Introduction

Postponing childbirth is common in Western countries and has resulted in an increasing number of pregnancies in women over 35 years of age [1–4]. Delayed childbearing has become socially acceptable and a considerable amount of favourable media attention has been given to older mothers [4, 5]. Current advances in assisted reproductive techniques may have caused misconceptions about the possibility of manipulating female fertility at will [4, 6].

Originally, knowledge about the impact of age on fertility was based on historical data concerning populations that did not use contraceptive measures [7, 8]. More recently, studies about the treatment of infertility have provided additional data [8, 9].

Female fertility declines with advancing age, and the reproductive phase in women is relatively short in comparison with their entire lifespan [7, 10]. To some degree, there is individual variation in female reproductive ageing, which is determined mainly by genetic factors [9]. Although the exhaustion of follicles at menopause marks the definitive end of female reproductive capacity, female fertility actually begins to decrease many years before the menopause. Female fertility declines slightly and gradually toward the end of the third decade, most significantly from approximately 32 years onwards and much faster after the age of 37 years [7, 10].

The aim of this study was to investigate university students’ desire to have children and awareness of the impact of age on female fertility.

Material and methods

The data were derived from a national health survey conducted in 2008 among Finnish university students [11]. The study population comprised 282,049 Finnish undergraduate university students who were less than 35 years of age. A random sample of 9967 students, of whom 45% were male, was drawn from the study population. The respondents were representative of the study population with respect to sex, age, university and field of study. The questionnaire responses were collected using a postal questionnaire, although completion of the questionnaire over the internet was also possible. The questionnaire was sent three times, once in paper format and twice electronically.

Altogether, the questionnaire was answered by 1864 men and 3222 women. The overall response rate was 51% (42% for men and 59% for women).

Questionnaire

The majority of the questions were structured, but there were also some open questions. The questionnaire asked students about current pregnancies, the number of children they had and their desired number of children. An open response format was used for the following questions concerning the impact of age on female fertility:

1. At what age is there a slight decrease in a woman’s ability to become pregnant?
2. At what age is there a marked decrease in a woman’s ability to become pregnant?
3. If a man and a woman regularly have unprotected intercourse during a period of 1 year, how high is the percentage chance that the woman will become pregnant if she is:
   a. 25–30 years old?
   b. 35–40 years old?
The slight fertility decrease was defined to be between the ages of 25 and 29 years and the marked decrease to be between the ages of 35 and 39 years. The chances of a woman conceiving at the age of 25–30 years or at the age of 35–40 years were defined as 70–79% and 50–59%, respectively.

The respondents’ perception of the ages of slight and marked decreases in female fertility were analysed using a two-way analysis of variance (ANOVA) model with age group and sex as explanatory variables.

**Results**

The desire for children

The vast majority (94.0%) of respondents wanted to have children in the future. Two-thirds of female students and 42% of male students wanted to have their first child between the ages of 25 and 29 years.

Fertility awareness

Women were significantly more aware of the age-related drop affecting female fecundity than were men \((p = 0.001)\) (Figure 1). More than half of the men and about one-third of the women thought that the marked decline in female fertility began after the age of 45 years.

For both sexes, the proportion of respondents with a correct perception of the impact of age on female fertility was the smallest among younger respondents \((p = 0.001)\).

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More than half of both female and male students overestimated a couple’s chance of conceiving during 1 year of unprotected intercourse (Figure 2). Concerning this issue, women were better informed than men \((p = 0.001)\), and older respondents had greater awareness than younger respondents \((p = 0.041)\). Almost half of the 30- to 35-year-old male participants and 40% of the 30- to 35-year-old female participants overestimated the chance of a woman becoming pregnant between the ages of 35 and 40 years.

Discussion

Awareness among participants of the natural, age-related decline in female fertility was insufficient. Particularly alarming is the lack of awareness among male students and younger respondents, as well as the belief among one-third of men and one-fifth of
women that female fertility decreases markedly only after the age of 50 years. Postponement of the first birth varies strongly by social background and is most common among highly educated women [12–14]. Even if most female participants wanted children before the age of 30 years, many of them may nevertheless postpone parenthood to an age when female fertility is markedly decreased [15].

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The prevention of infertility is as important as that of unwanted pregnancies. Sex education in schools should include information about the age-related decline in fertility. The media could contribute by creating a more positive atmosphere to encourage people to have children within the optimal age range of 20–35 years. Informed choices about the timing of parenthood are possible only if people are fully aware of the risks of delayed childbearing. One task of health care personnel is properly to inform students of both sexes about the effects of ageing on reproductive function. However, more research is needed on what kinds of interventions would best increase awareness and how awareness would shape individual choices.

References