

Original research article

# Induced abortion in Canada 1974–2005: trends over the first generation with legal access<sup>☆,☆☆</sup>

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Received 30 January 2011; revised 8 June 2011; accepted 22 June 2011

## Abstract

**Background:** Canadian women currently entering menopause are the first generation with access to legal induced abortion throughout their reproductive years.

**Study Design:** Statistics Canada data from 1974 to 2005 on age-specific abortion and first-abortion rates were analyzed to determine the proportion of the cohort hypothetically and actually undergoing at least one induced abortion, as well as the age-specific trends.

**Results:** Among Canadian women who turned 45 years old in 2005, 31% had at least one abortion, with a median age at first abortion of 24 years. Since 1997, age-specific induced abortion rates overall and among teenagers have declined significantly, while rates among older women show less decline as age increases. Annually from 1974 to 2005, women aged 20–29 years account for 52% (SD 1.8%) of all abortions in Canada.

**Conclusions:** Induced abortion is a common procedure experienced by nearly a third of Canadian women during their reproductive years. Consistently, half of all women accessing abortion are in their twenties. These findings suggest that Canadian women, particularly those in their twenties, experience a significant unmet need for effective contraception.

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**Keywords:** Termination of pregnancy; Induced abortion; Canada; Population health; Pregnancy outcome; Reproductive behavior

## 1. Introduction

Induced abortion is a common procedure in Canada with 96,815 performed in 2005 [1]. Abortion has been legally available in Canada since 1969. A full generation of Canadian women has now had access to safe, legal induced abortion throughout their entire reproductive years, although the proportion accessing this service is unknown. An understanding of the prevalence of abortion in the lives of Canadian women and of the consistent requirement for

abortion services in Canada can provide valuable information for decision makers in the health, political and education arenas, and contribute to an enhanced public perception of this common reproductive service.

Prior to 1969, abortions in Canada could only be performed if the continuation of the pregnancy endangered the life of the woman. Passage of the Omnibus Bill (C-150) of 1969 permitted women in Canada to obtain an abortion at a hospital if a committee of three physicians determined that the pregnancy was a threat to the woman's life or health. Further, this law required the hospital to report all abortions to the Therapeutic Abortion Survey (TAS), a database created for that purpose within the Dominion Bureau of Statistics (which later became Statistics Canada). This database has tabulated annual abortion counts since 1969 and, by 1974, added detailed record-level data such as demographic and parity information [2]. Prior to 1988, the TAS coverage for abortions performed in Canada was considered to be 100% [3]. In 1988, the Supreme Court of Canada struck down Bill C-150 restricting abortions to

<sup>☆</sup> Funding: No funder or sponsor was involved in the design or conduct of this study; with the collection, management, analysis or interpretation of the data; or with the preparation, review or approval of this manuscript. The author gratefully acknowledges the support of the Clinician Scholar Program of the University of British Columbia, Department of Family Practice, during the preparation of this manuscript.

<sup>☆☆</sup> Disclosure of interests: none.

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hospitals and requiring mandatory reporting to the TAS [3]. Since that time, an increasing proportion of Canadian abortions are performed in clinic rather than hospital settings [1]. Reporting to TAS, although voluntary since 1988, has continued from both hospitals and clinics. Statistics Canada estimates that TAS currently receives information on 90% of all abortions performed in Canada [4].

The hypothetical proportion of Canadian women who have had at least one abortion during their lifetime has not been recently estimated. Alan Guttmacher Institute reports that an estimated 35% of American women would have at least one abortion by age 45 years if 2005 US abortion rates prevailed throughout their lives [5]. Henshaw's [6] earlier estimate indicated that 43% of women in the United States would have at least one abortion over their reproductive lifetime based on abortion rates of 1992.

Among Canadians for the same period, Millar et al. [7] theorized that 34% would ever have an abortion if the abortion rates prevalent in 1993 were present throughout their reproductive lives [Total First Abortion Rate (TFAR)]. In addition, Miller et al. [7] reported TFAR for each of the years 1974, 1979, 1981, 1984, 1991 and 1993, demonstrating an upward trend from 25% through to 34%.

More recently, global [8] and Canadian [1] published data indicate a steady decline in both overall number and rates of induced abortion. These declines are widely attributed to increased prevalence of contraceptive use and increased effectiveness of contraception [5,8,9]. Lower induced abortion rates are associated with jurisdictions offering full public funding of health care including abortion [10]; increased access to safe [11], legal [12] abortion services; and increased sexual health education [8,13].

This study aimed to determine the proportion of Canadian women completing their reproductive years in 2005 who had at least one induced abortion and to describe temporal trends of abortion use in Canada 1974–2005.

## 2. Methods

These calculations utilized Statistics Canada data from 1974 to 2005 on age-specific rates for induced abortion [1]. Age-specific numbers of first, repeat and all induced abortions for each year in the period 1998 to 2005 were accessed as custom tabulations from the Canadian Institute for Health Information (CIHI), the agency designated to compile the TAS by and for Statistics Canada [14–16]. An age-specific rate of first abortion represents the number of women in the specific age category having a first abortion in a given year from among the number of women in the same age category who have not previously had an abortion (that is, the denominator is limited to those “at risk” for a first abortion). The age-specific first abortion ratio, however, is the number of first abortions among 1000 total women in the specific age group (regardless of previous abortion history). The TFARs for the years 1975,

1979, 1984, 1989, 1991 and 1993 utilized are those published by Millar et al. [7]. For subsequent years, TFAR was calculated in the following manner: An age-specific first abortion ratio is available for each 5-year age category (for example, one ratio is available for those 20–24 years of age). As we wish to sum the ratios occurring at each of the reproductive years, age 15 to age 45 years, to produce the TFAR over a reproductive life span, we begin by summing the ratios within each 5-year interval (multiplying the ratio given for the interval age 20–24 years by 5). This will give us a subtotal first abortion rate for the age range 20–24 years. We will do the same for each 5-year age range and then add all of the 5-year subtotals together to yield the lifetime TFAR. When combined with TFARs of Millar et al., these data illustrate the trend over selected years during the study period 1974–2005 for hypothetical lifetime probability that a Canadian woman will ever have an abortion. This is a hypothetical rate that assumes that 1000 women have lived each of the years of their reproductive life experiencing the age-specific rates prevalent during the single actual calendar year, producing the number from that thousand who, in theory, would have a first abortion by age 45.

To calculate the *actual* proportion among women to have experienced at least one abortion during an entire reproductive life span, we sum the annual age-specific first abortion ratios from each of their reproductive years of age (in this case, starting with the ratio of 14-year-olds having a first abortion in the year 1974, and adding each ratio annually until this cohort reached the age of 45 years in 2005).

As the data are available grouped in 5-year age cohorts and available for the years 1974, 1979, 1984, 1989 and 1993 and annually 1998 through 2005, we are able to reflect the rate experienced by a woman in our cohort in a particular year applying the 5-year cohort rate in year-by-year analysis, interpolating rates for years in which we do not have data as the proportional increment between the values for the closest year on either side. In this way, we incorporate changes (in some cases up to 2%) to the first abortion ratios within cohorts during the 5-year intervals. Comparative calculations were modeled using analysis by 5-year age cohorts, with rates for each cohort multiplied by 5 then summed. The median age at first abortion was calculated as the age by which half of the women among this cohort who would ever have an abortion had had one and adding 0.5 year to account for the rounding of reported year of age to the start of a year. It is assumed that all abortions for girls under 15 years of age are first abortions.

### 2.1. Data quality

For the years 1998–2005, complete data on previous abortion history are available for 45.4% of Canadian induced abortion records, compared to an average of 79% for 1975–1993 [7]. The decline in the proportion of data available with record-level demographic detail is due almost entirely to the

increasing proportion of all abortions performed in provinces submitting only aggregate (not record-level) data on abortions to CIHI. In some cases, the decision to submit aggregate data is made in an effort to further protect confidentiality for this highly sensitive procedure. For example, the governments of the provinces of British Columbia and Quebec, although having record-level data available from both hospitals and clinics and submitting information on about 15% and 20% of all Canadian abortions, respectively [1,4], transmit only aggregate data to CIHI [4]. All calculations assume that the proportion of first abortions among the records/provinces for which we have record level data is valid for the records/provinces submitting only aggregate data.

### 3. Results

#### 3.1. Trends in abortion rates

Overall, Canadian induced abortion rates, similar to those seen in global abortion rate data, have declined by 14% since 1997 (Fig. 1). For each recent year 1998–2005, teenagers account for about a fifth of all abortions (18.2%, SD 1.3%), and women in their twenties accounted for roughly half of all abortions (52.1%, SD 0.9%). Over the entire data span from 1974 to 2005, women in their twenties consistently and overall account for about half of all abortions (52.2%, SD 1.8%) From 1997 to 2005, teenagers (age 15–19 years) have demonstrated the steepest decline in abortion rates (29% reduction), followed by women aged 20–24 years (19% reduction). In comparison, there has been less decline for

women 25–29 years (13% reduction), with no consistent trend in rate among women aged 30 and older, demographically the fastest growing age category. Notably, a significant increase in access to abortion occurred following the 1988 Supreme Court decision striking down the law limiting abortions to hospitals and requiring adjudication by a three-person committee.

Fig. 2 illustrates the gradual increase in the proportion of abortions sought in clinics vs. hospitals [1], such that, by 2005, roughly half of these services had been delivered in clinic settings. As can be seen in the trend figures for numbers of abortion after 1988, and comparing to the proportion of clinics and hospitals, more procedures were accessed in both settings following the lifting of restrictions.

#### 3.2. Trends in hypothetical lifetime probability to have an abortion (TFAR)

The hypothetical, or period, TFAR reflects the proportion of women who will have at least one abortion over their lifetime (if experiencing the age-specific ratios occurring in a specific year over the entire reproductive range). Millar et al. [7] demonstrated TFAR increasing from 25% to 34% over the years 1975–1993. Fig. 3 reproduces these rates adding TFAR for each year from 1998 to 2005 to demonstrate the hypothetical trend for Canadian women during selected years over the period 1974–2005. The current hypothetical proportion of women who would ever have an abortion, if the age-specific first abortion ratios of 2005 prevailed throughout their reproductive life, is 27.2%.

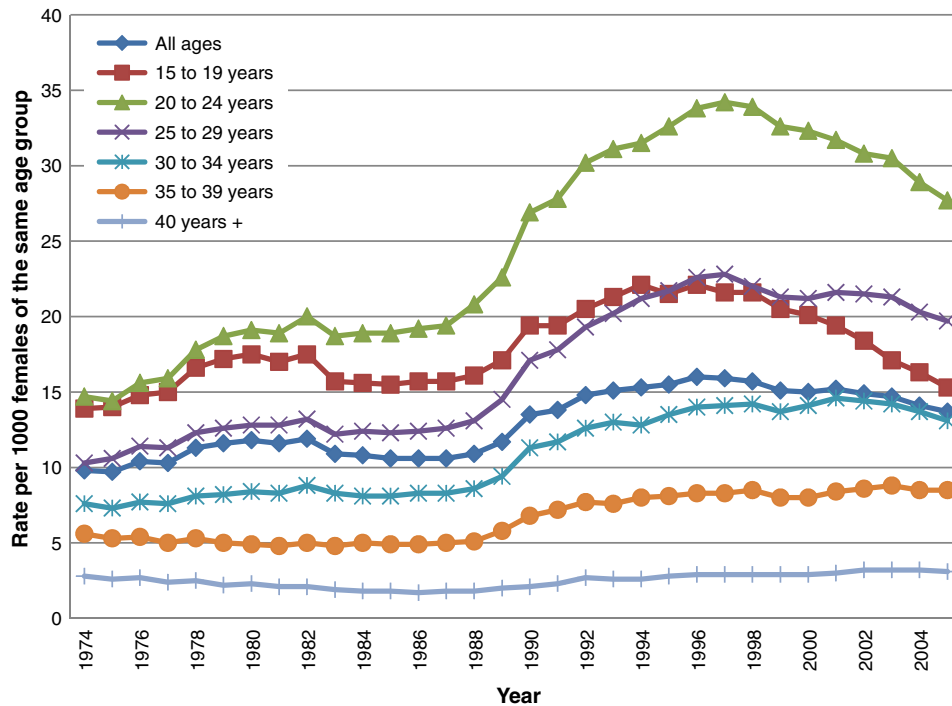


Fig. 1. Age-specific rate for all induced abortions, Canada, 1974–2005.

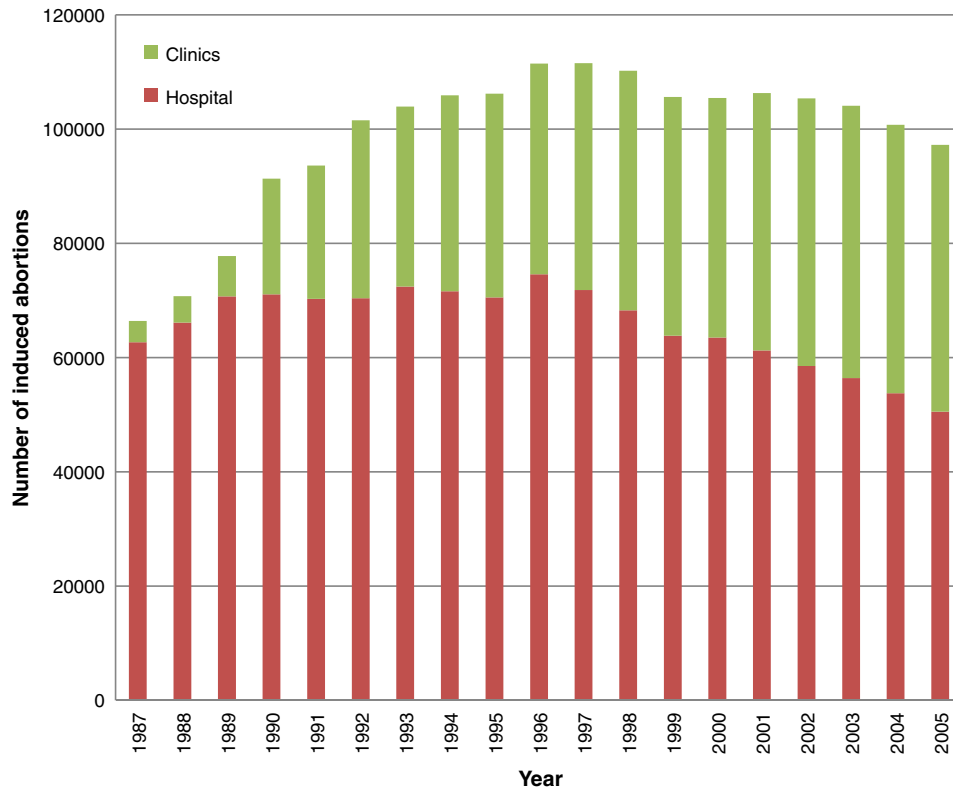


Fig. 2. Hospital vs. clinic induced abortions, Canada, 1986–2005.

3.3. Proportion of women with at least one lifetime abortion among the first Canadian cohort with legal access

Table 1 indicates the calculation for a lifetime proportion of women who will have a first abortion to yield 31% among the cohort of women who were 14 years old in 1974 and turned 45 years old in 2005. These calculations indicate a

median age at first abortion, among those in this cohort who have ever had an abortion, of 24.0 years. Because they are so few, addition of expected abortions for women between the age of 45 and 50 years (up to 2010), assuming age-specific first abortions would be within 20% of that in 2005, would not change the reported percentage. An ancillary analysis was undertaken using three alternate methods to estimate

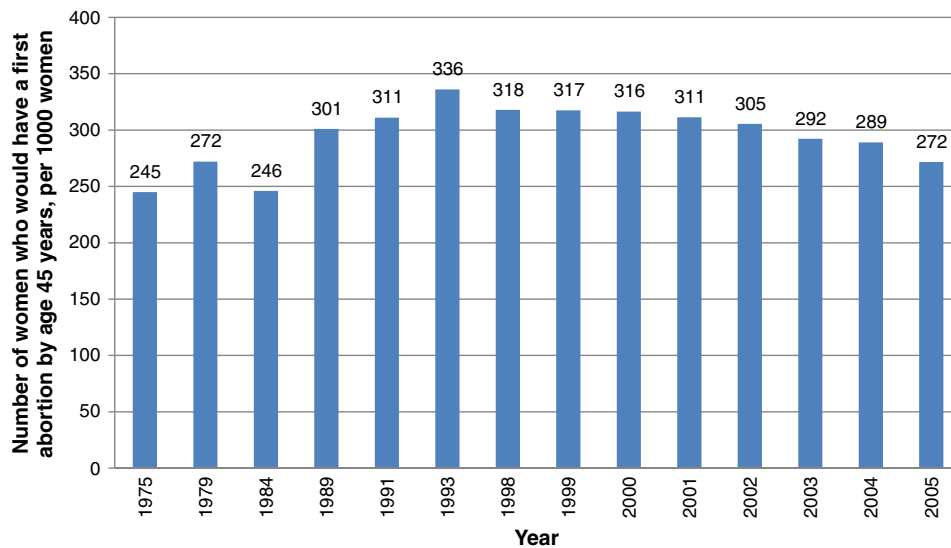


Fig. 3. Total first abortion rate for selected years 1974–2005, Canada.

Table 1  
Calculation of the cumulative total first abortions among 1000 Canadian women born in 1959 and turning 45 years in 2005

Actual year	Actual age	Age range accessed	Year of data table	Age-specific first abortion (FA) ratio; data year or closest prior year	Age-specific FA ratio; next data year	Age-specific ratio of FA: actual/interpolated	Cumulative total first abortions per 1000 women
1974	14	<15	1974	2.7		2.7	2.7
1975	15	15–19	1975	13.7		13.7	16.4
1976	16	15–19	1975/1979	13.7	16.5	14.4	30.8
1977	17	15–19	1975/1979	13.7	16.5	15.1	45.9
1978	18	15–19	1975/1979	13.7	16.5	15.8	61.7
1979	19	15–19	1979	16.5		16.5	78.2
1980	20	20–24	1979/1984	17.3	16.9	17.2	95.4
1981	21	20–24	1979/1984	17.3	16.9	17.1	112.6
1982	22	20–24	1979/1984	17.3	16.9	17.1	129.6
1983	23	20–24	1979/1984	17.3	16.9	17.0	146.6
1984	24	20–24	1984	16.9		16.9	163.5
1985	25	25–29	1984/1989	10.7	13.4	11.2	174.7
1986	26	25–29	1984/1989	10.7	13.4	11.8	186.5
1987	27	25–29	1984/1989	10.7	13.4	12.3	198.8
1988	28	25–29	1984/1989	10.7	13.4	12.9	211.7
1989	29	25–29	1989	13.4		13.4	225.1
1990	30	30–34	1989/1991	13.4	9.5	11.5	236.6
1991	31	30–34	1991	9.5		9.5	246.1
1992	32	30–34	1991/1993	9.5	10.3	9.9	256.0
1993	33	30–34	1993	10.3		10.3	266.3
1994	34	30–34	1993/1998	10.3	7.6	9.8	276.0
1995	35	35–39	1993/1998	6.1	4.8	5.6	281.6
1996	36	35–39	1993/1998	6.1	4.8	5.3	286.9
1997	37	35–39	1993/1998	6.1	4.8	5.1	292.0
1998	38	35–39	1998	4.8		4.8	296.8
1999	39	35–39	1999	4.7		4.7	301.4
2000	40	40–44	2000	1.8		1.8	303.2
2001	41	40–44	2001	1.8		1.8	305.0
2002	42	40–44	2002	1.9		1.9	306.9
2003	43	40–44	2003	1.8		1.8	308.7
2004	44	40–44	2004	1.9		1.9	310.7
2005	45	45–49	2005	0.1		0.1	310.7
							Total FA/1000

lifetime proportion of women who experience a first abortion. The first method estimated this proportion assuming 5-year age cohorts (and multiplying these rates by 5, then summing) rather than by single-year rates and also yields 31%. Another method employed the assumption that first abortion age-specific ratios in the single-year calculation for years in which this rate is not available are the same as those known for the closest year (1 or 2 years before or after) and similarly yielded a lifetime rate of 31%. A third alternate calculation, assuming each unknown year rate is an average of the known rates for years immediately before and after, further supports a proportion of 31%.

#### 4. Discussion

Analysis of data from 1974 to 2005 yielded an estimation that 31% of Canadian women now entering menopause had at least one legal induced abortion. This represents the first calculation of the actual proportion of a cohort of Canadian women to undergo abortion and is consistent with the

hypothetical range (TFAR) over the same period varying between 25% and 34%. These rates indicate that nearly a third of Canadian women born after 1959 (i.e., those attaining age 10 years in 1969 or later) will experience at least one induced abortion in their lifetime. Notably, a declining trend in TFAR in recent years may indicate that the proportion of today's reproductive-age women experiencing abortion could be less than that reported among this first cohort. Ongoing determination of abortion trends in Canada will require improvement to the current data reporting and collection methods, as data from 2006 through 2008 have significant missing elements [1,17,18].

Continued efforts to prevent unintended pregnancies among Canadian teenagers and women in their early twenties are important. However, demographic shifts are producing an increase in the proportion of the population who are women over the age of 25 years. Among this age cohort, the decline in abortion rate is substantially less than that seen for younger women. Similarly, Upson et al. [19] found that American women 35 years and older have the lowest rate of contraceptive use and highest proportion of



unintended pregnancies ending in abortion. Consistently over the past three decades, half of all abortions are accessed by women in their twenties. Public health and primary care health services should consider targeting pregnancy prevention programming and education toward this highest user age cohort to address the high unmet need for contraception.

Trends to increasingly provide abortions in single-purpose clinic settings reflect many advantages such as lower costs [20] and enhanced ability to combine contraception counselling and provision with the abortion service [20]. However, abortion clinics in Canada are located almost exclusively in large urban centers [21]. This concentration of service locations carries a disadvantage of increased costs and travel for many women [22] as fewer rural and remote hospitals (compared to urban hospitals) now offer any abortion procedures [22,23]. As Kaposy [21], notes this leaves “many women who live away from urban centers with no ready access to abortion services.”

#### 4.1. Limitations

The largest source for error in these calculations is the limitation of the original Statistics Canada data set, particularly with regard to possible missing data. Statistics Canada estimates that data on 10% of abortions performed in Canada are missing [1,3,4]. In detailed review of the data elements collected and potentially or known as missing in the period from 1988 to 2005, the stability of this estimate over the period appears justified. Consequently, calculations based on a data set missing 10% of events will tend to underestimate lifetime proportion of women having an abortion.

The estimated missing 10% of abortions in Canada is due to several minor factors detailed here. Since 2004, data are no longer collected on Canadian women obtaining an abortion in the United States (representing 0.1% of all abortions in Canada during 2003) [24]. In 2004 and 2005, Manitoba did not submit information on abortions performed in a clinic (representing 0.8% of abortions in 2003). For 2002 and 2003, there was incomplete reporting of induced abortions in Nunavut (typically under 0.3% of abortions prior to 2002). For abortions in Quebec from 2004 and since 1999 for clinic abortions in Ontario, Statistics Canada estimates that less than 1% of data are missing, representing nonresident women not covered under the provincial health insurance plan or those who do not submit claims. Data are also missing Canada-wide for all of those obtaining an abortion at military and prison hospitals (estimated by Statistics Canada at 2%) and women who seek medication-induced (“medical”) abortions performed outside of a reporting abortion facility (estimated at 1%–2%). In the United States, 10.6% of all abortions were medication-induced abortions in 2006 [25]. Although medical abortion utilizing mifepristone is a common procedure in the United States and other developed nations, the effect of missing medical abortion reporting in Canada is small as mifepristone is not available in Canada. Medication abortions in

Canada utilize methotrexate [23] and are much less common, as evidenced by counts captured when paid for by the provincial health care system in Ontario [23] and BC or when performed within reporting facilities in other provinces.

The other potential factor affecting accurate calculation of first abortion rate is underreporting of previous abortions by women at the time of seeking an abortion, which will tend to overestimate the true lifetime risk because some abortions that are second or higher-order abortions will be (incorrectly) reported as first abortions, thus artificially inflating first-abortion rates. Although no data are available within the past 20 years for the magnitude of underreporting of previous abortions at the time of an abortion, data from the United States on underreporting of a personal history of abortion by women in general surveys indicate capture of 45%–59% [26–28]. An American record linkage study published in 1979 indicated underreporting of previous abortions at the time of a subsequent abortion to be approximately 20% [29]. Due to the distribution of abortion service facilities in Canada (in many cases, only one or two facilities in a province) and the presence of universal health care coverage, women seeking a subsequent abortion will in many cases seek care at the facility with records on their previous abortion. Additionally, health information transmitted to their abortion provider at the time of an abortion may be more accurate than that disclosed during an independent survey. Thus, underreporting of a personal history of abortion at the time of giving a medical history in an abortion facility in Canada may be significantly lower than that observed during general surveys and interviews in the American survey estimates. In a 1999 Canadian study by Fisher et al. [30], 31.8% of 1127 women completing a questionnaire at the time of presenting for an abortion indicated having had a previous abortion. This rate compares favorably with the official Canadian rate of repeat abortions in 1998 of 38.1% [14], although underreporting may potentially affect both rates. The question of accuracy of abortion history given at Canadian abortion facilities deserves further study.

Using data aggregated as 5-year age groups, and not available in single-year categories, affects accuracy throughout these estimations, but is a less significant factor than the missing or inaccurate data considered above.

Thus, the limitations of the data set may be causing an underestimate of up to 10% (representing roughly 3% more women in this cohort to have undergone abortion). This estimated error is partly balanced by lesser factors (underreporting previous abortions and aggregated 5-year data) contributing to an overestimate.

## 5. Conclusion

An entire generation of Canadian women has now had access to safe legal abortion throughout their reproductive life span. Induced abortion is a common procedure experienced by 31% of the cohort of Canadian women who reached 45

years of age in 2005. Trends over three decades indicate consistently that half of all women having abortions are in their twenties. These findings indicate a significant unmet need for effective contraception among Canadian women.

### Acknowledgments

The author wishes to thank Dr. Stanley Henshaw for his guidance and suggestions during the preparation of this manuscript, and the reviewers and editor of this journal for their helpful comments.

Parts of this material are based on data and information provided by the Canadian Institute for Health Information. However, the analyses, statements, opinions and conclusions expressed herein are those of the author and not necessarily those of the Canadian Institute for Health Information.

**Contribution to authorship** The author acknowledges that she takes responsibility for the accuracy of the data analysis.

**Details of ethics approval** Ethics approval was obtained from the University of British Columbia Ethics Review Board (H10-01377) on July 13, 2010.

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