



Demographic Research a free, expedited, online journal
of peer-reviewed research and commentary
in the population sciences published by the
Max Planck Institute for Demographic Research
Konrad-Zuse Str. 1, D-18057 Rostock · GERMANY
www.demographic-research.org

DEMOGRAPHIC RESEARCH

VOLUME 19, ARTICLE 5, PAGES 73-84
PUBLISHED 01 JULY 2008

<http://www.demographic-research.org/Volumes/Vol19/5/>

Research Article

Overview Chapter 3: Birth regulation in Europe: Completing the contraceptive revolution

Tomas Frejka

This publication is part of Special Collection 7: Childbearing Trends and Policies in Europe (<http://www.demographic-research.org/special/7/>)

© 2008 Frejka.

This open-access work is published under the terms of the Creative Commons Attribution NonCommercial License 2.0 Germany, which permits use, reproduction & distribution in any medium for non-commercial purposes, provided the original author(s) and source are given credit. See <http://creativecommons.org/licenses/by-nc/2.0/de/>

Table of Contents

1	Introduction	74
2	Contraception	76
3	Induced abortions	79
4	Effects	81
	References	83

Overview Chapter 3: Birth regulation in Europe: Completing the contraceptive revolution

Tomas Frejka¹

Abstract

Early in the 21st century modern contraception -- primarily hormonal methods, advanced IUDs, sterilization and condoms -- has become the main instrument of birth regulation in Northern and Western Europe and gaining ground in Southern Europe and the formerly state socialist countries of Central and Eastern Europe. Legal induced abortion use, which was highly prevalent in Central and Eastern Europe, has been declining since the demise of authoritarian regimes around 1990. Nonetheless, abortions are still used in countries of the former Soviet Union and the Balkans, where the “abortion culture” had been deeply ingrained. Liberal abortion legislation, modern induced abortion technology, and modern contraceptives, have enhanced women’s health, been instrumental in childbearing postponement, have been a factor in changing partnership relations, and in the evolution of values regarding sexuality, reproduction, and childbearing, but they have not been a principal cause of contemporary low fertility. Assisted reproductive technology (ART) is emerging and having a slight positive impact on fertility in some countries.

¹ E-mail: Tfrejka@aol.com

1. Introduction

Contraception and induced abortions were the principal means of regulating fertility in Europe in recent decades. Both were known already in the ancient cultures of Egypt, Greece, Rome and other countries (Himes 1936; van de Walle 1999), but were not widely practiced prior to the 19th century.

In addition to abstinence, the most widespread contraceptive method of the 19th and early 20th centuries was *coitus interruptus* – withdrawal (Santow 1993). The practice of induced abortion was also widespread. With time, other contraceptive methods were increasingly used, namely the douche, the rhythm method (also known as the *calendar method* or *periodic abstinence*) and condoms. The first intrauterine devices (IUDs) were introduced in the 1920s, but were not in general use before the 1960s. The U.S. Food and Drug Administration approved oral hormonal contraception, the “pill,” in 1960; this marks the initiation of the era of truly modern contraception. The generally accepted contemporary classification of modern contraceptives includes sterilization, condoms and barrier methods in addition to IUDs, and various forms of hormonal contraception, such as the pill, injectables and implants. (We will use this terminology even though the characterization “modern” is historically inaccurate.) Rhythm, withdrawal, prolonged abstinence and douching are considered traditional methods. One reason for distinguishing between modern and traditional methods is the difference in their effectiveness in preventing conception. Modern methods are very effective when properly administered, whereas traditional methods tend to have high failure rates. When a modern contraceptive method is used consistently for 12 months, fewer than one pregnancy per 100 women-years will materialize, compared to 14 – 26 pregnancies when traditional methods are used² (United Nations 2000).

In the second half of the 20th century, several European countries had legal restrictions on the use of contraceptive methods, reflecting the position and influence of religious institutions, notably Christian churches. In the Netherlands, for example, “it was forbidden to sell or advertise contraceptives” in the 1960s, but “in 1969 the [Dutch] government removed the statutory prohibition on contraceptives” (Netherlands chapter). In principle, none of these restrictions are any longer in force early in the 21st century.

Abortion laws can be classified into five broad categories, reflecting various degrees of restrictiveness: (1) strict prohibition, or abortion only allowed to protect the woman’s life; (2) abortion also permitted to protect a woman’s physical health; (3) abortion permitted to protect a woman’s physical and mental health; (4) abortion permitted on socioeconomic grounds; and (5) abortion permitted on demand during a

² Although the male condom is considered a modern method its effectiveness is low: the probability of failure is 14 pregnancies per 100 women-years during 12 months of use.

prescribed period of the pregnancy without restriction as to reason. Induced abortions were almost universally illegal in the first half of the 20th century. After 1950, laws were liberalized in most European countries, first in the formerly state-socialist countries of Central and Eastern Europe in the mid-1950s, and gradually elsewhere. As of the early 21st century, induced abortions are permitted without any restriction as to reason in almost all European countries (Rahman et al. 1998), although a few countries have some legal constraints, and there are two significant exceptions. The most restrictive laws are still in force in Ireland. In Poland, abortion was permitted on socioeconomic grounds in 1956, but the law was revised in 1993 to permit abortion only when a pregnancy threatens the woman's life or health, when a pregnancy is the result of a crime, or if the foetus appears to be severely and incurably damaged (Kulczycki 1995).

The legal status of abortion may entail various consequences, such as increased health risks or the need to travel to other countries to obtain an abortion. Where restrictive laws are in force, the health risks can be considerable because induced abortions may not be performed in optimal hygienic conditions with advanced medical procedures. Following the imposition of extensive restrictions in eligibility for an induced abortion in Romania in October 1966, the abortion-related maternal mortality rate increased from 16.9 per 100,000 live births in 1965, to 151.3 in 1982, a nine-fold increase. Throughout the 1980s, 85 to 90 percent of maternal deaths in Romania were due to abortions (Baban 1999). The response to restrictive legislation in some countries is that women with a strong motivation to interrupt an unwanted pregnancy will travel to another country to obtain an abortion. "In Ireland ... an increasing number of women have been travelling to England for abortion services" (Henshaw et al. 1999). The health risks to these women are negligible because of the good quality of the services in England. Nonetheless, even with liberal legislation the quality of abortion services may differ from one country to another, with differential effects on women's reproductive health.

The principal contemporary medical methods of pregnancy termination are vacuum aspiration and Mifepristone (RU-486) for early abortions, as well as dilatation and curettage (D&C). Up until the second half of the 20th century, the health risks associated with induced abortions were considerable. It was with the development of antisepsis that D&C became a relatively safe procedure when performed by qualified medical personnel. The introduction of vacuum aspiration roughly coincided with the widespread legalization of abortion (van de Walle 2003). RU-486 was invented in France in 1980, and has become a widely used method in a number of European countries. This method was used, for example, in 57 percent of induced abortions in 2005 in Sweden (Socialstyrelsen 2006)

Customarily, only the means to prevent conception and births -- contraception and induced abortion -- have been subsumed under the concept of birth regulation. In recent decades, however, various methods of assisted reproduction have been increasingly used by couples facing infertility, and these methods have become relevant for fertility trends (e.g., Stephen 2000). Assisted reproductive technology (ART) has led to a rise in the frequency of multiple births (Czech Republic chapter), and arguably has also had a slight positive impact on fertility rates, especially at higher reproductive ages (Hoorens et al. 2007, Sobotka et al. 2007). Leridon's (2004) study shows that assisted reproduction can partly offset the negative effects of fertility postponement on the ability to conceive. These findings justify the inclusion of such activities in the "birth regulation" concept.

The first human conceived by in vitro fertilization (IVF) was born in 1978 in England (Stephoe and Edwards 1978). A few other methods of ART have been developed since then, of which the most prominent is the intracytoplasmic sperm injection (ICSI), which is commonly used in the case of male-factor infertility. The use of ART differs greatly between countries. These variations can be attributed to a number of factors, including differences in the provision of ART by the various national health care systems, differences in the legislative regulation of ART, and varying levels of access to ART treatments (Schenker 1997). In most European countries with available statistics on assisted reproduction, the proportion of children born after an ART treatment ranges between one and three percent, with Macedonia recording a very low volume of 0.2 percent, and Denmark reporting the highest success rate of 3.9 percent in 2003 (Anderson et al. 2007, these data exclude intrauterine inseminations).

2. Contraception

It is possible to get a general idea of levels and trends in contraceptive use in the four main regions of Europe in the past two decades from Table 1³.

³ The United Nations Population Division periodically provides an overview of contraceptive use around the world. Nationally representative sample surveys of women of reproductive age (usually restricted to women who are married or in a union) conducted by governments and international organizations are compiled and regional averages are estimated. The two most recent global overviews refer to 1998 and 2005 (United Nations 2001 and 2006), but reflect developments preceding those years because national surveys are conducted irregularly.

Table 1: Contraceptive use and use of modern methods, by regions in Europe, as reported in 1998 and 2005, reflecting years prior to these dates

Region	Year reported	Percentage of couples using		Percentage of users employing modern methods
		any method	modern method	
Eastern Europe ^a	1998	69	31	44
	2005	62	36	58
Northern Europe	1998	78	77	98
	2005	79	75	95
Southern Europe	1998	69	31	46
	2005	69	49	71
Western Europe	1998	75	71	94
	2005	74	70	95

Sources: United Nations 2001, 2006.

Note: ^aThe formerly state-socialist countries of Central and Eastern Europe.

The main observations that can be drawn from these data are as follows:

Contraceptive prevalence was higher in Northern and Western Europe than in Eastern and Southern Europe;

The use of modern contraceptives was almost universal in Northern and Western Europe;

Although relatively low, the use of modern contraceptives increased substantially in Eastern Europe and especially in Southern Europe during recent years.

The transition to the dominant use of modern contraceptives by the majority of populations, habitually referred to as “the contraceptive revolution” (Westoff & Ryder 1977), took place in Northern and Western Europe during the 1960s and 1970s. In Southern Europe, this occurred mostly during the 1980s and 1990s, and is still ongoing in the 2000s (see country chapters). In the formerly socialist countries of Central and Eastern Europe, major changes in contraceptive behaviour got under way with the collapse of the authoritarian regimes (For examples see Table 2 and the chapters on the Czech Republic, Poland, Russia, and Slovakia).

Table 2: Percentage currently using contraception, married women of reproductive age^a, selected European countries, 1971-1999

Country	Year	Any method	Prevalence of modern methods					Percentage of users employing modern methods	
			Total	Sterilization	Pill	IUD	Condom		Withdrawal
Czech Republic	1991	78	53	2	7	17	27	25 ^b	68
	1993	69	45	3	8	15	19	22	65
	1997	72	63	12	23	14	13	7	88
Romania	1978	58	5	..	1	0	3	26	9
	1993	57	15	1	5	11	4	34	26
	1999	64	30	3	8	7	9	29	47
Finland	1971	77	54	0	20	3	31	16	70
	1977	80	78	4	11	29	32	2	98
	1989	77	75	16	11	26	20	1	97
Spain	1977	51	20	0	13	1	5	22	39
	1985	59	38	5	16	6	12	16	64
	1995	81	67	20	15	8	24	11	83
France	1972	64	21	0	11	1	8	33	33
	1978	79	48	5	27	10	6	22	61
	1988	81	67	7	30	26	4	7	83
	1994	75	69	8	36	20	5	3	92

Sources: United Nations 2001, 2006.

Notes: a – Women currently married or in consensual unions, usually ages 15-44 or 15-49; b - includes rhythm.

There was considerable variation between countries in the composition of contraceptive methods used, and in their trends of use over time. Taking into account that contraceptive methods tend to be used differentially depending on age (mainly, on the age of women), an almost universal increase in the use of the more effective methods, sterilization and the pill can be observed (Table 2). Conversely, the use of traditional methods has declined across the board, as exemplified by the trends in the use of withdrawal.

One specific development is worth pointing out. The overall use of sterilisation has generally been increasing. Nonetheless, the delay of childbearing, with a growing number of women “catching up” towards the end of their reproductive period, has led to some decline in the use of sterilisation at those ages. In Great Britain, for example, “since the 1980s, particularly among couples in their 30s and early 40s, the popularity of sterilisation as a method of contraception seems to have decreased, whilst among women aged 45–49 it appears to have increased” (Botting and Dunnell 2000). This phenomenon is apparently occurring in several Western countries (see, for example, Figure 19 and its discussion in Netherlands chapter).

When looking at the mix of contraceptives being used and the trends of use of specific contraceptives, a clear distinction can be made between those countries where the contraceptive revolution has run its course, and those countries where change is still

in progress. In those countries where the contraceptive revolution is complete, the use of traditional methods is now almost zero. In a number of countries, such as the Czech Republic and Spain, change in the use of contraceptives was progressing rapidly during the 1990s, and the patterns of use are coming close to those of countries with a completed transformation. Romania is an example of a country where changes in contraceptive use still have a long way to go. Despite a significant ongoing metamorphosis, fewer than half of all couples in Romania were using modern contraceptives in 1999, but the transformation no doubt continued during the 2000s (Romania chapter).

3. Induced abortions

“Abortion culture” is the term succinctly characterizing the nature of birth regulating behaviour in the formerly socialist countries of Central and Eastern Europe for the four decades of the 1950s through the 1980s (Stloukal 1999). Liberal abortion legislation, coupled with health systems advancing curative, rather than preventive, medicine, made induced abortions easy to obtain and socially acceptable. With the exception of Hungary, the GDR, and parts of the former Yugoslavia, modern contraceptives, especially the pill, were difficult to obtain, and most couples were using traditional ineffective contraception (Stloukal 1995; Sobotka 2003). Withdrawal, and, to a lesser extent, the rhythm method and condoms, were being employed by a majority of users (Frejka 1983; David 1999).

There were major differences between these countries in the incidence of induced abortions. For the most part, women had an average of one to two lifetime abortions. But in the Soviet Union and Romania, the total induced abortion rate around 1960 was on the order of five to almost eight lifetime abortions per woman (Frejka 1983).

Birth prevention behaviour changed significantly during the 1990s and early 2000s following the collapse of the totalitarian regimes in the formerly socialist countries, although some reshaping was seeping in prior to that. The incidence of induced abortion decreased in all these Central and Eastern European countries (Table 3) together with a major shift to modern contraceptives (Tables 1 and 2). The real decline of induced abortions might not have been quite as impressive as official data depict due to likely incomplete registration. By the early 2000s, countries of Central Europe with reliable abortion registration experienced levels close to those prevalent in Western Europe, but there were a number of countries where a considerable proportion of women were still resorting to induced abortion. This was particularly true in the countries of the former Soviet Union and in the Balkans (Sobotka 2003), where the “abortion culture” had been deeply ingrained, living conditions for diverse socio-economic strata of the population

were improving unevenly and gradually, and it was taking time for birth preventing behaviour to modernize.

Table 3: Legal induced abortions, rates (per 1000 women of reproductive age) and total abortion rates, selected countries, 1980–2003

Country	Rates of legal induced abortion				Total induced abortion rate ^e			
	1980	1990	1996	2003	1980	1990	1996	2003
Croatia ^a	50.3	40.1	12.9	6.5	1.5	1.2	0.4	0.2
Czech Republic	32.3	47.7	20.7	12.6	1.0	1.4	0.6	0.4
Hungary	36.3	41.2	34.7	25.8	1.1	1.2	1.0	0.7
Romania ^a	u	181.7	78.0	34.8	u	5.5	2.3	1.0
Russian Federation ^a	[123.1]	[109.3]	68.4 ^a	44.5	3.7	3.3	2.0 ^e	1.3
Russian Federation (see chapter)						3.4 ^d	2.5	1.6
Finland	20.4	11.1	10.0	10.8	0.6	0.3	0.3	0.3
Sweden	20.7	21.3	18.7	20.2	0.6	0.6	0.6	0.6
Spain ^a	u	4.3	5.7	8.5	u	0.1	0.1	0.2
Germany	u	8.5	7.6	7.7	u	0.3	0.2	0.2
France	21.6	16.4	16.6	16.5	0.6	0.5	0.5	0.5
France (see chapter)	19.0 ^f	14.0 ^d	14.2	14.1	0.6 ^f	0.5 ^d	0.5	0.5
Netherlands ^b	6.7	5.2	6.5	8.6	0.2	0.2	0.2	0.3

Sources: Henshaw et al. 1999 (for columns 1980, 1990, and 1996); Sedgh et al. 2007 (for column 2003); Rossier and Pirus (2007) for France; papers in this volume.

Notes: a – Incomplete or of unknown completeness; b – Residents only; c – The total induced abortion rate is the average number of induced abortions per woman during her lifetime if present levels were to prevail. It is commonly estimated by multiplying rates per 1000 women of reproductive age by 30 (the number of years between age 15 and age 45). Data in the table are either such estimates or those cited in papers of this volume; d – 1991; e – 1995; f – 1981; u – Unknown.

Throughout Western Europe, especially following the introduction of modern contraceptives in the 1960s and 1970s, levels of induced abortions were low, and abortion was apparently employed to a large extent as a backup measure. The total induced abortion rates (TIARs) were generally below 0.6 abortions per woman (Table 3), with no major fluctuations over time. A relatively high level of induced abortions by Western European standards is not necessarily taken as problematic in a particular country. The fact that France has one of the highest TIARs in the West (at the level of 0.5 to 0.6) appears to be accepted as normal (France chapter). In Sweden, TIARs are equally high, which can be attributed to about 20 percent of couples using traditional methods of contraception; this proportion has remained stable for several decades (Sweden chapter). Even though there are efforts to increase the use of modern contraceptives in Sweden, these have not been very successful. Yet apparently authorities are not much concerned, possibly because “currently more than half of the induced abortions are performed before the 7th week of pregnancy” (Sweden chapter). In Spain, on the other hand, the TIAR has been much lower than in France and Sweden. However, as the numbers of induced abortions, and thus their incidence, have been

increasing in Spain since decriminalization in 1985, the level of induced abortions is perceived as high, especially among young people, and “may be regarded to be a consequence of shortcomings in sex education, for these subjects are not included in school curricula” (Spain chapter).

4. Effects

The significant advancements in contraceptive and induced abortion technologies, and their relatively easy and widespread availability, are phenomena of the second half of the 20th century. Presumably this could imply that they have had a profound impact on fertility levels and trends. Was that the case? What would the course of fertility have been towards the end of the 20th century without modern contraceptive technology, and without liberal abortion legislation? If the absence of the latter features had been the only societal development that was different over the past half century, fertility trends might not have been much different than they were in reality. Remember that over half of Europe’s population was reproducing at below the replacement level in the 1920s (Kirk 1946), and that this was brought about by employing mainly withdrawal, condoms and illegal abortions. Restricted childbearing motivation was the critical factor. For a more modern example, let us note that developments in Poland in the 1990s suggest that legislative changes may have only negligible visible fertility consequences. The rescinding of liberal abortion legislation in 1993 apparently had only a marginal effect on declining fertility, although without the ban fertility might have declined faster. On the other hand, under certain circumstances the legal curtailment of induced abortion, combined with limited access to contraception, can affect fertility markedly, as was the case in Romania after 1966. There fertility was retained at a relatively high level compared to most other formerly state-socialist countries through the late 1980s.

According to this line of reasoning, liberal abortion legislation and modern induced abortion technology, as well as the availability of new contraceptives, may have facilitated a behaviour that people found preferable in any case, and this may have been its main effect. Even without the liberal abortion legislation, without vacuum aspiration and RU-486, and without the improved contraceptive technology, childbearing trends of the past several decades would most likely have been similar to what actually occurred. It is the motivations shaped by living conditions, as well as by values, norms and attitudes, that modify childbearing behaviour. People would have used whatever contraception was available, backed up by some illegal abortions, to achieve their goals. The changed abortion legislation, together with modern abortion

and contraceptive technologies, made it easier for people to have the number of children they desired.

Several additional, overlapping, crucial effects surface when childbearing developments of the past 50 years are examined in greater detail.

Modern contraceptives have reduced the incidence of unwanted and mistimed pregnancies and births, which, in turn, has reduced the incidence of legal and illegal induced abortions. The latter is a significant contribution to improved reproductive health.

Modern contraceptives have contributed to a decline in unwanted and mistimed pregnancies and births at all ages. In most countries, this decline has been more pronounced among young women, especially teenagers.

Modern contraception and liberal abortion legislation have been instrumental in enabling women and couples to postpone childbearing to higher ages. Postponed fertility generates period fertility that is lower than what would otherwise be the case, and can be a factor in declining lifetime childbearing.

The use of modern contraceptives, complemented by relatively easy access to legal induced abortions, provides women (couples) with tools that allow them to time pregnancies more effectively than was previously possible, and thus to have greater control over life-cycle events, such as education, employment, career development and marriage (Presser 2001; Sobotka 2004).

The use of modern contraceptives, complemented by relatively easy access to legal induced abortions, constitutes one out of a number of basic components/phases of the second demographic transition (van de Kaa 2001). At the same time, the application of modern contraceptives and liberal abortion legislation are instrumental in generating other characteristics of the SDT, namely postponement of marriages and births, and the separation of sex and procreation. These characteristics are, in turn, preconditions for new forms of partnership and family behaviour, as well as changes in values and norms on sexuality, reproduction and childbearing.

These developments can be seen as evidence that modern contraception and liberal induced abortion legislation have had unmistakable and highly significant fertility effects, as well as broader social effects. These family planning tools have improved people's lives, enhanced women's health, and been instrumental in childbearing timing and postponement. In addition, enhanced control over fertility has been a factor in changing partnership relations, and in the evolution of values and norms on sexuality, reproduction and childbearing.

References

- Anderson, N. A., A. V. Goossens, L. Gianaroli, R. Felberbaum, J. de Mouzon, and K. G. Nygren. 2007. Assisted reproductive technology in Europe, 2003. Results generated from European registers by ESHRE. *Human Reproduction* 22(6): 1513–25.
- Baban, A. 1999. Romania, in H. P. David (Ed.), *From Abortion to Contraception: A Resource to Public Policies and Reproductive Behavior in Central and Eastern Europe from 1917 to the Present*. Westport, Connecticut: Greenwood Press, pp: 191-221.
- Botting, B., and K. Dunnell. 2000. Trends in fertility and contraception in the last quarter of the 20th century. *Population Trends* 100, *UK National Statistics* http://www.statistics.gov.uk/articles/population_trends/fertcontrends_pt100.pdf.
- David, H. P. (Ed.) 1999. *From abortion to contraception. A resource to public policies and reproductive behavior in Central and Eastern Europe from 1917 to the present*. Westport, Connecticut: Greenwood Press.
- Frejka, T. 1983. Induced Abortion and Fertility: a Quarter Century of Experience in Eastern Europe, *Population and Development Review* 9(3): 494–520.
- Henshaw, S. K., S. Singh, and T. Haas. 1999. Recent trends in abortion rates worldwide, *International Family Planning Perspectives* 25(1): 44–48.
- Himes, N. E. 1936 (reprinted 1963). *Medical History of Contraception*. New York: Gamut Press.
- Hoorens, S., F. Gallo, J. A. K. Cave, and J. C. Grant. 2007. Can assisted reproductive technologies help to offset population ageing? An assessment of the demographic and economic impact of ART in Denmark and UK, *Human Reproduction* 22(9): 2471–2475.
- Kirk, D. 1946. *Europe's Population in the Interwar Years*. Princeton, NJ: League of Nations and Princeton University Press
- Kulczycki, A. 1995. Abortion policy in post-communist Europe. The conflict in Poland, *Population and Development Review* 21(3): 471–505.
- Leridon, H. 2004. Can assisted reproduction technology compensate for the natural decline in fertility with age? A model assessment, *Human Reproduction* 19(7): 1549–1554.
- Presser, H. B. 2001. Comment: A gender perspective for understanding low fertility in post-transitional societies, in R. A. Bulatao and J. B. Casterline (Eds.), *Global fertility transition. Supplement to Population and Development Review* 27: 177–183.
- Rahman, A., L. Katzive, and S. K. Henshaw. 1998. A global review of laws on induced abortion, 1985–1997, *International Family Planning Perspectives* 24(2): 56–64.
- Rossier C., and C. Pirus. 2007. Estimating the number of abortions in France, 1976–2002, *Populatio E* 62(1): 57–88.
- Santow, G. 1993. Coitus interruptus in the twentieth century, *Population and Development Review* 19(4): 767–792.
- Schenker, J. G. 1997. Assisted reproduction practice in Europe: legal and ethical aspects, *Human Reproduction Update* 3(2): 173–184.
- Sedgh G., S. K. Henshaw, S. Singh, A. Bankole, and J. Drescher. 2007. Incidence and recent trends in legal abortion worldwide, *International Family Planning Perspectives* Forthcoming September 2007.
- Sobotka, T. 2003. Re-emerging diversity: rapid fertility changes in Central and Eastern Europe after the collapse of the communist regimes, *Population-E* 58(4–5): 451–486.

- Sobotka, T. 2004. *Postponement of childbearing and low fertility in Europe*. Doctoral thesis, University of Groningen, Amsterdam: Dutch University Press.
- Sobotka, T., M. Hansen, T. Jensen, and N. E. Skakkebaek. 2007. Will fertility among Danish women remain stable due to assisted reproduction? Assessing the role of in vitro fertilization in sustaining cohort fertility rates. PAA Annual Meeting, New York.
- Socialstyrelsen (The National Board of Health and Welfare, Centre For Epidemiology, Sweden), 2006. *Aborter 2005*. www.socialstyrelsen.se.
- Step toe, P. C., and R. G. Edwards. 1978. Birth after the reimplantation of a human embryo, *Lancet* 2(8085): 366.
- Stephen, E. H. 2000. Demographic implications of assisted reproductive technologies, *Population Research and Policy Review* 19(4): 301–315.
- Stloukal, L. 1995. Demographic aspects of abortion in Eastern Europe: A study with special reference to the Czech Republic and Slovakia. PhD Thesis, Canberra: Australian National University.
- Stloukal, L. 1999. Understanding the ‘abortion culture’ in Central and Eastern Europe, in H. P. David (Ed.), *From Abortion to Contraception: A Resource to Public Policies and Reproductive Behavior in Central and Eastern Europe from 1917 to the Present*. Westport, Connecticut: Greenwood Press, pp 23-37.
- United Nations. 2001. *Levels and Trends of Contraceptive Use as Assessed in 1998*. ST/ESA/SER.A/190. New York: United Nations
- United Nations. 2006. *World Contraceptive Use 2005*. New York: United Nations.
- Van de Kaa, D. J. 2001. Postmodern fertility preferences: from changing value orientation to new behavior, in R. A. Bulatao and J. B. Casterline (Eds.), *Global fertility transition. Supplement to Population and Development Review* 27: 290–331.
- Van de Walle, E. 1999. Towards a demographic history of abortion, *Population. An English Selection* 11: 115–132.
- Van de Walle, E. 2003. Induced abortion: history, in P. Demeny and G. McNicoll (Eds.), *Encyclopedia of Population*, New York: MacMillan Reference USA, pp: 527–529.
- Westoff, C. F., and N. B. Ryder. 1977. *The Contraceptive Revolution*. Princeton: Princeton University Press.