Sexual behaviour in the general young population – factors associated with sexual risk behaviour

PhD dissertation

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Sexual behaviour in the general young population – factors associated with sexual risk behaviour
PREFACE
OUTLINE OF THE THESIS

This PhD thesis is based on the project “Health & Sex among Danish youth”. The project was carried out during my time as a research fellow and again during my time as a PhD student at the department of Public Health Programs, Randers regional Hospital, Central Denmark Region and the Research Unit for General Practice, Aarhus University.

Chapter 1 offers an introduction to issues related to sexual behaviour in the general population of youth along with an introduction to theoretical and behavioural perspectives, challenges in sexual behaviour surveys and former political initiatives. Chapter 2 presents the overall and specific aims of the PhD study. Chapter 3 describes the study design, data sources, development of the questionnaire and the data collection. The main results of the four studies are presented in Chapter 4, and Chapter 5 to 8 present the four papers. Chapter 9 and 10 offers a discussion of the methods used and the results presented in the papers. Chapter 11 summarises the conclusions relevant to the aims of the studies. Chapter 12 describes the perspectives raised by the present research and offers ideas for future research. Chapter 13 gives the references used in the thesis and Chapters 14 to 15 present the English and Danish summaries. Appendices I to IV include the sexual behaviour questionnaire, the invitation letter, the dunning letter, and tables containing the data quality of three scales; Self-esteem, Condom Self-efficacy and dietary habits.
This thesis is based on the following papers, which will be referred to by their Roman numerals:

I. Jørgensen MJ, Maindal HT, Christensen KS, Olesen F, Andersen B. “Sexual behavior in the young Danish population: a cross-sectional study based on core indicators with a special emphasis on socio-demographic differences between respondents and non-respondents”

II. Jørgensen MJ, Maindal HT, Christensen KS, Olesen F, Andersen B. “Unsafe sex in young adults: the importance of intra-, interpersonal and situational decision-making factors”

III. Jørgensen MJ, Maindal HT, Christensen KS, Olesen F, Andersen B. “Sexual risk-taking behaviour and associations with dietary habits, smoking, alcohol consumption, and physical activity”

<table>
<thead>
<tr>
<th>ABBREVIATIONS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STI</td>
<td>Sexually transmitted infections</td>
</tr>
<tr>
<td>EC</td>
<td>Emergency contraceptives</td>
</tr>
<tr>
<td>ECDC</td>
<td>European Centre for Disease Prevention and Control</td>
</tr>
<tr>
<td>CRN</td>
<td>Civil registration number</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>QR</td>
<td>Quick response code</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence interval</td>
</tr>
<tr>
<td>OR</td>
<td>Odds ratio</td>
</tr>
<tr>
<td>IQI</td>
<td>Interquartile intervals</td>
</tr>
<tr>
<td>SSI</td>
<td>State Serum Institute</td>
</tr>
<tr>
<td>CTI</td>
<td>Chlamydia trachomatis infection</td>
</tr>
<tr>
<td>BP</td>
<td>Background population</td>
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</table>
CHAPTER 1

INTRODUCTION
Consequences of sexual risk behaviour

Sexually transmitted infections (STIs) and unintended pregnancies are results of risky sexual behaviour and remain a significant public health problem, especially among youth aged 15-29 years. Surveillance systems have previously found that *Chlamydia trachomatis* infection is the most common bacterial STI in Western countries and that the population aged 15-24 accounts for 75% of all reported cases (1, 2). Additionally, 41% of all gonorrhoea infections and 13.6% of all syphilis cases are reported in the young population (1). STIs have major medical, social and public health implications and can have long-term consequences such as infertility, ectopic pregnancy and cervical cancer (3-6). Furthermore, women aged 20-24 account for the majority of abortions and the highest age-related abortion rate (30.1 per 1,000 women in England, 27.4 in the USA, and 25.6 in Denmark) (7-9). In addition, most Western countries have seen a steep rise in the sale of emergency contraceptives (ECs) since ECs became over-the-counter drugs in 2001 (10). EC consumption patterns may be seen as an indicator of sexual risk behavior. In Denmark, the sale of EC rose from 13,900 packages in 2001 to 101,200 packages in 2012 (11), and in Norway there has been an estimated 30-fold increased use of EC since 2000 (12). These data demonstrate that greater access increases use. However, to date, no study has shown that increased access to ECs reduces unintended pregnancy or abortion rates at a population level (10).

The increasing prevalence of STIs, the high abortion rate and the rising in EC sales point to a high prevalence of risky sexual behaviour among youth. New initiatives must therefore be taken to improve sexual and reproductive health in the younger population, with an obvious need for primary prevention. For this purpose, detailed knowledge about sexual behaviour is essential and in line with recommendations from the European Centre for Disease Prevention and Control (ECDC).
INTRODUCTION

SEXUAL BEHAVIOUR IN THE GENERAL YOUNG POPULATION

The ECDC recommends sexual behavioural surveillance via the use of an international standardised set of core indicators (13) to enhance the possibility of international comparison, monitoring trends, and targeting preventive interventions. These indicators include a) age at first coitus or the proportion of adolescents who are sexually active at age 15; b) contraceptive method at first coitus; c) number of partners in the past year; d) contraceptive methods at the last sexual encounter including type of partner (steady, casual or paid); e) and history of HIV testing (14). An in-depth analysis made by the ECDC revealed a large diversity within the European countries in terms of the specific indicators used with regard to their contents and wording. Furthermore, only 13 countries conducted a national behavioural surveillance in the general young population (13). The remaining 18 countries either collected data through more or less organised consecutive surveys (five countries) or through smaller local studies. The latter group included Denmark. Thus, with the exception of one national study conducted in 2006 (15), Danish studies have been confined to local studies. Findings from different European studies indicate that the median age at first coitus for both genders is between 16.0-18.5 years with the lowest age in the UK and the Scandinavian countries (16-18). Condom use is most common at first coitus compared with other contraceptive methods. For instance, in Sweden 62% of adolescent women and 66% of men used a condom, while 17% and 15%, respectively, used the pill (19). In Denmark, 77% of adolescents used a condom either alone or in combination with other contraceptives at first coitus, while only 15% used the pill (20). The use of condom and contraceptive methods at the last sexual encounter has been found to vary enormously within the European countries (18). For instance, in the UK 64.5% of women used a condom, 6.8% used the pill and 16.4% used dual protection. In comparison, 33.5% of women in The Netherlands used a condom, 20.9% used the pill and 40.1% used dual...
protection. Among men, 68.5% from the UK used a condom, 2.7% reported that their partner used the pill and 15.8% used dual protection. The tendency was similar in the Netherlands, but only 47.9% of Danish men reported condom use at their last sexual encounter, while 20.8% reported that their partner used the pill and 21.2% used dual protection. Furthermore, another Danish study found that 30% of men aged 20-24 did not use a condom every time they had a sexual encounter with a new partner (15). In a Norwegian study, only 17.4% of the young population aged 18-25 reported having used a condom at their last sexual encounter with a casual partner, 31% had used hormonal contraceptives and 15% did not use any contraceptive methods (16). Reporting of the numbers of sexual partners among European youth is complicated by a large diversity in the categorisation of multiple partners. The proportion of adolescents having three or more sexual partners was investigated in a Swedish study (21) which reported that 25% of the women and 23% of the men aged 18-19 had had three or more partners within the past year. Among individuals aged 20-24, the corresponding figures were 19% for women and 26% for men. In Denmark, 49% of the men and 42% of the women aged 15-24 had had two or more sexual partners within the past year (15). A study conducted in Finland found that 25% of the men and 18% of the women aged 18-29 had had more than one partner within the past year (22). The Finish study also reported that men on average had had 5.0 partners, while women had had 3.4 partners within the past year.

Despite the variation in the reporting of sexual behaviour and the variation in sexual habits among youth in the European countries, the above results warrant an effort to clarify which factors influence adolescents’ sexual behavior.
THEORETICAL PERSPECTIVES ON SEXUAL BEHAVIOUR

We cannot offer a strictly objective definition of safe and unsafe sex, but the definitions used in this thesis follow those often used in the literature. In the present thesis, safe sex was defined as always using a condom at the first sexual encounter with a new partner, only having sexual encounters in a steady relationship, or having no sexual encounters (within the past year or ever). Unsafe sex was defined as non-condom use at the first sexual encounter with at least one new partner within the past year. Furthermore, we defined the concept of a risk factor as a factor that increases the risk of having unsafe sex.

Many different models have been developed to examine sexual behaviour and risk factors for unsafe sex. These models can be described as either developmental models or decision-making models (23). Developmental models describe behaviour in a series of stages related to increased sexual activity and a developing acceptance of one’s sexuality. They describe the transition through the stages without examining the psychological factors that may influence the transition (23, 24). Decision-making models, however, describe an individual’s cognitions, and to varying degrees they place these cognitions within the context of relationship and social norms (23). It has been argued that the best approach to examine sexual behaviour is to combine the developmental and the decision-making models. The optimal approach should further include information on background such as age, sex, ethnicity and education; intrapersonal factors such as attitudes and personality; interpersonal factors such as the facets of the relationship; and situational factors such as substance use prior to the sexual encounter (24) (Table 1). Information on these factors is essential for planning and implementing preventive intervention aiming at reducing the consequences of sexual risk behaviour in the general young population. Paper II therefore
presents an analysis of the association between selected decision-making factors and sexual behaviour among young Danes.

**Table 1. The contents of four categories in the integrated developmental and decision-making framework**

<table>
<thead>
<tr>
<th>Background factors</th>
<th>Intrapersonal factors</th>
<th>Interpersonal factors</th>
<th>Situational factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Knowledge</td>
<td>Interaction with…</td>
<td>Spontaneity of sex</td>
</tr>
<tr>
<td>Gender</td>
<td>Attitude</td>
<td>- Partner</td>
<td>Substance use prior to sex</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Beliefs</td>
<td>- Parents</td>
<td>Accessibility of contraception</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td>Personality</td>
<td>- Peers</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
In 2007, an American meta-analysis identified more than 500 factors currently known to either increase or decrease the likelihood that adolescents will engage in unprotected sexual encounters (25). Among these factors, the adolescents’ own sexual beliefs, values and attitudes, as well as intentions were found to be most strongly related risk factors. The risk factors relevant for the present thesis will be reviewed below.

Condom self-efficacy
Self-efficacy is defined as a person’s belief in his or her ability to succeed in a particular situation (26). According to professor Bandura, psychologist, a weak perceived self-efficacy to exercise personal control can increase the likelihood of risky sexual behaviour (26). This is in line with findings from previous studies where personal control and high self-efficacy in sexual negotiation were found to be significantly associated with safer sex behaviour among adolescents (27). Furthermore, a favourable attitude toward contraceptives has been found to increase adolescents’ intention to use them, but the perceived self-efficacy determined whether those intentions were put into use or not (28). These findings indicate that management of safe sexual practice among youth requires that they believe in their own ability to use a condom and to exercise influence over themselves.

Self-esteem
Sociologist, Dr. Morris Rosenberg defines self-esteem as a personal worth or worthiness (29) Although high self-esteem is commonly believed to be a protective factor for sexual risk behaviour, the evidence is not convincing (25). A systematic review from 2005 of the relationship between self-esteem and adolescents’ sexual behaviours found that out of 38 publications, 62% found no
statistically significant association with self-esteem (30). This calls for further investigation of the relation between self-esteem and sexual risk behaviour among the general young population.

Young age at first coitus
The third National Survey of Sexual Attitudes and Lifestyles (Natsal-3) from Uk recently found that first coitus before the age of 16 is strongly associated with unplanned pregnancy (31). Furthermore, women who engage in first coitus before the age 15 have been found to be more likely to have multiple sexual partners, to be smokers, to binge drink and to have a history of STIs (32, 33).

Alcohol and smoking
In general, alcohol is a well-known predictor of sexual risk behaviour (25, 34). It has been associated with non-use of contraception in relation to both first and last sexual encounter (19), and with a sexual encounter involving a non-steady partner (35). In addition, frequent drinking until a state of drunkenness (binge drinking) has been found to many-fold increase the likelihood of having unprotected sexual encounters among adolescents (34). Smoking has also been associated with sexual risk behaviour. The association applies for both early initiation of smoking and current smoking (31, 36).

Multiple sexual partners
Many studies have shown an association between multiple partners and sexual risk behaviour (16, 37-41), but there is considerable variation in how duration is measured and how the number of partners is calculated. Some studies examine the number of lifetime partners (40); others examine the number of partners within the past six months or the past year (16, 37-41). The number of partners has been categorised both as groups e.g. 2-3, 4-5 and >5 partners (16), or it has been dichotomised, e.g. ≥2 partners (38, 39). However, common to all the studies
is that having multiple sexual partners are associated with non-use of contraception at most recent sexual encounter, ever use of ECs (40), or having an STI (16, 37-39, 41).

Gaps between sexual partnerships
Gaps between sexual partnerships, whether in the form of short gaps between serial monogamous partnerships or overlap between sexual partners, have been identified as potential risk factors for STIs (42-45). Also, the duration of sexual partnerships between one day and three months coupled with short positive gap lengths has been identified as significant in sustaining the transmission of STIs, whereas one-night stands played a less important role (46).

Findings from our qualitative study conducted before this thesis indicated that both personality and behavioural factors may be associated with sexual risk behaviour among Danish youth (47). These findings are in line with the above findings from the international literature. However, cultural differences may influence the association. Thus, there is a need for a thorough quantitative Danish analysis of the associations between potential risk factors and sexual behaviour among youth. A national analysis conducted in conformity with international standards may facilitate international comparison, improve national preventive initiatives, and enable analysis of time trends and effects of preventive efforts. Therefore, in the present thesis, the association between sexual risk behaviour and different selected factors will be investigated in Papers I-IV.
One of the key challenges in sexual behaviour surveys is to generate representative, unbiased and precise measures of individual and population behaviour patterns (48).

Response rate
A low response rate can result in poor representativeness and participation bias (48) as discussed in detail for our study on page 166. In postal surveys designed to investigate sexual behaviour, non-return rates commonly reach 40% and such studies are therefore fraught with selection bias (49). Stated reasons for non-participation include language barriers, physical or mental handicaps, inability to reach the respondents on the phone or address indicated, or refusal for unknown reasons (48). The setting in which the study is conducted may also affect the response rate. For instance, previous school-based surveys reported a response rate of 54% (39). In comparison, surveys based on a random sample of the general young population reported response rates between 16.7% and 41% (16, 50). The higher response rate in school-based surveys may be attributable to the possibility of providing thorough information and the close contact with the teachers. However, either way, a potential risk of participation bias due to non-response is present and must be taken into consideration when interpreting estimates of population parameters (51).

Social desirability bias
A potential risk of information bias in the form of social desirability bias is also present when examining sensitive issues such as sexual behaviour (48). Social desirability is defined as the tendency among individuals to report an answer in a manner that will be viewed favourably by others (52). It can take the form of over-reporting of desirable behaviours and under-reporting of undesirable
behaviours, resulting in confounding associations between variables by moderating or attenuating relationships (53). The risk of social desirability bias depends on the individual, the person’s sex, cultural background, the specific questions and the context; e.g. interviews versus anonymous questionnaires. The tendency to act in a socially desirable way is a serious problem in research with self-reports; and since the bias interferes with the interpretation of average tendencies as well as individual differences, caution must be exercised when examining themes such as sexual behaviour (53).
As a result of the high incidence of STIs and abortions among youth, many Western countries have devoted much political attention to the issue and have devised national preventive strategies and programmes that have been running for a number of years. In Denmark, health promotion and prevention aim at reducing the health risks of smoking, poor physical activity, undesirable dietary habits, alcohol consumption, and unsafe sex (54). Since 2007, a number of recommendations issued by the Danish Health and Medicines Authority have been implemented by the municipalities in different ways and settings. The strategy targeting unsafe sex has focused mainly on sex education in primary, lower and upper secondary schools. As a result of this recommendations, 70% of the Danish municipalities are engaged in a special effort to ensure that all young citizens receive qualified sex education (55), for example by participating in the national sex education campaign run by “Sex & Society” (56). This organisation offers in-depth sex education to all Danish schools one week a year. The purpose of the campaign is to increase children's and young people’s knowledge and to strengthen their ability to make good choices in relation to well-being, rights, relationships, sexuality and health. In addition to the thorough sex education, the Danish Health and Medicines Authority in cooperation with “Sex & Society” are running a two-week national condom campaign every year. By focusing on young people’s own perception of the risk of contracting an STI, the campaign aims to increase condom use and to reduce the prevalence of STIs among individuals aged 18-22 (secondarily 16-25) (57). Finally, a free Human Papillomavirus (HPV) vaccination program including a catch-up program to the age of 26 has been implemented in Denmark in order to reduce the risk of cervical cancer and, secondarily, to reduce the risk of Condyloma (58).
However, despite the national initiatives and an observed, decreasing trend in STIs since 2009 in both Condyloma, *C.trachomatis* infection (Figure 2) and abortions (Figure 3), the incidence of young Danes who are infected with an STI or become pregnant unintendedly remains high. It should be noted that the decrease in *C. trachomatis* infections is not caused by a decreasing number of Chlamydia tests (59).

**Figure 2.** Individuals aged 15-24 with a verified *C. trachomatis* infection, 2001 -2012.

**Figure 3.** Abortions (per 1000) women aged 15-24, 1998 – 2012.

Source: Danish Health and Medicines Authority, 2014.

In summary, further data on sexual behaviour are needed in order to refine the preventive initiatives and to improve the younger population’s sexual health. The present thesis offers important knowledge of sexual behaviour in the general Danish population. It thereby paves the way for the development of evidence-based, targeted preventive interventions, and to interpret changes in STI surveillance.
STIs and unwanted pregnancies remain a significant public health problem among youth aged 15-29. Current figures testify to a high prevalence of risky sexual behaviour which can have major medical, social and public health implications such as infertility, ectopic pregnancy and cervical cancer. These facts call for new preventive strategies to improve the younger generation’s sexual and reproductive health.

In order to refine and better target national preventive interventions, it is necessary to understand the younger population’s sexual behaviour and any factors that influence this behaviour. Furthermore, studies must be conducted nationally as attitudes and behaviours are shaped by the cultural norms and traditions that prevail within the individual European countries.

Sexual behaviour surveys should be based on internationally recognised core indicators to facilitate international comparison as one of the tools to stimulate both national and international preventive initiatives.

A final argument for conducting national studies using internationally agreed core indicators is the added value of international analysis and comparison of time trends and internationally validated modelling studies which can be used as a drive for further preventive initiatives.

All these facts form the rationale and impetus of the present thesis.
CHAPTER 2

AIMS
The overall aim of this thesis was to examine the sexual behaviour of the general young population aged 15-29 years in Denmark, and to identify potential risk factors for unsafe sex. The overall aim was addressed through the following specific aims:

1. To assess sexual behaviour in the general Danish population aged 15-29, using core indicators as recommend by the ECDC in 2009, and to examine potential socio-demographic differences between respondents and non-respondents, including the potential consequences for the obtained sexual behaviour data (Paper I).

2. To analyse associations between background, intra- and interpersonal and situational decision-making factors and having a verified sexual risk behaviour as compared with the general young population (Paper II).

3. To examine if sexual risk-taking behaviour is associated with risk behaviour in dietary habits, smoking, binge drinking and physical activity (Paper III).

4. To examine the association between overlapping partners, gap length between serial monogamous partnerships and the risk of having a urogenital C. trachomatis infection among Danes aged 15-29 years compared with the general young population (Paper IV).
CHAPTER 3

MATERIAL AND METHODS
STUDY DESIGN

The study was designed as a population-based cross-sectional study. It was conducted among three groups of young Danes aged 15-29 years; two selected groups of individuals with a verified sexual risk behaviour from the Central Denmark Region, and a random sample of the general young population in Denmark. Data were obtained via questionnaires, and survey data were combined with register data in Paper I (Table 2).

Table 2. Characteristics of Papers I-IV

<table>
<thead>
<tr>
<th>Paper</th>
<th>Study population</th>
<th>Data sources</th>
<th>Primary outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>20,000 young Danes aged 15-29 years</td>
<td>Web-based questionnaire study combined with register data (CRS)</td>
<td>Sexual behaviour of respondents and differences in socio-demographic characteristics between respondents and non-respondents</td>
</tr>
<tr>
<td>II</td>
<td>1716 women buying ECs, 1445 C. trachomatis infected women and men, and 20,000 women and men from the background population</td>
<td>Web-based questionnaire study</td>
<td>Associations between background, intra- and interpersonal and situational decision-making factors and having sexual risk behaviour</td>
</tr>
<tr>
<td>III</td>
<td>Like in Paper I</td>
<td>Like in Paper II</td>
<td>Associations between sexual risk-taking behaviour and risk behaviour in dietary habits, smoking, binge drinking and physical activity</td>
</tr>
<tr>
<td>IV</td>
<td>1445 C. trachomatis infected women and men, and 20,000 women and men from the background population</td>
<td>Like in Paper II</td>
<td>Associations between overlapping partners, gap length between serial monogamous partnerships and the risk of having a urogenital C. trachomatis infection</td>
</tr>
</tbody>
</table>

1 The Danish Civil Registration System
2 Emergency contraceptives

Setting

In Denmark, approximately 1 million inhabitants are 15 - 29 years of age (17.9% of the total Danish population). Within this age group, 17.7% are living in the Central Denmark Region from where the study population with verified sexual
risk behaviour was sampled. The Region has five gynaecological departments, three microbiological departments and two pharmacies which are open 24 hours a day and 17 pharmacies which are open extra hours and weekends (Figure 3).

**Figure 3.** Map of Denmark showing the location of the cities from where the young Danes with known sexual risk behaviour were sampled.
The Danish Civil Registration System

Since 1968, all Danish citizens have been registered in the Danish Civil Registration System and assigned a unique 10-digit civil registration number (CRN). The CRN contains information on date of birth, gender, and a unique code identifying the individual. Apart from the CRN, the civil Registration System holds individual information on name, place of birth, place of residence, citizenship, marital status (including spouse) and kinship (parents/children). The unique CRN can be linked to individuals across all national registries, including comprehensive registers containing health and socioeconomic data (60).

Statistics Denmark

Statistics Denmark is a national integrated Database on Danish Society and Labour Market Research (61). It provides impartial statistics on the Danish society and makes socio-demographic data available for research projects. These data can be linked at the individual level using the CRN.
THE WEB-BASED SEXUAL BEHAVIOUR QUESTIONNAIRE

The sexual behaviour questionnaire was developed in the period from January to May 2010 in a study conducted before the present study was launched (62). In order to facilitate understanding of the development of the questionnaire, the content and validation process will be provided below.

Development of the questionnaire
First, a thorough literature search was performed. The search revealed no appropriate questionnaires that could be used to describe sexual behaviour among youth in Denmark. The research group therefore designed the questionnaire on the basis of their own experiences from years of work in the field, literature studies (15, 22, 25, 34, 63-68) and a qualitative study conducted by the research group (47). The questionnaire in its full form provides information on sexual behaviour, lifestyle factors, personality factors and socio-demography (Table 3, Appendix I). Information on sexual behaviour includes a detailed description of the sexual debut, sexuality and partner status, the last three sexual partners within the past year, sexual attitude and the outcome of having unprotected sex.

Whenever possible, questions from earlier surveys on lifestyle factors were used (63, 66, 67) where they had proved effective in describing a young Danish population; otherwise, new ad hoc questions were constructed.

Two validated questionnaires were also applied: the Rosenberg Self-Esteem Scale and a Condom Self-Efficacy Scale. Both scales were translated from American into Danish using a systematic forward-backwards translation process as recommended by the World Health Organisation (WHO) (69). The Rosenberg Self-Esteem Scale is a validated ten-item Likert scale where items are answered
on a four-point scale ranging from 3=strongly agree to 0=strongly disagree. Items with an asterisk were reverse scored, thus ranging from 0=strongly agree to 3=strongly disagree (29). The Condom Self-Efficacy Scale is constructed as two sub-scales; steady and casual partner. Each sub-scale is a five-item Likert scale where items are answered on a five-point scale ranging from 1 = not at all confident to 5 = extremely confident (70).
Table 3. Contents of the web-based sexual behaviour questionnaire; main categories and items related to each category.

<table>
<thead>
<tr>
<th>Sexual behaviour</th>
<th>Lifestyle</th>
<th>Personality</th>
<th>Socio-demography</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexual debut</strong></td>
<td><strong>Sexuality and partners</strong></td>
<td><strong>Last three sexual partners within the last year</strong></td>
<td><strong>Outcome of unprotected sex</strong></td>
</tr>
<tr>
<td>Age of the respondent and partner</td>
<td>Sexuality</td>
<td>Relationship status (steady or casual)</td>
<td>History of pregnancy and abortion (for women)</td>
</tr>
<tr>
<td>Meeting place</td>
<td>Number of partners the past year, past 3 months, past month</td>
<td>Length of a steady relationship</td>
<td>STI history</td>
</tr>
<tr>
<td>Experience at the sexual debut</td>
<td>Meeting place</td>
<td>Influence of alcohol or drugs</td>
<td>Dates of the first and last sexual encounter</td>
</tr>
<tr>
<td>Influence of alcohol or drugs</td>
<td>Using place</td>
<td>Dates of the first and last sexual encounter</td>
<td>Having a one-night stand</td>
</tr>
<tr>
<td>Use of condom and/or non-condom contraception$^a$</td>
<td></td>
<td>Dates of the first and last sexual encounter</td>
<td>Using place</td>
</tr>
</tbody>
</table>

$^a$Non-condom contraception encompassed hormonal contraception methods, intra-uterine devices and barrier methods

$^b$Condom Self-Efficacy Scale (CSE) (70)

$^c$Rosenberg Self-Esteem Scale (29)
Pilot test
The themes and questions were carefully discussed within the research group, followed by an assessment by a group of experts working in the field to confirm that all relevant issues involved in young people’s sexual health had been covered. The questionnaire was pilot-tested among 13 18-23-year-old students at a Danish folk high school. Individual cognitive interviewing was deployed to identify difficulties with potential items and response categories (62, 71, 72). The questionnaire was further pilot-tested in a test sample of 120 high school student aged 18-20 to examine potential problems with floor and ceiling effects and test-retest reliability (62, 71). A few changes were made in regard to phrasing and the construct of the questionnaire. After the adjustment, another pilot test was conducted among six students aged 18-23 from the same folk high school as previously. Cognitive interviewing was performed in a focus group setting. Only minor changes to the phrasing of the questions were made, and no questions or themes were dropped or added before producing a final version which was shown to have a high content validity in relation to the research question (71, 72).

The questionnaire layout
The web-based questionnaire was designed using the IT-program “SurveyXact”. All response categories were considered to be exhaustive and mutually exclusive. Each question depended on the response of the previous question; hence, only questions relevant for the individual were introduced. A reminder was sent if important questions were neglected. The response time was assessed to be 15-20 minutes. This time frame has previously has been found to be suitable for web-based questionnaires (73). Data were exported directly into SPSS and converted into Stata using StatTransfer Eleven.
Development of a sex risk algorithm

In order to stimulate interest in participating in the Sexual Behaviour Survey among Danish youth, we developed a sex-risk algorithm. The algorithm was based on a logistic regression analyses conducted among young Danes with a verified *C. trachomatis* infection (CTI) compared with the background population. The results of the analyses identified an association between having one or more sexual encounters during the past month, having more than three sexual partners the past year, having at least one partner overlap the past year, non-condom use at first sexual encounter with a new partner and having a CTI. Odds ratios for different combinations of these risk factors were calculated. Based on the frequencies of occurrence in the background population, the various odds ratios were stratified into low, medium and high for contracting a CTI. After completing the questionnaire, each individual could choose either to view their individual risk score or they could close the questionnaire screen.

Data collection

The study population was sampled according to the procedure depicted in Figure 4 and described on page 39-40. Individuals diagnosed with a CTI were consecutively mailed an invitation between 12 March and 16 September 2012. Between 1 February and 24 September 2012, women who bought ECs were consecutively handed an invitation by the pharmacists, and women who had an abortion were consecutively given an invitation to participate in the survey by the nurse.

The randomly selected individuals from the background population were invited to participate on 26 October 2012. Each individual selected for inclusion received a written postal invitation with a description of the study objectives, information on anonymity, a link and a quick response code (QR) to the web-based questionnaire and instruction on how to access the questionnaire. The invitation letter also contained an announcement of the risk score as described
on page 37. Non-respondents to the first invitation received a reminder three weeks later. Excepted from these reminders were women who bought ECs or had an abortion because we lacked their names and addresses. Respondents received no compensation.
As mentioned on page 37, young Danes aged 15-29 were invited to participate in the Sexual Behaviour Survey over a nine-month period from 1 February 2012. All individuals in the population were between 15-29 years of age and defined by the following four characteristics: 1) women and men diagnosed with a C. trachomystis infection, 2) women who bought EC pills, 3) women who had an abortion and 4) a random sample of women and men. Groups 1-3 were considered to have verified sexual risk behaviour, while no prior record of sexual risk behaviour was identified for group 4.

Figure 4 depicts the flow chart of the study population. Young women and men with a verified CTI were sampled from the MADS database \( (a \text{ clinical \ laboratory \ database}) \) at the Department of Clinical Microbiology at Aarhus University Hospital, Denmark. The database contains all samples received at the Department, including test samples drawn by the primary physicians in the catchment area of approximately 250,000 people. In addition, the database contains the test results and names and addresses of the individuals who have provided the tests. In Denmark, ECs can be bought without a prescription. Therefore, the group of young women who bought ECs was sampled from four selected pharmacies in three Danish cities (Arhus, Randers and Viborg) in the Central Denmark Region. These pharmacies were open 24 hours a day. Thus, the women had access to the pills out of normal office hours. The group of young women who had an abortion was sampled from five different departments of gynaecology in the Central Denmark Region. In 2010, this Region performed 1853 abortions among women aged 15-29 (74). We therefore expected that it would be possible to include at least 250 women over a period of seven months. However, for unknown reasons as discussed in chapter 161, only a few women completed the questionnaire. This group of women was therefore
excluded from all analyses in the study. Finally, the random sample from the background population was drawn from the Danish Civil Registration system, using the CNR, the name and the address of the individuals who were living in Denmark at the time of data retrieval, and who did not have address or enjoyed research protection. Between 2000-2006 research protection could be gained by ticking a box on a removal notice, where after it could only be gained by direct contact to the local authorities.

Sample size for the general young population
To detect a 10% difference between individuals who engage in unsafe vs. safe sex with 90% power at the 0.05 significance level, a total of 1076 young Danes with 538 in each group would be required to be included in the study. Because of a response rate of 25% in a previous but similar study, we decided to multiply the study population by four. In the power calculation, we further raised the number of invited individuals for safety reasons and in order to enable subgroup analysis between specific strata of individuals.
Figure 4. Flow chart of the study population.

Young Danes aged 15-29 years with a known sexual risk behaviour.
N=3236-3531

- Pharmacy
  Young women who bought morning-after pills: N=1716

- Dep. of clinical microbiology
  Young women and men with a verified C. Trachomatis infection: N=1445

- Dep. of gynaecology
  Young women who had an abortion: N=73-370

EXCLUDED
47 The postal service were unable to deliver the letter.
11 Respondents initiated but did not complete the questionnaire n=58 (4.0%)

NON-RESPONDENTS
- Pharmacy n=1,483 (86.4%)
- Dep. of clinical microbiology n=1,170 (81.0%)

STUDY SUBJECTS
Young Danes with known sexual risk behavior:
- Pharmacy n=233 (13.6%)
- Dep. of clinical microbiology n=217 (15.0%)

Young Danes aged 15-29 years, a random sample of the background population:
N=20,000

EXCLUDED
11 Did not read Danish.
11 Had physical or mental disabilities.
15 Were abroad for a longer period.
19 Did not wish to participate (no specific or unknown reason).
346 The postal service were unable to deliver the letter.
243 Respondents initiated but did not complete the questionnaire n=645 (3.2%)

NON-RESPONDENTS
n=15,283 (79.6%)

STUDY SUBJECTS
A random sample of the background population:
n=4,072 (20.4%)
DATA ANALYSES

Throughout the thesis, P values of 0.05 or less were regarded as statistically significant, and estimates were given with 95% confidence intervals (95% CI) when relevant. All analyses were made using Stata 11.2 (StataCorp LP. College Station. TX. USA).

Paper I
A detailed description of the method used in this Paper is given on page 62-64. Socio-demographic and sexual behaviour characteristics were stratified by gender and analysed using descriptive statistics. Comparisons between respondents and non-respondents within the two strata were calculated using Pearson’s chi-squared tests. Socio-demographic factors associated with respondents compared with non-respondents were further assessed using multiple logistic regression analysis, adjusted for age group, ethnicity, educational level and highest achieved level of parental education. The results were presented as odds ratio (OR) with 95% CIs. Sexual behaviour characteristics were presented as unweighted and weighted results. Weighted results were calculated by using a logistic regression model estimating each respondent’s probability of responding, adjusted for gender, age group, ethnicity, educational level and highest achieved education of parents. Each respondent was assigned a weight that was inversely proportional to this estimated probability to give a value for frequencies after being adjusted for selection bias due non-response (75).

Paper II
A detailed description of method used in this Paper is given on page 90-93. Decision-making factors relevant to young people’s sexual behaviour were divided into four main categories: background, intrapersonal factors,
interpersonal factors and situational factors (24). Descriptive characteristics were reported as percentages for nominal data and as means and standard deviations for numeric, normally distributed continuous data. Comparisons between the groups were calculated using Pearson’s chi-squared tests and student’s t-test for unpaired samples. A logistic regression model was used to calculate the association between the studied factors and having bought ECs or having a verified C. trachomatis infection. We adjusted for age, years of sexual experience, self-esteem, self-efficacy steady and casual partner, type of relationship, meeting place, alcohol intake at last sexual encounter and paid sex. The results were presented as ORs with 95% CIs.

Paper III

A detailed description of the method of this Paper is given on page 115-118. Lifestyle risk behaviour was presented as percentages stratified according to the number of partners within the past year and by unsafe/safe sex with the past three sexual partners. Trends in percentages of high-risk lifestyle behaviour were tested by non-parametric trend test across ordered sexual risk behaviour groups with unsafe sex based on condom use as the highest rank followed by the number of sexual partners. Logistic regression analyses were used to calculate the association between lifestyle factors and having unsafe sex among respondents who had one or more new sexual partners within the past year. We adjusted for age, diet, smoking, binge drinking and physical activity. Results were presented as ORs with 95% CIs.

Paper IV

A detailed description of the method of this Paper is given on page 140-143. Gaps between serial monogamous partnerships and possible overlaps in the three most recent sexual partnerships are depicted in Figure 5. In each group; CTI and the background population, frequencies of sexual behaviour
characteristics and overlapping partnerships were stratified by gender and presented as percentages for nominal data and as median with interquartile intervals (IQR) for numeric continuous data. Differences between groups were estimated using Pearson’s chi-squared tests and Wilcoxon signed-rank test for nonparametric statistics. The association between overlapping partners, gaps between serial monogamous partnerships and having a verified CTI were studied in multiple logistic regression analysis. We adjusted for age, number of sexual intercourses during the past month, relationship status with the last sexual partner and condom use the first and the last time with the last sexual partner. Results were presented as ORs with 95% CIs.
**Figure 5.** Gaps* between serial monogamous partnerships and possible overlaps* in the three most recent sexual partnerships

<table>
<thead>
<tr>
<th>The time between the last two partnerships.</th>
<th><strong>Gap between serial monogamous partnership</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gap length</td>
</tr>
<tr>
<td></td>
<td>Third from last</td>
</tr>
<tr>
<td></td>
<td>Second from last</td>
</tr>
<tr>
<td></td>
<td>Last sexual partner</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>An overlap occurs either between third from last and second from last or between second from last and latest sexual partnership.</th>
<th><strong>One overlap</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Second from last</td>
</tr>
<tr>
<td></td>
<td>Third from last</td>
</tr>
<tr>
<td></td>
<td>Second from last</td>
</tr>
<tr>
<td></td>
<td>Last sexual partner</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>An overlap occurs between both third from last and second from last sexual partnership and between second from last and latest sexual partnership.</th>
<th><strong>Two overlaps</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Third</td>
</tr>
<tr>
<td></td>
<td>Second from last</td>
</tr>
<tr>
<td></td>
<td>Last sexual partner</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>An overlap occurs between both third from last, second from last and latest sexual partnership.</th>
<th><strong>Three overlaps</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Last sexual partner</td>
</tr>
<tr>
<td></td>
<td>Third</td>
</tr>
<tr>
<td></td>
<td>Second</td>
</tr>
</tbody>
</table>

*Gap is the time between the end of one sexual partnership and the beginning of a new and can only occur in serial monogamous partnerships

*Overlap is defined as having a sexual partnership that does not end before another is initiated

○ = One-Night stand with either latest sexual partner, second from last or third from last sexual partner
Respondents gave their informed consent by filling in the web-based questionnaire. The studies in this thesis were approved by the Danish Data Protection Agency (J.no. 2010-41-5610). The studies were submitted to the National Scientific Committee on Health Research Ethics for approval. According to the Scientific Committee, approval was not required since no biomedical intervention was performed (J.no. 162/2010). Study one and four were approved by the State Serum Institute (SSI), Division of National Health Documentation and Research, Data Supplies and Pharmaceutical Statistics, Research Services (FSEID00000213).

Ethical considerations
Even though the Danish Scientific Committees do not assess survey studies because they include no biomedical interventions, several ethical considerations were made prior to this survey. How to approach the study population in the accompanying letter was carefully considered as was the wording of the questions in the questionnaire. In Denmark, a priori consent is not required, but lies implicit in the individual’s questionnaire response. In the accompanying letter, we therefore emphasised the anonymity of each individual’s response, which was ensured by using aggregated data that could not be linked at the level of the individual participant. Furthermore, the file which contained the CNR of the background population was kept separately from the data file.
CHAPTER 4

RESULTS IN SUMMARY

This chapter offers a brief summary of the main results of each paper in the thesis. A more detailed description of the results is presented in Chapters 5 to 8.

Table 3. Study results presented in Papers I-IV

<table>
<thead>
<tr>
<th>Paper</th>
<th>Study results presented</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Sexual behaviour in the young Danish population based on internationally recommended core indicators.</td>
</tr>
<tr>
<td>II</td>
<td>Associations between decision-making factors and sexual risk behaviour.</td>
</tr>
<tr>
<td>III</td>
<td>Associations between lifestyle risk behaviour and sexual risk behaviour.</td>
</tr>
<tr>
<td>IV</td>
<td>Associations between overlapping sexual partnerships and the risk of having a C. trachomatis infection.</td>
</tr>
</tbody>
</table>
Respondents differed from non-respondents in relation to age, ethnicity, educational level and highest achieved education of parents, but data on sexual behaviour differed only modestly after adjusting for socio-demographic variables due to non-response.

The mean age at sexual debut was 16.1 (SD:2.0) years for women and 16.4 (SD:2.4) for men. The vast majority of both women and men were heterosexual. The majority of the women had a sexual partner who was 1-5 years older than themselves, whereas approximately 1/3 of the men had a younger sexual partner; 1/3 had one at the same age, and a little under 1/3 had a partner who was 1-5 years older than themselves.

The main proportion of women (62.4%) and men (57.8%) had had only one sexual partner within the past year. However, approximately one third of the women and one third of the men had had 2-5 sexual partners within the past year, and 11.4% of the women and 13.0% of the men had had 2–5 partners within the past 3 months.

At the sexual debut, most respondents used a condom for protection, whereas either condom alone or non-condom contraception alone was most commonly used at the last sexual encounter. This applied both when the last sexual encounter was in a steady relationship or with a casual partner. However, approximately 10% of the respondents used no contraceptive methods during their last sexual encounter with a steady partner, and 14.8% of the women and 20.9% of the men used no contraceptive methods with a casual partner.

In conclusion, the high proportion of youth who have multiple sexual partners and do not use contraceptive methods showed a need for further information about safe sex both in regard to avoidance of STIs and unintended pregnancy.
DECISION-MAKING FACTORS AND SEXUAL RISK BEHAVIOUR

A higher proportion of both women who bought ECs and women and men with a verified CTI had sex with a casual partner at their last sexual encounter compared with the background population. Furthermore, compared with the background population, a higher proportion among all three groups with a verified sexual risk behaviour met their partner at a festival, on a vacation or during a night out partying and had been drinking alcohol prior to the last sexual encounter.

Women who bought ECs were more likely to have less confidence in their ability to use a condom with a casual partner and to be somewhat confident in their ability to use a condom with a steady partner than women in the background population. Furthermore, CTI women were more likely to be non-confident in their ability to use a condom with both a steady and a casual partner as compared to women in the background population. Among men with CTI, an insignificant likelihood of less confidence was found in their ability to use a condom in relation to a steady and a casual partner.

Of all the included decision-making factors, the strongest association was found between having sex with a casual partner at the last sexual encounter, having met the partner at a festival, on a vacation or during a night out partying and having a verified sexual risk behaviour. The association applied whether sexual risk behaviour was assessed as having bought ECs or having a CTI. In addition, an association was found between non-confidence in Condom Self-Efficacy and having a verified sexual risk behaviour. The association was strongest among women with a CTI. The results stayed the same when the analyses were stratified according to whether the partner at the last sexual encounter was steady or casual (Table 4).
**Table 4.** The association between Condom self-efficacy and buying emergency contraceptives (ECs) (N=175) or having a verified C. trachomatis infection (N=133 women, N=43 men) compared with the background population (N=1619 women, 798 men). Presented as crude and adjusted odds ratio (OR), with 95% CI and stratified by steady and casual partner.

<table>
<thead>
<tr>
<th></th>
<th>EC group</th>
<th>C. trachomatis group</th>
<th>C. trachomatis group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crude OR</td>
<td>Adj. OR(^a)</td>
<td>Crude OR</td>
</tr>
<tr>
<td><strong>Intrapersonal factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condom self-efficacy, Steady partner(^b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
</tr>
<tr>
<td>Somewhat confident</td>
<td>0.69 (0.41-1.17)</td>
<td>0.68 (0.40-1.17)</td>
<td>3.35 (1.25-8.95)</td>
</tr>
<tr>
<td>Not confident</td>
<td>0.43 (0.25-0.73)</td>
<td>0.46 (0.26-0.79)</td>
<td>4.55 (1.79-11.58)</td>
</tr>
<tr>
<td>Condom self-efficacy, Casual partner(^b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
</tr>
<tr>
<td>Somewhat confident</td>
<td>2.73 (1.56-4.77)</td>
<td>2.71 (1.52-4.86)</td>
<td>2.06 (1.05-4.04)</td>
</tr>
<tr>
<td>Not confident</td>
<td>2.03 (0.99-4.15)</td>
<td>1.89 (0.88-4.00)</td>
<td>3.02 (1.42-6.42)</td>
</tr>
</tbody>
</table>

\(^a\) Adjusted model: Adjusted for age, self-esteem, age difference, having paid or got paid for sex, type of relationship, meeting place for last sexual partner and alcohol intake at last sexual encounter

\(^b\) Condom self-efficacy (CSE): An individual’s conviction and belief in his or her own ability to use a condom with primary and non-primary partner in a variety of sexual situations.
In conclusion, the paper showed that three types of decision-making factors are important for young people's engagement in sexual risk behaviour. These include intrapersonal factors such as Condom Self-Efficacy, interpersonal factors such as type of partner at the last sexual encounter, and situational factors such as meeting place and alcohol intake prior to the last sexual encounter.
Sexual behaviour in the general young population – factors associated with sexual risk behaviour

**LIFESTYLE RISK BEHAVIOUR AND SEXUAL RISK BEHAVIOUR**

An increased likelihood of engaging in high-risk smoking and binge drinking behaviour was found among individuals who engaged in sexual risk behaviour. This was the case when sexual risk behaviour was assessed as the number of sexual partners and augmented when assessed as safe vs unsafe sex based on condom use among individuals who had had three or more new sexual partners within the past year. The association between dietary habits and the number of sexual partners was insignificant, but went in the same direction as for smoking and binge drinking.

An equal proportion of women and men engaged in sexual risk behaviour, but men were more likely to show lifestyle risk behaviour than women (Table 5).

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexual behaviour</strong></td>
<td></td>
<td></td>
<td>0.165</td>
</tr>
<tr>
<td>Safe sex</td>
<td>340 (43.3)</td>
<td>671 (40.4)</td>
<td></td>
</tr>
<tr>
<td>Unsafe sex</td>
<td>445 (56.7)</td>
<td>992 (59.7)</td>
<td></td>
</tr>
<tr>
<td><strong>Dietary habits</strong></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No risk</td>
<td>76 (9.7)</td>
<td>283 (17.0)</td>
<td></td>
</tr>
<tr>
<td>Middle risk</td>
<td>489 (62.3)</td>
<td>1054 (63.4)</td>
<td></td>
</tr>
<tr>
<td>High-risk</td>
<td>220 (28.0)</td>
<td>326 (19.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Smoking</strong></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>No risk</td>
<td>527 (67.1)</td>
<td>1157 (69.6)</td>
<td></td>
</tr>
<tr>
<td>Middle risk</td>
<td>178 (22.7)</td>
<td>395 (23.8)</td>
<td></td>
</tr>
<tr>
<td>High-risk</td>
<td>80 (10.2)</td>
<td>111 (6.7)</td>
<td></td>
</tr>
<tr>
<td><strong>Binge drinking</strong></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No risk</td>
<td>220 (28.0)</td>
<td>660 (39.7)</td>
<td></td>
</tr>
<tr>
<td>Middle risk</td>
<td>500 (63.7)</td>
<td>911 (54.8)</td>
<td></td>
</tr>
<tr>
<td>High-risk</td>
<td>65 (8.3)</td>
<td>92 (5.5)</td>
<td></td>
</tr>
<tr>
<td><strong>Physical activity</strong></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No risk</td>
<td>426 (54.3)</td>
<td>634 (38.1)</td>
<td></td>
</tr>
<tr>
<td>Middle risk</td>
<td>191 (24.3)</td>
<td>616 (37.0)</td>
<td></td>
</tr>
<tr>
<td>High-risk</td>
<td>168 (21.4)</td>
<td>413 (24.8)</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. *The distribution of sexual risk behaviour and risk behavior in lifestyle factors among individuals who had had one or more sexual partners within the past year, stratified by gender (N=2453*).*

Missing data on five individuals regarding type of partner
Sum of groups may be above 100% due to rounding up of decimal values.
For both genders, a strong association was found between having unsafe sex and high-risk behaviour in smoking and binge drinking. The association was strongest among women who engaged in high-risk smoking (OR: 5.59, 95% CI:3.12-10.0) and men who engaged in high-risk binge drinking behaviour (OR: 3.50, 95% CI:1.74-7.05). No associations were found between having unsafe sex and high-risk dietary habits or physical activity.

In conclusion, the strong association between sexual risk behaviour and high-risk smoking and binge drinking behaviour showed the importance of addressing general behaviour aspects when planning preventive interventions to improve the sexual health of young people.
OVERLAPPING PARTNERSHIPS AND C.TRACHOMATIS INFECTION

The proportion of CTI women and men who had had three or more sexual partners within the past year, who engaged in casual partnerships and who did not use a condom at their first sexual encounter was higher among men and women in the study population than among women and men in the background population. Furthermore, 49.2% of the women and 45.2% of the men with a verified CTI had at least one partner overlap compared with 14.1% and 14.7%, respectively, among women and men in the background population. The median length of days since the last overlap occurred, gaps between serially monogamous partnerships, and the length of these partnerships was shorter among both genders with a verified CTI than among the background population (Figure 6).

**Figure 6.** The median length of days since last overlap, gaps between and length of serially monogamous partnerships among women and men with a verified C. trachomatis infection in the study population compared with the women and men in the background population. Y-axis in cumulative percentage.

No statistically significant association was found between short gaps compared with long gaps in serially monogamous partnerships and having a CTI. However, having at least three overlaps increased the association of having an infection by 5.46 (2.79-10.67) for women and by 5.22 (1.56-17.44) for men, which indicate a strong association between overlap and having a CTI.
In conclusion, overlap between sexual partners seems to be more strongly associated with having a CTI than short gaps between serial monogamous partnerships. In addition having a CTI was associated with multiple partners, casual partnerships and non-condom use at the first sexual encounter with a new partner.
Sexual behaviour in the general young population – factors associated with sexual risk behaviour
CHAPTER 9

DISCUSSION OF METHODS

This chapter discusses the methodological issues of the studies in relation to design, sampling, data quality, statistical analysis, bias, confounding and generalisability with special emphasis devoted to selection and information bias.
DATA VALIDITY

Design
As mentioned on page 30, the overall study was designed a population-based cross-sectional study conducted among a random sample of the general young population in Denmark and among two population groups with known sexual risk behaviour.

Cross-sectional studies are non-experimental and primarily descriptive. They have well-known limitations in relation to bias and risk of confounding, and they cannot distinguish between incidence and natural history for the purpose of establishing causal inference (76). Despite these limitations, they are suitable for measuring prevalence and for obtaining data that may be used to compare groups using a case-reference analytical approach with estimates presented as odds ratios (77). In addition, they can provide population-level data that may be useful for guiding research and health policy (76). The design was therefore deemed suitable for examining the sexual behaviour of the general young population in Denmark (Paper I). The cross-sectional design also made it possible to identify and obtain detailed knowledge about potential risk factors for unsafe sex in the general young population (Paper III) and among a population empirically known to have had unsafe sex as compared with the general population (Paper II and IV). Hence, using a cross-sectional design in the four papers enabled us to answer both the overall aims and the more specific aims of this thesis; and the design may, furthermore, help to target future national preventive strategies and allow us to compare Danish sexual behaviour data with similar international data.
Sampling procedure

The Danish Civil Registration System affords unique possibilities for conducting representative population-based studies (60); and in the present thesis, the registry made it possible to obtain a large national random sample of the background population. Sampling individuals with known sexual risk behaviour may, on the other hand, be a challenging task. As described on page 39, we sampled individuals with a verified CTI from the Department of Microbiology, Aarhus University Hospital. Furthermore, women who were either at risk of or had fallen unintendedly pregnant were sampled from four selected pharmacies and five Gynaecological Departments in the central Denmark Region, respectively. Early in the sampling period, it became clear that we were facing a special challenge in the group of women who went for an abortion as fewer than we expected were invited and even fewer completed the questionnaire. Of the approximately 1050 women who were expected to have an abortion over the seven-month period based on statistics from 2010 as described on page 39, only 75-370 were invited. Of those who were invited, only 14 completed the questionnaire (Figure 4). We therefore had to exclude this group of women from the study. It is uncertain why we experienced the difficulties of achieving a larger sample within this group. Before the inclusion period, a thorough orientation about the study was given at each of the five Gynaecological Departments, and both management and staff at all the Departments expressed great interest in participating. However, we cannot exclude the possibility that the difficulties encountered may be due to a high workload at the Departments in general or the existence of staff reluctance towards the study despite the expressed positive attitude. Furthermore, achieving informed consent from women who are likely to be in a psychologically strenuous situation may be difficult. In total, it became obvious that the staff felt barriers in relation to asking the women to participate in the study, and the women were often not motivated to answer the questionnaire.
even if they had accepted to participate. Thus, future research needs to consider alternative methods for investigating sexual behaviour among this group of women.
DATA QUALITY

The register data

In Paper I, we included data on socio-demography from the national integrated database on Danish Society and Labour Market Research run by Statistics Denmark (61). This database includes comprehensive material from numerous registers. The accuracy and completeness of the database are considered to be high as data are being continuously used and updated; and the database therefore offers access to high-quality data. However, as described in Paper I, missing information for the registry-based variables provided by Statistics Denmark ranged from 0% for age and gender to 3.4% for ethnicity and parental information. Missing information on ethnicity may occur, e.g. if someone from the study population is in Denmark as a student. Foreign students who arrive in Denmark are registered with a CRN, but most other information pertaining to such students is missing. Missing parental information can occur, e.g. when a person is adopted or has immigrated to Denmark without one or both parents. However, missing values below 5% are considered very low and therefore unlikely to have had any substantial effect on our estimates in Paper I.

The questionnaire data

As described on page 33, the sexual behaviour questionnaire was developed in a study preceding the present study, and it was based on the research group’s experiences from years of work in the field, literature studies (15, 22, 25, 34, 63-68) and a qualitative study conducted by the research group (47). The questionnaire was subject to a comprehensive pilot test where both qualitative and quantitative measures were applied to ensure high content validity; hence, only minor phrasing adjustments were made at the end of the pilot tests. However, because of these minor adjustments, it was decided for the present thesis to examine the possibility of an existing floor-ceiling effect within the Self-
Esteem Scale, the Condom Self-Efficacy Scale and the Dietary Habits Scale (appendix IV) among the general population. The analysis identified a tendency to ceiling effect in the Self-Esteem Scale for each item whether the phrasing was positive or negative (Appendix IV, Table 7). Furthermore, in the Dietary Habits Scale there was a tendency to a floor effect in unhealthy diet and ceiling effect in healthy diet (Appendix IV, Table 10). However, the overall score for both scales revealed a reasonable distribution indicating a good ability to measure differences between groups with different habits. In relation to a steady partner, the Condom Self-Efficacy Scale revealed a ceiling effect in one item, but the items in the overall scale were also reasonably distributed (Appendix IV, Table 8). In contradiction, in relation to a casual partner, the Condom Self-Efficacy scale showed a floor effect in all five items including the overall score. Using a scale with floor effect for comparison of two groups can be a problem if both groups cluster in the same direction. Therefore, we further examined the floor-ceiling effect in the Condom Self-Efficacy Scale for casual partners among members of the group with a verified sexual risk behaviour (Appendix IV, Table 9). Findings revealed a floor effect when the scale was applied to women who bought ECs and to men with a verified CTI, but they also revealed a reasonable distribution of both items and the overall scale when women with a verified CTI were examined. The overall effect of floor and ceiling may in a non-differentiated way reduce our ability to measure differences between groups and may thus contribute to an underestimation of differences between groups.
When analysing sexual behaviour and risk factors for unsafe sex, it is important to consider the possibility of gender differences. Throughout the studies, we therefore performed stratified analyses based on the assumption that gender could be both a confounder and an effect modifier. However, although the stratification procedure was an important tool which was deployed to limit the risk of confounding and effect modification (76, 78), it reduced the statistical power of the study, particularly in Study II and Study IV due to the low number of individuals with a verified sexual risk behaviour, and especially in the group of men. Some caution is therefore warranted when interpreting the findings of these analyses. In Paper I and Paper III, the sample sizes were large and our CIs relatively narrow, which reduced the risk of type II errors.

A logistic regression model was used in all four studies to estimate the associations between the outcome and the independent variables investigated. Findings were presented as odds ratios with 95% CIs, which is a well-established method in cross-sectional studies with binary outcomes (78).
INTERNAL VALIDITY

Selection bias

Achieving a representative sample and good response rates in sexual survey research is essential to obtain survey representativeness and to reduce participation bias as mentioned on page 22 (48). Representativeness is the ability to generalise survey findings to the external population, while participation bias describes the error arising from systematic differences in characteristics between respondents and non-respondents (48). Minimal participation bias is therefore one of the preconditions for representativeness. Because of the low response rates (13.6-20.4%) in the present studies (Figure 4), a thorough discussion of potential selection and information bias is necessary.

The random sample of 20,000 individuals from the background population was obtained from the Danish Civil Registration System. The sample can therefore be assumed to be representative of the approximately 1 million inhabitants available for research projects in the selected age group. However, a potential risk of selection bias may still be present due to the high proportion of residents holding publicly recorded protection from research participation (12-25% in the specific age group). The high proportion is due to the simplicity of the procedure that allows citizens to obtain research protection simply by ticking a box on a removal notice. This procedure was used in the years 2000-2006 in Denmark. From 2007 and onwards, a person should actively contact the local authorities in order to gain research protection, but those who already had gained research protection remained protected. In the present thesis, a selection bias could therefore be present, especially in the older age groups (≥ 21 years) if the choice of research protection was not randomly distributed within the population. Although we cannot rule out the possibility of some geographical differences, young people in general tend to move much during their student
years. It is therefore likely that those holding research protection represent a random sample of the general young population, thus we have no reason to believe that this selection introduces a differentiated bias between the sample and the general young population.

Another possibility of selection bias relates to our choice of a web-based questionnaire compared to a posted questionnaire. In Denmark, 99% of all Danish households have access to a computer and the internet (79). Furthermore, the young target group is generally very familiar with the use of computers. We therefore believed that it would be possible to achieve a higher response rate when a web-based questionnaire was used for data collection than if a posted questionnaire had been used. However, we cannot eliminate the possibility that those who completed the questionnaire might spend more time using their computers and have a different sexual behaviour than other young Danes, but a potential selection bias would be likely to underestimate our findings.

The main risk of selection bias in the studies are therefore caused by the low response rates among invited respondents which may have caused the sample to be biased. A thorough analysis of socio-demographic differences between respondents and non-respondents was therefore performed within the background population (Paper I, page 79-80). Like in other studies, respondents were more likely to be women than men, to be younger and to have parents who had attained a higher education (80-82). In addition, our findings indicated that respondents were more likely than non-respondents to be ethnic Danes and still to be engaged in formal education. Due to these demographic differences, statistical weighting techniques were used to adjust for selection bias arising from non-response (48, 75). The results of the weighted analysis showed only a minimal difference in the prevalence of sexual behaviour characteristics.
However, respondents may differ from non-respondents not only in socio-demographic characteristics, but also in behavioural characteristics. Hence, weighted estimates adjusted for socio-demography may not overcome selection bias that arises independently of demographic factors (48). An analysis of sexual behaviour characteristics among early vs. late respondents in the background population was therefore conducted (Table 6). The findings of this analysis showed no significant differences between early and late respondents. It should be noted that the analyses could only be performed among the background population since we had no information on CRN, addresses or the exact dates of questionnaire response for the population with verified sexual risk behaviour. However, there is no reason to believe that a potential selection bias is different among early and late respondents in the general population and those with verified sexual risk behaviour.
Table 6. Distribution of selected sexual behaviour characteristics among early vs. late respondents from the background population of Danes aged 15-29 years.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Women</th>
<th>Background population</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Early</td>
<td>Late</td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n=1660</td>
<td>n=389</td>
<td></td>
</tr>
<tr>
<td>Sexual debut</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Early</td>
<td>Late</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age of index person (Years)²</td>
<td>Mean age (sd)</td>
<td>16,0 (2,0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age difference between index-person and partner (Years)²</td>
<td>Partner younger</td>
<td>105 (6,4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No difference in age</td>
<td>474 (28,7)</td>
<td>115 (29,7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partner 1-5 years older</td>
<td>958 (56,0)</td>
<td>225 (58,1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partner &gt; 5 years older</td>
<td>115 (7,0)</td>
<td>24 (6,2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contraceptive use³</td>
<td>Dual protection</td>
<td>283 (17,1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Condom</td>
<td>875 (52,9)</td>
<td>207 (53,4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-condom contraception</td>
<td>258 (15,6)</td>
<td>64 (16,5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No contraceptive use</td>
<td>237 (14,3)</td>
<td>55 (14,2)</td>
</tr>
<tr>
<td>Sexual partners</td>
<td></td>
<td>0</td>
<td>65 (3,9)</td>
<td>12 (3,1)</td>
</tr>
<tr>
<td>(within the past 12 months)²</td>
<td></td>
<td>1</td>
<td>1043 (62,8)</td>
<td>235 (60,4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-5</td>
<td>469 (28,3)</td>
<td>126 (32,4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;5</td>
<td>83 (5,0)</td>
<td>16 (4,1)</td>
</tr>
<tr>
<td>Contraceptive use at last sexual encounter</td>
<td></td>
<td>(within the past 12 months)²</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With a steady partner³</td>
<td>Dual protection</td>
<td>260(20,7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Condom</td>
<td>386 (30,8)</td>
<td>87 (32,0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-condom contraception</td>
<td>503 (40,1)</td>
<td>105 (38,6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No contraceptive use</td>
<td>105 (8,4)</td>
<td>23 (8,5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With a casual partner³</td>
<td>Dual protection</td>
<td>48 (14,4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Condom</td>
<td>90 (27,0)</td>
<td>29 (27,6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-condom contraception</td>
<td>145 (43,4)</td>
<td>37 (35,2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No contraceptive use</td>
<td>51 (15,3)</td>
<td>14 (13,3)</td>
</tr>
</tbody>
</table>

Numbers vary due to missing data
²Core indicators as proposed by ECDC
³Non-condom contraception encompassed hormonal contraception methods, intra-uterine devices and barrier methods.
Information bias

The most pronounced risk of information bias that may apply to the studies in this thesis is that of social desirability bias as mentioned on page 22 (53). However, the use of an anonymous self-completed web-based questionnaire is likely to minimise social desirability bias, to increase respondents’ willingness to participate, and to report sensitive behaviour, and thereby to improve the validity of the data obtained (83-85). In addition, topics such as sexual behaviour are known to be underreported rather than over-reported (53). The possibility of information bias is therefore likely to be in the direction of reported normal rather than extreme sexual behaviour; hence, the total bias is likely to be in the direction towards the null.

Another potential information bias pertains to the accuracy of retrospective self-reported data which depends on the respondents’ ability to recall past behaviours (76). To minimise recall bias, the questionnaire proceeded chronologically from the most recent sexual partner to the third-to-last sexual partner enabling the respondents to sequentially order their recall of events. The questionnaire hence promoted thoughtful responses (Appendix I). To further reduce the risk of recall bias, it might have been helpful to use diaries on sexual behaviour. Such dairy use is thought to improve the validity of the data collected (86), but this type of prospective registration is difficult to conduct in a representative sample of respondents.

Finally, we cannot exclude the possibility of misclassification in Paper II and Paper IV. In these studies, we examined the difference between the group with verified sexual risk behaviour and the general young population. However, we have no information on whether the general young population might have had sexual risk behaviour; hence, they should have been included in the other group.
instead. However, as for the risk of social desirability bias, the risk of differential misclassification is likely to have underestimated our findings.

Confounding
Analyses in the four studies were stratified by gender and adjusted for known confounders. For example, in Paper I, the association between socio-demographic factors and being a respondent were adjusted for age group, ethnicity, educational level and highest achieved level of parent education. In Papers II-IV, the analysed associations were all adjusted for age, and, when relevant, for personality, lifestyle and different sexual behaviour characteristics. It may have been relevant to adjust for other factors of importance for respondents’ characteristic, e.g. individuals’ IQ, residence, socioeconomic status and sexual network. We believe that we did account for the most important covariates. However, the inclusion of relatively few respondents with verified sexual risk behaviour limited the number of variables that could be adjusted for and, hence, residual confounding may exist.
EXTERNAL VALIDITY

Generalisability

In light of the above discussion of selection and information bias, we believe that our background population is a representative sample of the general young population in Denmark owing to the random selection of the target population. The findings within this group are therefore considered to be generalisable to the entire population; still the limitations mentioned in the discussion of internal validity should be borne in mind. However, with respect to our two samples with verified sexual risk behaviour, we have to raise the question whether they sufficiently represent the national group of C. trachomatis infected individuals and young women at risk of unintended pregnancies. These two groups were sampled within the same catchment area. The area is both highly urbanised and has a number of rural districts; moreover, its social and occupational diversity is large. We therefore believe that the sample is representative, and findings within these two groups may accordingly be considered generalisable to other young Danes with either a CTI or at risk of unintended pregnancy. However, it is a limitation that we were unable to directly compare population characteristics in these two samples with the characteristics of a national sample with the same risk profile. In conclusion, when considering both internal and external validity, we believe that our findings can be generalised to the general young population in Denmark, and a potential bias would tend only to underestimate our findings.

Extrapolation of our study results to other countries requires careful consideration of differences in the categorisation of the included indicators related to sexual behaviour, lifestyle and personality. A prerequisite for such extrapolation is therefore the use of internationally recommended indicators, e.g. those recommended by the ECDC on sexual behaviour. Furthermore, it may also be important to consider the possibility of cultural differences when extrapolating our results to other countries.
CHAPTER 10

DISCUSSION OF RESULTS

This chapter discusses and considers the results (Papers I-IV) of the present thesis in relation to other studies on sexual behaviour and potential risk factors for unsafe sex in the general young population.
A PREREQUISITE FOR EVIDENS-BASED, TARGETED PREVENTIVE INTERVENTIONS

In Chapter 9, we discussed the methodological strengths and limitations of our study. Having these in mind, the aim of the present chapter is to discuss our results in relation to other studies and in relation to our overall and specific aims.

The aim of this thesis was to examine the sexual behaviour of the general young population in Denmark and to identify potential risk factors for unsafe sex. For any preventive initiatives to be effective, fundamental knowledge of sexual behaviour in the general young population is necessary. Paper I therefore assessed the sexual behaviour of the general Danish population aged 15-29 using a set of internationally recommended core indicators (14). The findings suggest that a high proportion of Danish youth engage in unsafe sex; hence, they are at risk of unintended pregnancies and STIs.

In Papers II-IV, numerous factors were identified that influence the sexual risk behaviour of Danish youth. These factors included both inter- and intrapersonal factors, situational and lifestyle factors and sexual network. As stated, knowledge of sexual behaviour and risk factors for unsafe sex is essential in guiding the development and evaluation of future preventive interventions to improve the sexual and reproductive health of this population. A thorough discussion of the sexual behaviour and risk factors for unsafe sex among Danish youth is therefore required to explain the full depth of these results and their implications for future preventive interventions including a discussion of which factors may be most easy and effective to target in prevention.
Sexual behaviour in the general young population (Aim 1)

The mean age at first coitus among Danish youth was 16.1 years for women and 16.4 years for men (Paper I), and the median age at first coitus for both genders was 16.0. These figures correspond to the overall median age reported in a study conducted among women aged 18-45 in four Nordic countries (17), but it is slightly lower than the figures reported for both genders in other industrialised countries (16.5-18.0) (18). Our findings therefore indicate that youth in the Nordic countries engage in sexual activity earlier than their counterparts in other industrialised countries; hence, the onset of preventive strategies in Scandinavia may benefit from earlier implementation compared with other European countries. In Paper I, we also found that approximately one third of youth had had two or more sexual partners within the past year. This proportion is higher than in other Scandinavian studies (21, 22), but lower than in an earlier Danish study (15). However, comparisons of findings in regard to the number of partners are complicated by the large variation in the assessment of this parameter. The consequences of the variation, the depth of the findings and the implications for future preventive interventions will be examined in the next section discussing multiple sexual partners as a risk factor for unsafe sex.

In regard to contraceptive methods, condoms were most commonly used at first coitus, whereas condom and non-condom contraception were used equally at the last sexual encounter with a steady partner. The same tendency has been found in other studies (18-20). However, compared to these studies, we found a slightly lower proportion who used condoms and a slightly higher proportion who used non-condom contraception. These findings indicate that youth in Denmark are better at taking the necessary precautions in relation to pregnancy avoidance than in relation to STI avoidance. Part of the explanation for this time trend may be that the fear of HIV infection has declined in recent years compared with previous investigations. This argument is supported by the fact
that approximately 40% of the women in our study used only non-condom contraception at their last sexual encounter. Finally, in comparison with earlier findings (16), a higher proportion of women and men in the present study failed to use any contraceptive methods at their last sexual encounter with a casual partner compared with a steady partner. Earlier findings suggest that non-condom use with a new partner is due to several factors such neglect, inconvenience, it spoils the romance, or the risk of an STI is considered to be low (15). Furthermore, it is likely that young people in general find it easier to suggest condom use with a steady partner than with a partner they just met, for example on a night out partying where the likelihood of alcohol intake is high and normal restraints may be relaxed. This will be discussed in further details in the next section on risk factors for unsafe sex. Either way, the findings are of great importance for future preventive interventions staged to improve the sexual health of the younger population.

Risk factors for unsafe sex (Aims 2-4)
As mentioned above and described in Papers II-IV, we identified numerous risk factors for unsafe sex in the young Danish population. One of these risk factors was “having sex with a casual partner at the last sexual encounter” (Papers II and IV). This factor has also been identified in previous studies (16, 87), and it may be closely connected to where a person meets the sexual partner. For example, in Paper I, we found that meeting a sexual partner at a festival, on a vacation or during a night out partying was associated with sexual risk behaviour. The findings are in correspondence with previous studies where meeting a sexual partner on a holiday trip has been found to increase the likelihood of sexual risk behaviour (88). Due to the low possibility of ever meeting the person again, meeting places like these are likely to affect normal restraints in a relaxing way (47). In addition, the likelihood of having unprotected sex with a casual partner may also be influenced by alcohol (35). As
described in Chapter 1, page 20, alcohol is a well-known predictor for unsafe sex (25, 34, 35, 89), and alcohol consumption has been associated with non-use of contraception both in relation to first coitus and last sexual encounter (19). These previous findings are in correspondence with the findings in Paper II, where approximately half of the women and men with a verified sexual risk behaviour had been drinking prior to their last sexual encounter. Furthermore, in Paper III, we found a strong association between a high-risk of binge drinking and sexual risk behaviour. This association applied when sexual risk behaviour was assessed based on the number of sexual partners within the past year; and they were augmented when risk behaviour was defined based on safe and unsafe sex (according to condom use), regardless of the number of sexual partners. These findings are similar to findings reported in Chapter 1, page 20, where frequent drinking until a state of drunkenness many-fold increased the likelihood of having unprotected sexual encounters among adolescents (34). The strong association between alcohol and sexual risk behaviour stresses the need for including this parameter in future preventive interventions aiming at improving the sexual health of youth. Since Danish youth and the youth in Britain have both been found to drink more alcohol than the youth in any of the other 24 OECD countries (90), it may be of even greater importance to include this parameter when targeting youth in Denmark. In Paper III, we also identified a strong association between high-risk smoking behaviour and sexual risk behaviour. The role of smoking as a risk factor associated with unsafe sex in the younger population has also been identified in previous findings (31, 32, 36). Furthermore, in Paper III, we found a non-significant trend between high-risk dietary habits and risk behaviour. This trend corresponds with the finding published in a French study where obesity was found to be associated with multiple partners and non-condom use (68). In conjunction with the findings of other studies, our findings may indicate that the younger population exhibits general behavioural traits that entail risk behaviours related to sex, alcohol,
smoking and diet. Future preventive health interventions aiming to reduce sexual risk behaviour in the younger population may therefore benefit from including both smoking, binge drinking and dietary habits.

In Paper IV, we identified an association between having had multiple sexual partners within the past 12 months and sexual risk behaviour. This association has also been identified in previous studies (16, 37-39, 41), but there is a large diversity across countries as how to categorise multiple partners and whether to examine the past 12 months or number of lifetime partners. As recommended by the ECDC (14), future research may therefore benefit from international consensus on how to assess multiple partners. Such agreement will also enable comparison across countries, ease assessment of time trends and improve the targeting of preventive interventions among youth. In Paper IV, we also found a strong association between overlapping sexual partners and the risk of having a urogenital C. trachomatis infection. This finding corresponds with the findings of both a mathematical modelling study (45) and recent empirical studies (43, 44). However, in contradistinction to other studies, we found no association between sexual risk behaviour and having short gap lengths between serial, monogamous partnerships (42-44). These findings are important to future preventive interventions where there must be a stronger focus on the risk in relation to overlap, and findings may further help to refine mathematical modelling studies on STI risks.

In Paper II, we showed that similar to the existing literature, self-esteem was not associated with sexual risk behaviour in the younger Danish population. In contrast, we showed that intrapersonal factors such as condom self-efficacy in relation to both a steady and casual partner may be considered as a risk factor for unsafe sex, especially among women with a CTI. These findings are in line with findings from the study mentioned in Chapter 1, page 19, where personal
control and high self-efficacy in sexual negotiation was found to be significantly associated with safer sex behaviour among adolescents (27). However, we found no association among men, and findings among women who bought ECs were somewhat paradoxical. Part of this paradoxical effect may be due to behavioural aspects as discussed in Paper II, and part of it may be a methodological problem due to measurement properties in the scale. Therefore, in Chapter 9, page 164, potential floor and ceiling effects of the scale were examined, and findings revealed a floor effect in relation to a casual partner among all groups except women with verified sexual risk behaviour. The findings in regard to condom self-efficacy should therefore be interpreted with great caution; and future research would benefit from a thorough analysis in regards to the validity of the scale before using it within the young Danish population.

Overall, our findings have stressed and confirmed the existence of problems that should be taken into account when planning and prioritising elements in future interventions. In addition, the standardised and internationally acclaimed dataset of the present thesis may be of value in follow-up on international time trends and effects of interventions. They may also be an important tool for refining mathematical modelling studies in relation to both pregnancy and STI avoidance and, hence, improve future preventive strategies and predict the effect of these interventions.
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CHAPTER 11

CONCLUSION
Parts of the overall conclusion have been presented earlier in Chapters 4 and 10 which presented and discussed the study results. In this chapter, we describe the overall conclusions referring to the aims of this thesis as stated in Chapter 2, page 27.

Sexual behaviour in the general young population (Aim 1)
The analysis of sexual behaviour in Denmark showed that a high proportion of Danish youth engaged in unsafe sex which leaves an open space for further risk-reducing preventive interventions in our society. This is based on the approximately 30% who failed to use a condom at first coitus and approximately 50% who failed to use a condom during their last sexual encounter, regardless of the type of partner (Paper I). In general, condoms were most commonly used at first coitus, whereas condom and non-condom contraception were used equally at the last sexual encounter with a steady partner. However, more young people failed to use any contraceptive methods at their last sexual encounter with a casual partner than with a steady partner. In addition, approximately one third of the study population had two or more sexual partners within the past year, which may raise the risk of STI transmission if condoms are not used.

Risk factors for unsafe sex (Aims 2-4)
The present thesis identified ten risk factors which influenced the sexual risk behaviour of young Danes. In relation to the second aim and as described on page 49, three types of decision-making factors were identified as important for young people’s engagement in sexual risk behaviour. These consisted of intrapersonal factors such as condom self-efficacy, interpersonal factors such as type of partner at last sexual encounter and situational factors such as meeting place and alcohol intake prior to the last sexual encounter. In addition and in relation to the third aim of the thesis, sexual risk behaviour was found to be strongly associated with high-risk smoking and binge drinking behaviour (page
Furthermore, even though our findings did not reveal a statistically significantly association between sexual risk behaviour and dietary habits or physical activity, the non-significant association for dietary habits pointed in the same direction as smoking and binge drinking. Finally, in relation to the fourth aim of this thesis (page 54), a strong association was found between overlapping partnerships and the risk of having a CTI, while no association was found in relation to short gaps between serial monogamous partnerships. Furthermore, having a CTI was associated with having multiple partners, casual partnerships and non-condom use at the first sexual encounter with a new partner.

In conclusion, this study provides evidence that intra-, interpersonal and situational decision making factors as well as risky sexual practice such as overlapping partnerships are associated with sexual risk behaviour. It also provides evidence that sexual risk behaviour is associated with lifestyle risk behaviour such as smoking, binge drinking and, partly, diet. All these factors should be taken into consideration, when planning and monitoring effects of preventive efforts and systematic interventions to reduce the risk of unsafe sex.
CHAPTER 12

PERSPECTIVES AND FUTURE RESULTS
The present thesis offers a detailed description of sexual behaviour among youth in Denmark, including granular results of the relation between risky sexual behaviour and risk factors in terms of inter- and intrapersonal factors, situational and lifestyle factors and sexual networks. These findings enable us to understand and quantify processes leading to unsafe sex in the general young population, and they call for detailed and well-evaluated interventions to reduce morbidity due to unsafe sex. The results of this thesis together with those of the previous Danish study (Ung2006) (15) should be used as a baseline platform for monitoring changes in sexual behaviour over time (secondary surveillance). This baseline platform can furthermore be a useful tool for measuring and monitoring the effect of future interventions as they are implemented in society.

Furthermore, our results can be used as recommended by the ECDC for valid comparison of sexual behaviour at an international level. In addition, international comparison may also be used as a national benchmark for improvement.

As stated above, the findings from this thesis can be used to refine mathematical simulation models of the transmission of STIs and the estimated effect of interventions where sexual risk behaviour is of importance, e.g. the effect of HPV vaccination. These models are well-suited to inform health care planners’ discussions of the cost-effectiveness of societal preventive efforts.

In relation to preventive strategies, a recent national report on health in Denmark showed a remarkable decrease in alcohol intake, especially among men aged 16-24 (91). These findings likely reflect the effect of a solid strategy to prevent alcohol consumption, and continuing efforts in this direction may also affect the sexual behaviour of youth due to the strong association between alcohol and sexual risk behaviour. Based on the findings of a high-risk exposure
among young people as shown in Papers I and III of this thesis, further well-planned interventions targeting both general lifestyle and sexual risk behaviour are recommendable and should be followed up by appropriate evaluations.

Several new areas of research should be addressed in the future to further explore the sexual health among youth in Denmark and to consolidate our findings. This research should include interview studies which will improve our understanding of the reasons underlying different attitudes and which will facilitate future intervention studies. We also need finely granulated studies targeting special risk groups. For example, in the present study, we examined the sexual health among a wide age range of young Danes. However, sexual behaviour and associated risk factors are likely to differ within these age groups. Future research may therefore benefit from stratified analyses of sexual behaviour among the younger compared with the older age groups, and thereby enable the likelihood of more improved preventive interventions. Also, the findings in Paper I, page 79, indicated that the questionnaire was completed by a rather low percentage of the invited study population with a non-Danish ethnic origin. Thus, further analyses are needed before implementing preventive interventions aiming to improve the sexual health among this group.

There is also a need for future research to focus on achieving a higher response rate to reduce the risk of possible selection bias and improve the generalisability of findings among the general young population. One potentially productive avenue could be to adapt the methods used in the Natsal studies in the UK (92), where personal interviews are conducted shortly after the questionnaire has been sent. This method, however, is both time-consuming and costly. Other future research should address the difficulties of sampling women who had an abortion – an area where our study failed. One way to solve this issue would be to sample in a different location, e.g. the Danish national consultative abortion
councils (Abortrådene). This method, however, requires careful consideration regarding the risk of selection bias due to the possibility of a lower social gradient among these women compared with those that may be recruited from the gynaecological departments. Other methods for including the women should therefore be considered and tested. A possibility may be to employ dedicated research nurses in the sampling procedure, as the permanent staff had obvious difficulties in implementing a research project in their daily activities.

With respect to scale development and refinement of research methods, there is a need for additional validation of the Condom Self-Efficacy Scale as mentioned on page 164. The validation process should be followed by new research to identify the importance of condom self-efficacy in relation to the sexual health of the younger Danish population.
CHAPTER 13

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CHAPTER 14

ENGLISH SUMMARY
Introduction
Despite numerous attempts to improve the sexual health of youth in the Western countries, sexually transmitted infections (STI) and unwanted pregnancies remain a significant public health problem in the younger population. New and improved preventive initiatives are therefore necessary. For this purpose, detailed knowledge about the target population’s sexual behaviour is essential and in conformity with recommendations from the European Centre for Disease Prevention and Control (ECDC). In Denmark, there is no tradition for collecting systematic sexual behaviour data in the general young population. It is therefore a challenge to monitor sexual behaviour in Danish youth and to gain knowledge about factors that may influence their sexual risk behaviour. The present thesis therefore offers important, knowledge of sexual behaviour and associated risk factors in the general young population.

Aims
The aim of this thesis was to examine the sexual behaviour of the general young population aged 15-29 years in Denmark, and to identify potential risk factors for unsafe sex.

Methods
The study was conducted as a population-based cross-sectional study among young Danes aged 15-29 years. The study population consisted of a random sample of the general young population and two groups with verified sexual risk behaviour: 1) a group of women who bought emergency contraceptives, 2) a group of women and men with a verified C. trachomatis infection. Individuals were sampled from the Danish Civil Registration System, four selected pharmacies in the Central Denmark Region and the Department of Clinical Microbiology, Aarhus University Hospital. Data were obtained via a web-based questionnaire, and survey data were combined with public register data in
Paper I. A total of 20,000 individuals from the general young population were invited and questionnaires were completed by 4,072 (20.4%) respondents. Of the 1716 invited women who bought emergency contraceptives and the 1445 invited women and men with a verified *C. trachomatis* infection, a total of 233 (13.6%) and 217 (15.0%), respectively, completed the questionnaire.

Results

Paper I showed that the median age at first coitus among Danish youth is 16 years, and approximately one third had had two or more sexual partners within the past year. Condoms were most commonly used at first coitus, whereas condom and non-condom contraception were used equally at the last sexual encounter with a steady partner. However, at the last sexual encounter, only half of the young population used a condom and a higher proportion of both women and men failed to use any contraceptives with a casual partner (14.8% and 20.9%, respectively) compared with a steady partner (8.4% and 10.0%, respectively). These findings suggest that a high proportion of Danish youth engage in unsafe sex; hence, they are at risk of unintended pregnancies and STIs.

Papers II-IV showed that sexual risk behaviour in Danish youth is associated with multiple partners within the past 12 months, having sex with a casual partner at the last sexual encounter, and meeting a sexual partner at a festival, on a vacation or a night out partying. In addition, sexual risk behaviour is strongly associated with high-risk smoking and binge drinking behaviour and partly with high-risk dietary habits. This association applied when sexual risk behaviour was assessed based on the number of sexual partners within the past year; and they were augmented when risk behaviour was defined based on safe and unsafe sex (according to condom use), regardless of the number of sexual partners. Furthermore, sexual risk behaviour in Danish youth is strongly associated with overlapping sexual partners, whereas no association was found
in relation to short gap lengths between serial monogamous partners. Finally, non-confidence in their ability to use a condom (condom self-efficacy) with both a steady and a casual partner also seemed to be associated with sexual risk behaviour, but these findings should be interpreted with caution due to floor effect of the scale.

Conclusions and perspectives
In conclusion, this thesis offers a detailed description of sexual behaviour among youth in Denmark, including granular results of the relation between risky sexual behaviour and risk factors in terms of inter- and intrapersonal factors, situational and lifestyle factors and sexual networks. These findings enable us to understand and quantify processes leading to unsafe sex in the general young population, and they call for detailed and well-evaluated interventions to improve the sexual and reproductive health of youth. Furthermore, the results from this thesis present data that can serve as a baseline when changes in sexual behaviour are monitored over time including measurement of the effect of future interventions as they are being implemented in society. The data improve the possibility of interpreting STI surveillance (secondary surveillance) in Denmark and allow for comparisons of sexual behaviours on an international level. Finally, the findings of this thesis can also be used in mathematical simulation models to estimate the effect of interventions where sexual risk behaviour is of importance.
DANSK RESUME
Introduktion

Formål
Formålet med denne afhandling var at undersøge den seksuelle adfærd blandt unge danskere i alderen 15-29 år samt at identificere mulige risikofaktorer for usikker sex.

Metode
Et populationsbaseret tværsnitsstudie blev gennemført blandt unge danskere i alderen 15-29 år i perioden marts til november 2012. Studiepopulationen bestod af henholdvis en tilfældigt udvalgt gruppe af unge danskere, unge kvinder der havde købt fortrydelsespiller samt unge kvinder og mænd, der fik konstateret en Klamydia infektion. Studiepopulationen blev inkluderet via CPR registret, fire udvalgte apoteker i Region Midtjylland samt fra Klinisk Mikrobiologisk Afdeling, Aarhus Universitets Hospital. Data blev indhentet via et web-baseret spørgeskema og sammenkoblet med registerdata i Artikel I. I alt blev 20.000 personer fra den generelle population inviteret, hvoraf 4072 (20,4%) besvarede
spørgeskemaet. Blandt de 1716 inviterede kvinder, der havde købt fortrydelsespiller, og de 1445 inviterede kvinder og mænd, der havde fået konstateret Klamydia–infektion, besvarede henholdsvis 233 (13,6%) og 217 (15,0%) spørgeskemaet.

Resultater
Artikel I viser, at medianalderen for den seksuelle debut er 16 år. Cirka to tredjedele af de unge har haft to eller flere seksuelle partnere inden for det seneste år. Kondom er mest anvendt som præventionsform ved den seksuelle debut, hvorimod henholdsvis kondom eller anden form for prævention anvendes i takt med, at de unge får mere erfaring. Ved seneste seksuelle samvær brugte kun omkring halvdelen af de unge et kondom, og 14,8% af kvinderne samt 20,9% af mændene brugte ingen form for prævention, hvis deres seneste seksuelle samvær var med en tilfældig partner sammenlignet med henholdsvis 8,4% af kvinderne og 10,0% af mændene, hvis forholdet var med en fast partner. Det tyder derfor på, at en høj andel af de unge i Danmark har usikker sex og dermed er i risiko for at blive smittet med en SOI eller blive uønsket gravide.

Artiklerne II-IV viser, at seksuel risikoadfærd blandt unge danskere både er associeret med flere partnere inden for det seneste år, sex med tilfældige partnere ved seneste samleje, samt at have mødt den seksuelle partner på en festival, en ferie eller en bytur. Seksuel risikoadfærd er desuden stærkt associeret med højrisikoadfærd i forhold til rygning, alkohol (druk) og til dels med dårlige kostvaner. Denne association gælder, når seksuel risikoadfærd klassificeres baseret på antal partnere det seneste år, og forstærkes yderligere når risikoadfærd baseres på sikker/usikker sex i forhold til kondombrug uden at tage højde for antal partnere. Endvidere er seksuel risikoadfærd stærkt associeret med overlappende seksuelle partnere i modsætning til korte ophold mellem serielle monogame forhold, hvor studiet ikke kunne påvise en
signifikant association. Endelig viser resultaterne, at mangel på egen tiltro til at man vil bruge et kondom (Condom Self-efficacy) er associeret med seksuel risikoadfærd både i forhold til en fast og en tilfældig partner. Fundene er dog påvirket af en tendens til floor effekt i skalaen og skal derfor tolkes med lidt forbehold.

Konklusion og perspektivering
Denne afhandling bidrager med en grundig beskrivelse af unge danskeres seksuelle adfærd, og der er en høj detaljeringsgrad af sammenhængen mellem seksuel adfærd og risikofaktorer i forhold til både intra,- og interpersonelle faktorer, situations- og livsstilsfaktorer samt sociale netværk. Disse fund bidrager til en bedre forståelse af mulige forklaringer på, hvorfor unge i Danmark engagerer sig i usikker sex, hvilket muliggør en mere veldokumenteret og fokuseret forebyggende indsats, som på populationsniveau kan forbedre unges seksuelle og reproduktive sundhed. I tillæg hertil bidrager resultaterne med data, der kan anvendes som baseline for monitorering af seksuelle adfærdsændringer over tid samt effektmålinger af implementerede forebyggende interventioner. De muliggør ligeledes overvågning af SOI i Danmark samt internationale sammenligninger af seksuel adfærd. Endelig kan de anvendes i matematiske simulationsmodeller med henblik på at estimere effekten af interventioner, hvor seksuel risikoadfærd har betydning.
APPENDIX I

THE SEXUAL BEHAVIOUR QUESTIONNAIRE
Velkommen til spørgeskemaet om unges SUNDHED & SEX

Vi er meget glade for, at du har lyst til at besvare dette spørgskema.

Din besvarelse er helt anonym, og vil sammen med besvarelsen fra andre unge give os en meget vigtig viden for at kunne målrette og øge kvaliteten af de forebyggende indsatser, der har fokus på at bedre den seksuelle sundhed blandt unge i Danmark.

Spørgeskemaet, der henvender sig til unge i alderen 15-29 år, tager ca. 25 minutter at besvare. Undervejs vil du blive bedt om at svare på spørgsmål, der handler om sex, selvværd/trivsel, livsstil og baggrundsoplysninger.

Hvis du ønsker at holde pause undervejs, vil dine svar automatisk blive gemt. Når du vender tilbage til spørgeskemaet, vil du dog blive nødsaget til selv at bladre frem til det sted, hvor du var kommet til. Husk ALTID at bruge knapperne forrige og næste i stedet for pilene.

Som afslutning på din besvarelse, får du mulighed for at vide, hvor stor DIN risiko er for at blive smittet med Klamydia.

På forhånd tusind tak for hjælpen!

Med venlig hilsen

Marianne J. Jørgensen
Sypepl., MPH, Ph.d.stud.
Projektkoordinator
Baggrundsoplysninger

Først nogle spørgsmål om dig selv

1. Er du... □ Mand □ Kvinde

2. Hvor gammel er du?
   (Sæt kryds ved din alder)

   15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

3. Går du i skole, er du under uddannelse eller laver du noget andet?
   ○ jeg går i skole/er under uddannelse → Gå til spørgsmål 4
   ○ Jeg laver noget andet → Gå til spørgsmål 5, side 212

4. Hvilken skole/uddannelse går du på?
   ○ Grundskole(9.-10. klasse) → Gå til spørgsmål 4.a
   ○ Gymnasiel uddannelse(f.eks. alment gymnasium, STX, HF, HHX eller HTX)
     → Gå til spørgsmål 4.b
   ○ Erhvervsuddannelse (f.eks. teknisk skole, HG, i lære, landbrugsuddannelse osv.)
     → Gå til spørgsmål 4.c, side 212
   ○ Social og sundhedsskolerne?
   ○ Videregående uddannelse (kort, mellemlang eller lang videregående uddannelse)
     → Gå til spørgsmål 4.d, side 212
   ○ Andet (f.eks. højskole eller produktionsskole) – skriv hvilken__________

   a. Hvilken type grundskole går du i?
      ○ Almindelig folkeskole
      ○ Privat skole
      ○ Efterskole
      ○ Andet – skriv hvilken__________

   b. Hvilken gymnasiel uddannelse går du på?
      ○ Alment gymnasium (Stx)
      ○ HF
      ○ Handelsgymnasium (HH/HHX)
      ○ Teknisk gymnasium (HTX)
      ○ Andet – skriv hvilken__________
c. **Hvilken erhvervsuddannelse går du på?**
   - Grundforløb på teknisk skole (f.eks. teknologi og kommunikation eller fra jord til bord)
   - Grundforløb på handelsskole (f.eks. HG)
   - Teknisk skole
   - I lære (f.eks. elektriker, murer osv.) eller i skolepraktik på Teknisk skole
   - I lære på handelsskole (f.eks. salgsassistent eller dekoratør) eller i skolepraktik på
     Handelsskole
   - Landbrugsuddannelse
   - Andet – skriv hvilken

d. **Hvilken type videregående uddannelse går du på?**
   - Kort videregående uddannelse, under 3 år (f.eks. laborant, markedsføringsøkonom,  
     installatør eller produktionsteknolog)
   - Mellemlæng videregående uddannelse, 3-4 år (f.eks. sygeplejerske, diplomingeniør,  
     folkskolelærer, socialrådgiver eller pædagog)
   - Lang videregående uddannelse, over 4 år (f.eks. læge, gymnasielærer, civilingeniør  
     eller biolog)

5. **Hvad lever du for tiden?**
   - Erhvervsarbejde
   - Arbejdsløs/under aktivering
   - Langtidsugnemeldt
   - Soldat, værnepligtig
   - Under revalidering eller lignende
   - Går på højskole
   - Andet – skriv hvilken
Spørgsmål om sex

Følgende spørgsmål handler om seksuel adfærd. Vi ved, at nogen at nogle af spørgsmålene kan være svære eller meget personlige at svare på. Derfor skal du vide, at alle svar **bliver behandlet fortroligt** og at ingen kan finde frem til, hvem der har svaret (anonymisering). Du kan derfor svare helt ærligt uden risiko for, at nogen kan spore din besvarelse til dig.

Ved nogle af spørgsmålene bliver du bedt om at angive et bestemt antal (f.eks. antal partnere) eller en bestemt dato (f.eks. dato for, hvornår du havde sex). Hvis det er svært at huske helt præcist, så kom med **dit bedste bud**.

**Definition på sex:**

"Sex kan være mange ting, men i denne sammenhæng menes vaginale (skede) eller analt (endetarm) samleje. Mundseks og/eller kæleri tæller ikke med. Der er tale om sex, uanset om manden eller kvinden har haft orgasme/udløsning."

6. **Har du haft din seksuelle debut – haft sex for første gang?**
   - Ja
   - Nej → Gå til spørgsmål 69, side 232

7. **Opfatter du dig selv som...**
   - Heterosексuel (har kun lyst til sex med personer af det modsatte køn)
   - Homoseksuel (har kun lyst til sex med personer af samme køn som mig selv)
   - Bisexuel (har lyst til sex med personer af begge køn)
   - Ved ikke
   - Andet

8. **Har du nogensinde haft sex med en af samme køn som dig?**
   - Ja
   - Nej

9. **Tænk på de seneste 12 måneder: Hvor mange forskellige personer har du haft sex med?**
   - Ingen
   - Antal partnere

10. **Tænk på de seneste 3 måneder: Hvor mange forskellige personer har du haft sex med?**
    - Ingen
    - Antal partnere
11. Tænk på den seneste måned: Hvor mange forskellige personer har du haft sex med?
   ○ Ingen
   □ Antal partnere

12. Har du i løbet af det sidste år haft flere seksuelle partnere sideløbende med hinanden/indenfor samme tidsperiode?
   ○ Ja
   ○ Nej

13. Hvor mange seksuelle partner har du haft siden din seksuelle debut?
    Svar mulighed: "1" – "50 eller flere"

14. Hvor mange gange har du haft sex de seneste måned?
    Skriv så nøjagtigt et antal som muligt □□□ gange

15. Er du i et fast forhold?
   ○ Ja
   □ Nej → Gå til spørgsmål 16

15a. Hvor lang tid har I været kærester?
   ○ Mindre end 1 måned
   ○ 1-3 måneder
   ○ 4-6 måneder
   ○ 7 måneder – 1 år
   ○ Mellem 1-2 år
   ○ Mellem 2-5 år
   ○ Mere end 5 år

Tænk på den første gang du havde sex
Ved nogle af spørgsmålene bliver du bedt om at angive et bestemt antal (f.eks. anta partnere) eller en bestemt dato (f.eks. dato for, hvornår du havde sex). Hvis det er svær at huske helt præcist, så kom med dit bedste bud.

16. Hvor gammel var du første gang du havde sex?
    □□□ år

17. Hvor gammel var den partner, du var sammen med, første gang du havde sex?
    □□□ år
18. Hvor mødte du den person, du første gang havde sex med?
   ○ På et uddannelsessted
   ○ Ved en fritidsaktivitet
   ○ Gennem venner
   ○ Til fest og/eller i byen
   ○ På festival
   ○ Gennem familien
   ○ Via internettet:
     ○ Datingsider
     ○ Facebook, twitter eller lignende
     ○ Chatrooms (f.eks. MSN, Arto eller lignende)
     ○ Andet___________
   ○ På dit arbejde
   ○ På ferie/rejse i udlandet
   ○ Andet___________

19. Første gang du havde sex: Vil du sige....
   ○ At du havde lyst til at have sex?
   ○ At du skulle overtales til at have sex?
   ○ At du blev presset til at have sex?

20. Var der alkohol indblandet første gang, du havde sex?
   ○ Ja, jeg havde drukket alkohol
   ○ Ja, min partner havde drukket alkohol
   ○ Ja, vi havde begge drukket alkohol
   ○ Nej, der var ikke alkohol indblandet

21. Havde du eller din partner røget hash eller indtaget andre euforiserende stoffer første gang, du havde sex?
   ○ Ja, jeg havde røget hash eller indtaget andre euforiserende stoffer
   ○ Ja, min partner havde røget hash eller indtaget andre euforiserende stoffer
   ○ Ja, vi havde begge røget hash eller indtaget andre euforiserende stoffer
   ○ Nej, hverken min partner eller jeg havde ikke røget hash eller indtaget andre euforiserende stoffer

22. Brugte I kondom første gang, du havde sex?
   ○ Ja → Gå til spørgsmål 23, side 216
   ○ Nej
   ○ Husker ikke → Gå til spørgsmål 23, side 216
22a. **Forklar, hvorfor du og din partner ikke brugte kondom første gang, I havde sex?**
(Sæt ét eller flere kryds)
- Jeg tænkte ikke på at bruge kondom
- Jeg havde ikke noget kondom
- Jeg vidste ikke, hvor jeg skulle få et kondom fra
- Jeg synes, det er for flovt/pinligt at købe kondomer
- Jeg vidste ikke, hvordan man bruger et kondom
- Min partner ville ikke bruge et kondom
- Det føles ikke rart at bruge kondom
- Kondomer ødelægger stemningen
- Manglende rejsning ved brug af kondom
- Kondomer går for let i stykker
- Jeg har ikke sex med andre
- Jeg troede ikke, at jeg/hun kunne blive gravid
- Jeg troede ikke, jeg kunne få en kønsygdom (seksuel overført infektion)
- Jeg/min partner brugte p-piller
- Jeg/min partner brugte andre former for prævention
- Andet__________________

23. **Brugte du eller din partner andre former for prævention, første gang I havde sex?**
- Ja
- Nej → Gå til spørgsmål 24, side 217
- Ved ikke → Gå til spørgsmål 24, side 217

23a. **Hvilken slags prævention brugte du eller din partner?**
(Sæt et eller flere kryds)

<table>
<thead>
<tr>
<th>P-piller</th>
<th>Minpiller</th>
<th>Fortrydelsespiller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Den metode, hvor manden/drenge trækker sig ud, inden han kommer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Den metode, hvor du undgår sex på frugtbare dage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-ring (f.eks. NuvarRing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andet__________________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tænk på den seneste person, du har haft sex med i det forgangne år.

Følgende spørgsmål omhandler forholdet til den seneste person, du har haft sex med. Det kan være en fast partner/kærest, eller det kan være en person, du ikke har haft et fast forhold til. Du bedes svare, selvom denne person er den samme, som ved din seksuelle debut.

Ved nogle af spørgsmålene bliver du bedt om at angive en bestemt dato. Hvis det er svært at huske helt præcist, så kom med dit bedste bud.

24. Vil du sige at du har/ har haft et fast forhold til denne person?
   ○ Ja
   ○ Nej
   ○ Ved ikke

25. Hvor mødte du denne person?
   ○ På et uddannelsessted
   ○ Ved en fritidsaktivitet
   ○ Gennem venner
   ○ Til fest og/eller i byen
   ○ På festival
   ○ Gennem familien
   ○ Via internettet:
     ○ Datingsider
     ○ Facebook, twitter eller lignende
     ○ Chatrooms (f.eks. MSN, Arto eller lignende)

   ○ Andet

26. Hvornår havde du første gang sex med denne person?
   Skriv så nøjagtigt som muligt. Dag Måned År

27. Var der alkohol indblandet, første gang I havde sex?
   ○ Ja, jeg var påvirket
   ○ Ja, min partner var påvirket
   ○ Ja, vi var begge påvirkede
   ○ Nej, der var ikke alkohol indblandet
28. Havde du eller din partner røget hash eller indtaget andre euforiserende stoffer første gang, I havde sex?
   ○ Ja, jeg havde røget hash eller indtaget andre euforiserende stoffer
   ○ Ja, min partner havde røget hash eller indtaget andre euforiserende stoffer
   ○ Ja, vi havde begge røget hash eller indtaget andre euforiserende stoffer
   ○ Nej, hverken min partner eller jeg havde ikke røget hash eller indtaget andre euforiserende stoffer

29. Brugte I kondom ved denne lejlighed?
   ○ Ja → Gå til spørgsmål 30
   ○ Nej
   ○ Husker ikke → Gå til spørgsmål 30

29a. Forklar, hvorfor du og din partner ikke brugte kondom første gang, I havde sex?
(Sæt et eller flere krydser)
   ○ Jeg tænkte ikke på at bruge kondom
   ○ Jeg havde ikke noget kondom
   ○ Jeg vidste ikke, hvor jeg skulle få et kondom fra
   ○ Jeg synes, det er for fladt/pinligt at købe kondomer
   ○ Jeg vidste ikke, hvordan man bruger et kondom
   ○ Min partner ville ikke bruge et kondom
   ○ Det føles ikke rart at bruge kondom
   ○ Kondomer ødelægger stemningen
   ○ Manglende rejsning ved brug af kondom
   ○ Kondomer går for let I stykker
   ○ Jeg har ikke sex med andre
   ○ Jeg troede ikke, at jeg/hun kunne blive gravid
   ○ Jeg troede ikke, jeg kunne få en kønsygdom (seksuel overført infektion)
   ○ Jeg/min partner brugte p-piller
   ○ Jeg/min partner brugte andre former for prævention
   ○ Andet__________________

30. Brugte du eller din partner andre former for prævention, første gang I havde sex?
   ○ Ja
   ○ Nej → Gå til spørgsmål 31, side 219
   ○ Ved ikke → Gå til spørgsmål 31, side 219
30a. **Hvilken slags prævention brugte du eller din partner?**
(Sæt ét eller flere krydser)

<table>
<thead>
<tr>
<th>P-piller</th>
<th>Minipiller</th>
<th>Fortrydelsespiller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Den metode, hvor manden/drengen trækker sig ud, inden han kommer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Den metode, hvor du undgår sex på frugtbare dage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-ring (f.eks. NovaRing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andet________________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

31. **Har du haft sex med denne person mere end en gang?**
- Ja
- Nej → Hvis pige: Gå til spørgsmål 36, side 221
  → Hvis dreng: Gå til spørgsmål 38, side 221

32. **Hvornår har du sidst haft sex med denne person?**
Skriv så nøjagtigt som muligt. Dag Måned År

33. **Brugte I kondom ved denne lejlighed?**
- Ja → Gå til spørgsmål 34, side 220
- Nej
- Husker ikke → Gå til spørgsmål 34, side 220

33a. **Forklar, hvorfor du og din partner ikke brugte kondom sidste gang, I havde sex?**
(Sæt ét eller flere krydser)
- Jeg tænkte ikke på at bruge kondom
- Jeg havde ikke noget kondom
- Jeg vidste ikke, hvor jeg skulle få et kondom fra
- Jeg synes, det er for flovt-pinligt at købe kondomer
- Jeg vidste ikke, hvordan man bruger et kondom
- Min partner ville ikke bruge et kondom
- Det føles ikke rart at bruge kondom
- Kondomer ødelægger stemningen
- Manglende rejsning ved brug af kondom
- Kondomer går for let i stykker
- Jeg har ikke sex med andre
- Jeg troede ikke, at jeg/hun kunne blive gravid
- Jeg troede ikke, jeg kunne få en kontsygdom (seksuel overført infektion)
- Jeg/min partner brugte p-pillar
- Jeg/min partner brugte andre former for prævention
- Andet________________
34. **Brugte du eller din partner andre former for prævention, sidste gang i havde sex?**
   - Ja
   - Nej → Gå til spørgsmål 35
   - Ved ikke → Gå til spørgsmål 35

34.a **Hvilken slags prævention brugte du eller din partner?**
(Sæt ét eller flere krydser)

- P-piller
- Minipiller
- Fortrydelsespiller
- Den metode, hvor manden/drengen trækker sig ud, inden han kommer
- Den metode, hvor du undgår sex på frugtbare dage
- P-ring (f.eks. NuvaRing)
- Spiral
- Pessar
- Andet ________________

35. **Forventer du at have sex med den pågældende person igen?**
   - Ja
   - Nej
   - Ved ikke
**Til pigerne: Graviditet**

36. Har du nogeninde været gravid?
   - ○ Antal gange (dropdown 1-10)
   - ○ Nej → Gå til spørgsmål 38

37. Har du nogeninde fået foretaget en provokeret abort?
   - ○ Ja, en gang
   - ○ Ja, flere gange
   - ○ Nej

**Kønsygdomme (seksuel overførte infektioner)**

38. Vil du lade dig undersøge, hvis du tror, du er smittet med en kønsygdom (seksuel overført infektion)?
   - ○ Ja
   - ○ Nej
   - ○ Ved ikke

39. Er du nogeninde blevet testet for en kønsygdom (seksuel overført infektion)?
   - Gælder også rutinetjek hos lægen
   - ○ Ja
   - ○ Nej → Gå til spørgsmål 41, side 223
   - ○ Ved ikke → Gå til spørgsmål 41, side 223

40. Hvilken kønsygdom (seksuel overført infektion) er du blevet testet for?
   (Sæt ét eller flere krydser)

<table>
<thead>
<tr>
<th>Klamydia</th>
<th>Gonorré</th>
<th>Syfilis</th>
<th>Kondylomer (kanssorter)</th>
<th>Herpes på karnorganerne</th>
<th>HIV</th>
<th>Anden seksuel overført sygdom</th>
</tr>
</thead>
</table>

Hvis anden: Hvilken

40.a Har en test nogeninde vist, at du var smittet med Klamydia?
   - ○ Ja
   - ○ Nej

40.b Har en test nogeninde vist, at du var smittet med Gonorré?
   - ○ Ja
   - ○ Nej
40.c Har en test nogensinde vist, at du var smittet med Syfilis?
   ○ Ja
   ○ Nej

40.d Har en test nogensinde vist, at du var smittet med Kondylomer (kønsvorter)?
   ○ Ja
   ○ Nej

40.e Har en test nogensinde vist, at du var smittet med Herpes på kønsorganerne?
   ○ Ja
   ○ Nej

40.f Har en test nogensinde vist, at du var smittet med HIV?
   ○ Ja
   ○ Nej

40.g Har en test nogensinde vist, at du var smittet med en anden kønssygdom (seksuel overført infektion)?
   ○ Ja....hvilken?
   ○ Nej
Spørgsmål om tidligere seksuelle partnere

Du har nu svaret på halvdelen af de spørgsmål, der omhandler sex.

I det følgende bliver du bedt om at svare på en række spørgsmål omhandlende den næstsidste og tredie sidste person, du har haft sex med i det forgangne år. Det tager ca. 8 minutter at besvare disse spørgsmål.

Tænk på de seneste personer, du har haft sex med i det forgangne år

Følgende spørgsmål omhandler den næstsidste person, du har haft sex med. Det kan være en fast partner/kæreste, eller det kan være en person, du ikke har haft et fast forhold til.

Ved nogle af spørgsmålene bliver du bedt om at angive en bestemt dato. Hvis det er svært at huske helt præcist, så kom med dit bedste bud.

41. Vil du sige, at du har eller har haft et fast forhold til denne person?
   ○ Ja
   ○ Nej
   ○ Ved ikke

42. Hvor mødte du denne person?
   ○ På et uddannelsessted
   ○ Ved en fritidsaktivitet
   ○ Gennem vennere
   ○ Til fest og/eller i byen
   ○ På festival
   ○ Gennem familien
   ○ Via internettet: ○ Datingsider
   ○ Facebook, twitter eller lignende
   ○ Chatrooms (f.eks. MSN, Arto eller lignende)
   ○ Andet___________
   ○ På dit arbejde
   ○ På ferle/rejse i udlænding
   ○ Andet___________

43. Hvornår havde du første gang sex med denne person?
   Skriv så nøjagtigt som muligt. Dag Måned År

44. Var der alkohol indblandet, første gang i havde sex?
   ○ Ja, jeg var påvirket
   ○ Ja, min partner var påvirket
   ○ Ja, vi var begge påvirkede
   ○ Nej, der var ikke alkohol indblandet
45. Havde du eller din partner røget hash eller indtaget andre euforiserende stoffer første gang, du havde sex?
   ○ Ja, jeg havde røget hash eller indtaget andre euforiserende stoffer
   ○ Ja, min partner havde røget hash eller indtaget andre euforiserende stoffer
   ○ Ja, vi havde begge røget hash eller indtaget andre euforiserende stoffer
   ○ Nej, hverken min partner eller jeg havde ikke røget hash eller indtaget andre euforiserende stoffer

46. Brugte I kondom ved denne lejlighed?
   ○ Ja → Gå til spørgsmål 47
   ○ Nej
   ○ Husker ikke → Gå til spørgsmål 47

46a. Forklar, hvorfor du og din partner ikke brugte kondom første gang, du havde sex?
    (Sæt et eller flere krydser)
   ○ Jeg tænkte ikke på at bruge kondom
   ○ Jeg havde ikke noget kondom
   ○ Jeg vidste ikke, hvor jeg skulle få et kondom fra
   ○ Jeg synes, det er for flovt/pinligt at købe kondomer
   ○ Jeg vidste ikke, hvordan man bruger et kondom
   ○ Min partner ville ikke bruge et kondom
   ○ Det føles ikke rart at bruge kondom
   ○ Kondomer ødelægger stemningen
   ○ Manglende rejsning ved brug af kondom
   ○ Kondomer går for let i stykker
   ○ Jeg har ikke sex med andre
   ○ Jeg troede ikke, at jeg/hun kunne blive gravid
   ○ Jeg troede ikke, jeg kunne få en kønsygdom (seksuel overført infektion)
   ○ Jeg/min partner brugte p-pills
   ○ Jeg/min partner brugte andre former for prævention
   ○ Andet

47. Brugte du eller din partner andre former for prævention, første gang du havde sex?
   ○ Ja
   ○ Nej → Gå til spørgsmål 48, side 225
   ○ Ved ikke → Gå til spørgsmål 48, side 225
47a. Hvilken slags prævention brugte du eller din partner?
(Sæt ét eller flere krydser)

- P-piller
- Minipiller
- Fortrydelspille
- Den metode, hvor manden/drengen trækker sig ud, inden han kommer
- Den metode, hvor du undgår sex på frugtbare dage
- P-ring (f.eks. NusaRing)
- Spiral
- Pessar
- Andet

48. Har du haft sex med denne person mere end en gang?
- Ja
- Nej → Gå til spørgsmål 53, side 226

49. Hvornår har du sidst haft sex med denne person?
Skriv så nøjagtigt som muligt. Dag Måned År

50. Brugte I kondom ved denne lejlighed?
- Ja → Gå til spørgsmål 51, side 226
- Nej
- Husker ikke → Gå til spørgsmål 51, side 226

50a. Forklar, hvorfor du og din partner ikke brugte kondom sidste gang, I havde sex?
(Sæt ét eller flere krydser)
- Jeg tænkte ikke på at bruge kondom
- Jeg havde ikke noget kondom
- Jeg vidste ikke, hvor jeg skulle få et kondom fra
- Jeg synes, det er for flovt/pinligt at købe kondomer
- Jeg vidste ikke, hvordan man bruger et kondom
- Min partner ville ikke bruge et kondom
- Det fælles ikke rart at bruge kondom
- Kondomer ødelægger stemningen
- Manglende rejsning ved brug af kondom
- Kondomer går for let i stykker
- Jeg har ikke sex med andre
- Jeg troede ikke, at jeg/hun kunne blive gravid
- Jeg troede ikke, jeg kunne få en kønssygdom (seksuel overført infektion)
- Jeg/min partner brugte p-piller
- Jeg/min partner brugte andre former for prævention
- Andet
51. Brugte du eller din partner andre former for prævention, sidste gang I havde sex?
   ○ Ja
   ○ Nej → Gå til spørgsmål 52
   ○ Ved ikke → Gå til spørgsmål 52

51a. Hvilken slags prævention brugte du eller din partner?
   (Set et eller flere krydsere)
   □ P-piller
   □ Minipiller
   □ Fertilitetsskille
   □ Den "sikre" metode, hvor manden trækker sig ud, inden han kommer
   □ "Den naturlige måde", hvor du undgår sex på frugtbarde dage
   □ K-ring (f.eks. NuvaRing)
   □ Spirals
   □ Pessar
   □ Andet __________________

52. Forventer du at have sex med den pågældende person igen?
   ○ Ja
   ○ Nej
   ○ Ved ikke

Følgende spørgsmål omhandler den 

53. Vil du sige, at du har eller har haft et fast forhold til denne person?
   ○ Ja
   ○ Nej
   ○ Ved ikke

54. Hvor mødte du denne person?
   ○ På et uddannelsessted
   ○ Ved en fritidsaktivitet
   ○ Gennem venner
   ○ Til fest og/eller i byen
   ○ På festival
   ○ Gennem familien
   ○ Via internettet:
      ○ Datingsider
      ○ Facebook, twitter eller lignende
      ○ Chatrooms (f.eks. MSN, Arto eller lignende)
      ○ Andet __________________
   ○ På dit arbejde
   ○ På ferie/rejse i udlandet
   ○ Andet __________________
55. Hvornår havde du **første** gang sex med denne person?

Skriv så nøjagtigt som muligt. Dag Måned År

---

56. Var der alkohol indblandet, første gang i havde sex?

- Ja, jeg var påvirket
- Ja, min partner var påvirket
- Ja, vi var begge påvirkede
- Nej, der var ikke alkohol indblandet

---

57. Havde du eller din partner røget hash eller indtaget andre euforiserende stoffer første gang, i havde sex?

- Ja, jeg havde røget hash eller indtaget andre euforiserende stoffer
- Ja, min partner havde røget hash eller indtaget andre euforiserende stoffer
- Ja, vi havde begge røget hash eller indtaget andre euforiserende stoffer
- Nej, hverken min partner eller jeg havde ikke røget hash eller indtaget andre euforiserende stoffer

---

58. Brugte I kondom ved denne lejlighed?

- Ja → Gå til spørgsmål 59
- Nej
- Husker ikke → Gå til spørgsmål 59

---

58a. Forklar, hvorfor du og din partner ikke brugte kondom første gang, i havde sex?

(Sæt én eller flere krydser)

- Jeg tænkte ikke på at bruge kondom
- Jeg havde ikke noget kondom
- Jeg vidste ikke, hvor jeg skulle få et kondom fra
- Jeg synes, det er for flovet/filigrat at købe kondomer
- Jeg vidste ikke, hvordan man bruger et kondom
- Min partner ville ikke bruge et kondom
- Det føles ikke rart at bruge kondom
- Kondomer ødelægger stemningen
- Manglende rejsning ved brug af kondom
- Kondomer går for let i stykker
- Jeg har ikke sex med andre
- Jeg troede ikke, at jeg/hun kunne blive gravid
- Jeg troede ikke, jeg kunne få en kønssygdom (seksuel overført infektion)
- Jeg/min partner brugte p-piller
- Jeg/min partner brugte andre former for prævention
- Andet ____________________

---

59. Brugte du eller din partner andre former for prævention, første gang i havde sex?

- Ja
- Nej → Gå til spørgsmål 60, side 228
- Ved ikke → Gå til spørgsmål 60, side 228
59a. **Hvilken slags prævention brugte du eller din partner?**
(Sæt én eller flere krydsere)

- P-piller
- Minipiller
- Førdrigelsespille
- Den "sikre" metode, hvor manden trækker sig ud, inden han kommer
- "Den naturlige måde", hvor du undgår sex på frugtbare dage
- P-ring (f.eks. NuvaRing)
- Spiral
- Pessar
- Andet __________

60. **Har du haft sex med denne person mere end en gang?**
- Ja
- Nej → Gå til spørgsmål 65, side 230

61. **Hvornår har du sidst haft sex med denne person?**
Skriv så nøjagtigt som muligt. Dag Måned År

62. **Brugte I kondom ved denne lejlighed?**
- Ja → Gå til spørgsmål 63, side 229
- Nej
- Husker ikke → Gå til spørgsmål 63, side 229

62a. **Forklar, hvorfor du og din partner ikke brugte kondom sidste gang, I havde sex?**
(Sæt én eller flere krydsere)
- Jeg tænkte ikke på at bruge kondom
- Jeg havde ikke noget kondom
- Jeg vidste ikke, hvor jeg skulle få et kondom fra
- Jeg synes, det er for flovt/pinligt at købe kondomer
- Jeg vidste ikke, hvordan man bruger et kondom
- Min partner ville ikke bruge et kondom
- Det fælles ikke rart at bruge kondom
- Kondomer ødelægger stemningen
- Manglende rejsning ved brug af kondom
- Kondomer går for let i stykker
- Jeg har ikke sex med andre
- Jeg troede ikke, at jeg/hun kunne blive gravid
- Jeg troede ikke, jeg kunne få en kønnssygdom (seksuel overført infektion)
- Jeg/min partner brugte p-pillar
- Jeg/min partner brugte andre former for prævention
- Andet __________

228
63. **Brugte du eller din partner andre former for prævention, sidste gang I havde sex?**
   - Ja
   - Nej → Gå til spørgsmålet 64
   - Ved ikke → Gå til spørgsmålet 64

63a. **Hvilken slags prævention brugte du eller din partner?**
*(Sæt ét eller flere krydser)*
   - P-piller
   - Minipiller
   - Fortrydelsesspill
   - Den "sikre" metode, hvor manden trækker sig ud, inden han kommer
   - "Den naturlige måde", hvor du undgår sex på frugtbare dage
   - P-ring (f.eks. NuvaRing)
   - Spiral
   - Pessar
   - Andet____________________

64. **Forventer du at have sex med den pågældende person igen?**
   - Ja
   - Nej
   - Ved ikke
Kondombrug.

Forestil dig en situation, hvor du som udgangspunkt vil bruge kondom ved sex.

65. Hvor sikker er du på, at du vil bruge kondom sammen med din faste partner... (Sæt ét kryds ved hver linje)

<table>
<thead>
<tr>
<th>Slet ikke sikker</th>
<th>Ikke særlig sikker</th>
<th>Nogenlunde sikker</th>
<th>Meget Sikker</th>
<th>Fuldstændig Sikker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Når du har indtaget алкогол eller andre røgmidler (f.eks. hash, kokain, amfetamin, ecstasy m.m.)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Når du er seksuelt ophidset?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Når du tror, din partner vil blive irriteret, hvis du foreslår, i skal bruge kondom?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Når du eller din partner allerede bruger en anden form for prævention (f.eks. p-piller)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Når du gerne have at din partner ved, at du tager jeres forhold senest?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

66. Hvor sikker er du på, at du vil bruge kondom sammen med en person, du ikke har et fast forhold til? (Sæt ét kryds ved hver linje)

<table>
<thead>
<tr>
<th>Slet ikke sikker</th>
<th>Ikke særlig sikker</th>
<th>Nogenlunde sikker</th>
<th>Meget Sikker</th>
<th>Fuldstændig Sikker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hvis du vurderer, at risikoen for at få en kønsygdom (seksuel overtøft sygdom) er lille?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Når du har indtaget алкогол eller andre røgmidler?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Når du er seksuelt ophidset?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Når du tror, din seksuelle partner måske bliver irriteret/kes af det, hvis du foreslår, i skal bruge kondom?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Når du eller din seksuelle partner allerede bruger en anden form for prævention (f.eks. p-piller)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Sex, der involverer ting eller penge.**

Nogle aftaler at udveksle/give ting i form af tøj, smykker og mobiltelefon eller cigaretter, drinks eller penge for sex.

67. **Har du nogensinde betalt eller givet noget for sex?**
   - Ja, flere gange
   - Ja, en enkelt gang
   - Nej, aldrig → Gå til spørgsmål 68

67a. **Hvad har du betalt eller givet for sex?**
   - Penge – hvor meget__________Kr.
   - Tøj
   - Smykker
   - Cigaretter
   - Drinks
   - Andet_________________

68. **Har du nogensinde fået betaling eller andet for sex?**
   - Ja, flere gange
   - Ja, en enkelt gang
   - Nej, aldrig → Gå til spørgsmål 69, side 232

68a. **Hvad har du fået for sex?**
   - Penge – hvor meget__________Kr.
   - Tøj
   - Smykker
   - Cigaretter
   - Drinks
   - Andet_________________
Spørgsmål om selvværd/trivsel

Du har nu svaret på de spørgsmål, der omhandler sex.

I det følgende beder vi dig svare på en række spørgsmål omhandlende selvværd/trivsel. Det tager ca. 10 minutter at besvare disse spørgsmål.

69. Hvor mange nære venner har du?
   Med nære venner menes: venner som du betro dig til og stoler på.
   ○ Jeg har ingen nære venner
   ○ En
   ○ To
   ○ Tre
   ○ Fire
   ○ Fem
   ○ Seks eller flere

70. Sker det nogensinde, at du er alene, selvom du har mest lyst til at være sammen med andre?
   ○ Ja, ofte
   ○ Ja, engang imellem
   ○ Ja, men sjældent
   ○ Nej, aldrig

71. Har du nogen at tale med, hvis du har problemer og brug for støtte?
   ○ Ja, en person
   ○ Ja, flere personer
   ○ Nej, ingen

72. Hvem taler du især med, når du har problemer?
   (Sæt ét eller flere krydsør)
   ○ Din mor
   ○ Din stedmor
   ○ Din far
   ○ Din stedfar
   ○ Din søster
   ○ Din bror
   ○ Din kæreste
   ○ Din ægtefælle
   ○ Din ven/dine venner
   ○ En lærer på skolen
   ○ En arbejdskollega
   ○ Andre ___________________
73. Hvem føler du dig mest knyttet til?
(Sæt ét eller flere kryds

- Din mor
- Din stedmor
- Din far
- Din stedfar
- Din søster
- Din bror
- Din nærmeste
- Din ægtefælle
- Din ven/dine venner
- En lærer på skolen
- En arbejdskollega
- Andre____________

(Sæt ét kryds ved hver linje)

<table>
<thead>
<tr>
<th></th>
<th>Meget</th>
<th>Enig</th>
<th>Uenig</th>
<th>Meget</th>
<th>Uenig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeg føler, jeg er lige så meget værd som andre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeg føler, jeg har mange gode egenskaber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alt: alt er jeg tilbage i at føle mig som en flaske</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeg kan gøre ting lige så godt som de fleste andre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeg føler ikke, jeg har meget at være stolt af</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Jeg har en positiv indstilling til mig selv</td>
<td></td>
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</tr>
<tr>
<td>Alt: alt er jeg tilfreds med mig selv</td>
<td></td>
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</tr>
<tr>
<td>Jeg ville ønske, jeg havde mere respekt for mig selv</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Jeg føler mig håblos indimellem</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Indimellem synes jeg slet ikke, jeg er god nok</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
**Spørgsmål om livsstil**


**Spørgsmål om din kost**

75. **Hvordan vurderer du dine kostvaner?**
   - Meget sundt
   - Sund
   - Nogenlunde sundt
   - Usundt
   - Meget usundt

76. **Hvor tit plejer du at spise eller drukke følgende?**
    (Sæt et kryds ved hver linje)

<table>
<thead>
<tr>
<th>Antal gange</th>
<th>Aldrig</th>
<th>Mindre end 1 gang om ugen</th>
<th>1 gang om ugen</th>
<th>2-4 gange om ugen</th>
<th>5-6 gange om ugen</th>
<th>1 gang om dagen</th>
<th>2 gange om dagen</th>
<th>3 el. flere gange om dagen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potemes frites</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chips</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light sodavand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sukkerpakket sodavand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silke/chokolade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast food (f.eks. pizza/burger)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Salat/akost</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frugt</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Spørgsmål om motion**

77. **Hvis du ser på det sidste halvår, hvad vil du så sige passer bedst som beskrivelse af dine fysiske aktiviteter i fritiden?**
   - Jeg træner hårdt og dyrker konkurrenceudræt regelmæssigt og flere gange om ugen (f.eks. konkurrencevæsning, håndbold/fodbold på konkurrenceplan)
   - Jeg dyrker motionsudrøft eller udfører tungt arbejde mindst 4 timer pr. uge (f.eks. motionsløb, styrketræning, oestrogen 1-2 gange ugentligt)
   - Jeg går, cykler eller dyrker anden lettere motion mindst 4 timer pr. uge (f.eks. til skole eller arbejde)
   - Jeg går, cykler eller dyrker anden lettere motion mindre end 4 timer pr. uge (f.eks. til skole eller arbejde)
   - Jeg ser kun fjernsyn, spiller computer, læser eller anden stillesiddende beskæftigelse
78. ** Hvordan vil du vurderes dit eget udseende? **
- Jeg ser ret godt ud
- Jeg ser godt ud
- Jeg ser almindelig ud
- Jeg ser ikke særlig godt ud
- Jeg er grim
- Jeg tænker ikke over mit udseende
- Ved ikke

79. ** Er der noget ved din krop, du gerne vil ændre? **
- Ja
- Nej → Gå til spørgsmål 81

80. ** Hvordan kunne du tænke dig at ænde det? **
- Ved at ændre mine sundhedsvaner; herunder kost, rygning, alkohol og motion
- Ved at tage slankepiller, proteinpulver eller proteindrik m.v.
- Ved at tage anaboliske steroider (muskelopbyggende stoffer) eller lignende.
- Ved hjælp af plastikkirurgi (f.eks. brystoperation, ansigtslæftning, fedtusning m.v.)
- Jeg tror ikke, det kan ændres
- Andet __________________

81. ** Hvor høj er du? **
- □ □ □ cm

82. ** Hvor meget vejer du? **
- □ □ □ kg

** Spørgsmål om rygning **

83. ** Ryger du cigaretter? **
- Ja, dagligt
- Ja, indimellem
- Nej → Gå til spørgsmål 84, side 236
83a. Hvor mange cigaretter har du røget i løbet af de sidste 30 dage?

(Sæt ét kryds ved hver linje)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingen overhovedet</td>
<td></td>
</tr>
<tr>
<td>Mindre end en cigaret om ugen</td>
<td></td>
</tr>
<tr>
<td>Mindre end en cigaret om dagen</td>
<td></td>
</tr>
<tr>
<td>1-5 cigaretter om dagen</td>
<td></td>
</tr>
<tr>
<td>6-10 cigaretter om dagen</td>
<td></td>
</tr>
<tr>
<td>11-20 cigaretter om dagen</td>
<td></td>
</tr>
<tr>
<td>Mere end 20 cigaretter om dagen</td>
<td></td>
</tr>
</tbody>
</table>

Spørgsmål om alkohol

De følgende spørgsmål handler om drikke, der indeholder alkohol (det vil sige øl, vin, spiritus eller alkohol-Sodavand f.eks. Moka. Hvis det er svært at huske helt præcist, så kom med dit bedste bud.

84. Har du nogensinde drukket alkohol?

☐ Ja
☐ Nej → Gå til spørgsmål 85, side 237

84a. Hvor mange gange har du drukket noget, der indeholder alkohol?

(Sæt ét kryds ved hver linje)

<table>
<thead>
<tr>
<th>Drikket alkohol</th>
<th>Aldrig</th>
<th>1-2 gange</th>
<th>3-5 gange</th>
<th>6-9 gange</th>
<th>10-19 gange</th>
<th>20-39 gange</th>
<th>40 eller flere gange</th>
</tr>
</thead>
<tbody>
<tr>
<td>I hele dit liv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indenfor de seneste 12 måneder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indenfor de seneste 30 dage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

84b. Hvor mange gange har du været fuld af at drikke alkohol?

F.eks. ikke kunnet tale tydeligt, haft svært ved at gå lige, kastet op eller haft svært ved at huske, hvad der var sket?

(Sæt ét kryds ved hver linje)

<table>
<thead>
<tr>
<th>Varet fuld</th>
<th>Aldrig</th>
<th>1-2 gange</th>
<th>3-5 gange</th>
<th>6-9 gange</th>
<th>10-19 gange</th>
<th>20-39 gange</th>
<th>40 eller flere gange</th>
</tr>
</thead>
<tbody>
<tr>
<td>I hele dit liv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indenfor de seneste 12 måneder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indenfor de seneste 30 dage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Spørgsmål om stoffer

85. Hvor mange gange (hvis nogen) har du røget hash (pot eller marihuana)?
(Sæt et kryds ved hver linje)

<table>
<thead>
<tr>
<th>Røget hash</th>
<th>Aldrig</th>
<th>1-2 gange</th>
<th>3-5 gange</th>
<th>6-9 gange</th>
<th>10-19 gange</th>
<th>20-39 gange</th>
<th>40 eller flere gange</th>
</tr>
</thead>
<tbody>
<tr>
<td>i hele dit liv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indenfor de seneste 12 måneder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indenfor de seneste 30 dage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

86. Hvor mange gange (hvis nogen) har du anvendt et eller flere af følgende stoffer?
(Sæt et kryds ved hver linje)

<table>
<thead>
<tr>
<th>Aldrig</th>
<th>1-2 gange</th>
<th>3-5 gange</th>
<th>6-9 gange</th>
<th>10-19 gange</th>
<th>20-39 gange</th>
<th>40 eller flere gange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecstasy, Amfetamin, Kokain eller andre euforiserende stoffer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Følgende spørgsmål handler om, hvorvidt du tror nogen af dine venner og/eller eventuelle selskende ryger cigaretter, drikker alkohol eller indtager stoffer.

87. Hvor mange af dine venner vil du tro...
(Sæt et kryds ved hver linje)

<table>
<thead>
<tr>
<th>Ryger cigaretter?</th>
<th>Ingen</th>
<th>Få</th>
<th>Nogle</th>
<th>De fleste</th>
<th>Alle</th>
<th>Drikker alkohol?</th>
<th>(d. alkohol-sodavand, vin eller drinks)?</th>
<th>Drikker sig fulde?</th>
<th>Ryger hash (pot eller marihuana)?</th>
<th>Tager ecstasy, amfetamin, kokain eller andre euforiserende stoffer?</th>
</tr>
</thead>
</table>

88. Har du nogen selskende?

☐ Ja

☐ Nej → Gå til spørgsmål 89, side 238

88a. Er der nogen af dine selskende der regelmæssigt...
(Sæt et kryds ved hver linje)

<table>
<thead>
<tr>
<th>Ryger cigaretter?</th>
<th>Ja</th>
<th>Nej</th>
<th>Ved ikke</th>
<th>Drikker alkohol?</th>
<th>(d. alkohol-sodavand, vin eller drinks)?</th>
<th>Drikker sig fulde?</th>
<th>Ryger hash (pot eller marihuana)?</th>
<th>Tager ecstasy, amfetamin, kokain eller andre euforiserende stoffer?</th>
</tr>
</thead>
</table>
Til sidst lidt spørgsmål om dig og din familie

89. Hvem bor du sammen med?
(Sæt én eller flere krydser)
- Mor
- Stedmor
- Far
- Stedfar
- Søskende
- KæresteÆgtefælle
- Andre, f.eks. i kollektiv, på kollegium, hos venner
- Ingen, jeg bor alene
- Andet_________

90. Hvad er din mors højeste uddannelse?
- 7 år eller færre års skolegang
- 8-10 års skolegang
- Specialarbejder (f.eks. rengøringsassistent, chauffør, postarbejdere eller dagplejemoser)
- Lærer-/uddannelse eller anden faglig uddannelse (f.eks. tømreruddannelse, social- og sundhedssudd. eller landbruksudd.)
- Gymnasial uddannelse (gymnasium, HF eller HH)
- Kort videregående uddannelse, under 3 år (f.eks. laborant, markedsføringsakademiet, installatør eller produktionsteknolog)
- Mellemlængt videregående uddannelse, 3-4 år (f.eks. sygeplejerske, diplomingeniør, folkeskolelærer, socialrådgiver eller pædagog)
- Lang videregående uddannelse, over 4 år (f.eks. læge, gymnasielærer, civilingeniør eller biolog)
- Andet – angiv venligst_________
- Ved ikke

91. Hvad er din fars højeste uddannelse?
- 7 år eller færre års skolegang
- 8-10 års skolegang
- Specialarbejder (f.eks. rengøringsassistent, chauffør, postarbejdere eller dagplejemoser)
- Lærer-/uddannelse eller anden faglig uddannelse (f.eks. tømreruddannelse, social- og sundhedssudd. eller landbruksudd.)
- Gymnasial uddannelse (gymnasium, HF eller HH)
- Kort videregående uddannelse, under 3 år (f.eks. laborant, markedsføringsakademiet, installatør eller produktionsteknolog)
- Mellemlængt videregående uddannelse, 3-4 år (f.eks. sygeplejerske, diplomingeniør, folkeskolelærer, socialrådgiver eller pædagog)
- Lang videregående uddannelse, over 4 år (f.eks. læge, gymnasielærer, civilingeniør eller biolog)
- Andet – angiv venligst_________
- Ved ikke
92. **Hvor er du født?**
   - Danmark
   - Andet land – hvilket

93. **Hvor er din mor født?**
   - Danmark
   - Andet land – hvilket

94. **Hvor er din far født?**
   - Danmark
   - Andet land – hvilket

95. **Hvilken religion tilhører du?**
   - Protestantisk (Medlem af Den Danske Folkekirke)
   - Katolsk
   - Islam
   - Jødisk
   - Buddhistisk
   - Ikke troende
   - Ved ikke
   - Anden

95a. **Hvor aktivt troende vil du beskrive dig selv?**
   - Meget
   - Noget
   - Lidt
   - Slet ikke
Hvis du har uddybende kommentarer eller oplysninger, er du meget velkommen til at skrive dem i følgende rubrik.

(Der er plads til op til 255 ord).

Du er nu færdig med din besvarelse.

Ønsker du at se din sex risiko score klik her

Tak for din deltagelse i undersøgelsen.

Med venlig hilsen
Marianne J. Jørgensen

Siddes du ved en offentlig computer, f.eks. på biblioteket eller i skolen, bør du lukke browseren, så andre ikke kan se din besvarelse.

Undersøgelsen er lavet i samarbejde med:
Afdeling for Folkeundersøgelser, Region Midtjylland. www.kraeftscreening.rm.dk
Forskningsenheden for Almen Praksis, Aarhus Universitet. www.alm.au.dk/fe
APPENDIX II

THE INVITATION LETTER
Spørgeskemaundersøgelse om unges SUNDHED og SEX

Vi har brug for lidt af din tid!
Som led i et landsdækkende forskningsprojekt ved Aarhus Universitet håber vi, du har lyst til at deltage i en spørgeskemaundersøgelse om unges sundhed og sex.

Hvorfor?

Projektets formål er derfor at opnå en viden, så vi bliver bedre til at lave forebyggende indsatser, der kan forbedre unges seksuelle sundhed - herunder både seksualundervisning i skolerne og nationale kampagner.

Du kan gøre en forskell!
Det vil være en stor hjælp, hvis du og ca. 20.000 andre unge vil hjælpe os med at skabe ny viden ved at besvare et web-baseret spørgeskema, der handler om sex, men også sundhed generelt.

Din deltagelse er naturligvis frivillig og helt anonym. Vi gør opmærksom på, at denne undersøgelse tidligere er afprøvet blandt en gruppe unge i Region Midtjylland. Hvis du var blandt de inviterede håber vi, du har lyst til at deltage igen.

Praktisk info:
- Hvis du går ind via hjemmesiden skal du indtaste nøglen "survey_key". Dette er et personligt og anonymt ID nummer, og din besvarelse kan således ikke ses af andre.
- Hvis du har spørgsmål, er du meget velkommen til at kontakte projektkoordinator, Marianne Jørgensen på 50 12 29 25 eller mj@alm.au.dk.

Med venlig hilsen

Marianne Jørgensen
Projektkoordinator, Ph.d. stud.
Afdeling for Folkeundersøgelser.
Regionhospitalet Randers

Bente Andersen
Ovelæge, Ph.d., lektor

Frede Olesen
Prakt.læge, adj.professor, dr.med.
APPENDIX III

REMINDING LETTER
Spørgeskemaundersøgelse om unges SUNDHED og SEX

Vi har brug for lidt af din tid!
For et par uger siden inviterede vi dig til at deltage i spørgeskemaundersøgelsen om unges sundhed og sex.

Da vi endnu ikke har modtaget din besvarelse, tillader vi os at sende denne påmindelse.
Hvis du i løbet af de sidste par dage har besvaret spørgeskemaet, beder vi dig se bort fra denne henvendelse.

Du kan gøre en forskel!
For at kunne bedre den fremtidige indsats omkring unges seksuelle sundhed er det meget vigtigt, at så mange som muligt deltager i undersøgelsen. Din deltagelse er naturligvis helt anonym.

Praktisk info:

- Det web-baserede spørgeskema finder du på www.ung2012.dk eller ved at scanne koden her:

- Det tager ca. 25 minutter at besvare spørgeskemaet.

- Hvis du går ind via hjemmesiden skal du indtaste nøglen «survey_key»
Dette er et personligt og anonymt ID nummer, og din besvarelse kan således ikke ses af andre.

- Hvis du har spørgsmål, er du meget velkommen til at kontakte projektkoordinator, Marianne Jergensen på 50 12 29 25 eller mj@alm.au.dk.

Med venlig hilsen

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APPENDIX IV

DATA QUALITY OF SCALES; SELF-ESTEEM, CONDOM SELF-EFFICACY AND DIETARY HABITS
**Table 7. Data quality for the Rosenberg Self-esteem scale in the general population (n=4072)**

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Floor %</th>
<th>Ceiling %</th>
<th>Cronbachs Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-esteem scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. I feel that I’m a person of worth, at least on an equal plane with others.</td>
<td>2.0</td>
<td>0.7</td>
<td>2</td>
<td>24.0</td>
<td>24.8</td>
<td>0.91</td>
</tr>
<tr>
<td>2. I feel that I have a number of good qualities.</td>
<td>1.6</td>
<td>0.8</td>
<td>1</td>
<td>2.4</td>
<td>52.4</td>
<td></td>
</tr>
<tr>
<td>3. All in all, I am inclined to feel that I am a failure</td>
<td>2.0</td>
<td>0.8</td>
<td>2</td>
<td>4.8</td>
<td>32.9</td>
<td></td>
</tr>
<tr>
<td>4. I am able to do things as well as most other people.</td>
<td>1.8</td>
<td>0.7</td>
<td>2</td>
<td>1.8</td>
<td>33.9</td>
<td></td>
</tr>
<tr>
<td>5. I feel I do not have much to be proud of</td>
<td>1.8</td>
<td>0.8</td>
<td>2</td>
<td>4.3</td>
<td>41.2</td>
<td></td>
</tr>
<tr>
<td>6. I take a positive attitude toward myself.</td>
<td>1.9</td>
<td>0.8</td>
<td>2</td>
<td>3.5</td>
<td>31.3</td>
<td></td>
</tr>
<tr>
<td>7. On the whole, I am satisfied with myself.</td>
<td>2.0</td>
<td>0.8</td>
<td>2</td>
<td>3.8</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>8. I wish I could have more respect for myself.</td>
<td>2.3</td>
<td>1.0</td>
<td>2</td>
<td>12.2</td>
<td>25.1</td>
<td></td>
</tr>
<tr>
<td>9. I certainly feel useless at times</td>
<td>2.4</td>
<td>0.9</td>
<td>3</td>
<td>11.0</td>
<td>17.6</td>
<td></td>
</tr>
<tr>
<td>10. At times I think I am no good at all</td>
<td>2.4</td>
<td>1.0</td>
<td>3</td>
<td>12.9</td>
<td>21.2</td>
<td></td>
</tr>
</tbody>
</table>

The scale ranged from strongly disagree (0) to strongly agree (3)
Table 8. Data quality for the Condom Self-efficacy scale in the general population (n=4072)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Floor</th>
<th>Ceiling</th>
<th>Cronbachs Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steady partner, total score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. When you have been using alcohol or other drugs?</td>
<td>2,2</td>
<td>0,8</td>
<td>2</td>
<td>44,5</td>
<td>20,8</td>
<td>0,92</td>
<td></td>
</tr>
<tr>
<td>2. When you are sexually aroused?</td>
<td>3,5</td>
<td>1,5</td>
<td>4</td>
<td>39,6</td>
<td>16,9</td>
<td>0,92</td>
<td></td>
</tr>
<tr>
<td>3. When you think your partner might get angry?</td>
<td>3,2</td>
<td>1,6</td>
<td>3</td>
<td>34,1</td>
<td>24,9</td>
<td>0,92</td>
<td></td>
</tr>
<tr>
<td>4. When you (or your partner) are already using another method of birth control?</td>
<td>4,1</td>
<td>1,3</td>
<td>5</td>
<td>60,7</td>
<td>8,9</td>
<td>0,92</td>
<td></td>
</tr>
<tr>
<td>5. When you want your partner to know you are committed to the relationship?</td>
<td>3,2</td>
<td>1,6</td>
<td>3</td>
<td>36,9</td>
<td>25,1</td>
<td>0,92</td>
<td></td>
</tr>
<tr>
<td><strong>Casual partner, total score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. When you think the risk of disease is low?</td>
<td>1,5</td>
<td>0,7</td>
<td>1</td>
<td>11,0</td>
<td>56,6</td>
<td>0,94</td>
<td></td>
</tr>
<tr>
<td>2. When you have been using alcohol or other drugs?</td>
<td>1,9</td>
<td>1,2</td>
<td>1</td>
<td>4,8</td>
<td>53,5</td>
<td>0,94</td>
<td></td>
</tr>
<tr>
<td>3. When you are sexually aroused?</td>
<td>2,3</td>
<td>1,3</td>
<td>2</td>
<td>8,1</td>
<td>40,5</td>
<td>0,94</td>
<td></td>
</tr>
<tr>
<td>4. When you think your partner might get upset?</td>
<td>2,2</td>
<td>1,3</td>
<td>2</td>
<td>7,4</td>
<td>43,9</td>
<td>0,94</td>
<td></td>
</tr>
<tr>
<td>5. When you (or your partner) are already using another method of birth control?</td>
<td>2,0</td>
<td>1,2</td>
<td>2</td>
<td>6,0</td>
<td>48,5</td>
<td>0,94</td>
<td></td>
</tr>
</tbody>
</table>

The scale ranged from not at all confident (1) to extremely confident (5)
Table 9. Data quality for the Condom Self-efficacy scale with a casual partner among women who bought emergency contraceptives (n=175) and women and men with a verified C. trachomatis infection (n=133 and n=43, respectively)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Floor %</th>
<th>Ceiling %</th>
<th>Cronbachs Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women who bought emergency contraceptives</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. When you think the risk of disease is low?</td>
<td>2.1</td>
<td>1.2</td>
<td>2</td>
<td>4.1</td>
<td>46.9</td>
<td></td>
</tr>
<tr>
<td>7. When you have been using alcohol or other drugs?</td>
<td>2.6</td>
<td>1.3</td>
<td>3</td>
<td>8.1</td>
<td>29.3</td>
<td></td>
</tr>
<tr>
<td>8. When you are sexually aroused?</td>
<td>2.4</td>
<td>1.4</td>
<td>2</td>
<td>8.1</td>
<td>40.3</td>
<td></td>
</tr>
<tr>
<td>9. When you think your partner might get upset?</td>
<td>2.0</td>
<td>1.2</td>
<td>2</td>
<td>4.1</td>
<td>48.4</td>
<td></td>
</tr>
<tr>
<td>10. When you (or your partner) are already using another method of birth control?</td>
<td>2.7</td>
<td>1.5</td>
<td>3</td>
<td>15.3</td>
<td>31.1</td>
<td></td>
</tr>
<tr>
<td><strong>Total score</strong></td>
<td>1.6</td>
<td>0.7</td>
<td>1</td>
<td>11.8</td>
<td>50.5</td>
<td>0.92</td>
</tr>
<tr>
<td><strong>Women with a verified C. trachomatis infection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. When you think the risk of disease is low?</td>
<td>2.6</td>
<td>1.4</td>
<td>2</td>
<td>12.0</td>
<td>27.2</td>
<td></td>
</tr>
<tr>
<td>2. When you have been using alcohol or other drugs?</td>
<td>3.1</td>
<td>1.3</td>
<td>3</td>
<td>20.9</td>
<td>17.7</td>
<td></td>
</tr>
<tr>
<td>3. When you are sexually aroused?</td>
<td>3.0</td>
<td>1.4</td>
<td>3</td>
<td>16.5</td>
<td>20.3</td>
<td></td>
</tr>
<tr>
<td>4. When you think your partner might get upset?</td>
<td>2.6</td>
<td>1.4</td>
<td>3</td>
<td>14.8</td>
<td>32.9</td>
<td></td>
</tr>
<tr>
<td>5. When you (or your partner) are already using another method of birth control?</td>
<td>2.9</td>
<td>1.4</td>
<td>3</td>
<td>20.3</td>
<td>24.1</td>
<td></td>
</tr>
<tr>
<td><strong>Total score</strong></td>
<td>1.9</td>
<td>0.7</td>
<td>2</td>
<td>23.2</td>
<td>31.0</td>
<td>0.94</td>
</tr>
<tr>
<td><strong>Men with a verified C. trachomatis infection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. When you think the risk of disease is low?</td>
<td>2.3</td>
<td>1.2</td>
<td>2</td>
<td>3.9</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>2. When you have been using alcohol or other drugs?</td>
<td>3.0</td>
<td>1.3</td>
<td>3</td>
<td>13.7</td>
<td>17.7</td>
<td></td>
</tr>
<tr>
<td>3. When you are sexually aroused?</td>
<td>2.6</td>
<td>1.2</td>
<td>2</td>
<td>8.0</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>4. When you think your partner might get upset?</td>
<td>2.4</td>
<td>1.3</td>
<td>2</td>
<td>9.8</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>5. When you (or your partner) are already using another method of birth control?</td>
<td>2.9</td>
<td>1.4</td>
<td>3</td>
<td>2.9</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total score</strong></td>
<td>1.8</td>
<td>0.7</td>
<td>2</td>
<td>16.0</td>
<td>36.0</td>
<td>0.93</td>
</tr>
</tbody>
</table>

The scale ranged from not at all confident (1) to extremely confident (5)
Table 10. Data quality for the scale of dietary habits in the general population
\((n=4072)\)

<table>
<thead>
<tr>
<th>“How often do you eat/drink...”</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Floor %</th>
<th>Ceiling %</th>
<th>Cronbachs Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. French fries</td>
<td>2.0</td>
<td>0.6</td>
<td>2</td>
<td>17.7</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>2. Chips</td>
<td>2.1</td>
<td>0.8</td>
<td>2</td>
<td>17.2</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>3. Other kinds of fast-food</td>
<td>2.2</td>
<td>0.8</td>
<td>2</td>
<td>10.4</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>4. Candy</td>
<td>3.3</td>
<td>1.9</td>
<td>3</td>
<td>3.2</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>5. Light soda</td>
<td>2.1</td>
<td>1.4</td>
<td>2</td>
<td>46.9</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>6. Regular soda</td>
<td>2.6</td>
<td>1.5</td>
<td>2</td>
<td>23.6</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>7. Vegetables</td>
<td>4.7</td>
<td>1.6</td>
<td>5</td>
<td>2.4</td>
<td>4.6</td>
<td></td>
</tr>
<tr>
<td>8. Fruit</td>
<td>5.4</td>
<td>1.9</td>
<td>5</td>
<td>2.0</td>
<td>14.9</td>
<td></td>
</tr>
<tr>
<td>Total score</td>
<td>2.1</td>
<td>0.6</td>
<td>2</td>
<td>14.7</td>
<td>22.2</td>
<td>0.6</td>
</tr>
</tbody>
</table>

The scale ranged from never to \(\geq 3\) times/week