25.1	6.1	43 301	22.5	21.4	91 673	47.6	47
Average		*14.9*	*4.1*		*16.0*[f]	*15.1*[f]		*30.7*[f]	
Eastern Europe									
Bulgaria	9 787	46.7	12.1	3 414	16.3	10.1	13 201	62.9	26
The Czech Republic	3 599	11.8	3.0	2 282	7.5	9.3	5 881	19.3	39
Hungary	5 784	19.5	6.0	5 337	18.0	12.4	11 121	37.5	48
Poland	20 451	16.3	4.9	42[g]	0.0[g]	NA	NA	NA	NA
Romania	25 456	39.5	11.4	12 574[h]	19.5[h]	10.8[h]	38 030[h]	59.0[h]	33[h]
Slovakia	3 987	21.8	6.5	1 460	8.0	8.1	5 447	29.7	27
Average		*25.9*	*7.3*		*13.8*[f]	*10.1*[f]		*41.7*[f]	
Southern Europe									
Cyprus	167	6.0	1.7	na	na	na	na	na	na
Greece	3 219	11.6	2.7	728[h]	2.6[h]	4.5[h]	3 857[h]	13.7[h]	19[h]
Italy	9 800	6.8	1.7	9 839	6.8	8.6	19 639	13.6	50
Malta	275	20.2	6.6	0[g]	0.0[g]	NA	NA	NA	NA
Portugal	4 284	15.3	4.3	2 391	8.5	12.2	6 675	23.9	36
Slovenia	283	5.4	1.3	346	6.6	7.4	629	12.1	55
Spain	13 100	12.0	2.7	13 967	12.7	12.5	27 067	24.7	52
Average		*11.0*	*3.0*		*7.5*[f]	*9.1*[f]		*17.6*[f]	
Western Europe									
Austria	2 537	10.4	3.3	na	na	na	na	na	na
Belgium	3 403	10.7	2.7	2 674	8.4	14.2	6 077	19.0	44
France	18 845	9.9	2.4	29 004	15.2	13.9	47 849	25.2	60
Germany	19 447	9.1	2.9	12 883	5.9	11.6	32 330	15.1	39
Luxembourg	101	7.0	1.8	na	na	na	na	na	na
The Netherlands	2 636	5.3	1.4	3 965	8.0	14.0	6 601	13.3	60
Average		*8.7*	*2.4*		*9.4*	*13.4*		*18.2*	
Total EU	206 315	15.0	4.2	158 450	12.2[f]	12.0[f]		27.8[f]	

EU, European Union; NA, no or restricted access to abortion services; na, data not available.

[a] Abortion and pregnancy data of Greece and Poland are from 2007 and 2008, respectively.

[b] Number of live births among women aged 15–19 years [200, national data].

[c] Number of legally induced abortions among women aged <20 years [200, 201, national data].

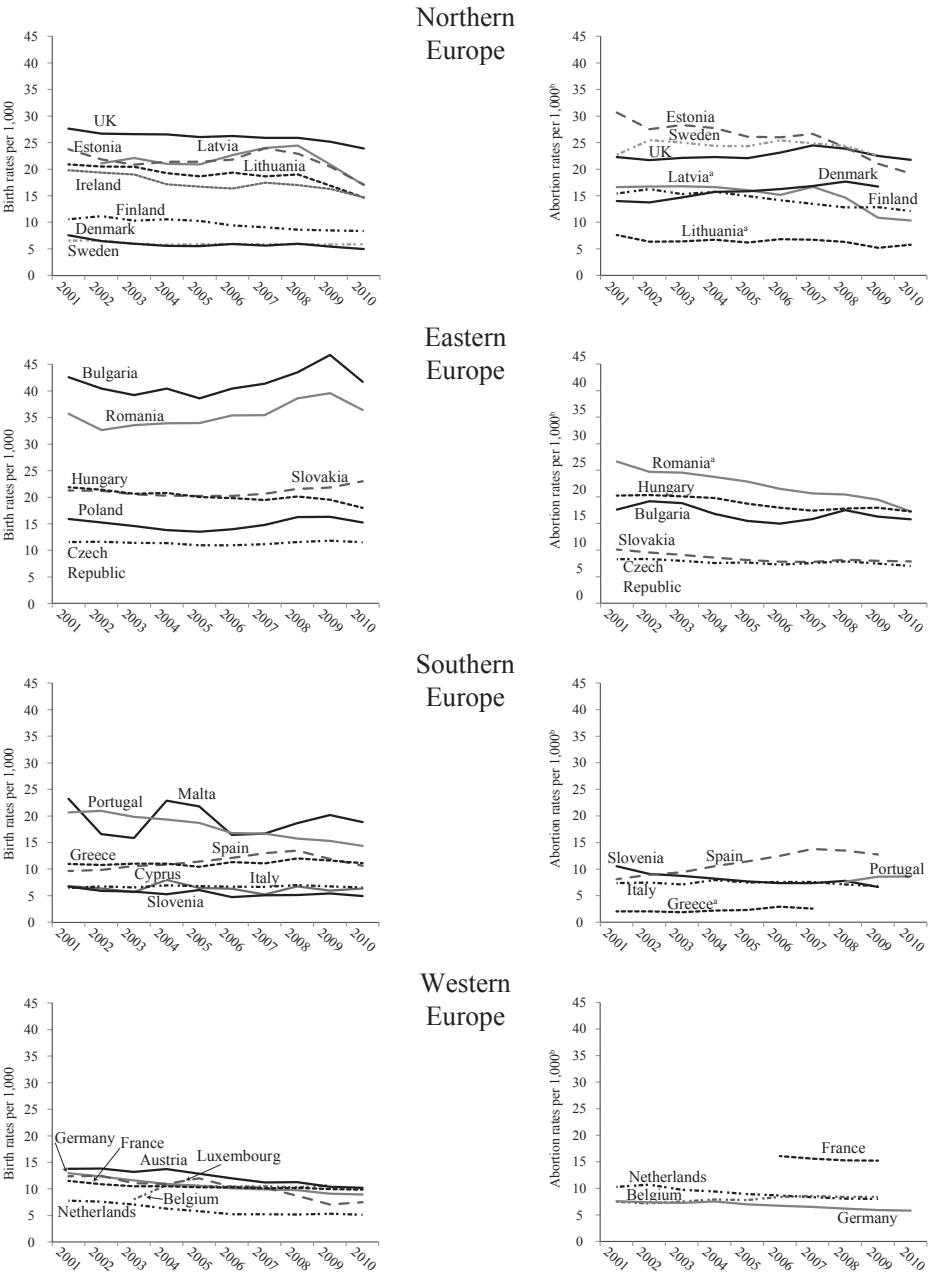
[d] Number of live births among women aged 15–19 years and legally induced abortions among women aged <20 years [200, 201, national data].

[e] Includes data on Great Britain (Northern Ireland excluded).

[f] Calculation excluded Ireland, Malta and Poland and countries with no available abortion data (Austria, Luxembourg and Cyprus).

[g] Countries with no/restrictive access to abortion.

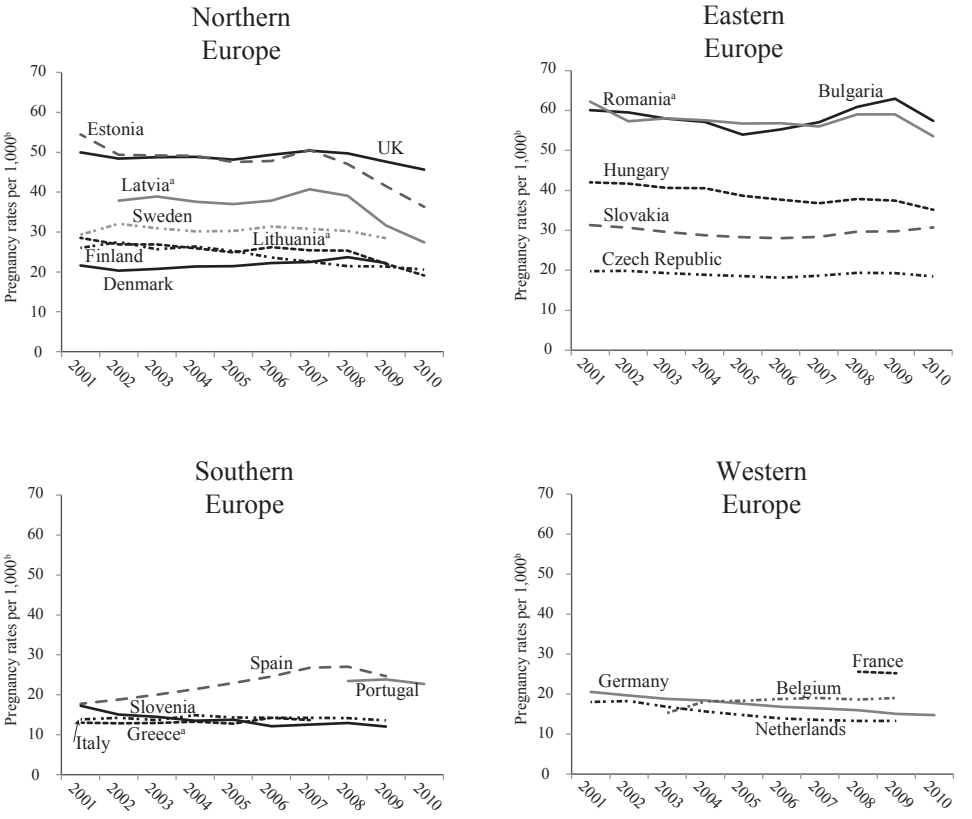
[h] Abortion reporting was estimated incomplete (defined as including less than 90% of all legal abortions) or completeness uncertain in 2008 [69].



[a] Abortion reporting was estimated as incomplete (defined as including less than 90% of all legal abortions) or completeness uncertain in 2008.
[b] Data on teenage abortions were not available for Ireland, Poland, Cyprus, Malta, Austria and Luxembourg.

Figure 5. Teenage birth and abortion rates per 1000 women aged 15–19 years in the European Union in 2001–2010.

Similarly, teenage pregnancy rates declined in all regions (Figure 6). In 17 countries with complete data, the most prominent decline was observed in Northern Europe (–13%), followed by Western (–12%), Eastern (–7%) and Southern Europe (–2%). In a country comparison, the decline in teenage pregnancy rate was greatest in Estonia and Slovenia, whereas Spain, Belgium and Denmark witnessed a small increase over the same time period.



[a] Abortion reporting was estimated as incomplete (defined as including less than 90% of all legal abortions) or completeness uncertain in 2008.
[b] Teenage pregnancy rates could not be calculated for Ireland, Poland, Cyprus, Malta, Austria and Luxembourg (abortion data not available).

Figure 6. Teenage pregnancy rates per 1000 women aged 15–19 years in the European Union in 2001–2010.

5.1.2. Context of abortion laws

Early abortions (mostly up to 10–14 weeks of gestation) were allowed at the woman's request in 20 EU member states. Abortion was prohibited in Malta, and restricted in Ireland and Poland. Abortion was permitted only for physical and mental health reasons in Northern Ireland (a part of the UK), and

additionally for socio-economic indications in Cyprus, Finland, Luxembourg (until 2012) and the UK. Procedural and legal barriers have been implemented in some countries, for example dissuasive counseling in Hungary (since 2000) and Latvia (since 2002).

Parental consent for induced abortions for minors up to 18 years of age was required in Bulgaria, Cyprus, Estonia (from 2009 to 2015), Greece, Hungary, Latvia, Lithuania, Luxembourg, Poland and Slovakia (since 2009); and up to 14–16 years of age in the Czech Republic, Spain and Austria. Adults other than parents may give their consent in Italy, Denmark, France, Portugal and the Netherlands. Parental consent was not required in the remaining seven member states where abortion is legal (Belgium, Finland, Germany, Slovenia, Sweden, Romania and the UK).

Average teenage birth rate was 17.1/1000 in countries requiring parental consent for abortion and 12.2/1000 in countries with no such requirement or where other adults may give their consent. The respective figures for the average teenage abortion rates in these two groups of countries were 13.9/1000 and 12.2/1000, and for the average teenage pregnancy rates – 35.9/1000 and 22.0/1000 (only countries with available and complete abortion data were taken into consideration).

5.1.3. Context of youth sexual health services

In Northern Europe, youth SH services were organized either as an integrated part of primary health care, such as general practitioners, health centers, school and student health care (for example, in Denmark, Finland and the UK) and/or there was a network of specialized YFCs (for example, in Sweden and Estonia). As a rule, youth SH services covered all areas. In Latvia, Lithuania and Ireland, however, there were no youth SH services available. In Eastern Europe, there were mostly family planning association (FPA) clinics or special "emergency contraception" or "child and adolescent ambulance" services, located in major hospitals and big cities, not covering all areas. In Southern and Western Europe, the services were offered in various models: by FPA clinics, specialized YFCs, integrated services in primary care, or special consultations for girls in private gynecological services. In Western Europe the services generally covered all areas, whereas in Southern Europe this may not have been the case. In Malta there were no youth SH services available. Where available, the services were mostly free of charge.

Countries offering youth SH services in all areas (for example, Denmark, Estonia, Finland, Sweden, Portugal) had teenage birth, abortion and pregnancy rates of 11.3/1000, 14.3/1000 and 25.6/1000, respectively, whereas in countries where the services were absent or limited due to uneven location (for example, Bulgaria, Hungary, Slovakia, Spain), the respective rates were 17.1/1000, 10.7/1000 and 28.8/1000 (only countries with available and complete abortion data were taken into consideration).

Hormonal contraceptives and sometimes also IUDs were generally free of charge for a certain period of time or subsidized for young people in most Northern and Western European countries, except Latvia and Lithuania. In Eastern as well as Southern European countries, with the exception of Portugal, Slovenia and Spain, contraceptives for young people were not subsidized, were available for vulnerable groups only, or only in certain clinics.

Countries where contraceptives were free of charge or subsidized for all minors (for example, Belgium, Denmark, Finland, the Netherlands, Germany) had teenage birth, abortion and pregnancy rates of 11.2/1000, 14.0/1000 and 25.7/1000, respectively. In countries where contraceptives for minors were available only under certain conditions (for example, Bulgaria, Italy, Slovenia), the respective rates were 20.2/1000, 9.9/1000 and 29.5/1000, and in countries where contraceptives for minors were not subsidized (for example, the Czech Republic, Hungary, Slovakia), the respective rates were 17.1/1000, 11.1/1000 and 28.9/1000 (only countries with available and complete abortion data were taken into consideration).

5.2. Influence of school-based sexuality education in Estonia (Papers II and IV)

5.2.1. Association between sexuality education and knowledge

Characteristics of the respondents

The characteristics of the respondents in Paper II are presented in Table 5. There was no significant difference in gender distribution in either study year. In 1994 the respondents consisted of 49.2% (95% CI 46.1–52.2) boys and 50.8% (95% CI 47.8–53.8) girls; in 1999, of 45.7% (95% CI 42.8–48.5) boys and 54.3% (95% CI 51.5–57.2) girls. In 1994, the mean age of the respondents was 14.6 years (SD 0.6) and in 1999 –15.1 years (SD 0.5). In 1994, 56.8% of the respondents and 75.5% in 1999 had talked about sexuality with parents. In 1994, 75.1% and in 1999, 96.8% of the respondents reported school-based SE. Of the respondents, 10.5% in 1994 and 12.9% in 1999 had experienced sexual intercourse.

Table 5. Characteristics of 9th grade pupils in the 1994 and 1999 KISS studies, Estonia

Characteristic	1994		1999	
	n	%	n	%
Total	1069	100	1187	100
Gender				
Male	526	49.2	542	45.7
Female	543	50.8	645	54.3
Age (in years)				
14	513	48.0	95	8.0
15	486	45.5	887	74.7
16	70	6.5	205	17.3
Discussions about sexuality with parents				
No	407	38.1	265	22.3
Yes	607	56.8	896	75.5
Missing answer	55	5.1	26	2.2
School-based sexuality education				
No	137	12.8	26	2.2
Yes	803	75.1	1149	96.8
Missing answer	129	12.1	12	1.0
Experience of sexual intercourse				
No	915	85.6	989	83.3
Yes	112	10.5	153	12.9
Missing answer	42	3.9	45	3.8

Association between sexuality education and good sexuality-related knowledge

Good sexuality-related knowledge was observed among higher percentage (62.1%) of Estonian 9th grade pupils in 1999 than in 1994 (43.4%) ($p<0.05$). The respondents in both study years had good overall knowledge about puberty, conception, contraception and STIs, but knowledge about overall sexuality was uneven. For example, most of the respondents (90.6%) in 1999 knew the meaning of the word "abortion", but only very few (5.1%) knew the meaning of the word "incest", the age of consent in Estonia was familiar to only 37.7% of the respondents and only 13.3% of the boys and 30.2% of the girls ($p<0.05$) evaluated correctly the most fertile time during the menstrual cycle (this was the only question in which a significant difference in boys' and girls' knowledge emerged).

Multiple logistic regression analysis adjusted for gender, age, discussions about sexuality with parents, school-based SE and experience of sexual intercourse showed that in 1994, only experience of sexual intercourse (AOR 2.14; 95% CI 1.37–3.35) was significantly associated with good sexuality-related knowledge, whereas in 1999, in addition to experience of sexual

intercourse (AOR 1.69; 95% CI 1.15–2.49) also school-based SE (AOR 4.63; 95% CI 1.91–11.24) was strongly associated with good knowledge. No statistically significant relationship was found between good sexuality-related knowledge and gender, age and discussions about sexuality with parents in either study year.

5.2.2. Association between sexuality education and the use of contraception

Characteristics of the respondents

The characteristics of the respondents in Paper IV are presented in Table 6. The distribution of native language of the respondents was in agreement with the official country statistics. The mean age among the 16- to 19-year-old women was 18.02 (standard deviation [SD] 0.9) years and the median age was 18 years; in the 20- to 22-year age group, the mean age was 21.03 (SD 0.80) years and the median age was 21 years; and among the 23- to 24-year age group, the mean age was 23.48 (SD 0.50) years and the median age was 23 years. School-based SE was reported by a majority of respondents, but a significant 7.7% reported no SE at school. Use of contraceptive services is presented in Section 5.4.1.

Table 6. Characteristics of 16- to 24-year-old women requiring contraception by age group, Estonia, 2004 (%)

Characteristic	Age group (in years)			
	16–19 n=284	20–22 n=365	23–24 n=219	Total n=868
All respondents	32.7	42.1	25.2	100.0
Native language				
Estonian	74.3	69.9	71.7	71.8
Not Estonian	25.0	29.9	28.3	27.9
Missing	0.7	0.3	0	0.4
School-based sexuality education				
Yes	93.7	91.8	90.9	92.2
No	6.0	8.2	9.1	7.7
Missing	0.4	0	0	0.1
Use of contraceptive service/ service type				
No visit	40.9	16.7	11.9	23.4
Women's outpatient clinic	20.8	35.6	44.3	33.0
Youth-friendly clinic	13.7	15.9	9.6	13.6
Private gynecology clinic	11.3	11.5	15.5	12.4
Family doctor	3.2	9.6	12.3	8.2
Missing/other	10.2	10.7	6.4	9.4

Association between sexuality education and the use of contraception

The prevalence of effective contraception at last sexual intercourse among Estonian 16- to 24-year-old women is presented in Section 5.4.1.

Multiple logistic regression analysis adjusted for age, native language, type of contraceptive service and school-based SE showed that the use of effective contraception (hormonal methods, condom, IUD) at last sexual intercourse was positively associated with receiving SE at school (AOR 2.69; 95% CI 1.32–5.50). More specifically, the use of hormonal methods at last sexual intercourse was positively associated with school-based SE (AOR 3.79; 95% CI 1.51–9.49). Other variables that were significantly associated with effective contraception use in multivariable analysis were use of a YFC or private gynecology clinic and being a native Estonian speaker (data shown in Section 5.4.4).

5.3. Factors associated with early sexual intercourse in Estonia (Paper III)

Characteristics of the respondents

The characteristics of the respondents are presented in Table 7. The study subjects were 9th grade 15- to 16-year-old pupils (n=1048), 46.9% boys and 53.1% girls. Majority of the girls had experienced and reported their age at menarche. Of them, one third had earlier than average pubertal timing. Of the boys, 91.2% had experienced ejaculations, but nearly one third of them did not report their age at spermarche. As a result, two fifths of the boys had earlier pubertal timing, one third had later pubertal timing and the rest had unknown age of pubertal timing. Three times more girls than boys had progressive gender attitudes, but notably many respondents from both genders could not position their gender attitude. Attitude towards sexual intercourse between young people was expressed, however, by the majority of respondents, and answers were divided equally between the liberal and conservative view. Smoking and drunkenness experience was clearly more prevalent among boys than girls.

Table 7. Characteristics of 9th grade boys and girls in the 1999 KISS study, Estonia

Characteristic	Boys		Girls	
	n	%	n	%
Age (full years)				
15	378	76.8	480	86.3
16	114	23.2	76	13.7
Pubertal timing				
Later	159	32.3	370	66.5
Earlier	200	40.7	177	31.8
Missing answer	133	27.0	9	1.6

Table 7. (Continuation)

Characteristic	Boys		Girls	
	n	%	n	%
Gender role related attitudes				
Progressive	57	11.6	183	32.9
Traditional	205	41.7	164	29.5
Hard to say	211	42.9	187	33.6
Missing answer	19	3.9	22	4.0
Attitudes towards sexual intercourse				
Conservative	220	44.7	263	47.3
Liberal	248	50.4	264	47.5
Missing answer	24	4.9	29	5.2
Smoking				
Non-smoker	355	72.2	457	82.2
Smoker	130	26.4	93	16.7
Missing answer	7	1.4	6	1.1
Alcohol consumption during prior year				
Not been drunk	237	48.2	373	67.1
Been drunk	251	51.0	181	32.6
Missing answer	4	0.8	2	0.4

5.3.1. Association between gender attitudes and early sexual intercourse

Of boys, 72 (14.6%) had experienced early sexual intercourse and of girls, 73 (13.1%). No sexual intercourse experience was reported before the age of 10, when it is more likely to be non-consensual, and only nine respondents reported sexual intercourse at the age of 10–12.

Multiple logistic regression analysis, adjusted for age, pubertal timing, gender attitudes, attitudes towards sexual intercourse, and a combined variable of smoking and alcohol consumption, showed that among boys, early sexual intercourse was positively associated with age (16 *vs*. 15 years) (AOR 1.94; 95% CI 1.00–3.75) and earlier pubertal timing (AOR 2.14; 95% CI 1.01–4.52). Among girls, early sexual intercourse was positively associated with earlier pubertal timing (AOR 2.06; 95% CI 1.07–3.97) and traditional gender role attitudes (AOR 4.00; 95% CI 1.71–9.36).

5.3.2. Association between substance use and early sexual intercourse

Not smoking, but having been drunk was associated with early sexual intercourse among both boys (AOR 8.35; 95% CI 2.74–25.46) and girls (AOR 4.62; 95% CI 1.98–10.76). Smoking, but not having been drunk was associated with early sexual intercourse among boys – the AOR was 10.40 (95% CI 2.03–53.37). The strongest association was found between early sexual intercourse and a combined variable of smoking and alcohol consumption among both boys and girls: the AOR for early sexual intercourse was 25.25 (95% CI 8.41–75.77) for boys who smoked and had been drunk, and the AOR was 21.74 (95% CI 9.72–48.66) for girls with similar experience.

5.4. Influence of youth-friendly counseling services in Estonia (Paper IV)

5.4.1. Contraceptive prevalence

Characteristics of the respondents

The characteristics of the respondents are presented in Table 6. Nearly half of the teenagers and one tenth of the oldest age group in need of contraception had not accessed contraceptive services. A women's outpatient clinic was the leading type of health care service that the respondents of all age groups had most recently visited for contraceptive counseling. A considerable number of respondents in all age groups (13.6%) had visited YFCs and private clinics (12.4%). Visiting the family doctor for contraception was the least prevalent (8.2%) compared with other types of services.

Contraceptive prevalence

Contraceptive prevalence at last sexual intercourse is presented in Table 8. Among 868 respondents in need of contraception, three-quarters (75.1%) had used an effective contraceptive method. The prevalence was highest among the oldest (79.9%) and youngest (77.1%) age group and lowest among the middle age groups (70.7%). Among teenagers, the most prevalent effective contraceptive method was the condom (51.1%), and among 23- to 24-year-olds, hormonal methods (39.3%). Less than 6% in all age groups used a dual method or IUD and less than 1% used injectables. The use of ineffective methods was, in turn, most prevalent among 20- to 22-year-olds due to frequent use of withdrawal (20.3%) and the rhythm method (6.6%).

Table 8. Contraceptive prevalence among 16- to 24-year-old women requiring contraception by age group, Estonia, 2004 (%)

Contraceptive method at last sexual intercourse	Age group (in years)			
	16–19 n=284	20–22 n=365	23–24 n=219	Total n=868
Effective method	77.1	70.7	79.9	75.1
Hormonal pill/patch	21.5	32.1	39.3	30.4
Injectable	0	0.6	0.9	0.5
Condom	51.1	30.4	29.2	36.9
Dual method	3.5	5.8	5.5	5.0
IUD	1.1	1.9	5.0	2.4
Ineffective method	22.9	29.3	20.1	24.9
Emergency contraceptive pill	2.5	0	0.5	0.9
Rhythm method	4.2	6.6	3.7	5.1
Withdrawal	14.8	20.3	11.9	16.4
Spermicide	0	0.6	0.9	0.5
Other	0.4	0.6	1.4	0.7
No use	1.1	1.4	1.8	1.4

5.4.2. Obstacles when accessing contraceptive services

As shown in Table 9, the leading obstacle of more than a quarter of respondents was difficulty in making an appointment. In addition, shame and fear of the gynecological examination were more likely to be reported by teenagers.

Table 9. Self-rated obstacles that might have impeded visiting a doctor for contraception during the last year among 16- to 24-year-old women requiring contraception by age group, Estonia, 2004 (% of affirmative answers)

Obstacle	Age group (in years)			
	16–19 n=284	20–22 n=365	23–24 n=219	p-value
Difficult to make an appointment	21.8	26.6	30.6	0.081
Long journey/poor transport connections	6.0	6.0	5.0	0.863
Previous negative experience	4.6	6.0	6.4	0.626
Shame	7.4	2.2	0.9	<0.000
Fear of gynecological examination	13.4	7.4	5.5	<0.004
No obstacles	46.1	45.8	50.2	0.540

5.4.3. Satisfaction with contraceptive services

The majority of respondents were satisfied with the selected aspects of all contraceptive services, but the satisfaction was highest with YFCs. The aspect of friendliness was statistically significantly more highly rated for YFCs (Table 10).

Table 10. Satisfaction with selected aspects of contraceptive counseling at the most recent visit among 16- to 24-year-old women (n=605) who were in need of contraception and had accessed contraceptive services, Estonia, 2004 (%)

Aspect	Women's clinic	Youth-friendly clinic	Private gynecology clinic	Family doctor	p-value
Friendliness					
Very/quite unsatisfied	12.3	5.9	5.6	4.2	0.041
Very/quite satisfied	85.9	94.1	93.5	88.7	
Missing	1.7	0.0	0.9	7.0	
Competence					
Very/quite unsatisfied	10.2	5.9	8.3	12.7	0.342
Very/quite satisfied	86.3	92.4	90.7	83.1	
Missing	3.5	1.7	0.9	4.2	
Confidentiality/reliability					
Very/quite unsatisfied	8.8	5.1	13.0	9.9	0.319
Very/quite satisfied	85.9	93.2	85.2	85.9	
Missing	5.3	1.7	1.9	4.2	
Length of visit					
Very/quite unsatisfied	12.7	8.5	6.5	7.0	0.065
Very/quite satisfied	80.6	89.0	88.0	83.1	
Missing	6.7	2.5	5.6	9.9	

5.4.4. Association between the use of contraception and access of different contraceptive services

Multiple logistic regression analysis adjusted for age, native language, type of contraceptive service and school-based SE showed that the use of effective contraception (hormonal methods, condom, IUD) at last sexual intercourse was positively associated with the use of a YFC (AOR 1.82; 95% CI 1.03–3.23) or private gynecology clinic (AOR 2.08; 95% CI 1.11–3.92). More specifically, the use of hormonal methods was positively associated with using an YFC (AOR 2.87; 95% CI 1.54–5.37), private gynecology clinic (AOR 2.44; 95% CI 1.20–4.95) or family doctor (AOR 2.37; 95% CI 1.17–4.78). The use of hormonal methods was associated, in addition, with being a native Estonian speaker (AOR 2.36; 95% CI 1.36–4.08). Receiving SE at school was significantly associated with the use of effective contraception in multivariable analysis (data shown in Section 5.2.2).

6. DISCUSSION

This research was undertaken to evaluate the role of factors in the social context, such as access to sexuality education and youth-friendly services, laws, and gender- and sexuality-related attitudes, together with substance use, on selected SH indicators of young people in Estonia. In addition, teenage pregnancies in the EU were studied. The findings show that Estonia had one of the greatest declines in teenage pregnancy rate in the EU between 2001 and 2010. Reported teenage pregnancy rates in the EU were generally lower for countries where youth SH services were available in all areas, contraceptives were subsidized for all minors, and parental consent for abortion was not required, compared with countries where these conditions were not met. In 2004, a considerable number of young women, especially non-Estonians, who were susceptible to unplanned pregnancy due to the use of ineffective contraceptive methods. The mandatory school-based SE together with the network of YFCs had a beneficial effect on young people's SH, whereas substance use and traditional gender attitudes, reflected in social norms and policies, were risk factors.

6.1. Teenage pregnancies

A decline in teenage pregnancy rates was observed in the EU in 2001–2010, but the results suggest remarkable variation in teenage pregnancies, abortion laws and access to youth SH services across member states and uneven progress during the decade.

Teenage birth rates in Europe were declining in line with the results of other studies [67, 68, 215]. However, the cross-country variation was up to nine-fold in 2009. Teenage childbearing and the proportion of teenage mothers were highest in Eastern Europe, and the decline in teenage pregnancies over the study period was also the smallest here. This may be explained, at least partly, by some historical reasons. Namely, the decline in teenage fertility in developed countries is explained by complex shifts in social and gender norms, timing of childbearing, distribution of information, sexuality education and SH services, which took place from the 1960s onwards [67, 70]. Similar shifts occurred in Central and Eastern European and former Soviet countries only since the 1990s [68, 70]. This resulted in a decline in teenage motherhood in the 1990s in many Eastern European countries [70]. According to our results, some countries (for example, Estonia, Latvia, Lithuania, Hungary) showed a continued decline in teenage births in the 2000s, while others (for example, Bulgaria, Romania and Slovakia) continued to have relatively high teenage birth rates in the 2000s. These high rates may be attributed to barriers to access to contraception, such as parental consent in accessing contraceptive services [129], high cost of contraceptives [129], lack of SE and myths about effective contraceptive methods [68].

While data on teenage live births were available across Europe, data on teenage abortions were unavailable or incomplete in more than one-third of EU countries. The finding that in 17 EU countries teenage abortion rate was declining is in line with the results of other researchers [10, 68, 135, 214]. The observed regional and cross-country differences in teenage abortion rates may be real or biased due to under-reporting [214] for a variety of reasons, such as not reporting (medical) abortions in private clinics [201, 215, 216], induced abortions being registered as miscarriages [136], and the exclusion of abortions of non-residents or migrants in the national statistics [135].

The results concerning teenage pregnancies in 17 countries showed that Eastern Europe continued to have the highest teenage pregnancy rates in Europe in 2001–2010, and that the decline in teenage pregnancy rates was highest in Northern Europe. Estonia witnessed the greatest decline, which is in correlation with the results of a recent cross-country comparative study from the mid-1990s to 2011 [68]. The decline in teenage pregnancy rates can be explained by increased contraception use, which has been achieved, among other factors, by continuously allocating public resources to SE and YFCs [14] and subsidizing contraceptives. Recently, a register-based study in Finland described fluctuations in teenage abortion rates and concluded that teenage pregnancies seem to be very sensitive to cut-backs in health services and SE [217].

The highest percentage of teenage pregnancies ending in abortion was observed in Northern and Western European countries showing high motivation to delay early motherhood. On the contrary, a low percentage of teenage pregnancies ending in abortion was observed in countries where teenage pregnancy rates were (very) low, but the abortion registration was considered to be incomplete (for example, Greece, Latvia, Lithuania). In addition, a low percentage of teenage pregnancies that end in abortion may indicate restricted access to abortion services [10, 67]. However, the findings do not allow us to draw any conclusions about whether the low percentage is influenced by the restrictions of the abortion policies (Hungary, Latvia and Lithuania), reflects opposition to abortion [69, 136], or due to the practice of conscientious objection [128]. Cut-backs in public health services, far-right-wing religious and anti-choice movements may also have an impact in several countries [128, 135, 202]. Also, population decline is a political concern for many governments in Central and Eastern Europe [128].

It is difficult to determine exactly how abortion laws and teenage pregnancy rates are related, since abortion data are not available or incomplete in most countries with no or restricted legal access to abortion. However, it is most likely that the legal barriers have no effect on the need for an abortion [129]. The findings suggest that countries that did not require parental consent generally had lower teenage birth rates and did not have higher abortion rates than countries where such consent was required. Although this result may be explained by other related factors, such as overall supportive attitudes to teenage sexual rights in these countries, it is rather likely that parental consent

provisions and fear over confidentiality issues may be a serious barrier in seeking help from available services and undermines teenagers' access to safe services [129, 130].

The data about the location and organization of youth SH services in the EU are far from complete and are not sufficient to assess the range of services that may be accessible to teenagers through regular healthcare services, such as in the Netherlands [40]. However, the findings suggest that most of the countries that offer SH services for young people in all areas, also deliver free or subsidized contraception for all minors. Those countries report lower teenage birth rates than countries where such conditions are not met. The difference in teenage abortion rates between these groups of countries is less evident, but this may be due to incomplete reporting of abortions. The result is consistent with quasi-experimental trials from the US, where increased access to contraception by reimbursement of SH services and contraceptives for adolescents was a cost-effective way of decreasing teenage pregnancy rates [145, 218].

Different organizational models of youth SH are used. Services that are integrated into primary health care are easily accessible and likely to meet the needs of adolescents, as long as the personnel is adequately trained, waiting times are kept short, and confidentiality is guaranteed [61]. Providing services through hospitals or private gynecologists may impair the access and may be associated with higher costs [40]. FPA-run clinics, found for example in Bulgaria and Romania, may be faced with serious questions about their sustainability [203]. Specialized youth clinics that guarantee confidentiality may be needed if teenage sexuality is morally judged. However, such a need diminishes when teenage sexuality becomes accepted in a society [40].

6.2. The role of school-based sexuality education

The influence of SE can be viewed in the short and long term [140]. Sexuality-related knowledge among 9th grade pupils in 1999 was used as a short-term outcome of SE. However, knowledge is not sufficient in itself to ensure the conduct of safe sexual behavior [62]. The relevant impact of SE can only be evaluated some years after the SE, meaning that for most students there will be a time period before they actually start having sexual relationships. For this reason, the use of contraceptive methods among 16- to 24-year-old women was used to study the possible long-term impact of SE. It must be taken into consideration that SE reached more pupils year by year and was nearly universally implemented in primary schools by 2004 – around ten years after its initial introduction in the school curriculum [12, 25]. According to the population-based Estonian Women's Health survey in 2004, the proportion of women who reported having had sufficient discussions on sexuality-related topics at school was 7% among women aged 35–44 years, 51% among women aged 18–24 years and 64% among women aged 16–17 years [12]. The positive

trend has been continued. According to the survey in 2014, 97% of the 16- to 17-year-old women admitted having had discussions on sexuality related topics at school, and 71% said that these discussions had been sufficient [25].

SE in Estonia was associated with sexuality-related knowledge and use of contraception among young people. In 1994, sexual knowledge of Estonian 9th grade pupils was positively associated only with experience of sexual intercourse. In 1999, good sexual knowledge was also positively associated with school-based SE. Presumably, in 1994, knowledge about sexuality, reproduction and contraception was gained after personally experiencing sexual intercourse and its potentially negative consequences, which might have forced adolescents to search independently for sexuality-related information. In 1999, however, the improvement in the respondents' level of sexual knowledge was strongly associated with SE lessons. This way of acquiring sexuality-related information can be considered much less risky for young people. The association between school-based SE and the use of effective contraception should lead to a decline in teenage pregnancy rates [10]. The downward trend in teenage pregnancies, STIs and sexually transmitted HIV cases detected among young people in Estonia during the recent two decades [14] is likely to be associated with the development of school-based SE.

We conclude that the introduction of mandatory SE into the school curriculum in 1996 and its successful implementation in the following years has very likely had a positive role in improving SH of young people in Estonia. There is much evidence in international literature that school-based SE is associated with good sexuality-related knowledge and the use of condoms and other contraceptive methods [113, 117–119, 124]. These associations, however, have not been demonstrated in Estonia before. The results are similar to a recent overview showing considerable improvements in SH indicators of Estonian young people in 1990–2009 [14]. In addition, it has been found that the Estonian school-based SE has been cost-effective [172, 173]. It is important to note that several other factors may also have contributed to the improvement of adolescents' sexuality-related knowledge in the 1990s, such as public distribution of knowledge on HIV/AIDS, more frequent public discussions about sexuality in the media and the establishment of youth YFCs.

6.3. Factors associated with early sexual intercourse

We found that all tested combinations of smoking together with drunkenness were related to early sexual experience, similarly to previous studies [36, 65, 66, 80, 183]. Importantly, the association was strongest among boys and girls who were smokers and had also been drunk during one year, which is consistent with the theories that early sexual intercourse is part of a cluster of problem behaviors [38, 125, 183]. Data concerning smoking prevalence and alcohol consumption patterns at the end of the 1990s were in line with previous

knowledge from the HBSC surveys in Estonia among 15-year-old adolescents [195, 196]. Both smoking prevalence and alcohol consumption trends were increasing in Estonia in the 1990s, especially among girls [194, 195]. The increasing trends of smoking and alcohol consumption coincided with the period of transition in the socioeconomic environment of the country, characterized by the start of marketing campaigns that showed alcohol consumption and smoking as part of the affluent Western lifestyle, which may have encouraged and sustained drinking and smoking among young people, while effective preventive measures were not yet in place [195, 196].

The association of earlier pubertal timing and early sexual intercourse has been demonstrated before [65, 66, 87, 88]. We found that for boys, this association became significant only after adjusting for smoking and drunkenness experience. For girls this association was significant and became weaker after adjustments. These results must be taken with caution due to the relatively high number of boys in our sample who did not answer the question about pubertal timing. In a recent Australian prospective cohort study, young age at menarche was not a risk factor for younger age at first sexual intercourse [219]. It was concluded that other factors such as psychosocial and cognitive development may account for early age at sexual intercourse [219].

Individual girls with traditional gender attitudes in our study had higher odds of experiencing (early) sexual intercourse than girls with progressive gender attitudes, but this was not true for boys. It has been found that traditional gender attitudes can result in poor communication, lack of preparation for intercourse, sexual coercion and violence, and gender-based differences in the motivation to become sexually involved [11]. The possible explanation is that while young men are given greater freedom to initiate sexual intercourse, women may be inhibited from taking responsibility for their own sexuality [11, 220]. It has been demonstrated that if women believe that they have to act passively they do not refuse unwanted sexual intercourse or ask their partner to use contraception [177]. Although gender attitudes were not associated with early sexual initiation among boys in our study, it is known from previous studies that boys with traditional attitudes can take other health-related risks [221]. To prevent such a pattern, educational programs that promote gender equality and challenge traditional gender norms for boys and girls have been recommended as a measure for improving a broad range of SH outcomes and preventing violence in relationships [37]. A part of the respondents of both genders were not able to express their gender role-related attitude, which may be explained by personal uncertainty due to the respondents' young age, especially in a society in transition. It is likely that gender attitudes of Estonian adolescents have changed since the 1990s, although the Human Studies' curriculum included topics about gender equality and the influence of gender stereotypes on health only since 2010 [151].

Holding liberal attitudes towards sexual intercourse was associated with sexual intercourse experience among boys and girls, in line with a previous

review [84]. This association became non-significant after adjustment for the combined smoking and drunkenness variable.

Studies have shown that both individual-level sexual behavior norms (such as appropriate timing for sexual initiation) [222] and macro level cultural norms for the timing of sexual initiation [79] may impact adolescents' timing of sexual initiation. The impact of such norms on specific health outcomes, however, is unclear. More culturally conservative contexts may constrain some precocious sexual behavior, but may also restrict adolescents' access to SE and SH services that could prevent negative SH outcomes [79].

6.4. The role of youth-friendly counseling services

The association found between the use of effective contraceptive methods and access to youth-friendly counseling services in Estonia suggests the effectiveness of YFCs [51, 125, 161–165]. Although causal association cannot be proved, the findings suggest that using effective contraception is, at least partly, attributable to visiting "youth-friendly" services. Visiting a private gynecology clinic and family doctor was also associated with effective contraceptive use. YFCs have several advantages compared with other services. For example, YCFs are free of charge, while the use of private clinics is associated with higher costs and is thus accessible only for women of higher socioeconomic status. The drop-in services, available also at Estonian YFCs [13], make the service more easily accessible for young people compared with appointment services in women's outpatient and private clinics. On the other hand, one may assume that YFCs may be more frequently visited by young people who are already more knowledgeable in SH matters and consequently use more effective contraceptive methods. Visiting a family doctor is also an option for young people who trust their family doctor in contraceptive matters or for those who wish to renew a prescription for hormonal contraceptives.

The finding that non-Estonian language background was a risk factor for not using hormonal methods deserves further investigation. In 2015, 69.7% of the population defined themselves as Estonians, 25.1% as Russians and 4.8% as other ethnic nationalities [223]. The migration of a large ethnic minority took place during the Soviet occupation, and this part of the population has remained largely segregated on geographical, cultural and native language grounds [224]. The segregation of the non-Estonian population may mean poor engagement in health-related information and services that are offered only in the Estonian language. Studies have shown that ethnic Russians have, on average, a lower health status than the ethnic majority population in Estonia [225]. Contraceptive non-use and the use of unreliable contraceptive methods are more prevalent among adult non-Estonian women compared to Estonian women [226].

The result that half of teenage and young women reported some obstacle in accessing contraceptive services, most often difficulties in making an

appointment, shows that easy access – an important aspect of quality of care of SH services according to Bertrand [159] – is especially needed for young people. In addition, teenagers more often reported shame and fear of gynecological examination as obstacles that might have impeded visiting a doctor for contraception, compared with older respondents. Embarrassment about going to see a doctor has been associated with a perception that premarital sex is unacceptable during teenage years [227]. The high satisfaction found with all contraceptive services is consistent with a previous study among teenagers in four European countries [122]. The result that the highest ratings were given to YFCs, emphasizes the importance of making contraceptive services friendly for young people [156]. There is evidence from diverse international settings that satisfaction with SH services is associated with improved contraceptive use [161, 162, 166, 228–231].

Contraceptive prevalence and condom use

Three out of four women aged 16–24 years in Estonia used effective contraceptive methods at their last sexual intercourse in 2004. Condoms were the most prevalent method used by teenagers, whereas hormonal methods were most prevalent among 23- to 24-year-old women. A dual method was used by less than 6% of the respondents. This is three times less than in Finland 10 years earlier [206, 207]. In addition, giving up condom use increases the risk of STIs and HIV, which is a big concern in Estonia with the very high prevalence of HIV [153]. It has been pointed out that the consistency of contraceptive use after first intercourse is a crucial issue in preventing unplanned pregnancies. The change from a condom to some other type of contraception is not always immediate, and young women sometimes find themselves in "in-between" situations, which may expose them to unplanned pregnancies [70].

The use of hormonal methods was lower than in Finland [206], Norway [232] or Sweden [107]. As much as one-quarter of the respondents used ineffective methods during their last sexual intercourse, being susceptible to unplanned pregnancy. This result exceeds by far the results of a Swedish study where only 3% of 17- to 21-year-olds used withdrawal at their latest sexual intercourse [107]. The prevalence of long-acting reversible methods, known to be safe and highly effective in preventing pregnancies [103], was marginal compared with the findings of a Norwegian study [232]. This may be due to health care providers' reluctance to prescribe these methods to young women or women's reluctance to use them.

In conclusion, the contraceptive pattern of 16- to 24-year-old women probably explains why the age-specific abortion rate, although declining, was still relatively high in Estonia.

The simultaneous role of sexuality education and youth-friendly counseling centers

The development of school-based SE and the creation of YFCs have been continuous and closely linked processes [13, 14, 141, 152]. The impact of one of them is conditional on the availability of the other. Therefore the impacts of these two implementations are interlinked and cannot be viewed separately [14]. There is growing evidence of the advantages of combining SE and youth-friendly services [140, 156]. SE and service provision at the community level has been associated with a positive effect on immediate [233], as well as on long-term consistent contraception use among sexually active young people [163], and with decreased teenage pregnancy rate [234].

6.5. Strengths and limitations of the study

Strengths of the study:

1. This is the first attempt to describe teenage pregnancies in the context of youth SH services and laws across the EU. The causal impact of laws and youth SH services on teenage pregnancies is virtually impossible to evaluate for methodological reasons [14]. Therefore cross-country estimates of teenage pregnancies and their likely contributing contextual factors is one possibility to identify programmatic responses to teenage pregnancies, and countries with low levels of teenage pregnancies or progress toward a decline in their incidence might serve as models for efforts to reduce levels elsewhere [68].
2. This is the first time in Estonia that data about possible associations between factors in the social context (school-based SE, contraceptive services, gender attitudes) and selected SH indicators of young people in a cross-sectional study are presented, especially for the time when major changes in society and in the school curriculum took place.
3. The evaluation of associations between use of contraception, sexuality education, and contraceptive services is rather unique.
4. The Estonian Women's Health survey is based on a representative sample that enables the estimates derived (for example, prevalence) to be generalized to the whole population of Estonia.

Limitations of the study:

1. The limited quality of abortion data in the EU limits cross-country comparison. Therefore estimates about the completeness of the abortion data, based on published literature, were used [69]. A broader set of indirect estimates of teenage pregnancy could be used, including contraceptive and condom prevalence or median age at first intercourse, but as these data were collected in national population-based surveys, they may not be comparable due to discrepancy of age groups and study design [56].

2. Somewhat different sampling methodologies were used in the 1994 KISS study (a convenience sample) and in the 1999 KISS study (a random sample from the list of Estonian 9th grade classes). However, the results reflecting respondents' sexuality-related knowledge revealed no significant regional differences in either study year, and the percentage of the target population included in the sample was similar in both study years.
3. The mean age of the respondents in KISS studies was slightly different in the two study years: 14.6 years in 1994 and 15.1 in 1999. This difference may be the result of a different school admission age: if in 1994, pupils started school mainly at the age of 7, then in 1999, pupils started school at the age of either 6 or 7. However, presumably all pupils followed the same curriculum regardless of age. Therefore, it is possible to assess the level of sexuality-related knowledge and school sexuality education in the light of the school curriculum. Logistic regression analyses were performed to detect real changes in independent variables between the two studies, after controlling for the age of pupils.
4. As in most studies with self-reported data, respondents may have given socially acceptable or dishonest answers in response to sensitive questions, and there may have been a recall bias. To increase the validity of self-reported data, effort was made to ensure the anonymity of the respondents in the process of collecting data. As the respondents were rather young, recall bias could not have affected the main results.
5. The school-based sample of KISS study excluded school drop-outs, who may be more prone to risky behavior. In 1999/2000, 0.5% of the primary school attendees, mostly boys, dropped out of school [235]. But the relatively small number of these potential respondents does not compromise the main results. Neither does the sample include Russian language school pupils, whose early sexual intercourse pattern may be different. Therefore, the results of the KISS study can be generalized only to school attendees in Estonian language schools.
6. The nature of a cross-sectional study does not allow causal inferences to be made. To describe the direction of causations, we relied on previous evidence from the literature.
7. Only one statement was used to reflect the respondents' gender attitudes. More comprehensive testing, with scales of attitudes in the context of intimate relationships [176], may have given more precise information on this topic.
8. The division between effective and ineffective contraceptive methods is debatable, since the effectiveness of a method depends on its correct use and the frequency of the need for contraception [100].

7. CONCLUSIONS

1. One of the most rapid declines in teenage pregnancies seen in the EU between 2001 and 2010 took place in Estonia. The remarkable variability observed across member states is likely to be explained, among other factors, by varying legal access to safe abortion, varying access to youth SH services, and differences in subsidization of contraceptives for young people.

2. Good sexuality-related knowledge of adolescents in 1999 and the use of effective contraception among 16- to 24-year-old women in 2004 are likely to be associated with the introduction of mandatory sexuality education in the Estonian school curriculum in 1996 and its successful implementation in the following years. The result indicates the important potential of sexuality education in preventing teenage pregnancies.

3. Early sexual intercourse was found to be strongly associated with smoking and experience of drunkenness among adolescents of both genders, indicating that initiating sexual intercourse early may be a part of general problem behavior which should be addressed simultaneously. Early sexual intercourse was associated with traditional gender role-related attitudes in girls, suggesting that gender norms may influence sexual decision-making in this group.

4. The lower use of hormonal and long-acting reversible methods compared to other developed countries and the higher prevalence of ineffective contraceptive methods among 16- to 24-year-old women indicates that a considerable number of young women in Estonia are susceptible to unplanned pregnancy. An association was found between the use of effective contraceptive methods and access to youth-friendly clinics. In addition, these services were given the highest satisfaction ratings. The result indicates that, while a choice of contraceptive services is beneficial for young people, better uptake of effective contraceptive methods can be achieved by promoting easy access to contraceptive services that are youth-friendly, especially among young women with non-Estonian ethnic background.

8. MAIN PRACTICAL IMPLICATIONS

1. Countries with low levels of teenage pregnancies and equal access to youth SH services, including safe abortion, and free/subsidized contraceptives should serve as examples of evidence-based good practice for decision-makers in other countries in the EU aiming to reduce the levels of teenage pregnancies.

2. The collection of standardized and comparable teenage pregnancy statistics, including reliable abortion recording, is obligatory in order to address the disparities in teenage pregnancies across Europe.

3. Sustainable provision of school-based mandatory sexuality education together with youth-friendly counseling centers is necessary in order to achieve and maintain good SH among young people in Estonia, including low prevalence of teenage pregnancies.

4. Strategies for promoting sexual health of young people should approach clusters of problem behavior, rather than focusing solely on the prevention of smoking, drinking or unwanted pregnancies.

5. Social norms and egalitarian attitudes should be addressed in the efforts to promote good SH in young people.

6. Updated and evidence-based information about available effective contraceptive methods, especially hormonal and long-acting reversible methods together with condom use (dual method), should be disseminated among all groups of teenagers and young people in Estonia, especially those with non-Estonian ethnic background.

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SUMMARY IN ESTONIAN

Eesti noorte seksuaaltervis sotsiaalses kontekstis: kooli seksuaalhariduse ja noorte nõustamiskeskuste roll

Lapsest täiskasvanuks saamise perioodi on alles üsna hiljuti hakatud käsitlema eraldiseisva eluperioodina. Sellele on kaasa aidanud varasemasse vanusesse nihkunud murdeiga ja seksuaalelu alustamine ning teisalt haridustee pikenemine ja kättesaadavamaks muutumine, hilisem kooselu alustamine ja laste saamine. Need protsessid on toimunud peaaegu kõikjal arenenud riikides ja on endaga kaasa toonud noorusea, s.o. 15–24 aastat [15], mil alustatakse seksuaalelu, kuid soovitakse varasemast kauem rasedusest hoiduda [2–4].

Maailma Terviseorganisatsiooni järgi on seksuaaltervis (ST) „täieliku kehalise, emotsionaalse, vaimse ja sotsiaalse heaolu seisund, mis on seotud seksuaalsusega" [5]. ST on eelkõige positiivse sisuga, mitte haigustega seonduv, mistõttu hea ST huvides rakendatavad tegevused ei peaks olema olemuselt diagnostilised või ravi eesmärgiga, vaid pigem tervist edendava, ennetusliku, hariva ja nõustava iseloomuga [40]. ST mõiste hõlmab ka rahvusvaheliselt tunnustatud seksuaalõigusi – noorte puhul eeskätt õigust turvalisele seksuaalsele arengule, seksuaalsusega seotud teabele ja haridusele, konfidentsiaalsetele terviseteenustele [44].

Kui individuaalseid tervisemõjureid on varasemalt põhjalikult uuritud, siis viimasel kahel kümnendil on hakatud üha enam tähelepanu pöörama sotsiaalse keskkonna mõjuritele – need on "tingimused, millesse inimesed sünnivad, milles nad kasvavad, elavad, töötavad ja vananevad" [8]. Noorte ST sotsiaalse keskkonna mõjuriteks on seadusandlus (sh vastavalt arenevale võimekusele autonoomse otsustusõiguse tagamine, juurdepääsu tagamine turvalisele raseduse katkestamisele), võrdne juurdepääs haridusele ja terviseteenustele, rahvuslik taust, soo ja seksuaalsusega seotud hoiakud ja üldine tervisekäitumine, sh suitsetamine ja alkoholi kasutamine [42, 123].

Uurimistöö keskendub noorte ST indikaatoritele (teismeliste rasedused, varane esmasseksuaalvahekord, rasestumisvastaste vahendite kasutamine ja seksuaalteadmised) ja nende seostele sotsiaalse keskkonna mõjuritega, eeskätt kooli seksuaalhariduse ja noortesõbralike terviseteenustega. Arenenud riikides on rasedus teismeliseeas enamasti plaanimata sündmus [2]. Teismeliste rasedusi nähakse kui sotsiaalset probleemi [4], mille põhjused on muudetavad ja millest tingitud riske on võimalik leevendada. Näiteks analüüsis Darroch koos kaas-autoritega [10] käesoleva sajandi alguses teismeliste raseduste esinemist viies arenenud riigis (USA, Kanada, Rootsi, Prantsusmaa ja Ühendkuningriik) ja leidis, et riikidevahelised erinevused on tingitud eeskätt noorte erinevast kontratseptsioonikasutusest, mitte niivõrd erinevustest seksuaalelu alustamise vanuses. Raseduse korral mõjutab teismelise otsust – sünnitada või katkestada rasedus – muuhulgas turvalise abordi kättesaadavus [67]. Et tuua esile eeskuju väärivate riikide kogemus, vajatakse võrdlevaid andmeid Euroopa riikide teismeliste

raseduste kohta sotsiaalsete mõjurite kontekstis. Seksuaalelu alustamine noorukieas on arenenud riikides aktsepteeritav, kui see toimub vabatahtlikult, võrdsete ja samaealiste partnerite lähisuhtes ning kasutatakse rasestumisvastaseid meetodeid [40, 94]. Varast esmasseksuaalvahekorda (enne 15. või 16. aastat) peetakse siiski problemaatiliseks, sest see on seotud plaanimata rasedustega hilisemas vanuses ja enamate seksuaalpartneritega, mis toob omakorda kaasa riski nakatuda seksuaalsel teel levivatesse infektsioonidesse (STLI) [2, 28, 64–66, 79–83]. Seetõttu on vajalik uurida tegureid, mis soodustavad varast seksuaalelu alustamist. Kõik taaspöörduva toimega rasestumisvastased meetodid on meditsiinilises mõttes sobivad igas vanuses noortele [9, 99]. Enim kasutatakse 15–24-aastaste hulgas kondoomi ja kombineeritud hormonaalseid rasestumisvastaseid vahendeid, samal ajal on just selles vanuserühmas suurim risk kasutada meetodeid vääralt ja mittejärjepidevalt [104]. Seetõttu üha enam soovitatakse noortele pika toimeajaga pöörduvaid rasestumisvastaseid meetodeid (emakasisene vahend ja süsteem, implantaat) [99, 105]. Vajalik on saada teadmisi eri rasestumisvastaste meetodite kasutussageduse ja seda soodustavate tegurite kohta. Head seksuaalteadmised ei taga iseenesest turvalist seksuaalkäitumist [62], kuid on selle eeltingimuseks ning leevendavad seksuaalsuse ja reproduktsiooniga seotud hirme ning eelarvamusi.

Euroopas hakati kohustuslikku SHst koolides pakkuma esmakordselt Rootsis 1955. aastal [94]. Praeguseks on jõutud nn holistilise SH kontseptsioonini, mis seisneb "seksuaalsuse kognitiivsete, tunnetega seotud, sotsiaalsete, interaktiivsete ja kehaliste aspektide õppimises /.../ lapse-, nooruki- ja täiskasvanueas; eesmärgiga toetada ja kaitsta lapse ja noore seksuaalset arengut, pakkudes järkjärgult eakohast teavet, oskusi ja positiivseid väärtusi, mis on vajalikud selleks, et mõista ja tunda rõõmu oma seksuaalsusest, osata luua ja hoida turvalisi ja vastastikku rahuldustpakkuvaid lähisuhteid ning võtta vastutust enda ja teiste ST ja heaolu eest" [139]. Üha enam on hakatud tähtsustama noortesõbralike terviseteenuste olulisust noorte ST edendamisel – see tähendab barjääride kõrvaldamist, et ST-teenused oleksid noortele kergesti kättesaadavad ja neile vastuvõetavad [51]. Noorte jaoks võivad teenuste poole pöördumisel barjäärideks osutuda näiteks teenuse kaugus elukohast, hind, pikad ooteajad, administratiivsed piirangud, vanema teavitamise nõue, kuid ka kliendi rahulolu teenusepakkuja sõbralikkuse, konfidentsiaalsuse ja visiidi pikkusega. Keerukas on leida võimalusi hindamaks kooli SH ja noortesõbralike terviseteenuste iseseisvat mõju noorte STle. Randomiseeritud kontrolliga uuringud on mitmel põhjusel raskesti tehtavad või pole kohased SH ega terviseteenuste põhjusliku efekti hindamisel. Seetõttu on otstarbekas tugineda eri meetoditega läbi viidud uuringutele ja andmebaasidele, sealhulgas hinnata tervisenäitajate suundumusi ajas sotsiaalsete tervisemõjurite kontekstis [140]. Kahes suures ülevaateuuringus on näidatud, et koolipõhistel SH-programmidel on positiivne mõju noorte seksuaalteadmistele, kondoomi ja rasestumisvastaste meetodite kasutamisele ning et SH ei kiirenda, vastupidiselt kartustele, seksuaalkogemuste hankimist ja võib esmasseksuaalvahekorra koguni edasi lükata [113, 117]. On

leitud, et noortesõbralikud terviseteenused on positiivse mõjuga noorte STle, kuid sarnase tõendusmaterjali hulk on seni ebapiisav [51, 125, 161–165]. Sarnaselt on leitud, et domineerivad soo ja seksuaalsusega seotud hoiakud mõjutavad olulisel määral noorte motivatsiooni seksuaalelu alustamiseks ja seksuaalsusega seotud otsuste langetamist [11, 42]. Traditsioonilisi sooga seotud hoiakuid on seostatud soovimatute seksuaalkogemuste ja vähesema kondoomikasutusega. Suhtumine noorte seksuaalelu lubatavusse on viimase poolsajandi jooksul muutunud järjest liberaalsemaks; on oletatud, et see võib soodustada järjest varasemat seksuaalelu alustamist. Suitsetamine ja alkoholi tarvitamine on osa laiemast (seksuaalse) riskikäitumise spektrist [38, 184], mis on suurel määral soodustud või piiratud vastavate seadustega ja mõjutatud kultuurilistest normidest [7].

Eestis on alates 1990ndatest toimunud sotsiaalsed muutused, mis võivad olla erineval moel mõjutanud noorte STst. Kooli õppekavasse viidi 1996 kohustuslik inimeseõpetuse aine, mille õppesisu kehtestas ka SHga seotud teemade käsitlemise. On teada, et aastaks 2004 oli koolis SH teemasid käsitletud enamiku Eesti naiste tervise uuringus [12] osalenud vastajate hinnangul. Alates 1991. aastast loodud ja järgneval kümnendil järkjärguliselt laienenud noorte nõustamiskeskuste (NNK) võrgustik, mille kaudu on kuni 25-aastastele noortele tasuta kättesaadav noortesõbralik kontratseptsioonialane nõustamine, testimine STLI/HIV suhtes ja seksuaalhariduslikud loengud kooliõpilastele [13]. Seadused on võimaldanud noortele juurdepääsu turvalisele raseduse katkestamisele [138], samuti kuuluvad Eesti hormonaalsed rasestumisvastased vahendid 50% soodushinnaga ravimite nimekirja. Kuigi seadus piirab tubakatoodete ja alkoholi kättesaadavust noortele ja tarvitamist avalikes kohtades, on alkoholi ja tubaka reklaami reguleerivad seadused Eestis siiani küllaltki liberaalsed ja alkoholi kasutamine üks kõrgemaid Euroopas [169]. Teadaolevalt noorenes ja võrdsustus soolises lõikes perioodil 1990–2009 esmasseksuaalvahekorra vanus [96], kuid samal ajal vähenes märgatavalt teismeliste raseduste suhteline sagedus [71, 72, 76] ja registreeritud STLH arv, paranesid noorte seksuaalteadmised ning kondoomi ja rasestumisvastaste vahendite kasutamine [14].

Siiani puudub selgus, mil määral need positiivsed suundumused noorte ST näitajates on olnud seotud nimetatud kahe uue algatuse – kooli SH ja NNK võrgustiku – mõjuga. Eestis pole enne käesolevat uuringut analüüsitud põhjalikumalt teismeliste seksuaaltervisealaste teadmiste ja varase esmasseksuaalvahekorraga seotud tegurid. Puuduvad täpsed andmed eri rasestumisvastaste meetodite, sh tõhusate ja ebatõhusate meetodite kasutussageduse kohta. Siiani pole uuritud, millised on eesti noormeeste ja neidude soo ja seksuaalsusega seotud hoiakud ning kuidas need on seotud seksuaalkäitumisega.

Eesmärgid

Töö üldeesmärk oli hinnata sotsiaalse konteksti mõju Eesti noorte seksuaaltervisele.

Töö alaeesmärgid olid:

1. Uurida teismeliste raseduste esinemissagedust Euroopa Liidus, vaadeldes riikide ja piirkondade vahelisi erinevusi ning muutusi ajas; abordiga seotud seadusi ja noorte seksuaaltervise teenuseid (artikkel I).
2. Hinnata kooli seksuaalhariduse võimalikku mõju analüüsides selle seoseid (a) heade seksuaaltervisealaste teadmistega teismelistel poistel ja tüdrukutel (artikkel II) ja (b) tõhusate rasestumisvastaste meetodite kasutamisega noorte naiste hulgas (artikkel IV).
3. Uurida varase esmasseksuaalvahekorra seost suitsetamise, alkoholi tarvitamise, soo ja seksuaalsusega seotud hoiakutega teismeliste poiste ja tüdrukute hulgas (artikkel III).
4. Analüüsida noorte nõustamiskeskuste külastamise seost tõhusate rasestumisvastaste meetodite kasutamisega noorte naiste hulgas; kirjeldada rasestumisvastaste meetodite kasutamissagedust, takistusi teenuste saamisel ja rahulolu eri teenustega (artikkel IV).

Andmed ja metoodika

Uurimistöö põhineb rahvusvahelise REPROSTAT uuringu (artikkel I), Eestis läbiviidud kahe (1994 ja 1999) KISS uuringu (artiklid II ja III) ja Eesti naiste tervise uuringu andmetel (artikkel IV).

REPROSTAT uuringus koguti rahvusvaheliste andmebaaside [133, 134, 200–203] ja eksperdihinnangutele tuginevad andmed teismeliste (15–19-aastaste) naiste elussündide ja legaalselt indutseeritud abortide, abordi seadusandluse (abordi legaalsus, vanema nõusoleku nõue), noorte ST teenuste kättesaadavuse ja tasuta/soodushinnaga rasestumisvastaste vahendite kättesaadavuse kohta 27 Euroopa Liidu riigis. Uuringusse kaasati perioodil 2001–2010 aasta kohta keskmiselt 14 841 439 naist vanuses 15–19 aastat.

Arvutati teismeliste sündimuskordajad (elussündide arv 1000 15–19-aastase naise kohta), abortiivsuskordajad (legaalselt indutseeritud abortide arv 1000 15–19-aastase naise kohta), raseduskordajad (elussündide ja legaalselt indutseeritud abortide arv 1000 15–19-aastase naise kohta), teismeliste sündide osakaal sündide üldarvust ja teismeliste abortide osakaal teismeliste rasedustest aastal 2009 riikide ja geograafiliste piirkondade (Ida-, Põhja-, Lõuna- ja Lääne-Euroopa) [214] lõikes. Esitati teismeliste sündimus-, abortiivsus- ja raseduskordajate muutused ajas 2001–2010 ja arvutati muutused. Abordistatistika täielikkust hinnati avaldatud kirjanduse põhjal [69].

KISS uuring viidi koolides õpilaste ankeetküsitlusena läbi 1994 ja 1999. Kasutati Soomes väljatöötatud küsimustikku [204–207], mis tõlgiti eesti (1994) ja vene keelde (1999). Üldvalimi moodustasid 9. klasside õpilased (valdavalt 14–16-aastased). Rahalistel kaalutlustel koostati 1994. aastal 9. klasside loendist mugavusvalim, võttes arvesse linna- ja maarahvastiku osakaalu (statistikaamet) ja seades eesmärgiks suurema osa Eesti geograafiliste piirkondade hõlmatuse. 1999 koostati haridusministeeriumi 9. klasside loendist kihitatud juhuvalim

väikese, keskmise ja suure õpilaste arvuga klasside hulgas. Valimist jäeti välja erivajadustega õpilaste koolid. Artiklite II ja III andmeanalüüsis kasutati vaid eesti õppekeelega koolide õpilaste andmeid. Valimi suurus oli vastavalt n=1223 ja n=1413. Valim moodustas 1994. aastal 10% ja 1999. aastal 12% üldvalimist. Andmed koguti 1994. ja 1999. aasta märtsis. Õpilased vastasid ankeetidele ühe koolitunni jooksul uuringu läbiviija juuresolekul. Anonüümsuse huvides panid vastajad täidetud ankeedi ümbrikusse ja sulgesid selle. Vastamismäärad olid 89,9% (1994) ja 88,6% (1999). Uuringuks saadi Tartu Ülikooli inimuuringute eetikakomitee luba.

Õpilaste seksuaalteadmisi (artikkel II) hinnati uuringuaastati 16 valikvastustega küsimuse põhjal seksuaalse arengu, viljastumise, rasestumisvastaste meetodite, STLI ja üldiselt seksuaalsuse kohta. Heade teadmistega vastajateks loeti noored, kes vastasid õigesti üheksale või enamale küsimusele ning kehvade teadmistega need, kes vastasid õigesti vähem kui üheksale küsimusele. Analüüs hõlmas 1069 õpilast 1994. ja 1187 õpilast 1999. aasta uuringus vanuses 14–16 aastat. Hinnati heade seksuaalteadmiste (sõltuv tunnus) seoseid kahel uuringuaastal järgmiste taustateguritega: sugu, vanus, vestlused vanematega seksuaalteemadel, seksuaalteemade käsitlemine koolis ja isiklik seksuaalvahekorra kogemus.

Varase seksuaalvahekorra kogemust (artikkel III) hinnati soo lõikes küsimuse "Kas sa oled kunagi kogenud seksuaalvahekorda?" (jah, ei) põhjal. Analüüs hõlmas 1048 õpilast vanuses 15–16 aastat 1999. aasta uuringus, kes olid vastanud seksuaalkogemuse kohta. Hinnati varase esmasseksuaalvahekorra (sõltuv tunnus) seoseid poistel ja tüdrukutel järgmiste taustateguritega: vanus, vanus murdeea saabumisel, sooga seotud hoiakud, seksuaalvahekorra lubatavusega seotud hoiakud ja liittunnus, mis iseloomustas suitsetamise ja alkoholi tarvitamise kombinatsioone.

Läbilõikelises Eesti naiste tervise uuringus kasutati valikvastustega küsimustikku, mis koostati rahvusvahelise uuringuprojekti "Reproductive Health and Fertility Patterns – A Comparative Approach" [208] raames ja milles tuginetti ka varem Soomes läbi viidud uuringutele [209–213]. Küsimustikku täiendati Eesti oludele vastavate küsimustega. Üldvalimi moodustas oli Eesti naisrahvastik vanuses 16–44 aastat. Valim arvutati vastavalt seksuaalelu kogemusega naiste osakaalule ja vastamismäärale varasemates uuringutes [112, 213]. Rahvastikuregistri alusel moodustati vanuse järgi kihitatud juhuvalim (n=5190) vanuserühmades 16–25, 26–35 ja 36–44 aastat. Vastajatele saadeti 2004. aasta märtsis eesti- või venekeelne küsimustik koos margistatud ümbrikuga. Anonüümsuse tagamiseks saadeti sama postitusega igale vastajale individuaalne uuringukood, mille vastaja tagastas ankeedist eraldi. Mittevastanutele saadeti küsimustik teist korda. Vastamismäär oli 53,8%. Uuringule andis loa Tartu Ülikooli Inimuuringute Eetikakomitee.

Rasestumisvastaste meetodite levimust (artikkel IV) uuriti kolme vanuserühma (16–19, 20–22, 23–24 aastat) lõikes küsimuse "Millist rasestumisvastast meetodit tarvitasite viimase suguühte ajal?" põhjal. Kasutatud rasestumis-

vastased meetodid jaotati tõhususe alusel [100] kahte rühma: tõhusad (hormonaalsed ja emakasisesed meetodid, kondoom) ja ebatõhusad meetodid (kalendrimeetod, katkestatud suguühe, spermitsiidid, SOS-pill, muu meetod, meetodi mittekasutamine). Kondoomi kombineeritud kasutamine hormonaalse/emakasisese meetodiga (topeltmeetod) liigitati tõhusate meetodite rühma. Teiste meetodite kombinatsioonide puhul võeti rühmitamisel aluseks tõhusaim meetod. Analüüs hõlmas 868 seksuaalkogemusega 16–24-aastast naist, kes vajasid rasestumisvastast meetodit (st ei olnud rasedad, ei plaaninud rasedust ega olnud viljatud). Hinnati tõhusate rasestumisvastaste meetodite kasutamise ja hormonaalsete rasestumisvastaste vahendite (sõltuvad tunnused) seoseid taustateguritega: vanus, emakeel, viimati külastatud kontratseptsiooninõustamist pakkuv terviseteenus (naistenõuandla, noorte nõustamiskeskus, naistearst eraklinikus, perearst), kooli seksuaalharidus.

Et kirjeldada takistusi pöördumisel kontratseptsiooninõustamist pakkuvate terviseteenuste poole, kasutati küsimust „Kas mõned alljärgnevatest põhjustest on mõjutanud viimase aasta jooksul Teie pöördumist arsti vastuvõtule rasestumisvastase vahendi/nõuande saamiseks?" Vastusevariandid jaotati viide rühma, mis tähistasid raskusi vastuvõtuaja saamisega; pikka vahemaad ja transpordiraskusi; eelnevaid negatiivseid kogemusi; häbi seoses naistearsti külastamisega ja kartust günekoloogilise läbivaatuse ees.

Rahulolu terviseteenustega hinnati küsimuse „Kuidas jäite rahule viimase pöördumisega rasestumisvastase nõuande/vahendi saamiseks?" põhjal. Vastajad hindasid teenusepakkuja sõbralikkust, asjatundlikkust, usaldusväärsust ja visiidi kestvust skaalal väga/üsna rahul ja väga/üsna rahulolematu.

Kirjeldavate tunnuste kohta esitati absoluut- ja suhtelised väärtused. Erinevusi kahe rühma vahel hinnati hii ruut testi abil ($p<0.05$). Seoseid sõltuvate tunnuste ja taustategurite vahel hinnati logistilise regressioonanalüüsi abil, arvutades riski hindamiseks kohandamata ja taustateguritele kohandatud šansisuhted koos 95% usaldusvahemikega. Andmeanalüüsiks kasutati Microsoft Excel, STATA 8 ja 10 tarkvara.

Tulemused

Teismeliste rasedused Euroopa Liidus abordi seadusandluse ja noorte terviseteenuste kontekstis (artikkel I)

Aastal 2009 oli keskmine teismeliste (15–19-aastaste) sündimuskordaja Euroopa Liidus 15,0; madalaim oli see Hollandis (5,3/1000) ja kõrgeim Bulgaarias (46,7/1000). Nii teismeliste sündimuskordaja kui teismeliste sünnitajate osakaal oli kõrgeim Ida-Euroopas. Andmeid teismeliste indutseeritud abortide kohta ei koguta Austrias, Küprosel ja Luksemburgis; andmed puuduvad Iirimaa, Malta ja Poola kohta. Ülejäänud 21 liikmesriigis oli aastal 2009 keskmine teismeliste abortiivsuskordaja 15,0/1000, kusjuures neist neljas riigis (Läti, Leedu, Rumeenia, Kreeka) on abordiandmed kirjanduse järgi alaregistreeritud.

Usaldusväärsete andmetega riikidest olid madalaimad teismeliste abortiivsuskordajad Saksamaal (5,9/1000) ja kõrgeimad Rootsis ja Ühendkuningriigis (22,5/1000). Teismeliste rasedused lõppesid suurema tõenäosusega (>60%) raseduse katkestamisega Põhja-Euroopa riikides ja väiksema tõenäosusega (<30%) mujal. Keskmine teismeliste raseduskordaja oli 2009. aastal 21 riigi hulgas 27,8 – see näitaja oli kõrgeim Ida-Euroopas.

Alates 2001. aastast olid ELis teismeliste raseduskordajad üldiselt langenud. Usaldusväärsete andmetega 17 liikmesriigi hulgas oli langus suurim Põhja- ja Lääne-Euroopas, sh kõige kiirem langus ilmnes Eestis.

Raseduse katkestamise näidustused on liberaalsed (naise soovil) 20 liikmesriigis. Indutseeritud abort on seadusega keelatud Maltas ning piiratud Iirimaal ja Poolas. Neljas riigis on abort lubatud kehalise ja vaimse tervise või sotsiaalmajandusliku näidustusega. Vanema nõusolek alla 18-aastaste naiste raseduste katkestamiseks on vajalik Bulgaarias, Küprosel, Eestis (2009–2015), Kreekas, Ungaris, Lätis, Leedus, Luksemburgis, Poolas ja Slovakkias, ja 14–16-aastaste naiste puhul Tšehhis, Hispaanias ja Austrias. Teine täiskasvanu võib anda nõusoleku Itaalias, Taanis, Prantsusmaal, Portugalis ja Hollandis ning vanema nõusolek ei ole vajalik Belgias, Soomes, Saksamaal, Sloveenias, Rootsis, Rumeenias ja Ühendkuningriigis.

Põhja-Euroopas on noorte ST teenused kas esmatasandi arstiabi või koolitervishoiu osa (näiteks Taanis, Soomes ja Ühendkuningriigis) ja/või on loodud noorte nõustamiskeskuste võrgustik (Rootsis ja Eestis). Erandina ei ole noorte ST teenuseid Iirimaal, Lätis ja Leedus. Ida-Euroopas on loodud pereplaneerimise liitude kliinikud (või erivastuvõtud noortele), mis paiknevad reeglina suuremates linnades. Lõuna- ja Lääne-Euroopas on teenused korraldatud erineval moel, sh Maltal noorte ST teenused puuduvad. ST teenused noortele on enamasti tasuta.

Põhja- ja Lääne-Euroopa riikides on hormonaalsed rasestumisvastased vahendid ja mõnikord ka emakasisene kontratseptsioon teatud aja jooksul noorte jaoks tasuta või soodushinnaga, v.a Lätis ja Leedus. Ida- ja Lõuna-Euroopas on üldreeglina soodushind kehtestatud vaid teatud haavatavatele gruppidele.

Teismeliste raseduskordajad on keskmisest madalamad riikides, kus vanema nõusolek teismelise raseduse katkestamiseks ei ole nõutav, noorte ST teenused on tasuta ja kättesaadavad ja kontratseptsioonimeetodid on noortele tasuta või soodushinnaga, võrrelduna riikidega, kus need tingimused pole täidetud.

Kooli seksuaalhariduse mõju (artiklid II ja III)

Pärast kohandamist valitud taustateguritele ilmnes 1994. aasta uuringus statistiliselt usaldusväärne seos, mille kohaselt 9. klasside õpilaste head seksuaalteadmised olid seotud isikliku seksuaalvahekorra kogemusega (AOR 2,14; 95% CI 1,37–3,35). Seevastu 1999. aasta uuringus olid head seksuaalteadmised lisaks isiklikule seksuaalvahekorra kogemusele (AOR 1,69; 95% CI 1,15–2,49) seotud veel kooli seksuaalharidusega (AOR 4,63; 95% CI 1,91–11,24).

Tõhusate rasestumisvastaste meetodite (hormonaalsed ja emakasisesed meetodid ja kondoom) kasutamine viimases seksuaalvahekorras 16–24-aastaste naiste hulgas oli positiivses seoses kooli seksuaalharidusega (AOR 2,69; 95% CI 1,32–5,50), samuti oli hormonaalsete meetodite kasutamine seotud kooli seksuaalharidusega (AOR 3.79; 95% CI 1.51–9.49).

Varase seksuaalvahekorra mõjurid (artikkel III)

Varane esmasseksuaalvahekord oli noormeestel usaldusväärselt seotud vanusega (16 *vs.* 15 aastat; AOR 1,94; 95% CI 1,00–3,75) ja keskmisest varasema murdeea saabumisega (AOR 2,14; 95% CI 1,01–4,52). Neidudel oli varane esmasseksuaalvahekord seotud varasema murdeeaga (AOR 2,06; 95% CI 1,07–3,97) ja traditsiooniliste sooga seotud hoiakutega (AOR 4,00; 95% CI 1,71–9,36). Tugevaim seos ilmnes aga suitsetamise ja alkoholi kasutamise liittunnuse variandiga, mis hõlmas suitsetamist ja purjujoomise kogemust nii neidudel (AOR 25,25; 95% CI 8,41–75,77) kui noormeestel (AOR 21,74; 95% CI 9,72–48,66).

Noorte nõustamiskeskuste mõju (artikkel IV)

Kolm neljandikku 16–24-aastastest naistest oli kasutanud tõhusaid rasestumisvastaseid meetodeid viimases seksuaalvahekorras. Teismeliste hulgas oli levinuim meetod kondoom (51,1%), ja vanimas vastajate rühmas (23–24-aastased) hormonaalsed meetodid (39,3%). Vähem kui 6% vastajatest kasutas topeltmeetodit või emakasisest kontratseptsiooni. Ebatõhusate meetodite kasutamine oli levinuim 20–22-aastaste vastajate hulgas – katkestatud vahekorda kasutas 20,3% ja kalendrimeetodit 6,6% vastajatest.

Pärast kohandamist ilmnes statistiliselt usaldusväärne seos tõhusate rasestumisvastaste meetodite (hormonaalsed ja emakasisesed meetodid, kondoom) kasutamise ja noorte nõustamiskeskuse (AOR 1,82; 95% CI 1,03–3,23) ja erakliiniku külastamise vahel (AOR 2,08; 95% CI 1,11–3,92). Kitsamalt hormonaalsete meetodite kasutamine oli seotud noorte nõustamiskeskuse (AOR 2,87; 95% CI 1,54–5,37), erakliiniku (AOR 2,44; 95% CI 1,20–4,95) ja perearsti külastamise vahel (AOR 2,37; 95% CI 1,17–4,78); lisaks ilmnes positiivne seos eesti emakeelega (AOR 2,36; 95% CI 1,36–4,08).

Pooltel vastajatel oli esinenud takistusi pöördumisel kontratseptsiooninõustamist pakkuvate terviseteenuste poole. Peamiseks takistusteks olid raskused vastuvõtuaja saamisega ja teismeliste puhul veel häbi ja hirm günekoloogilise läbivaatuse ees.

Enamik vastajatest oli rahul kõikide uuritud teenuste külgedega, kuid rahulolu oli kõrgeim noorte nõustamiskeskustega, sh ilmnes statistiliselt oluline erinevus sõbralikkusega.

Järeldused

1. Eestis on olnud üks kiireimaid teismeliste raseduste langusi Euroopa Liidus perioodil 2001–2010. Teismeliste raseduste esinemissageduse tähelepanuväärne kõikumine riigiti on muuhulgas seletatav seadusega tagatud turvalise abordi ja noorte ST teenuste kättesaadavuse ning tasuta/soodushinnaga rasestumisvastaste vahendite võimaldamisega noortele.
2. Kooli seksuaalhariduse seos teismeliste heade seksuaalteadmistega 1999. aastal ja 16–24-aastastel naiste tõhusate rasestumisvastaste meetodite kasutamisega on tõenäoselt seotud kohustusliku seksuaalhariduse viimisega kooli õppekavasse 1996. aastal ja selle järgneva eduka rakendamisega Eestis. Antud tulemus näitab, et kooli seksuaalharidusel on oluline osa teismeliste raseduste ennetamisel.
3. Varase esmasseksuaalvahekorra seos suitsetamise ja alkoholi liigtarvitamisega mõlemast soost teismelistel näitab, et varane seksuaalelu alustamine moodustab osa üldisest riskikäitumisest, seega on vajalik neid käsitleda kompleksselt. Neidudel ilmnenud seos varase esmasseksuaalvahekorra ja traditsiooniliste sooga seotud hoiakute vahel näitab nende rolli seksuaalsusega seotud otsuste tegemise protsessis.
4. Hormonaalsete ja pikaajaliste pöörduvate rasestumisvastaste meetodite tagasihoidlik kasutamine 16–24-aastaste naiste hulgas ja kõrge ebatõhusate meetodite levimus näitab, et märkimisväärne osa naistest on ohustatud plaanimatust rasedusest. Ilmnes seos 16–24-aastaste naiste tõhusa kontratseptsioonikasutuse ja noorte nõustamiskeskuste külastamise vahel ning kõrge rahulolu nende teenustega. See näitab, et kuigi valikuvõimalus eri kontratseptsiooninõustamist pakkuvate teenuste vahel on noorte jaoks kasulik, tuleb soodustada noorte juurdepääsu noortesõbralikele teenustele, mille kasutamine on seotud ka tõhusama kontratseptsioonikasutusega, eriti mitteeesti emakeelega noorte hulgas.

Praktilised soovitused

1. Madalate teismeliste raseduskordajatega riigid Euroopa Liidus, kus noortel on võrdne juurdepääs noorte ST teenustele, sh. turvalisele abordile ja tasuta/soodushinnaga rasestumisvastastele meetoditele, on heaks näiteks teistele liikmesriikidele, kus poliitiliste otsuste kaudu soovitakse teismeliste raseduste sagedust vähendada.
2. Hädavajalik on Euroopa Liidu riikides koguda ühesuguseid ja võrreldavaid andmeid teismeliste raseduste kohta, sh. usaldusväärseid andmeid legaalselt indutseeritud abortide kohta.
3. Kooli kohustusliku seksuaalhariduse ja noorte nõustamiskeskuste jätkusuutlik pakkumine Eestis on vajalik, saavutamaks ja säilitamaks head noorte seksuaaltervist, sh madalat teismeliste raseduste taset.

4. Seksuaaltervise edendamise meetmed peavad olema suunatud komplekssel riskikäitumise eri liikidele, mitte aga eraldi suitsetamisele, alkoholitarvitamisele ja soovimatute raseduste ennetamisele.
5. Noorte tulemuslikul ST edendamisel tuleb tähelepanu pöörata sotsiaalsete normide ja võrdõiguslike hoiakute käsitlemisele.
6. Kõikidele, sh mitte-eesti emakeelega noortele Eestis tuleb jagada kaasaegset ja tõenduspõhist teavet tõhusate rasestumisvastaste meetodite kohta, sh. eriti hormonaalsete ja pikaajaliste pöörduvate meetodite ning topeltmeetodi kohta.

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APPENDIX I
Questionnaire of the KISS 1999 study

1. Vastaja sugu

1 noormees
2 neiu

2. Sünniaasta ja -kuu

aasta…… kuu……

3. Kus Sa elad?

1 maal (külas)
2 väikelinnas või alevis
3 suuremas linnas (Tartu, Pärnu, Kohtla-Järve, Narva)
4 Tallinnas

4. Kas Sa elad oma vanema(te)ga koos või eraldi?

1 elan 1 vanemaga/kasuvanemaga koos
2 elan 2 vanemaga/kasuvanemaga koos
3 elan koos mõne muu täiskasvanuga
4 elan koos eakaaslas(t)ega
5 elan üksinda

5. Milline on isa, ema või muu hooldaja haridus ? *(anna igas veerus vastus)*

	A. isa/ kasuisa	B. ema/ kasuema	C. hooldaja
algkool	1	1	1
põhikool	2	2	2
keskkool	3	3	3
kõrgkool	4	4	4
ei tea	5	5	5
ei ela temaga koos	6	6	6

6. Kuidas Sa ennast koolis tunned?

1 väga hästi
2 suhteliselt hästi
3 raske öelda
4 suhteliselt halvasti
5 väga halvasti

7. Kas pead olema kodus mingiks kindlaks kellaajaks (kui oled näiteks sõpradega väljas) ?

1 jah, pean alati kodus olema hiljemalt kell…….
2 jah, lepime kokku, millal tulen
3 võin tulla millal tahan

8. Kas vanemad jälgivad kojutulekuaegadest kinnipidamist ?
1 jah, alati
2 jah, mõnikord
3 ei jälgi peaaegu kunagi

9. Kas oled viimase aasta jooksul vestelnud vanematega järgmistel teemadel ?
(*anna igale reale vastus)*

		sageli	mõnikord	mitte kunagi
A	kehalised muutused murdeeas	1	2	3
B	suitsetamine	1	2	3
C	alkohol	1	2	3
D	narkootikumid	1	2	3
E	sugulisel teel levivad haigused	1	2	3
F	rasestumine ja raseduse vältimine	1	2	3
G	sõbrustamine, "käimine"	1	2	3
H	seksuaalsuhted	1	2	3

10. Kas sind on viimase aasta jooksul kodus karistatud ? (*anna igale reale vastus)*

		mitte kunagi	mõnikord	sageli
A	karistatud kergelt (tutistatud või antud laks)	1	2	3
B	pekstud	1	2	3
C	sõnadega mõnitatud	1	2	3
D	pärast pahandust ei räägita minuga pikka aega	1	2	3

11. Kui sageli ja kuidas suhtled oma sõpradega ? (*anna igale reale vastus)*

		peaaegu iga päev	mõnel päeval nädalas	mõnel päeval kuus	harvem või mitte kunagi
A	olen enda või sõprade pool kodus	1	2	3	4
B	olen sõpradega väljaspool kodu	1	2	3	4
C	räägin sõpradega telefoni teel	1	2	3	4
D	veedan aega interneti jututoas	1	2	3	4

12. Kui sageli tegeled järgmiste asjadega ? (*anna igale reale vastus)*

		peaaegu iga päev	mõnel päeval nädalas	mõnel päeval kuus	harvem või mitte kunagi
A	sport	1	2	3	4
B	tantsupeod	1	2	3	4
C	usulised kogunemised	1	2	3	4
D	kino	1	2	3	4
E	raamatute lugemine	1	2	3	4
F	videofimid	1	2	3	4
G	vanematega vestlemine	1	2	3	4
H	õdede-vendadega vestlemine	1	2	3	4
I	baarides ja pubides käimine	1	2	3	4
J	kodused peod ("vaba pind")	1	2	3	4
K	huvialaringid või -organisatsioonid	1	2	3	4
L	TV	1	2	3	4
M	arvutimängud	1	2	3	4
N	internetis surfamine	1	2	3	4
O	tööl käimine	1	2	3	4

13. Kui tähtsad on Sulle järgnevad asjad ? (*anna igale reale vastus)*

		väga tähtis	tähtis	mitte eriti tähtis	ei ole tähtis
A	usk	1	2	3	4
B	perekond	1	2	3	4
C	uued ja põnevad kogemused	1	2	3	4
D	armastus	1	2	3	4
E	austus vanemate vastu	1	2	3	4
F	seks	1	2	3	4
G	kool, õppimine	1	2	3	4
H	sõprussuhted	1	2	3	4

14. Millised tulevikuplaanid on Sul pärast põhikooli ?

1 jätkan õpinguid gümnaasiumis ja püüan astuda kõrgkooli
2 jätkan õpinguid gümnaasiumis, aga arvatavasti ei astu kõrgkooli
3 jätkan õpinguid kutsekoolis
4 lähen tööle
5 esialgu ei lähe ei tööle ega õppima
6 ei tea veel

15. Kas Sul praegusel hetkel on lähedasi sõpru , kellega võid usalduslikult rääkida kõigist oma muredest ? Kui palju neid on ?
.....sõpra *(kui ei ole ühtegi, märgi 0)*

16. Kas Sa tavaliselt veedad vaba aega: *(vali üks võimalus)*

1 omaette
2 koos perega
3 ühe sõbraga koos
4 mitme sõbraga koos

17. Kas sõber või sõbrad , kellega tavaliselt vaba aega veedad, on:

1 sinuga samast soost
2 nii samast kui vastassoost
3 vastassoost

18. Kas Sinu lähedaste sõprade seas räägitakse oma isiklikest seksuaalkogemustest?

1 jah
2 ei

19. Mitmel Sinu sõpradest on olnud järgmisi seksuaalseid kogemusi ?
(*anna igale reale vastus)*

		mitte kellelgi	ühel	mitmel	ei tea
A	suudlemine	1	2	3	4
B	petting (erutavad hellitused)	1	2	3	4
C	seksuaalvahekord	1	2	3	4

20. Missugune järgmistest väidetest iseloomustab kõige paremini Sinu suitsetamist/mittesuitsetamist praegusel hetkel ?

1 ma ei suitseta
2 olen varem suitsetanud, kuid praegu mitte
3 suitsetan harvem kui kord nädalas
4 suitsetan kord nädalas või sagedamini, mitte iga päev
5 suitsetan iga päev …….. sigaretti

21. Kas ja kui sageli oled viimase aasta jooksul tarvitanud alkoholi ? Võta arvesse ka need korrad, kui tarvitad väga vähe alkoholi (näiteks pool pudelit õlut). Vali kõige täpsem vastus.

0 ei tarvita üldse *(jätka 23. küsimusest)*
1 kord aastas või harvem
2 3-4 korda aastas
3 5-6 korda aastas
4 kord kuus
5 paar korda kuus
6 kord nädalas
7 paar korda nädalas
8 iga päev

22. Kas ja kui sageli oled viimase aasta jooksul tarvitanud alkoholi nii palju, et oled olnud purjus ?

1 jah, sageli
2 jah, mõnikord
3 ei, mitte kunagi

23. Kas Sinu sõprus- või tutvusringkonnas on keegi , kes on kasutanud uimastavaid aineid (narkootikumid, ravimid, sissehingatavad ained) joobe saamiseks ?

1 ei *(jätka 25. küsimusest)*
2 jah, …… isikut

24. Missugused järgmistest uimastavatest ainetest on Sinu teada olnud kasutusel Sinu tutvusringkonnas *(ümbritse kõik teadaolevad)*?

A ravimid
B liimid, lakid, bensiin ja muud sissehingatavad ained
C *extasy* (E, ratas)
D kanep (rohi, tükk, hashish, marihuaana)
E heroiin, morfiin ja teised oopiumi preparaadid (süstitavad)
F LSD
G amfetamiinid (*speed, ice*)
H kokaiin ja crack (lumi, triip, koka)
I mingi tundmatu

25. Oled Sa ise proovinud mõnda eelpool toodud ainet joobe saamiseks ?

1 ei ole *(jätka 27. küsimusest)*
2 olen. Milliseid?.....……

26. Mitu korda oled neid aineid kokku kasutanud ?

.....korda

27. Loetle kõik rasestumisvastased meetodid, mida Sa tead ja tõmba joon alla Sinu arvates kõige kindlamini rasestumise eest kaitsevale nende hulgast.

……

28. Järgnevad väited käsitlevad seksuaaleluga seotud teadmisi ja seisukohti. Millised neist on õiged ja millised valed? (*anna igale reale vastus)*

		õige	vale	ei tea
A	orgasm tähendab, et mehe seemnerakk ja naise munarakk kohtuvad	1	2	3
B	abort on alanud raseduse katkestamine	1	2	3
C	kliitor (kõdisti) eritab munarakke	1	2	3
D	homoseksuaal on isik, kes tahab muuta oma sugu teiseks	1	2	3
E	impotentsus tähendab seda, et mehel ei eritu seemnerakke	1	2	3
F	intsest on kõikvõimalik laste seksuaalne ärakasutamine	1	2	3
G	rasestumisvastased tabletid kaitsevad suguhaiguste eest	1	2	3
H	ovulatsioon on küpse munaraku vabanemine munasarjast	1	2	3

29. Kas Sa tead, kuidas toimub mehe ja naise vaheline seksuaalvahekord?

1 ei tea
2 tean, kuigi endal kogemus puudub
3 tean, kuna olen olnud seksuaalvahekorras

30. Kas järgnevad väited on Sinu arvates õiged või valed?
(*anna igale reale vastus)*

		õige	vale	ei tea
A	kui tüdrukul on alanud menstruatsioonid, on võimalik seksuaalvahekorra järgselt rasedaks jääda	1	2	3
B	rasestumisvastastest meetoditest ainult kondoom kaitseb sugulisel teel levivate haiguste eest	1	2	3
C	elu esimese seksuaalvahekorra järgselt ei saa jääda rasedaks	1	2	3
D	ka väike tilk spermat võib põhjustada naise suguelunditesse sattudes raseduse	1	2	3
E	kui noormehel on alanud seemnepursked, on ta saanud suguküpseks ja võib saada lapsi	1	2	3

31. Kuidas arvestatakse menstruatsioonitsükli pikkust?

1 eelmise menstruatsiooni 1. päevast kuni järgmise menstruatsiooni 1. päevani
2 eelmise menstruatsiooni lõpupäevast kuni järgmise menstruatsiooni 1. päevani
3 eelmise menstruatsiooni lõpupäevast kuni järgmise menstruatsiooni lõpupäevani
4 ei tea

32. Märgi tabelisse arvatav ovulatsiooni päev naise menstruatsioonitsüklis (O) ja millal on arvatavalt suurim võimalus rasedaks jääda (X).

menstruats																								menstruatsioon			
■	■	■	■																					■	■	■	■

33. Millisel menstruatsioonitsükli (28-päevase tsükli) perioodil võib naine kõige kergemini rasestuda?

1 vahetult enne menstruatsiooni
2 menstruatsiooni ajal
3 kohe peale menstruatsiooni
4 menstruatsioonitsükli keskel
5 igal ajal
6 ei tea

34. Kas kalendermeetod (nn. ohtlike päevade lugemine menstruatsioonikalendrist) on Sinu arvates usaldusväärne rasestumisvastane meetod?

1 jah
2 ei
3 ei tea

35. Kas oled kunagi ise ostnud kondoome ?

1 jah
2 ei

36. Kas kannad kondoome kaasas ?

1 jah, alati
2 vahetevahel
3 ei

37. Kas tead, kuidas võib saada rasestumisvastaseid tablette ?

1 ei tea
2 tean. Kuidas?……..

38. Kas tead, millise ajavahemiku jooksul pärast kaitsmata vahekorda tuleb võtta SOS-pillide (vahekorrajärgsete pillide) esimene annus?

.....tunni jooksul 00 ei tea

39. Loetle haigusi, mis levivad sugulisel teel:
……
……

40. Eesti Vabariigi kriminaalkoodeksis on kehtestatud teatud kaitsev vanusepiir, mis tähendab seda, et teatud vanusest noorema isikuga on karistatav olla seksuaalvahekorras. Kas tead, mis vanus see on?

1 tean, see on.....aastat
2 ei tea

41. Oled Sa <u>viimase aasta jooksul</u> tutvunud järgmiste seksiteemaliste materjalidega: (*anna igale reale vastus)*

		sageli	mõnikord	mitte kordagi
A	videofilmid (v.a. koolis ja noortekeskuses)	1	2	3
B	seksiajakirjad	1	2	3
C	raamatud (v.a. kooliõpikud)	1	2	3
D	artiklid naisteajakirjades	1	2	3
E	naistearst/seksuoloogi vastuste veerud naisteajakirjades	1	2	3
F	artiklid noortelehtedes ja -ajakirjades	1	2	3
G	kirjavastuste veerud noortelehtedes ja -ajakirjades	1	2	3
H	voldikud ja broshüürid	1	2	3
I	interneti leheküljed	1	2	3

42. Kas koolitundides on räägitud mehe ja naise vahelistest suhetest, rasestumisest hoidumisest ja muudest seksuaaleluga seonduvatest küsimustest *(anna vastus mõlemas veerus)* ?

	A. selles klassis	B. varasemates klassides
ei ole käsitletud	1	1
on ühes tunnis	2	2
on käsitletud mitmetes tundides	3	3

42C. Kui on, siis mis tundides ? …….
……

43. Kes seda õpetust andis ? (*anna igale reale vastus)*

		jah	ei
A	õpetaja	1	2
B	kooli med-õde/arst	1	2
C	koolipsühholoog	1	2
D	keegi väljastpoolt kooli	1	2
E	käisime (loengul) mujal	1	2

Kus? .....

44. Milliseid probleeme on nendes tundides käsitletud *(kui tunde pole toimunud, mine järgmise küsimuse juurde)*? (*anna igale reale vastus)*

		käsitleti põhjalikult	mainiti	ei käsitletud
A	murdeiga	1	2	3
B	rasestumisvastased meetodid ja pereplaneerimine	1	2	3
C	sugulisel teel levivad haigused	1	2	3
D	AIDS	1	2	3
E	seksuaalvahekord	1	2	3
F	tunded ja lähedased suhted	1	2	3
G	rasestumine ja rasedus	1	2	3
H	sünnitus	1	2	3
I	masturbeerimine (eneserahuldamine)	1	2	3
J	seksuaalvähemused (homoseksualistid, transvestiidid jne)	1	2	3

45. Kas <u>koolitundides</u> räägiti rohkem...

1 seksuaalelu *positiivsetest* külgedest
2 seksuaaleluga kaasnevatest *ohtudest ja probleemidest*
3 mõlemast *võrdselt?*

46. Kas järgnevaltel teemadel peaks koolis räägitama senisest rohkem või vähem? (*anna igale reale vastus)*

		rohkem	samal määral	vähem
A	murdeiga	1	2	3
B	rasestumisvastased meetodid ja pereplaneerimine	1	2	3
C	sugulisel teel levivad haigused	1	2	3
D	AIDS	1	2	3
E	seksuaalvahekord	1	2	3

F	tunded ja lähedased suhted	1	2	3
G	rasestumine ja rasedus	1	2	3
H	sünnitus	1	2	3
I	masturbeerimine (eneserahuldamine)	1	2	3
J	seksuaalvähemused (homoseksualistid, transvestiidid jne.)	1	2	3

47. Oled Sa viimase aasta jooksul pöördunud seksuaalelu või pereplaneerimise teemadel järgmiste isikute poole? (*anna igale reale vastus)*

		mitmeid kordi	korra	ei kordagi
A	õpetaja	1	2	3
B	kooli med.-õde /arst	1	2	3
C	koolipsühholoog	1	2	3
D	muu arst (näiteks perearst)	1	2	3
E	psühholoog (väljaspool kooli)	1	2	3
F	noortenõustaja	1	2	3
G	lapsevanem	1	2	3

48. Oled Sa viimase aasta jooksul vestelnud sõpradega avameelselt järgmistel teemadel ? (*anna igale reale vastus)*

		sageli	mõni kord	mitte kunagi
A	rasestumisvastased meetodid	1	2	3
B	seksuaalvahekord	1	2	3
C	sugulisel teel levivad haigused	1	2	3
D	rasestumine	1	2	3
E	masturbatsioon (eneserahuldamine)	1	2	3
F	seemnepursked	1	2	3
G	menstruatsioonid	1	2	3
H	armumine	1	2	3

NB! Järgnevad küsimused on seotud Sinu soolise arengu ja küpsemisega. Küsimused 49-51 on mõeldud noormeestele. Neiud alustavad vastamist 52.-st küsimusest.

49. Mis vanuses oli Sul esimene seemnepurse ?

.....aastaselt
00 ei ole veel olnud *(jätka 61. küsimusest)*

50. Kas teadsid ette, et Sul algavad murdeeas seemnepursked?

1 teadsin
2 ei teadnud

51. Kas rääkisid oma seemnepursete algamisest: (*anna igale reale vastus)*

		jah	ei
A	isale	1	2
B	emale	1	2
C	sõbrale	1	2
D	õele-vennale	1	2

NB! Küsimused 52- 60 on mõeldud neidudele . Noormehed siirduvad 61. küsimuse juurde.

52. Millises vanuses oli Sul esimene menstruatsioon ?

.....aastaselt
00 ei ole veel olnud *(jätka 59. küsimusest)*

53. Kas teadsid ette, et Sul algavad murdeeas menstruatsioonid?

1 teadsin
2 ei teadnud

54. Kas rääkisid oma menstruatsioonide algamisest: (*anna igale reale vastus)*

		jah	ei
A	isale	1	2
B	emale	1	2
C	sõbrale	1	2
D	õele-vennale	1	2

55. Kui regulaarne on Sinu menstruatsioonitsükkel olnud viimase poole aasta jooksul?

1 päevapealt täpne
2 kõikumine kuni 3 päeva
3 kõikumine kuni 1 nädal
4 kõikumine rohkem kui 2 nädalat
5 kõikumine rohkem kui 4 nädalat

56. Kas oled kellegagi rääkinud ja küsinud nõu, kuidas saada rasestumisvastaseid tablette?

1 jah 2 ei

Kui jah, siis kellega? (*anna igale reale vastus)*

		jah	ei
A	isaga või emaga	1	2
B	õe või vennaga	1	2
C	sõbratari(de)ga	1	2
D	kooli med.-õega/arstiga	1	2
E	koolipsühholoogiga	1	2
F	mõne teise täiskasvanuga	1	2
G	noortenõustajaga	1	2

57. Kas oled kunagi kasutanud rasestumisvastaseid tablette raviks (nt. valulikud või ebaregulaarsed menstruatsioonid)?
1 jah
2 ei

58. Kas oled kunagi kasutanud rasestumisvastaseid tablette rasestumisvastase vahendina?

1 ei ole kunagi kasutanud *(jätka 61.küsimusest)*
2 olen kasutanud pidevalt ……aastat ……kuud
3 olen kasutanud, kuid mitte pidevalt, ... aasta jooksul

59. Kas kasutad praegu rasestumisvastaseid tablette ?

1 jah
2 ei

60. Kas Su vanemad teavad, et kasutad rasestumisvastaseid tablette ?

1 jah
2 ei

NB! Siit alates vastavad kõik!

61. Kas oled olnud tõeliselt armunud mõnda noormehesse või neiusse, keda tunned?

1 ei ole olnud
2 olen korra
3 olen paar korda
4 olen mitmeid kordi
5 ei oska öelda

62. Kui vanalt Sul oli esimest korda "oma poiss või tüdruk" ?

1 ei ole olnud
2 ..... aasta vanuselt

63. Kas oled kunagi kogenud järgmisi asju? Millal esimest korda?
(*anna igale reale vastus)*

		kogenud esimest korda	ei ole kogenud
A	Masturbeerimine (e. onaneerimine e. eneserahuldamine)	…….aastaselt	00
B	Suudlus suule	…….aastaselt	00
C	Erutavad hellitused riiete pealt	…….aastaselt	00
D	Erutavad hellitused riiete alt või alasti	……aastaselt	00
E	Seksuaalvahekord	……aastaselt	00

Kas tahaksid olla seksuaalvahekorras (juhul, kui ei ole varem olnud)?

1 jah 2 ei

64. Kas viimase kuu jooksul oled masturbeerinud?

1 ei ole
2 kord kuu jooksul
3 paar-kolm korda kuu jooksul
4 umbes kord nädalas
5 sagedamini

65. Kas Sul on praegu "oma poiss või tüdruk" ?

1 jah
2 ei ole *(jätka 68. küsimusest)*

66. Kui kaua olete "käinud"?

.....kuud

67. Kui vana ta on?

.....aastane

68. Mitu "oma poissi/tüdrukut" Sul on kokku olnud?

..... *(kui ei ole olnud ühtegi, märgi 0)*

69. On Sul kunagi olnud tunne, et Sind on seksuaalselt ahistatud (puudutati ebameeldivalt, tehti ebameeldivaid seksuaalse sisuga ettepanekuid, seksuaalse sisuga telefonikõned jne.)? (*anna igale reale vastus)*

		mitte kunagi	kord või paar	mitmeid kordi
A	tuttavate noorte poolt	1	2	3
B	tundmatute noorte poolt	1	2	3
C	täiskasvanud pereliikmete poolt	1	2	3
D	õdede-vendade poolt	1	2	3
E	tuttavate täiskasvanute poolt	1	2	3
F	tundmatute täiskasvanute poolt	1	2	3

70. Kas oled kunagi kannatanud seksuaalse vägivalla all (sunniti seksuaalvahekorras olema, suuseksile, end paljastama, s.t. vastu oma tahtmist osalema mingites seksuaaltoimingutes)?

1 jah
2 ei

71. Inimesed tunnevad mõnikord seksuaalset külgetõmmet peale vastassugupoole ka oma sugupoole suhtes. Kas Sinu seksuaalne huvi on suunatud:

1 ainult poistele
2 enamasti poistele, kuid ka tüdrukutele
3 enamasti tüdrukutele, kuid ka poistele
4 ainult tüdrukutele
5 ei tea

72. Kas Sul on seksuaalkogemusi (seksuaalset erutamist ja hellitusi) isikuga, kes on Sinuga samast soost ?

1 ei ole olnud
2 on üks kord. Kui vana Sa siis olid? .....aastane
3 on korduvalt. Märgi, millises vanuses .....aastasena

NB! Järgnevad küsimused on vastamiseks neile, kes on olnud seksuaalvahekorras. Kes ei ole, siirduvad 98. küsimuse juurde.

73. Kumb oli esimeses seksuaalvahekorras algataja ?

1 olin ise rohkem algataja
2 mõlemad ühepalju
3 partner rohkem
4 ei oska öelda

74. Missugune järgnevatest näidetest kehtib kõige rohkem Sinu ja Su partneri kohta, kui olite esimeses seksuaalvahekorras ?

1 kohtusime esmakordselt
2 olime varasemast tuttavad, kuid ei "käinud"
3 meil oli püsiv suhe .

Kui kaua see suhe oli enne esimest vahekorda kestnud?

.....kuud; ..... päeva (*kui suhe kestis vähem kui kuu, märgi 00 kuud)*

75. Kas olete oma partneriga arutanud rasestumisvastaste tablettide kasutamise üle? *(vastavad need, kes ei ole kasutanud)*

1 jah 2 ei

76. Kas kasutasite esimese vahekorra ajal mingit rasestumisvastast meetodit?

0 mitte mingisugust
1 kondoomi
2 rasestumisvastaseid tablette
3 SOS-pille (vahekorrajärgseid, nn. häda-abi pille)
4 keemilisi kaitsevahendeid (e. spermitsiide)
5 rütmimeetodit (ohtlike päevade lugemist)
6 duubelmeetodit (rasestumisvastased tabletid ja kondoom)
7 muid vahendeid ja meetodeid. Milliseid?.....

77. Kui te ei kasutanud esimese vahekorra ajal rasestumisvastaseid meetodeid, siis milline järgnevatest väidetest oli selle peamiseks põhjuseks? *(kes kasutasid, jätavad küsimusele vastamata)*

1 olukord tuli ootamatult
2 ei pidanud tähtsaks
3 ei julgenud vahendeid muretseda
4 polnud raha osta
5 ei julgenud partneriga rasestumisvastase vahendi osas kokku leppida
6 partner ei tahtnud
7 mina ei tahtnud
8 muu põhjus. Missugune?.....

78. Kas olite enne esimest vahekorda kasutanud alkoholi ?
(märgi vastus mõlemas veerus)

	A. mina	B. tema
üldse mitte	1	1
jah, veidi	2	2
jah, keskmiselt	3	3
jah, palju	4	4

79. Kas olite enne esimest vahekorda kasutanud narkootikume?

1 ei 2 jah

80. Kas oled sama partneriga veel olnud seksuaalvahekorras?

1 jah
2 ei

81. Kuidas esimene vahekord Sulle tagantjärgi tundub?

1 kõik õnnestus suurepäraselt
2 tundsime end hästi, kuigi olime ebakindlad ja kohmakad
3 jättis ükskõikseks, ei pakkunud midagi erilist
4 tundsin häbi ja piinlikkust
5 ei oska öelda

82. Tagantjärgi hinnates, miks olid esimeses vahekorras? (*anna igale reale vastus)*

		jah	ei
A	uudishimust	1	2
B	see oli suhete loomulik areng	1	2
C	tahtsin partnerile meeldida	1	2
D	partner veenis	1	2
E	partner sundis	1	2
F	muu põhjus. Milline?.....	1	2

83.A Kas said orgasmi esimese vahekorras?

1 jah
2 ei
3 ei tea

83.B Kas partner sai orgasmi?

1 jah
2 ei
3 ei tea

84. Kas Sinu esimene vahekord oli esimene ka Sinu partnerile?

1 jah
2 ei
3 ei tea

85. Kus esimene vahekord aset leidis?..... *(märgi koht)*

86. Mitu korda oled kokku olnud seksuaalvahekorras ?

.....korda

87. Kas oled kunagi proovinud muretseda rasestumisvastaseid tablette?

1 ei ole proovinud
2 olen üritanud ja saanud
3 olen üritanud, aga pole saanud. Miks see ebaõnnestus?.....
.....

88. Kui kaua aega enne või pärast esimest seksuaalvahekorda alustasid rasestumisvastaste tablettide võtmist? *(need, kes pole rasestumisvastaseid tablette võtnud, jätavad küsimusele vastamata)*

0 ei ole elanud suguelu
1 alustasin tablettide võtmist enne esimest vahekorda
2 vähem kui kuu pärast esimest vahekorda
3 1-3 kuud pärast esimest vahekorda
4 4-6 kuud pärast esimest vahekorda
5 7-12 kuud pärast esimest vahekorda
6 üle aasta pärast esimest vahekorda

89. Kui oled katkestanud rasestumisvastaste tablettide võtmise, mis oli selle põhjus? (*anna igale reale vastus)*

		jah	ei
A	ei vaja neid enam	1	2
B	kartsin nende mõju tervisele	1	2
C	tekkisid kõrvaltoimed. Millised?.....	1	2
D	muu põhjus? Milline?.....	1	2

90. Kui Sa ei ole esimese vahekorra järgselt jätkanud suguelu, siis miks?
(*anna igale reale vastus)*

		jah	ei
A	pole praegu huvi	1	2
B	pole olnud sobivat partnerit	1	2
C	pole olnud võimalusi	1	2
D	esimesest vahekorrast halb kogemus	1	2
E	kardan (näiteks haigusi, rasedust, vanemaid jne.)	1	2

91. Kas oled <u>viimase kuu jooksul</u> olnud seksuaalvahekorras?

1 jah. Mitu korda?.....korda
2 ei

92. Missuguseid rasestumisvastaseid meetodeid oled üldse kasutanud?
(võid märkida mitu võimalust)

0 ei ole üldse kunagi kasutanud
Mis põhjusel?.....
1 kondoom
2 rasestumisvastased tabletid
3 keemilised kaitsevahendid (spermitsiidid)
4 rütmimeetod (ohtlike päevade lugemine)
5 SOS-pillid (vahekorrajärgsed pillid)
6 duubelmeetod (rasestumisvastased tabletid koos kondoomiga)
7 muud meetodid. Millised?.....

93. Missuguseid rasestumisvastaseid meetodeid kasutasid viimase seksuaalvahekorra ajal?

0 ei kasutanud rasestumisvastaseid meetodeid
1 kondoom
2 rasestumisvastased tabletid
3 keemilised kaitsevahendid (spermitsiidid)
4 rütmimeetod (ohtlike päevade lugemine)
5 SOS-pillid (vahekorrajärgsed pillid)
6 duubelmeetod (rasestumisvastased tabletid koos kondoomiga)
7 muud meetodid, millised?

94. Kui Sa viimase vahekorra ajal ei kasutanud kaitsevahendeid, siis mis oli selle <u>peamiseks</u> põhjuseks *(märgi üks vastus)?*
(kes kasutasid, jätavad vastamata)?

1 olukord tuli ootamatult
2 ei pidanud tähtsaks
3 ei julgenud vahendeid muretseda
4 polnud raha osta

5 ei julgenud partneriga rasestumisvastase vahendi osas eelnevalt kokku leppida
6 partner ei tahtnud
7 mina ei tahtnud
8 muu põhjus. Milline?.....

95. Kas oled kunagi kasutanud duubelmeetodit (pillid + kondoom)?

1 ei 2 jah

96. Kui oled vahekorras kasutanud kondoomi, siis kui sageli?

1 ei kasuta kunagi
2 mõnikord kasutan
3 kasutan peaaegu iga kord

97. Kui mitme partneriga oled olnud sugulises vahekorras ?

.....partneriga

NB! KÕIK JÄTKAVAD!

98. Kas järgnevad asjad on Sind kunagi vaevanud või muretsema pannud?
(*anna igale reale vastus)*

		jah	ei
A	Kartus, et esimene suguühe on valus	1	2
B	Kartus saada suguhaigus	1	2
C	AIDSi hirm	1	2
D	Hirm rasestumise või isaks saamise ees	1	2
E	Hirm , et ei oska sõlmida seksuaalset suhet	1	2
F	Kartus, et seksuaalvahekord ebaõnnestub	1	2
G	Kartus, et langed seksuaalvägivalla ohvriks	1	2
H	Hirm, et vanemad saavad teada Sinu seksuaalsuhetest	1	2
I	Kartus rasestumisvastaste tablettide kõrvaltoimete eest	1	2

99. Järgnevalt esitame väited, mille kohta inimestel on erinev arvamus. Meid huvitab, mida arvad Sina. Seepärast vasta avameelselt. (*anna igale reale vastus)*

		nõus	raske öelda	ei ole nõus
A	Suguelu ei ole sobiv minuealistele	1	2	3
B	Seksuaalvahekorras võib olla ka ilma armastuseta	1	2	3
C	Raseduse katkestamine peaks olema keerulisem, kui praegu	1	2	3
D	Seksilehtede avaldamine tuleks keelustada	1	2	3
E	Kahe samasoolise inimese seksuaalsuhe on sallitav	1	2	3
F	Seksuaalsuhetes peaks olema algatajateks alati mees	1	2	3
G	Juhuslik seksuaalsuhe võib olla	1	2	3

	õnnelik ja mõlemaid osapooli rahuldav			
H	Suguelu käib kaasas ainult abieluga	1	2	3
I	Seksuaalsuhteid alustades on tähtis, et ei saaks halba mainet	1	2	3
J	Kui sõbrad saaksid teada mu salajased seksuaalsed soovid, peaksin kindlasti häbenema	1	2	3
K	Kui ma ei ole truu oma partnerile, oleks õige, et ta mu maha jätaks	1	2	3
L	Vanemad ei tohiks sekkuda kahe noore vahelisse intiimellu	1	2	3
M	Alles armununa on seks hea ja kaunis	1	2	3
N	Tahaksin abielluda seksuaalselt kogenematu inimesega	1	2	3

100. Millal on noorte seksuaalvahekorrad Sinu meelest lubatavad? *(võid ära märkida ka mitu võimalust)*

Need on lubatavad , kui mõlemad seda tahavad ja nad….

1 ei tunne teineteist
2 tunnevad teineteist
3 meeldivad teineteisele
4 on teineteisse armunud
5 on kihlatud/kavatsevad abielluda
6 on abielus või elavad koos

101. Millised seksiga seotud küsimused, millele sooviksid vastust saada, huvitavad Sind kõige enam? *(kirjuta vabas vormis)*

……..

TÄNAME KOOSTÖÖ EEST !

APPENDIX II
Questionnaire of the Estonian Women's Health survey

1. Background information

Date of completing the questionnaire: _____

1. When were you born? 19___

2. Are you currently *(you can choose several alternatives):*
   1 married
   2 cohabiting
   3 divorced
   4 separated
   5 widow
   6 single

3. How many times you have been married/cohabiting (cohabiting that later continued as marriage is counted as one event)? _____ *(times)*

4. Your citizenship: _____

5. Your native language: _____

6. How many persons are living with you *(choose one from each row)*?

	yes	*no*
1 I live alone	1	2
2 spouse	1	2
3 co-habiting partner	1	2
4 children under the age of 18	1 ..... persons	2
5 children over the age of 18	1 ..... persons	2
6 daughter's/son's spouse, grandchildren	1 ..... persons	2
7 my/my co-habiting partner's parents	1 ..... persons	2
8 my/my co-habiting partner's brothers/sisters	1 ..... persons	2
9 my/my co-habiting partner's other relatives	1 ..... persons	2
10 friends, acquantances	1 ..... persons	2
11 lodgers	1 ..... persons	2
12 others	1 ..... persons	2

7. How many pesons are living together at your home (count yourself also)?
_____ persons

7a. Where do you live?
   1 Tallinn, Tartu, Pärnu, Kohtla-Järve or Narva
   2 smaller town/urban settlement
   3 rural area

8. How many years of education have you had (count school and later education years)?
_____ years

9. What is the highest level of education you have completed?

1 basic/less
2 secondary
3 vocational secondary
4 vocational higher
5 university
6 postgraduate degree

10. Are you currently:

1 employed
2 unemployed
3 at home
4 pupil/student
5 retired, not employed. At what age did you retire? _____ years
6 other, what _____

11. What is your current/most recent occupation? _____

12. In what occupation have you been employed the longest? _____

14. What is your monthly average income (monthly salary after deductions and other allowances)?
_____ EEK

15a. What is your household's average monthly income (monthly salary after deductions and other allowances)?

1 _____ EEK
2 don't know

15b. How many persons live on this income (yourself inluded)? _____ persons

16. Do you have difficulties paying your bills (for housing, electricity, heating etc)?

1 all the time
2 often
3 sometimes
4 rarely
5 never

18a. How many rooms does your family have (not counting utility rooms and bathrooms)?

_____ rooms

17. Below is a list of various items, which of the following do you have in your household? *(choose one from each row*)

		yes	*no*
1	microwave	1	2
2	video recorder	1	2
3	television (colour)	1	2
4	washing machine	1	2
5	dishwasher	1	2
6	car	1	2
7	fridge	1	2
8	holiday cottage	1	2

9	video camera	1	2
10	satellite/cable TV	1	2
11	telephone	1	2
12	mobile phone	1	2

2. Intimate relationships and sexuality

19. At what age did you have your first serious relationship (dating, boyfriend/girlfriend – the relationship may/may not have included sexual intercourse)?

1 I was _____ years old
2 I haven't had such a relationship

21b. Have you ever had the following sexual experiences? At what age for the first time? *(choose one from each row*)

		yes, first time at the age of	*yes, but I don't remember the age*	*no*
1	masturbation	1 ..... years	2	3
2	kissing	1 ..... years	2	3
3	petting (touching each other)	1 ..... years	2	3
4	oral sex	1 ..... years	2	3
5	anal sexual intercourse	1 ..... years	2	3
6	vaginal sexual intercourse	1 ..... years	2	3

21c. Have you masturbated during the last month?

1 yes
2 no

20. At what age did you have your first sexual intercourse (vaginal and/or anal)?

1 _____ years old
2 I haven't experienced intercourse

The following questions are for those who have had sexual intercourse. If you haven't had sexual intercourse, go to question 25.

21. How old was the partner of your first sexual intercourse?

1 _____ years old
2 don't know

21a. Which of the following statements best describes your first sexual partner?

1 I had just met him
2 we knew each other earlier, but were not dating
3 we had a steady relationship

22. Which contraceptive method did you use in your first sexual intercourse *(you can choose several alternatives)*?

1 nothing
2 withdrawal (a man does not öet the sperm into the vagina)
3 condom
4 contraceptive pills
4a contraceptive patch

5 emergency contraception (SOS-pills, Postinor)
6 rhythm method (calculating “risky” days)
7 spermicide (vaginal ovules, creams)
8 some other method, what *(for example vaginal douche etc)?* .....
9 don't remember

23. How many sexual intercourse partners have you ever had? _____ partners

24. How many sexual intercourse partners have you had during last year? _____ partners

30. When did you have the latest sexual intercourse?
1 during the last 24 hours
2 1–2 days ago
3 3–4 days ago
4 5–7 days ago
5 1–2 weeks ago
6 3–4 weeks ago
7 1–3 months ago
8 4–12 months ago
9 1–2 years ago
10 3–10 years ago
11 more than 10 years ago
12 I haven’t had sexual intercourse

30a. How often have you had sexual intercourse during the last 30 days?
1 I haven’t had sexual intercourse during the last 30 days
2 once
3 2–3 times
4 once a week
5 2–3 times a week
6 3–4 tmes a week
7 5–6 times a week
8 every day/more often

30b. How often have you experienced pain/discomfort during/after sexual intercourse in your genitals (vaginal entry, vagina, abdomen)?
1 never
2 very rarely/few times
3 less than half of all occasions
4 about half of all occasions
5 more than half all occasions
6 almost always/always
7 I haven’t been able to experience sexual intercourse because of pain/fear of pain
8 I haven’t experienced sexual intercourse

30c. A release of sexual tension at its peak and the ensuing feeling of pleasure and relaxation is called orgasm. How often have you experienced orgasms in your present relationship during sexual intercourse, oral sex, petting and other activities?
1 always/almost always
2 on more than half of all occasions
3 on about half of all occasions
4 on less than half of all occasions
5 vary rarely/few times
6 I haven’t experienced orgasms
7 I don’t have a sexual relationship at the moment

30d. Are you satisfied with the frequency of sex (sexual intercourse, oral sex, petting etc) in your present steady/couple relationship?

1 I wish to have sex considerably more often
2 I wish to have sex a bit more often
3 I am satisfied with the present frequency
4 I wish to have sex a bit less often
5 I wish to have sex considerably less often
6 I don't have a steady/couple relationship at the moment

31. Did you consume alcohol before your last sexual intercourse?

1 no
2 yes, a little
3 yes, moderately
4 yes, a lot
5 I don't remember

All the respondents please continue from here.

25. Do you have a steady heterosexual relationship (that includes sexual intercourse, oral sex/petting) at the moment *(you can choose several alternatives)*?

1 yes, with my spouse
2 yes, with my co-habiting partner
3 yes, with somebody else
4 no, I don't have a sexual relationship at the moment

27. How are you satisfied with your present sexual relationship?

1 very happy
2 fairly happy
3 not happy, not unhappy
4 fairly unhappy
5 very unhappy
6 I don't have a sexual relationship at the moment

27a. During the last year have you experienced:

	very often	*fairly often*	*fairly rarely*	*never*
1 lack of sexual desire	1	2	3	4
2 your partner's lack of sexual desire	1	2	3	4

26. If you are married/cohabiting, then for how long have you been living together? (please count also cohabiting before marriage)

1 _____ years and _____ months
2 I am not living with anybody at the moment

80. Do you think that a woman may refuse sexual intercourse, in the following situations *(choose one from each row)*:

	yes	*no*
1 the woman has recently given birth	1	0
2 the woman knows/thinks that her partner/spouse is HIV-positive/has STDs	1	0
3 her partner/husband is physically violent	1	0
4 her partner/husband is drunk	1	0
5 her partner/husband has a parallel sexual relationship	1	0

6 the woman is tired	1	0
7 the woman does not want to have sexual intercourse	1	0

28. Talking about sexual life and contraception with your current partner is:
1 very difficult/even impossible
2 fairly difficult/complicated
3 not very difficult, especially when we have started talking
4 very easy
5 I have no sexual partner at the moment

29. Have you had parallel sexual relationships during the present marriage/cohabitation?
1 no
2 yes, casual
3 yes, permanent
4 yes, casual and permanent
5 I have no marriage/cohabitation at the moment

32. Sometimes people feel sexual attraction towards the same gender. At the moment your sexual attraction is directed:
1 only to men
2 mostly to men
3 equally to men and women
4 mostly to women
5 only to women

33. Have you had sexual experiences (sexual intercourse, oral sex, petting) with someone of the same gender?
1 no
2 yes, once
3 yes, several times

34. Has anyone tried to induce you to have sexual intercourse with them for money or other economic gain?
1 no
2 yes, but I have refused
3 yes, I have agreed once
4 yes, I have agreed several times

35. Did your parents discuss sexuality related topics with their children?
1 yes, even too much
2 yes, sufficiently
3 yes, too little
4 no, but I would have wished it
5 no, but I wouldn't have wished it

36. Were sexuality related topics discussed at school?
1 yes, even too much
2 yes, sufficiently
3 yes, too little
4 no, but I would have wished it
5 no, but I wouldn't have wished it

3. Pregnancies and children

37. Are you pregnant at the moment?
1 no
2 yes
3 don't know

38. Are you breastfeeding at the moment?
1 no
2 yes, exclusively breastfeeding
3 yes, the child gets additional food too

39. How old is the child you are breastfeeding? _____ months *(write 0, if you have no child whom you are breastfeeding at the moment)*

40. How many times have you been pregnant? *(write 0, if you have not been pregnant)*?
_____

41. How did these pregnancies end?
1 miscarriage _____ (how many) in _____ (years)
2 ectopic pregnancy _____ (how many) in _____ (years)
3 induced abortion _____ (how many) in _____ (years)
4 childbirth _____ (how many) in _____ (years)

The following questions are for those respondents who have given birth. Those who have not, go to question 52a.
Children born *(children from multiple pregnancies are to be noted separately)*

	1.child	2. child	3. child	4. child	5. child	6. child	7. child	8. child
42. Year of birth								
43. The child was born *(choose one)*								
1 alive	1	1	1	1	1	1	1	1
2 dead	2	2	2	2	2	2	2	2
44. The child was								
1 a girl	1	1	1	1	1	1	1	1
2 a boy	2	2	2	2	2	2	2	2
45. Does the child live with you at the moment?								
1 yes	1	1	1	1	1	1	1	1
2 no	2	2	2	2	2	2	2	2
46. If the child is not living with you at the moment, then when did she/he leave home? *(year)*?								
47. Did you live with the child's father when the child was born?								
1 yes	1	1	1	1	1	1	1	1
2 no	2	2	2	2	2	2	2	2
48. Did you live with some other grown-up (a friend, acquaintant, relative) when the child was born?								
1 yes	1	1	1	1	1	1	1	1
2 no	2	2	2	2	2	2	2	2

49. How long did you breastfeed your last child (count also non-exclusive breastfeeding)?
1 not at all
2 less than 1 month
3 _____ months
4 I am breastfeeding at the moment

50. Who looked/looks after your last pre-school aged child, when you were/are working? *(you can choose several alternatives)*
1 I am not working at the moment, I am/was at home with the child
2 the father is/was at home with the child
3 grandparents
4 other relatives
5 the child goes/went to a state nursery
6 the child goes/went to a private nursery
7 other, *what?*_____
8 I have no children

51. In case you have employed a nanny, how did you find him/her? *(you can choose several alternatives)*
1 through aquaintances
2 through neighbours
3 through relatives
4 through nanny finding agency
5 through an advertisement
6 I have not employed a nanny

52. Who looked after you when you were of pre-school age? *(you can choose several alternatives)*
1 mother and/or father
2 grandparents
3 other relatives
4 I was at the nursery
5 other, *what?* _____

4. Use of pregnancy and delivery related health care services
All continue from here.

52a. If you were pregnant now and you would like to continue the pregnancy, which health care provider would you contact first *(choose only one answer)*?
1 women's out-patient clinic
2 family doctor
3 private gynaecologist
4 youth-friendly clinic
5 somewhere else, *where?*_____
6 I wouldn't go to a doctor
7 I don't know

52b. If you were pregnant now, and you would not like to continue the pregnancy, which health care provider would you contact first *(choose only one answer)*?
a. women's out-patient clinic
b. family doctor
c. private gynaecologist
d. youth-friendly clinic
e. somewhere else, *where?*_____
f. I wouldn't go to a doctor
g. I don't know

If you have had no pregnancies, go to question 64.

53. Which health care providers did you use in connection with your last/current pregnancy *(you can choose several alternatives)*?
    1 women's out-patient clinic
    2 family doctor
    3 private gynaecologist
    3a youth-friendly clinic
    4 other, *what?*_____
    5 I didn't use any doctor
    5a I don't remember

The following questions are about abortion. If you have had abortions, then please answer regarding your last abortion. If you have had no abortions, go to question 64.

57a. What contraceptive method were you using when you became pregnant and consequently decided to have an abortion? *(you can choose several alternatives)*
    1 nothing
    2 contraceptive pills
    2a contraceptive patches
    3 intrauterine device ("spiral")
    4 condom
    5 spermice (vaginal ovules, cream)
    6 diaphragm
    7 contraceptive implants
    8 sterilisation: own, partner *(please underline)*
    9 rhythm method (calculating "risky" days)
    10 withdrawal (a man does not let the sperm into the vagina)
    11 vaginal douche *(with what agent?)* .....
    12 emergency contraception (SOS-pills, Postinor)
    13 some other method, *what?* .....
    14 don't remember

58. Where was the abortion induced?
    2 hospital gynaecology ward/day care)
    4 private clinic/practice
    5 somewhere else, *where?* _____

59. Did you pay for the abortion?
    1 yes, the official sum
    2 yes, non-officially, how much? *(please specify the amount)*_____
    3 yes, the official sum and also non-officially, how much? *(please clarify the amount of money)* _____
    4 I payed with other means, please specify _____
    5 no, I didn't pay

59a. Indicate your satisfaction with the amount of information you received from the doctor/nurse **before the abortion** about the following topics *(choose one from each row):*

	very satisfied	*fairly satisfied*	*fairly unsatisfied*	*very unsatisfied*
1 abortion procedure	1	2	3	4
2 possible psychological influences	1	2	3	4
3 possible medical risks/complications related to abortion	1	2	3	4

60a. Did you receive counselling about contraception before/after the abortion?

1 yes
2 no
3 don't remember

61. Were you satisfied with the way you were treated in the hospital/clinic during the abortion?

1 very satisfied
2 fairly satisfied
3 fairly dissatisfied
4 very dissatisfied
5 cannot say

I wish to comment:

_____
_____
_____

62. What were the reasons in your decision to have an abortion? *(you can choose several alternatives)*

1 I was not ready to take the responsibility for raising a child
2 I didn't want to raise a child alone
3 I didn't want to jeopardise my relationship/family unity with the birth of another child
4 my couple relationship was unstable/problematic
5 I didn't want to have a child with this particular partner
6 I gave up this pregnancy because of pressure from my partner/parents *(underline)*
7 for economic reasons
8 my living space (flat) was too small and I was not able to improve my living conditions
9 I was in the middle of my studies
10 work didn't allow it
11 I was not mature enough to be a mother
12 I was too young
13 I had nobody who would have helped me to take care of the child
14 I didn't have time for the child
15 other, *please specify*_____

63. Did you discuss the abortion beforehand with your partner?

1 no
2 yes

63a. Where did you go for a follow-up visit during one month after the abortion? *(you can choose several alternatives)*

a. I didn't go for the follow-up visit, why?_____
b. hospital, where the abortion was induced
c. policlinic, women's outpatient clinic
d. private clinic
e. somewhere else, where?_____
f. don't remember

All continue from here.

64. Have you ever had difficulties in getting pregnant, although you were having regular sexual intercourse during one year?

1 yes
2 no *(go to question 66b)*

65. Have you been investigated and/or treated for possible infertility?

1 yes, most recently in _____ (year)
2 no (go to question 66)

65a. What treatments have you received for infertility? *(choose one from each row)*

	yes	*no*
1 hormonal treatment	1	2
2 insemination (IUI) = sperm is placed in the uterus	1	2
3 in vitro fertilization (IVF)	1	2
4 IVF with microinjection (ICSI) = sperm is placed into the egg cell during IVF	1	2
5 IVF with cryopreserved embryos (FET)	1	2
6 other treatment (incl all alternative treatments), *what?*_____	1	2

66. If you haven't sought medical help for your infertility or you have discontinued investigations, what is the reason for this*?(you can choose several alternatives)*

1 I still want to wait and try to become pregnant naturally
2 I don't want medical interference
3 I haven't been aware what treatments for infertility are available
4 I am too old to get treatment
5 investigations are too expensive
6 hospital and infertility clinics are too far away
8 it is difficult to get an appointment to the specialist
9 my partner does not want to come for the investigations
10 my relationship came to an end
11 I was ashamed to approach a specialist with that problem
7 other reason, *what?* _____

66a. Have you been satisfied with the information you received during infertility investigations and treatment about the following topics? *(choose one from each row)*

	satisfied	*fairly satisfied*	*fairly unsatisfied*	*unsatisfied*
1 infertility investigations and treatment	1	2	3	4
2 psychological effects of infertility	1	2	3	4
3 possible medical risks related to investigations and treatment	1	2	3	4

All continue from here.

66b. If you became preganant now, what would be your most probable decision?

1 I would have a baby
2 I would have an abortion
3 don't know

67. At what age did you have your first menstruation? _____ years

68. Have you had the following sexually transmitted diseases? *(choose one from each row)*

	yes	*no*	*don't know*
1 genital herpes	1	3	2
2 papillomavirus/condylomas	1	3	2
3 chlamydiosis	1	3	2
5 gonorrhoea	1	3	2
6 syphilis	1	3	2
7 HIV/AIDS	1	3	2

8 trichomoniasis	1	3	2
10 other genital tract infection (bacterial vaginosis, thrush)	1	3	2

5. Contraception

If you have not experienced sexual intercourse, go to question 78.

70. Which contraceptive method did you use during your last sexual intercourse? *(you can choose several alternatives)*

1a we did not use any contraceptive method as we are trying to conceive
1b we don't need/use any contraceptive method as we are not able to conceive
2 contraceptive pills
2a contraceptive patch
3 intrauterine device ("spiral")
4 condom
5 spermicide (vaginal ovules, creams)
6 diaphragm
7 contraceptive implants
8 sterilisation: own, partner *(please underline)*
9 rhythm method (calculating "risky" days)
10 withdrawal (a man does not let the sperm into the vagina)
11 vaginal douche *(with what agent?)* .....
12 emergency contraception (SOS-pills, Postinor)
13 some other method, *what?* .....

71. Who decided on using contraception in your last sexual intercourse?

1 I
2 my partner
3 we both
4 someone else, *who?* _____
5 don't know, don't remember
6 we didn't use contraception during our last sexual intercourse

If you used a contraceptive method during your last sexual intercourse, go to question 73.

72. If you did not use a contraceptive method during your last sexual intercourse, what was the reason? *(choose a maximum of three answers)*

1 I was not aware of available contraceptive methods
2 I didn't want to use contraception
3 my partner didn't want/didn't allow me to use contraception
4 we do not need contraception as we are planning a pregnancy
5 we do not use contraception for religious reasons
6 we do not need contraception as I am pregnant at the moment
7 we do not need contraception as I / my partner is infertile
8 other reason, *what?*_____

72a. If you did not use a contraceptive method during your last sexual intercourse, where there any additional reasons? *(choose one from each row)*

	yes	*no*
1 I am afraid of the side effects of contraceptive methods	1	2
2 contraceptive methods are too expensive	1	2
3 it is difficult to obtain contraceptive methods	1	2

73. If you use/have used condoms, then why? *(choose only one answer)*
1 mainly for avoiding pregnancy
2 mainly for avoiding sexually transmitted diseases
3 equally for avoiding pregnancy and sexually transmitted diseases
4 other, *please specify* _____
5 we haven't used condoms

74. Have you ever used contraceptive pills?
1 yes
2 no

74a. If you have formerly used pills, but stopped, then why? *(you can choose several alternatives)*
1 I didn't need contraception any more
2 I was afraid of possible side effects, *please specify?* _____
3 I experienced side effects and/or contraindications, *please specify?* _____
4 for economic reasons
5 a doctor/nurse recommended me to stop/have a break
6 other, *please specify* _____

76. Are you satisfied with your current contraceptive method?
1 very satisfied
2 fairly satisfied
3 fairly dissatisfied
4 very dissatisfied
5 I don't use contraception at the moment

77. Have the costs affected your decisions concerning the use of contraception during the last year? *(Choose all that apply)*
1 no
2 because of the cost, I haven't used the method I would have liked to
3 I have not been able to visit a doctor as often as I consider necessary
4 I have not been able to have all the necessary laboratory tests
5 I don't know
6 other, what ?_____
7 I haven't needed contraception during last year

All continue from here.

78. When did you last visit a health care service for contraceptive counselling/prescription?
1 less than 6 months ago
2 6–12 months ago
3 more than one year but less than 2 years ago
4 2–5 years ago
5 more than 5 years ago
6 I haven't visited a health care institution for that purpose
7 don't remember

78a. Which health care service did you last visit in order to receive contraceptive counselling/prescription?
1 women's outpatient clinic
2 family doctor
3 private gynaecology clinic
4 youth-friendly clinic
5 elsewhere, *where?*_____
6 I haven't visited a health care service for that purpose
7 don't remember

79. Evaluate how well the following aspects of care were carried out during your last visit for contraception? *(choose one from each row)*

	very dissatisfied	*fairly dissatisfied*	*fairly satisfied*	*very satisfied*	*don't remember*
1 friendliness	1	2	3	4	5
2 competence	1	2	3	4	5
3 reliability	1	2	3	4	5
4 length of the visit	1	2	3	4	5

79a. Have some of the following impeded you in visiting a doctor for contraception **during the last year** *(you can choose several alternatives)*?

1 it was difficult to get an appointment
2 doctor is far away/bad transportation connections
3 it is not easy to get an appointment to a gynaecologist (specialist)
4 I didn't know where to find a good gynecologist
5 I would like to visit someone else than my own doctor
6 previous negative experiences
7 I was ashamed to visit a gynaecologist
8 I was afraid of the gynecological examination
9 other reasons, *what?* _____
10 I have not had any problems with such visits
11 I haven't needed any physician services regarding contraception

103. Where would you prefer to go for a contraceptive visit/prescription? *(choose only one from each part)*

A
1 the same doctor whom I visit for other health reasons
2 some other doctor
3 doesn't matter if I know the doctor or not
4 I cannot say

B
1 gynaecologist
2 family doctor
3 doesn't matter
4 cannot say

C
1 male doctor
2 female doctor
3 doesn't matter
4 cannot say

D
1 private doctor
2 family doctor centre
3 women's outpatient clinic
3a youth friendly clinic
4 doesn't matter
5 I cannot say

75. Have you heard about morning-after pills (Postinor) before completing this questionnaire?
1 yes
2 no

75a. Have you ever used morning-after pills?
1 no
2 yes, _____ times

81. It has been said that men participate too little in making contraceptive choices and during childbirth. In your opinion, should men's role/involvement be changed in regard to: *(choose one alternative from each line)*

	increased a lot	*somewhat increased*	*no change necessary*	*decreased*	*cannot say*
1 Responsibility for contraception?					
	1	2	3	4	5
2 Responsibility for costs of contraception?					
	1	2	3	4	5
3 Visiting maternity services during pregnancy?					
	1	2	3	4	5
4 Participation in childbirth?					
	1	2	3	4	5
5 Responsibility in deciding about induced abortion?					
	1	2	3	4	5

6. Reproductive plans

82. If you think in general terms, not from your personal point of view, then:
1 What is the ideal number of children in a family nowadays? _____ child/children
2 How long is the ideal spacing between children? _____ years
3 What is the ideal age for having a first baby?
a) for a woman _____ years
b) for a man _____ years

83. How many children would you yourself like to have? _____ child/children

If you have a child/children, go to question 86.

84. If you do not have a child, then why haven't you had one? *(you can choose several alternatives)*
1 I haven't met such partner with whom I would like/ would have liked to have a child
2 we have tried to conceive, but have not been successful so far
3 I wish to finish my studies first
4 my partner wishes to finish his studies first
5 I wish to get stable work first
6 my partner wishes to get stable work first
7 I wish to go on with my career
8 I feel that I am not mature enough to take responsibility for a child
9 I feel that my partner is not mature enogh to take responsibility for a child
10 for economic reasons
11 I would like to have stable living conditions first
12 there are problems in our relationship
13 other, *what?*_____
14 don't know

85. If you chose more than two answers to the previous question, please specify which answer is the most important for you?
1 answer number _____
2 don't know

From here all continue.

86. Are you planning to have a child/children in the future?
   1 no *(go to guestion 90)*
   2 don't know, I haven't decided *(go to guestion 90)*
   3 yes, I wish to have ..... (number) children
3 I am pregnant at the moment, in the future I wish to have another ..... (number) children

87. When do you wish to have your first/next child?
after _____ years

88. Why do you wish to have one more child/more children? *(you can choose several alternatives)*
1 the child/children we have need a brother/sister
2 I wish to have a daughter
3 I wish to have a son
4 I enjoy watching a child's development
5 life continues only through children
6 my partner wishes to have more children
7 I wish to have a child with my current/new partner
8 a common child is a sign of mutual love
9 I desire a little baby/have "baby fever"
10 more children are needed to preserve the Estonian nation
11 I do not want to be alone when I am old
12 children are of help doing domestic work
13 I wish to take care of a child and love him/her
14 I want to have a big family
15 I want (once more) to experience a delivery
16 I wish to experience motherhood
17 a human being has to have as many children as God gives
18 a child gives you a goal in life, to live and work
19 children bring variety to one's life
20 other*, what?* _____
21 don't know

89. If you chose more than two answers to the previous question, please specify which answer is the most important for you?
1 answer number _____
2 don't know

Questions 90-93 are for those who do not want to have more children/have not decided yet.

90. If you do not want to have (more) children/are unsure, then why? *(you can choose several alternatives)*
1 I am not married/cohabiting with anyone, there is no suitable father for a child
2 my partner does not want (more) children
3 my partner does not take part in domestic work and looking after children as much as I would expect
4 there are problems in our relationship
5 I wish to spend more time with my partner and shared hobbies
6 I probably cannot have children
7 if I have a child I cannot continue working/studying (as much as I do now)
8 I am afraid that in case of a new child I will lack time and attention for my older child/children
9 I am afraid that life would be too hard
10 I do not want to be engaged with little children (any more)
11 I do not want to be pregnant and/or give birth (any more)
12 I think I am too old for having babies

13 I want to dedicate myself to other things I am interested in
14 I/we do not have enough money for children
15 our living conditions are not suitable for a bigger family and we are not able to improve them
16 I/my partner do not have stable employment
17 the possibilities of help in looking after the child are unstable
18 society does not support families with children
19 the world is overpopulated
20 my/my family's health problem prevents me having a child
21 other, *what?* _____
22 don't know

91. If you chose more than two answers to the previous question, please specify which answer is the most important for you?
1 answer number _____
2 don't know

92. Are there any possible changes in society/in your private life that can affect your decision about having (more) children? *(you can choose several alternatives)*
1 improvement/stabilisation of personal economic conditions
2 moving to a larger home
3 sufficient possibilities to be at home with a child/children
4 sufficient opportunities for acceptable babysitting arrangements
5 an increase in financial assistence to families with children
6 the availability of a good and trustworthy babysitter (e.g. near home)
7 women's and men's equal participation in domestic work
8 certainty that your job will still be there after you have given birth
9 working hours are shorter and more flexible
10 Estonia becames a safer place to live
11 Estonia's pouplation decreases to a critical level
12 people are more friendly towards children
13 solution of global problems (pollution, nuclear weapons etc)
14 I am not able to have children
15 other, what?_____

93. If you chose more than two answers to the previous question, please secify which answer is the most important for you?
1 answer number _____
2 don't know

7. Health and use of health care services

94. How do you rate your current level of health?
1 very good
2 good
3 neither good nor bad
4 bad
5 very bad
6 don't know

95. How do you rate your quality of life?
1 very good
2 good
3 average
4 bad
5 very bad
6 don't know

96. Do you have some long-term illness, physical disability or handicap, injury or pain, that affects your functioning or ability to work)

1 no
2 yes, *what?*_____

97. How tall are you? _____ cm

98. How much do you weigh (not being pregnant)? _____ kg

99. Have you visited a doctor during the last 12 months because of a disease (and also pregnancy and delivery)? Do not count hospitalisations.

1 no
2 yes, _____ times

100. Have you been hospitalised during the last 12 months because of a disease (and also pregnancy and delivery)?

1 no
2 yes, _____ times

101. At what age did you firs visit a gynaecologist?

1 _____ years
2 I haven't visited a gynaecologist
3 don't remember

101a. How do you rate your first visit to a gynaecologist?

1 very positive experience
2 fairly positive experience
3 fairly negative experience
4 very negative experience
5 don't know

I wish to comment:

_____
_____
_____

102. Have you undergone any of the following examinations? *(please answer all the questions by choosing the most appropriate number on each row)*:

	During last 5 years	*Earlier*	*Never*	*Don'y know, remember*
1 mammography (breast X-ray examination)	1	2	3	4
2 breast examination (doctor)	1	2	3	4
3 breast ultrasound examination	1	2	3	4
4 PAP-smear (oncocytology)	1	2	3	4
5 gynecological examination	1	2	3	4

104. Have you been smoking at least one sigarette, sigar or pipe per day during one year?

1 no
2 yes formerly, but not now
3 I smoke daily
4 I smoke periodically

105. How often do you drink sufficient alcohol to get drunk?

1 daily
2 few times a week
3 once a week

4 twice a month
5 once a month
6 once every two months
7 3–4 times a year
8 once a year/less
9 never

106. Have you ever used drugs?
1 no
2 yes, intravenous
3 yes, other

107. Have you experienced the following situations during the last year *(you can choose several alternatives)*

	by partner	*by husband (marriage or cohabiting)*	*by someone else*
1 threatened with violence	1	2	3
2 pushed, shaken, had something thrown at you	1	2	3
3 hit with something that caused/could have caused physical injury	1	2	3
4 threatened with a knife/other object	1	2	3
5 physically forced to have sexual intercourse	1	2	3
6 threatened/frightened into having sexual intercourse	1	2	3
7 forced against your will to participate in other sexual acts	1	2	3
8 no	0		

108. If you have been quarreling with your partner during the last year, how often did you have... (mark x)

	no	1-2	3-5	6-10	11-20	> 20
1 bruises/pain						
2 wounds/broken bones						
3 injuries that needed medical attention						
4 we have not quarreled						

109. Have you talked to anyone about the violence?
1 no
2 yes, who? _____
3 I haven't experienced violence

Thank you!

If you wish to comment:

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