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ARTICLE

Family planning, fertility awareness and knowledge about Italian legislation on assisted reproduction among Italian academic students

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Abstract Over the last century, most industrialized countries have experienced a progressive increase in maternal age at first pregnancy and a reduction of fertility rate, with important social and economic consequences. Moreover in Italy a very restrictive law on assisted reproductive technologies was introduced in 2004, limiting its effectiveness and causing a strong public debate that unfortunately focused more on the political and ethical implications of the law than on the medical and technical aspects of assisted reproduction. The present study performed an epidemiological investigation among the students of Turin University in the year 2006/07 in order to assess three aspects: the factors affecting the decision to become parents, their level of consciousness about human reproduction and their level of knowledge about the legal rules that regulate assisted reproduction in Italy. The study also wanted to clarify how the sex (male or female) and the type of education (sciences or humanities) could affect their opinions and knowledge in this area. It was observed that young people consider parenthood an important part of their life, but knowledge about human fertility and legal rules regulating assisted reproduction is rather poor, regardless of sex and type of education.

KEYWORDS: assisted reproduction technologies, fertility awareness, Italian legislation

Introduction

Over the last century, a progressive increase in maternal age at first pregnancy and a simultaneous reduction of fertility rate (number of children per woman during fertile age) has been observed in most industrialized countries. In Europe, the lowest fertility rates are reported in Lithuania, Hungary, Poland, Portugal, Romania and Slovakia

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(1.25—1.35) (EUROSTAT, 2009; Ledger, 2009). The social and economic consequences of this trend are of great importance.

As far as Italy is concerned, the slight increase in the fertility rate observed in recent years (from 1.18 to 1.40 from 2000 to 2008) is probably due to births occurring among couples moving to Italy from the developing world; in fact, 15.3% of the newborns in Italy now belong to foreign mothers, whereas the birth rate among Italians in the same time period did not increase (ISTAT, 2009). According to epidemiological data from the Italian national database, the mean maternal age at the birth of the first child was 28 years in 1995 and it is now slightly over 31 years (ISTAT, 2009). In the study centre's obstetric unit (which hosts more than 9000 deliveries per year), the mean age at the first delivery has increased significantly from 26.3 years in 1970 to 32.4 years in 2008. This demographic situation is rather alarming if one considers that women have the highest fertility potential (approximately 30% probability of conceiving per month of unprotected sexual activity) at around age 20. Moreover, it is well known that female fertility declines from the age of 30 (pregnancy chance 25% per month) and more sharply decreases after 35 years of age, reaching an annual cumulative conception chance that does not exceed 20% after age 40 (ASRM, 2008; Baird et al., 2005; Hassan and Killick, 2003).

Over the past few decades, the use of assisted reproductive technology has greatly spread all over the world. It has been estimated that the number of treatment cycles in the world rose from 89,000 in 1989 to 600,000 in 2006 (extimated data based on Nyboe Anderson et al., 2009; Sunderam et al., 2009; Zegers-Hochschild et al., 2009). However, the value given is likely to be underestimated because the registers only include data from the USA and Europe. The rapid diffusion of the technology and its continuously increasing effectiveness are abundantly reported by the media and probably induce great expectations among people. However, despite a continuous improvement in results, the obstacle to conception represented by the woman's age has not been overcome, at least in homologous treatments. In fact, the cumulative probability of having a baby by IVF is around 50% when the woman undergoes the procedure at 30 years, but it drops to only around 5—10% when she is age 40 (Leridon, 2004).

Are these data known by people in general? Recently, epidemiological investigations aimed at understanding the degree of awareness of fertility among young people and the importance they give to becoming parents were carried out in Sweden, the USA and Canada (Lampic et al., 2006; Martinez et al., 2006; Tough et al., 2006). Other epidemiological studies investigated the level of knowledge among young people about other aspects of reproduction: contraception and undesired pregnancy (Rasch et al., 2001), medical consequences of delayed childbearing (Tough et al., 2006) and infertility risk factors other than advanced age (Bunting and Boivin, 2008). These studies showed quite clearly that although young people attribute a noticeable importance to parenthood, knowledge about human fertility is surprisingly poor. Furthermore, a survey among general practitioners in the USA clearly showed that even physicians may not be well informed about human fertility (Ceballo et al., 2009).

The present study conducted an epidemiological investigation among students of the University of Turin in order to assess their consciousness about fertility, their level of knowledge about human reproduction and the legal rules regulating assisted reproduction in Italy (Benagiano and Gianaroli, 2004). To this purpose, it must be considered that the Italian law on assisted reproductive technology introduced in 2004 was modified a few months ago by the Italian Constitutional Court, which cancelled some key parts of the text allowing procedures in Italy to be similar to that of many other countries. At the time of this study, however, the law had its original text (Benagiano and Gianaroli, 2004) and in particular the following content: (i) no more than three oocytes could be used for fertilization, regardless of the woman's age or the man's sperm characteristics; (ii) any type of embryo selection was forbidden; (iii) it was mandatory to transfer *in utero* all obtained embryos (embryo cryopreservation was not allowed); (iv) any clinical or experimental research on embryos was forbidden; and (v) any type of heterologous technique was forbidden. This study also aimed at clarifying how the sex (male or female) and the type of education (sciences or humanities) could affect this knowledge and their feelings about parenthood.

Materials and methods

This epidemiological investigation included students of the University of Turin in the year 2006/07 attending at the following schools: Agricultural Sciences, Medicine, Veterinary Medicine, Physics/Mathematics/Biological Sciences and Pharmacy (sciences schools) and Literature/Philosophy, Political Sciences and Law (humanities schools). The investigation protocol was approved both from the local ethical committee (St Anna Academic Hospital) and from each of the schools involved.

The students were randomly recruited immediately after a formal lesson and were asked to answer individually and anonymously to a questionnaire divided into three sections: (i) knowledge of human fertility; (ii) personal projects about family planning; and (iii) knowledge about assisted reproductive technology and the Italian law regulating it. All fulfilled questionnaires were immediately collected by the same researcher and stored.

At the end of the phase of questionnaire collection, a statistical evaluation was performed, during which the answers were grouped and analysed according to sex (males versus females) and type of education (sciences versus humanities) by means of the Chi-squared test. The level of significance was fixed at $P < 0.05$.

The questionnaire is available on request from the authors for further similar studies.

Results

A total number of 958 questionnaires were collected (76—150 per school). Among them, 607 (63.4%) belonged to females and 351 (36.6%) to males, a proportion that reflects the total population of students in the University of Turin (which in that year included 37,567 students, 62% of which were females) (**Table 1**). The students' mean age in the