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Abortion and Contraceptive-Use in a Northern Province in Vietnam

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Introduction

Vietnam's rapid fertility decline in the last three decades to replacement levels has been well documented in the literature. The Total Fertility Rate (TFR) in Vietnam declined from 5.7 births per woman in 1979 to 2.0 in 1998-2002 (Vietnam Demographic and Health Survey (VNDHS), 2002). This decline has been widely attributed to high rates of contraceptive use, resulting from aggressive family planning policies enacted by the government (see Goodkind, 1995; Haughton, 1997; Teerawichitchainan & Amin, 2010). According to the 2002 VNDHS, virtually all women in Vietnam had heard of at least one form of contraception and current use rates were as high as 80%. Another key factor that this rapid decline in fertility in Vietnam has been attributed to is the very high rates of induced abortion, the rates of which, at one point in time, were among the highest in the world (Goodkind, 1994). In 1996, an estimated 1.5 million documented abortions took place in public facilities in Vietnam and the Total Abortion Rate was estimated to be 2.50 (Henshaw, Singh, Haas, 1999). According to figures estimated by the General Statistics Office (GSO) of Vietnam, the abortion rate among women aged 15-49 was 1.5% in 1998. Since then abortion rates have declined steadily, but have still remained high. The most recent available figure shows that the abortion rate among women aged 15-49 had fallen to 0.8% in 2010 (General Statistics Office, 2011). Abortion was widely promoted in the Vietnam's early family planning campaigns and continues to be heavily subsidized by the government and readily accessible to the general population (Goodkind, 1994; Teerawichitchainan & Amin, 2010).

As alternative approaches to achieving a given aggregate level of fertility in a population, it can be expected that a rise in contraceptive use or in its effectiveness would lead to a decline in the demand for induced abortion and vice versa, if fertility and its other determinants remained constant (Marston & Cleland, 2003). Thus, given the high rate of reported contraceptive use and seemingly ready access to contraception in Vietnam, the continued prevalence of high rates of abortion seems counterintuitive, In certain circumstances however, the coexistence of high rates or the parallel rise in both contraceptive use and abortion is not entirely unusual. As Marston and Cleland (2003) suggest, this is likely to occur in settings that have not yet begun their fertility transition to below replacement fertility. Given however that there is ample evidence that Vietnam has completed the transition to replacement fertility (TFR=1.9; VNDHS, 2002), the situation in Vietnam where both exist at very high levels has baffled researchers and family planning program planners.

The key objective of this paper is thus to better understand why, given the ready access to contraceptives and their high reported use, the rates of abortion remain so high. In this paper, we aim to shed light on potential factors that influence the demand for abortion in Vietnam. In this paper, we focus exclusively on married women among whom reliable data is available. Although a focus on abortion among unmarried women has become an area of interest, research is still hampered by the lack of reliable data, and thus is beyond the scope of this study. In examining abortion among married women of reproductive age, we posit three potential influencing factors that determine the demand for abortion. In doing so, we propose that abortion users can be partitioned into three distinct groups. First, despite high reported use of contraception, a significant proportion of abortions may result from the non-use of contraception. Some proportion of abortions is likely to result from contraceptive failure, resulting from the ineffective or incorrect use of contraceptive methods or the use of methods that have high rates of failure. Finally, as technologies that enable couples to pre-determine the sex of their fetus have become increasingly commonplace in Vietnam where son preference is widely prevalent, it is likely that a sizeable proportion of the demand for abortion arises from the demand for pre-natal sex selection. This is particularly true in Vietnam where a two-child policy, while informal, retains substantial force.

In this study, we use data from the Thai Nguyen province in northern Vietnam. Thai Nguyen, with a population of approximately 1.2 million (2008) is a mountainous midland province in northern Vietnam, and presents a particularly compelling case for this study for several reasons. First, as a province in the northern region of Vietnam, it lies in an area of the country that has traditionally had high rates of abortion. Secondly, the population of Thai Nguyen province includes a substantial proportion of ethnic minorities. There is some evidence that ethnic minorities continue to have high fertility levels and have higher rates of use of traditional and ineffective methods, leading to the speculation that these groups may be driving these abortion patterns (Teerawichitchainan & Amin, 2010).

Literature Review

Non-use of Contraception

In examining the potential influences on the demand for abortion in Thai Nguyen, and by extension in Vietnam, the first and most obvious contributing factor that we explore in this study is the non-use of contraception. The non-use of contraceptives is the leading cause of unintended pregnancies, and

therefore is also central to the prevalence and demand for abortion. This is particularly true in settings like Vietnam where abortion is legal and widely practiced, and as a result a majority of unintended pregnancies end in induced abortion (Le, Magnani Rice, Speizer & Bertrand, 2004). Although rates of contraceptive prevalence in Vietnam have increased steadily over the last two decades and are high, the rates of unintended pregnancy and abortion rates have remained high as well (Le et al., 2004). The reported contraceptive prevalence rate (CPR) has increased steadily, from about 53.0% in 1988 to (National Committee for Population and Family Planning (NCPFP) [Vietnam] 1990) to 75.3% in 1997 (National Committee for Population and Family Planning (NCPFP) [Vietnam] 1999) and to 78.5% in 2002 (Committee for Population Family and Children [Vietnam] and ORC Macro 2003). Despite such high CPR, figures from the 1997 VNDHS show that over 27% of overall births between 1994 and 1997 were classified as unintended. As noted above, abortion rates in the 1990s were among the highest in the world and while they have declined continue to remain high. A recent study by Bradley, Croft, and Rutstein (2011) which used Demographic and Health Survey (DHS) data from over 20 countries, including Vietnam, estimated that close to 35% of unintended pregnancies in Vietnam that resulted in abortion were due to the non-use of contraception at the time of conception. The same study reported that 60% of unintended births in Vietnam resulted from the non-use.

The non-use of contraceptives, which is central to the concept of unmet need for contraception, has been an issue of significant interest for family planners. A substantial literature therefore exists from the developing world that examines the reasons why women do not use contraception despite not wanting to get pregnant (see review by Sedgh, Hussain, Bankole, & Singh, 2007b). As Sedgh et al. (2007) note, the patterns of the distribution of unmet need are inconsistent around the developing world. While outside of Africa, patterns of non-use are can be associated with rural, uneducated and poor women, no such patterns are apparent in Africa. Issues of supply and service provision also appear to be at the center of non-use in developing countries. In Vietnam however, with such a high rate of contraceptive prevalence, the non-use of contraception among certain segments of women that result in unintended pregnancies and its influence on the demand for abortion is relatively less understood. Very few studies have examined this topic in Vietnam. Studies such as Thang & Huong (2003), for instance have uncovered few if any significant associations of socio-demographic variables with non-use. In their study, Thang & Huong (2003) only found a significant association of non-use of contraceptives with age, finding that younger women were more likely not to be using contraceptives.

Contraceptive failure

The second factor that we explore that contributes substantially to raising levels of unintended pregnancies and abortion is contraceptive failure. Contraceptive failure is of particular interest for a study on abortion and unintended pregnancy in a high CPR setting like Vietnam as it is significantly more likely to be the cause for both in settings where contraceptive use is high. This is because contraceptive failure is mechanistically related to the size of the population using contraceptive methods. In a recent comprehensive review, Bradley et al (2011) used DHS data from over 20 countries, including Vietnam, to assess the impact of contraceptive failure on abortion and unintended pregnancies. Results for Vietnam in this study show that in 2002, 31.5% of all pregnancies ended in induced abortion. Analysis of abortion data for 1768 pregnancies in the VNDHS 2002 among women aged 15-49 during 4 years (2002 -2007) revealed that 19.9% of pregnancies that resulted from contraceptive failure ended in induced abortion. The study also estimates that approximately 38% of women were using contraception at the time of conception of unintended births. The reported rate of the use of any method of contraception at the time of conception of pregnancies that ended in abortion was approximately 65%. The same study suggests that in the absence of contraceptive failure, the abortion rate could be cut in Vietnam by more than half (Bradley et al., 2011).

Contraceptive failure is also related directly to the type of method used: whether it was modern or traditional. Results from various studies have shown that traditional methods are the least effective at preventing pregnancies, resulting in high rates of failure. Recent figures estimated in Bradley et al. (2011) using data from 20 countries confirms that failure rates for traditional methods were the highest, up to 19% for safe days or periodic abstinence and 22% for withdrawal in some countries. For Vietnam, Bradley et al (2011) estimate that first year failure rates for safe days and withdrawal were 14.6 % and 14.2% respectively. The short acting modern methods (e.g condoms) and long acting or permanent methods (e.g. IUD) had much lower failure rates. In terms of methods used at the time of the conception of pregnancies that led to abortion, approximately 44% were using traditional methods, 13% were using short acting and 8% were long acting methods (Bradley et al., 2011). Similarly, a study by Cleland and Ali (2004) using data from DHS surveys conducted between 1990 and 2000 in 19 developing countries showed that the 12 month contraceptive failure rate per 100 episodes of pregnancies were the highest for traditional method categories as well. Similar results were obtained from the study by Le et al. (2004) who found that among unintended pregnancies, 66% did not use any

method prior to pregnancies, and 34% used ineffectively, of which, 11% relied on withdrawal, 9% used an IUD, 6% practiced periodic abstinence, 5% used condom, and 3% used oral pills.

Sex Selective Abortion

Finally, the third contributor to the demand for abortion in Vietnam that we explore in this paper is sex selection. There is a growing body of evidence that has begun to show that Vietnam may be experiencing the onset of a sex ratio imbalance. A UNFPA report (UNFPA, 2010) noted that the sex ratio in Vietnam had reached an alarming 112.1 boys to 100 girls in 2008, up from normal levels of 105 in 2000. The General Statistics Office (GSO) reported the sex ratio to be 110 in 2007, and increasing at the rate of 1% per year between 2005 and 2007 (GSO, 2007). These levels and trends, confirmed in several other studies such as Guilmoto (2008) and Guilmoto et al. (2009), although not at high levels experienced in China, are still nonetheless alarming.

The root of this issue in Vietnam is son preference, which is a pervasive part of the culture. Several studies have documented the influence that son preference has on the fertility decisions of Vietnamese couples (Haughton & Haughton, 1995). This has been further compounded by societal transformations in Vietnam over the last several decades: rise of the small family norm and rapid fertility decline, as well as the reinforcement of the informal two-child policy, which has resulted in Vietnamese couples resorting to strategies such as sex selective abortion to obtain at least one son among their children (Belanger, 2006; Pham et al., 2011). One of the key factors that has contributed to an increase in demand for sex selective abortion in Vietnam has been the steadily increasing access to affordable sex determination technologies that enables prenatal sex selection (UNFPA, 2010; Pham, Hall & Hill, 2011). Although abortion is legal in Vietnam and safe abortion services are widely available free of cost through the family planning programs of the Ministry of Health, prenatal sex determination through means such as trans-abdominal ultrasound and sex selective abortion itself remain illegal in Vietnam under various government laws such as the Population Ordinance issued in 2003 and the Prime Minister's Decree in 2003 that outlawed these practices (UNFPA 2009). These laws prohibit not only the practice of sex selective abortion or pre-natal sex determination at health facilities, but even the prohibit any form of promotion of these practices including through various forms of media or print. Despite it being illegal, there is ample indication however that the use of sex selective technologies such as ultrasound is quite high in Vietnam. As Guilmoto et al (2009) note, 63.5% of first time mothers in the annual Population Change, Labour Force and Family Planning Survey 2006 who were asked about prenatal sex diagnosis declared they knew in advance the sex of their child.

Despite these indications however, there is little evidence on sex selective abortion practices in public or private health facilities in Vietnam and virtually no detailed and rigorous survey data on the prevalence of sex selective abortion that are essential to generate the kind of evidence that can provide a sound basis for policy development and interventions to counter such practices. As trends in sex ratios at birth have become more imbalanced, the Government of Vietnam has begun to pay special attention to this emerging scenario. Recent policy initiatives noted above are initial signs of the government's awareness and willingness to face this challenge head on. In this study, we attempt to begin to fill the void in research in this area by collecting special data on prenatal sex determination and abortion in Thai Nguyen, as we seek to better understand abortion in a high contraceptive use setting.

Data

Because of the limitations on abortion data described above, the Population Council, in collaboration with the Institute for Population, Health and Development (PHAD) Vietnam, developed and implemented a large population-based household survey focusing on key issues related to sexual and reproductive health in the Thai Nguyen province with a specific focus on abortion. This survey samples 2695 men and women of reproductive age from 2490 households in Thai Nguyen using a multistage stratified cluster sampling method, oversampling ethnic minorities and P135 designated (poor) populations. This survey is part of larger multi-instrument study that focuses on the access, utilization, quality and equity of primary and reproductive health (RH) care services in the province. Data collection took place between May and July 2011.

In this paper, we analyze data primarily from the Reproductive Health and Abortion modules of the multi-topic survey, consisting of information from 917 ever married women of reproductive age (15-49 years old) (MWRA), 901 of whom responded to questions on abortion. Among this group, 384 women reported having had an abortion at least once in their lifetime. One of the key features of this dataset is the inclusion of a chronological abortion history module for these women who had ever had an abortion, which collects detailed information on each abortion they have had. This module includes information on key factors such as age and marital status at the time of the abortion, the number of children (boys/girls), use of contraception and type of contraception used if any at the time of

pregnancy, and knowledge of the sex of the fetus prior to each abortion, and the presence of post abortion counseling for each abortion individual women in the sample had. This unique data is among the first of its kind collected in Vietnam in a large survey and is likely to be instrumental in the better understanding of the key correlates and determinants of abortion in Vietnam.

Measures

The key measures in this study are centered on the use of abortion and contraception among married women of reproductive age in Thai Nguyen Province. These measures are taken from both the primary survey sample and from the abortion history module sample. Socio-demographic characteristics of this sample of women are extracted from the larger primary sample.

i. *Abortion*: Abortion incidence is measured in this study based on the response of female survey respondents in the sample on whether they had ever terminated a pregnancy in their lifetime. The abortion history module, which records information on any number of abortions that a particular respondent might have had, also allows for the measurement of the number of abortions for each respondent. A more detailed set of questions including contraceptive use, counseling before and after the abortion and the type of facility used and the quality of care received are also asked about the most recent abortion women in the abortion sample had.

ii. *Contraceptive Use:* Contraceptive use in this study is operationalized in several ways. First, a measure of **ever use of contraception** is presented in the analysis. This variable is coded as "Yes" or "1" if the respondent reported that they have used any form of contraception at least once during their lifetime, and No or "0" if otherwise. A measure of **current use of contraception** is also measured. This variable is coded as "Yes" or "1" if a woman respondent reports to be using any form of contraception at the time of the survey and "No" or "0" if otherwise. The survey also collects information on the type of contraceptive used, either at the time of the survey (current use) or prior to the pregnancy resulting in an abortion. Using this information, contraceptive use is further classified into "**modern**" and "**traditional**" method categories for further analyses in the study. Contraceptive methods that are classified as modern include the following : Pill, IUD, Injectables, Condom, Diaphragm, Spermicidal Cream, Male and Female Sterilization, Emergency Contraceptive Pills and the Vaginal Ring. Methods that are classified as traditional are as follows:

Withdrawal, Safe Days/Rhythm/Calendar method, or Herbs. For current use, where multiple responses are allowed, a respondent is classified as a modern method even if used in combination with a traditional method.

iii. *Socio-demographic characteristics:* A number of socio-demographic characteristics of women are utilized for various analyses in the study. These include age (in years) and marital status of the woman at the time of the survey and at the time of the abortion. Education level is measured as a set of mutually exclusive categories indicating whether she had never been to school, or had completed a primary level, high school level, or college level of education Women's occupation is similarly categorized as not working, working in the farming (agriculture) sector or working in the non-farming sector. Women respondents' ethnic minority status is represented in the form of a dummy variable that is coded "1" if the woman belonged to an ethnic minority such as *Tay* and *Nung* and "0" if she was from the *Kinh* majority group. Women's economic status is also indicated by whether respondents lived in a P135 (poor) commune and through household wealth quintiles, generated through principal component analysis of a household wealth index that was included in the survey.

Method and Empirical Strategy

In this paper, we present descriptive and analytical results to delineate and better understand the various reasons why women have abortions in Thai Nguyen. The key analysis in this paper involves the partitioning of abortion users in Thai Nguyen into distinct categories based on the reason that potentially led to the unwanted pregnancy and/or the abortion. In this study, we propose three key categories of abortion users: those who get abortions either due to the *non use of contraceptives*, due to the *failure of contraceptives* or those who get abortions for *sex selection* of the fetus. These categories, which are described in detail in the following section, are exhaustive of all abortion users. Following this partitioning of abortion users, we contrast these three categories of abortion users among each other and against women who have never had an abortion, based on their socio-demographic characteristics. Chi-square tests and t-tests will be used to determine statistical significance of distinctions between groups. Throughout the paper, we also present descriptive abortion and contraceptive use figures from Thai Nguyen, which in addition to providing a contemporary picture of reproductive health outcomes in the province using current data, puts these figures into context

alongside official figures. In doing so, we not only generate updated data for the province, we also provide valuable information on important health indicators for the provincial health department, and subsequently, help generate evidence on emerging issues such as those covered in this paper, enabling the health department in making sound policy and programmatic decisions.

The evidence presented in this study is generated from both the full sample of MWRA from the primary survey (N=917) and some abortion specific results from the abortion history module (N=384). In order to account for design effects on the results from the primary survey, which was collected using a multistage stratified cluster sampling method, analyses involving this larger sample are conducted using the *svy* command in STATA using design adjustment *svyset* command instructions provided by PHAD, which led the data collection, design and implementation. Thus results from the full sample report population statistics and results from the abortion module represent sample specific statistics. Each of these results are distinguished in the tables and discussion of the results.

Results

Prevalence of Contraception and Abortion in Thai Nguyen

In the first set of results, we present figures for contraceptive use and abortion among married women of reproductive age in Thai Nguyen. In Table 1a we present population mean figures for ever-use and current-use of contraceptives among sexually active women in Thai Nguyen. We find that 92% of MWRA in Thai Nguyen had ever used a contraceptive method. In terms of current use, we find that 82% of currently married women of reproductive age reported using contraceptives at the time of the survey. Among these currently married women, 64% were using at least one modern method of contraception such as the pill, condom, IUD etc. and 18% were using only traditional methods, primarily withdrawal or “safe days” (periodic abstinence). In Table 1a, we further disaggregate current-use of modern and traditional contraceptive methods by individual methods. The most commonly used modern method was the IUD, used by 33% o MWRA. Among other modern methods, 15% reported using the condom and 11% reported using the pill. The use of other modern methods such as implants, injectables and the diaphragm was negligible. Approximately 4% reported having been sterilized. Among traditional methods, withdrawal account for 15% of currently married women while safe days accounted for 9%.

In Table 1b, we present descriptive statistics for the population and abortion samples for the incidence of abortion in Thai Nguyen. The proportion of MWRA who had ever had an abortion for the province is estimated at 42%. In our sample of 901 women in the province who answered questions on abortion, 384 women (or 43% of the unweighted sample) reported that they had at least had one abortion. Among these women, around one third had had two or more abortions in their lifetime; approximately 10% had had 3 or more abortions. We also present the age profile of when women got their first abortions. We find that most women in this subsample, approximately 67%, got their first abortion between the ages of 20 and 29, and a quarter had their first abortions between the ages of 30 and 39. Among women in these two age categories, the distribution of the age of women when they got the first abortion was more or less uniformly distributed across each ten-year age group. The proportions of women who had abortions when they were younger than 20 years old or when they were older than 40 years old were small.

Socio-demographic profile of women who have had abortions vs. women who have never had abortions

We present a socio-demographic profile of women who have ever had an abortion in Table 2 compared with women who have never had abortions. T-tests are used to determine the statistical significance of the differences between the two. In Table 2, we find that our sample women who have ever had an abortion in their lifetime are not a statistically distinct group with significantly different characteristics when compared to women who have never had abortions. In this analysis, the key statistically significant differences we find are only in age and occupation; women who have had abortions were significantly older and more likely to be not employed compared to women who have never had abortions. On other measures, clear differences between these groups in ethnic minority status, residence in a designated poor commune or in education and wealth profiles were not seen.

Partitioning of Abortions in Thai Nguyen

One of the key analyses that we propose in this study is to partition abortion users in Thai Nguyen into distinct categories based on the reason for women obtaining the abortion. This type of disaggregation allows for a critical understanding of the prevailing reasons why abortion rates remain high. In the partitioning of abortion users in Thai Nguyen, we carefully consider two key factors that our review suggests influences the demand for abortion among women in Vietnam, particularly against the backdrop an informal yet pervasive two child policy: contraceptive use and the demand for sex selection resulting from son preference. We partition abortion users into the following three categories:

1. Women who had an abortion due to an unintended pregnancy resulting from the non-use of contraception,
2. Women who had an abortion due to an unintended pregnancy resulting from contraceptive failure,
3. Women who had an abortion with the intent of sex selection of the fetus

In Table 3, we report proportions of women in each category from the partition, along with the description of the profile of women in each category in further detail. The figures reported in this table are generated using the abortion history module sample of 384 women who responded to questions regarding their contraceptive use at the time of the unintended pregnancy that resulted in abortion. Each abortion is treated as an individual observation, allowing women who have had multiple abortions to have multiple observations, resulting in a total of 562 abortion observations (cases) corresponding to this sample of women.

In Table 3, the results from this partitioning show that more than half of all abortions, 57%, can be attributed to the non-use of contraceptives; 31%, can be attributed to contraceptive failure; and 12% are attributable to sex selective abortion. Table 3 also shows that the proportion of abortions due to contraceptive non-use declines with age at abortion, while the proportions due to contraceptive failure and sex selection increase. That is, abortions that occur at later ages tend to be increasingly associated with contraceptive failure or sex selection rather than non-use. In the following section, we describe and examine each of these categories in further detail. In doing so, we present further disaggregated analyses and contrast the socio-demographic profiles of each group in an attempt to understand the various characteristics and circumstances that are associated with women getting abortions.

a. Abortion due to non-use of contraception

This category accounts for the majority of abortions in our sample with 57% of women reporting that they were not using a contraceptive at the time of the pregnancy that resulted in an abortion (sex selective abortions which may have occurred when contraceptives were not used are not included in this category). These are a distinct group of women who, despite not wanting a pregnancy, were not using contraception. This proportion is noteworthy particularly given the overall high usage of contraceptives that we report from our overall sample of MRWA in Thai Nguyen (82% of currently MWRA were seen to be using some form of contraceptives at the time of the survey). We examine non-use of contraceptives for all abortions by the order of abortion as well among women who have

had multiple abortions in Table 4. These figures are estimated using population statistics from the full sample. We find that the proportion of women not using contraception during their first abortion is significantly higher than the proportion of women not using contraceptives in subsequent abortions. We find that more than three quarters (76 %) of women reported not to be using a contraceptive at the time of conception of the pregnancy that resulted in their first abortion. Non-use was only 61% during the second abortion. This figure fluctuated between 64% and 44% for the third and fourth abortions respectively, though these figures were drawn on a very small number of abortions. In examining the socio-demographic profile of these non-users versus the women who used contraception or had sex selective abortions, we found no statistically significant distinctions in their profiles across a number of previously discussed socio-demographic characteristics (results not shown).

b. Abortion due to Contraceptive Failure

The second most common reason for abortion use in Thai Nguyen in our sample was contraceptive failure. Abortion users in this group were a group of women who report using some form of contraception at the time of the pregnancy that resulted in the abortion. The use of contraception indicates that the pregnancy was unwanted and therefore that the abortion was due to contraceptive failure. Approximately 31% of abortions in our abortion sample can be attributed to contraceptive failure. As we have noted in our review, one key consideration when examining contraceptive failure is identifying the type of contraceptive that was being used that failed. We report these figures in Table 5. Overall, modern contraceptives were being used during 51% of the pregnancies that resulted in an abortion while 49% involved the use of traditional methods. These figures, which represent failure rates for each of these methods, are in contrast to figures seen from the population estimates (Table 1a) where only 18% of the contraceptive users in Thai Nguyen used traditional methods, less than third of the traditional use observed among overall abortion users. Further, we find that 29% of all abortion cases can be attributed to the use of withdrawal as the method, while 19% of cases are related to the use of the safe days method. This is a strong indication that abortion users in Thai Nguyen are a select group that has disproportionately high use of traditional methods, for which failure rates high in international data.

In further analyses reported in Table 5, we examine traditional versus modern use by abortion order. While the split between traditional and modern method use is nearly identical between the first and second abortions (approximately 55% modern to 45% traditional), the breakdown changes dramatically in the third, with approximately 80% modern and 20% traditional. The fourth order abortions, which

are estimated based on only 5 abortions, are similar to patterns seen for the first and second order abortions.

c. Abortion due to sex selection:

The final category we explore in this paper is sex selective abortion. Only a very small proportion of abortions in our abortion sample could be attributed to sex selection. These are a special category of abortions that result when couples desire the pregnancy, thus don't use contraceptives prior to the pregnancy, but abort the pregnancy after finding out the sex of the fetus to be a girl. In our abortion sample, we collected data on whether couples knew the sex of the fetus prior to the abortion and whether they knew it was a girl. In Table 6, we report results from these data. The results in this table show two key patterns. First, the proportion of women (couples) that report that they knew the sex of the fetus prior to the abortion was quite small; 20% of abortions, particularly when compared to nationally reported figures (up to over 60%). Second, although the proportion of abortions where the sex of the fetus was known was small, strikingly, when the sex was known, abortions were overwhelmingly of girl fetuses. Almost 97% of abortions in which the sex of the fetus had been pre-determined were for girl fetuses. In Table 6, we also report results from the population sample for these parameters by abortion order. Population estimates suggest that the indications of sex selective abortion are particularly clear during the first and second order abortions. For the first abortion, sex of the fetus was known for just under a quarter (25%) of abortion cases. Among them, virtually all cases (99%) were that of female fetuses. Similarly in the second abortion, sex was known during approximately 20% of abortions of which approximately 89% were female fetuses. Figures for third and fourth order abortions did not reveal same marked patterns. For third order abortions, the proportion of abortions for which the sex of the fetus was known was lower (17%), as was the proportion of these abortions that were of female fetuses (60%). Fourth order abortions, which constituted a very small proportion of the total abortions (N=12), did not follow the pattern of the previous abortions. Sex had been determined in over 35% of fourth order abortions among whom only 30% of the abortions were that of female fetuses.

Given that sex selective abortion is illegal in Vietnam despite abortion being legal and highly subsidized in Vietnam, it is plausible that the rate of sex selective abortion reported in this sample is an underreport of the actual number of sex selective abortions taking place in Thai Nguyen. In Box 1, we present a calculation that attempts to estimate the actual proportion of all abortions that are sex

selective in Thai Nguyen, in an attempt to reconcile these numbers. In these calculations, we utilize sex ratios at birth reported in Thai Nguyen by the General Statistics Office, the expected natural sex ratio, and the deviation of Thai Nguyen's sex ratio at birth from this figure and other publicly available metrics to estimate this figure. This approach indicates that approximately 8% of abortions are the result of sex selection. Thus our finding of approximately 12% does not appear to under-report the actual number of abortions that are sex selective.

Socio-demographic Profiles of Abortion Users and Non-users

Finally, we present analyses that examines whether the women in the three categories explored above have statistically significantly different demographic profiles, which may signify either distinct advantage or disadvantage that may be driving the demand for abortion in each group. We report these results in Table 7. In this table we also juxtapose the socio-demographic profile of these three groups of abortion users alongside the profile of women who had never had an abortion (albeit from different samples). Data for women from the non-user groups are extracted from the main sample where as data for the three categories of abortion users are taken from the abortion only subsample. Chi-Squared tests are used to test for statistical differences among the three categories of abortions.

First of all, in contrasting characteristics of women in the three different categories of abortions, we find that overall these three groups were overall not clearly distinct from each other across a series of socio-demographic characteristics. In particular, no clear patterns of differences were seen among these three groups in their socio-economic status, educational attainment or occupational profiles. Small marginally significant distinctions (using Chi squared tests) could be noted between women who opted for a sex selective abortion compared to the other two groups in that the former group appears to be slightly less likely to be highly educated and more likely to be older compared to women in the latter two groups. Clear distinctions in other characteristics among the three groups were not noted.

In contrasting women in these three categories of abortions (from the abortion only sample) against women who had never had an abortion from the full population sample, which we also present in Table 7, we note some qualitative differences between these two groups. The statistical significance of these differences however cannot be ascertained since they are from different samples. We note differences between non-users of abortion and the three groups of abortion users particularly in their profiles in age, ethnic minority status, residence in poor communes, and in their wealth status. Women who had never had abortions are seen to be younger, less likely to be an ethnic minority and less likely to live in

a designated poor commune compared to the three groups of women who had had abortions. Women who have never had an abortion also appear to be a wealthier group, with a very high representation in the highest wealth quintile. Distinct patterns of differences between these groups however were not observed in their educational attainment and occupational profiles.

Discussion

We take the primary findings from this study to be the following. First, more than half of all abortions in Thai Nguyen result from non-use of contraception. An additional third of abortions result from contraceptive failure and about a tenth result from sex-selective abortion. Second, married women of reproductive age who resort to abortion, regardless of reason, are not strikingly different from the general population, except in being older than women who do not seek abortion. Third, while abortion rates in Vietnam are declining, they are still high given the high level of contraceptive use; we cannot isolate a particular reason why this is so.

This study has some limitations. First, it is restricted to married women, although all available understanding and evidence is that the level of abortion to unmarried women is substantial, and that the circumstances of such abortions are very different from those of older, married couples. Obtaining complete and representative data on such abortions in Vietnam, as elsewhere, is a forbidding task. Second, the sample is limited to Thai Nguyen province and the number of abortions, although large enough to capture broad tendencies, is too small for convincing analysis in detail. Third, since the questionnaire is for a multi-purpose survey, it has not delved into such issues of clients' perceptions and motivations in sufficient detail to answer questions along these lines

Important aspects of the data conform to expectations. Contraceptive prevalence is consistent with national levels. The social, economic and demographic characteristics of the population are consistent with other data from Thai Nguyen (data not shown). Levels of abortion are broadly consistent with national data, and the level of sex-selective abortion is broadly consistent with the sex ratio at birth.

These represent the first published data we know of on the reasons for abortion in Vietnam. In comparison with international data, we find a lower proportion of abortion due to contraceptive failure than in most international data, and conversely a higher proportion due to non-use of contraception.

While sex-selective abortion accounts for only about a tenth of all abortions in Vietnam, this level nevertheless has potentially serious social and economic consequences for the country in the future, and the Government is fully justified in focusing on this issue. The issue that, in our view, requires focus is the persistence of son preference in the context of a rapidly modernizing country. In particular, the need for sons to maintain the inheritance aspects of lineage seems to be an area where government policy could make a difference.

The data on abortion due to contraceptive failure according to method used at pregnancy indicate that relative failure rates of individual methods are in line with international findings. In particular, the continued popularity of traditional methods is associated with a substantial number of abortions. The study also finds that users of such methods are not markedly different from other couples; in particular, they are not less educated, or less wealthy, or rural, than users of other methods, or than non-users. It is possible that such methods are popular partly because abortion is readily available in case they fail. In any case, it is important that users of these methods are aware of the substantial likelihood of failure associated with their use.

Reasons for abortion due to non-use of contraception are inherently complex. Virtually all couples in Vietnam are aware of contraception, and services are readily available and inexpensive. Such factors as fear of side effects, lack of inter-spousal communication, availability of abortion as a backup, ambivalence, etc., are undoubtedly at play, but teasing out these issues in any particular case is probably not feasible.

In the long run, prospects for further reduction in abortion rates for Vietnam may be quite good. It is likely that Vietnam is a country where development of the culture of contraception is still underway. Over time, it is possible that couples will become clearer about their fertility intentions at any given time, more consistent in the use of contraception when desired family size is reached, and clearer about the methods needed to avoid pregnancy. The current decline in abortion rates may reflect a process that is underway, but not yet complete.

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Table 1a. Contraceptive Use Among MWRA in Thai Nguyen

Contraceptive Use	Ever MWRA (N=917)
EVER USE	%
Ever Used Contraceptive Method	**92.34**

CURRENT USE	Currently MWRA (N=880)
	%
Currently Using Contraceptive Method	**81.57**
Modern Methods	**63.98**
Pill	11.07
IUD	33.14
Implant	0.07
Injectable/Depo-Provera	0.2
Diapharagm	0.0
Condom	14.72
Spermicidal cream	0.0
Male sterilization	0.14
Female sterilization	4.28
Emergency contraception	0.14
Vaginal Ring	0.57
Traditional Methods	**17.59**
Safe days/abstinence	8.80
Withdrawal	15.49

Table 1b. Incidence of Abortion among Ever MWRA in Thai Nguyen

EVER HAD AN ABORTION	Ever MWRA (N=901)
	%
Ever had an abortion in their lifetime	41.50

First Abortions by Age	Abortion Sample (N=384)
	%
Under 20	2.86
20-29	66.41
30-39	24.74
40+	3.39
Age Unknown	2.60

NUMBER of ABORTIONS	Abortion Sample (N=384)
	%
1	67.71
2	21.88
3	7.29
4 +	3.13

Table 2. Sociodemographic Characteristics of Women by Whether they have Ever Had and Abortion

SocioDemographic Characteristics	Women who have had an Abortion % (N=379)	Women who have never had an Abortion % (N=512)	Difference Statistically Significant? t-test
Age of Respondent (years)	37.71	34.09	***
Ethnic minority	24.74	29.20	
P135 Commune	20.26	16.23	
Education level			
No School	1.77	0.42	
Primary school	9.27	11.26	
Secondary and High School	73.36	77.06	
Higher education	7.62	6.72	
Occupation			
Not working	4.41	4.16	**
Agriculture Work	62.99	66.29	
Non Agriculture Work	32.61	29.56	
SES HH Wealth Quintiles			
Wealth Quintile 1	13.97	15.26	
Wealth Quintile 2	16.74	18.51	
Wealth Quintile 3	17.53	16.33	
Wealth Quintile 4	21.19	21.05	
Wealth Quintile 5	30.57	28.85	

Significant at * : 1% Level, ** : 5% level, * : 1%**

N's reflect subset of observations for whom data on a range of these variables were available

Table 3. Abortion Users in Thai Nguyen: Partioning Why Women have Abortions (from the Abortion Sample)

Reason for Abortion	All Women		Women under Age 20		Women Aged 20-29		Women Aged 30-39		Women Aged 40+		Explanation
	N	%	N	%	N	%	N	%	N	%	
Non Use of Contraceptives	**318**	**56.58**	12	92.31	205	61.56	86	48.86	15	37.5	Women who are not using contraceptives either despite having reached desired family size or because of lack of knowledge of or access to contraceptive
Contraceptive Failure	**176**	**31.32**	0	0	92	27.63	66	37.5	18	45	Women who report using a contraceptives before having an abortion, who presumably have reached their desired family size, but have unintended pregnancies that they end up aborting
Sex Selective Abortion	**68**	**12.10**	1	7.69	36	10.81	24	13.64	7	17.5	Women who are likely not using contraceptives, have not reached desired family size, who have pregnancies but abort if the child is a girl
Total N	**562**	**100**	**13**	**100**	**333**	**100**	**176**	**100**	**40**	**100**	

Table 4. Abortion Users who had Abortions due to Non Use of Contraceptives

Characteristics of Women	All Abortions % (N=562)	1st abortion % (N=300)	2nd abortion % (N=100)	3rd abortion % (N=36)	4th abortion % (N=11)
	From Abortion Only Sample (Obs=Abortions)	From Full Population sample (Obs=Women)			
Not using Contraceptive prior to Abortion	**56.58 (318)**	76.26 (229)	61.11 (61)	64.14 (23)	44.16(5)

Table 5. Abortion users who had Abortions due to Contraceptive Failure

Characteristics of Women	All Abortions % (N=562)	1st abortion %(N=380)	2nd abortion %(N=123)	3rd abortion %(N=40)	4th abortion %(N=12)
	From Abortion Only Sample (Obs=Abortions)	From Full Population sample (Obs=Women)			
Using any method of contraception prior to Abortion	**31.32**	24.87	41.13	32.17	49.9
Contraceptive users at Abortion	**% (N=175)**	**% (N=111)**	**% (N=47)**	**% (N=13)**	**% (N=5)**
Traditional	**51.43**	**44.68**	**46.10**	**20.46**	**43.25**
Withdrawal	29.14	23.08	23.35	14.01	43.25
Safe Days	19.43	21.60	22.75	6.45	
Modern	**48.57**	**55.32**	**53.90**	**79.54**	**56.75**
Pill	24.57	29.72	23.28	16.66	
IUD	18.86	23.15	12.60	5.69	28.37
Condom	4.57	1.17	6.80	25.03	28.38
Other	3.43	1.27	11.22	32.16	

Table 6. Sex selective abortion (couples who did not use contraceptives/had abortion while knowing sex of child)

Sex selective abortion	All Abortions % (N=559)	1st abortion % (N=375)	2nd abortion % (N=122)	3rd abortion % (N=40)	4th abortion % (N=12)
	From Abortion Only Sample (Obs=Abortions)	From Full Population sample (Obs=Women)			
Couple knew sex of child	20.39	24.48	20.15	17.20	35.57
If Yes (N=114) what % were Female	96.49	99.43	89.31	59.94	29.92

Table 7. Sociodemographic Characteristics of Women (Abortions) by Three Categories of Abortion

SocioDemographic Characteristics	Not using Contraceptive	Contraceptive Failure	Sex Selective Abortion	Difference between Categories Diff?	Women who have never had an Abortion
	% (N=318)	% (N=176)	% (N=68)	Chi-square	% (N=512)
	From Abortion Only Sample (Obs=Abortions)				From Full Population sample (Obs=women)
Age of Respondent (Years)	38.52	38.8	39.11	**	34.09
Ethnic minority	41.82	43.18	38.24		29.20
P135 Commune	59.12	61.36	45.59		16.23
Education level					
No School	1.26	0	5.88	**	0.42
Primary school	16.98	9.09	16.18		11.26
Secondary and High School	71.7	84.09	58.82	***	77.06
Higher education	3.77	3.41	8.82		6.72
Occupation					
Not working	3.14	1.70	4.41		4.16
Agriculture Work	76.72	77.27	70.59		66.29
Non Agriculture Work	20.12	21.02	25.0		29.56
SES HH Wealth Quintiles					
Wealth Quintile 1	19.68	17.71	20.59		15.26
Wealth Quintile 2	22.86	24.57	8.82	*	18.51
Wealth Quintile 3	17.14	17.71	23.53		16.33
Wealth Quintile 4	21.41	26.86	26.47		21.05
Wealth Quintile 5	20.1	13.14	20.59		28.85

Significant at * : 1% Level, ** : 5% level, * : 1%**

N's reflect subset of observations for whom data on a range of these variables were available

Table 8. Perceptions of Women who have Ever Had an Abortion on Regarding Difficulty of Getting an Abortion (N=379)

Opinion about how difficult it is for a woman to get access to abortion services	%
Difficult or Very Difficult	51.39
Easy or Very Easy or indifferent	49.61

BOX 1

What is the actual number of sex selective abortion in Thai Nguyen?

Derivation:

Assume: no pregnancy wastage other than for female sex-selective abortion (SSA).

m = no of male fetuses
f_1 = no of female fetuses (= no. of female births absent SSA)
f_2 = no. of female births given SSA
n = no. of pregnancies = m + f_1,

$SRB_1 = (m/f_1)$ = sex ratio at birth in the absence of SSA (multiplication by 100 omitted)
$SRB_2 = (m/f_2)$ = sex ratio at birth in the presence of SSA

$x = SRB_2 - SRB_1$

To find: f_2, given x, n, m, and f_1

$x = m/f_2 - m/f_1$

$x + m/f_1 = m/f_2$

$(xf_1 + m)/f_1 = m/f_2$

By the rule of equality of reciprocals,

$f_1/(xf_1 + m) = f_2/m$

$f_2 = f_1m/(xf_1 + m)$

So, the proportion of pregnancies aborted through SSA associated with an x change in SRB is

$P_{ssa} = (f_1 - f_2)/n$

Calculating sex selective abortions in Thai Nguyen:

Assume SRB is 105 in the absence of sex-selective abortion, 111 in its presence in Thai Nguyen (SRB figures from GSO for the year 2009)

Begin with 10,000 pregnancies; assume no pregnancy loss other than sex selective abortion. (That is, we're starting with a number of pregnancies which, in the absence of SSA, would have led to 10000 births with an SRB of 105.)

If SRB is 105, then 10,000 births would be 5122 male, 4878 female. ($SRB = b_m/b_f \times 100$; % male births = $b_m/(b_m + b_f)$)

If SRB is 111, then 5122 male births would need to be associated with 4614 female births. (1.11 = 5122/x; x = 4614)

Thus, the reduction in female births needed to bring the SRB from 105 to 111 would be 4878 – 4614, or 264 sex-selective abortion, or 2.64% of the pregnancies that would otherwise have resulted in live births.

In our survey sample from Thai Nguyen

Mean number of living children= 1.922
Mean number of children ever born= 2.114 (assuming a 10% mortality)

Number of women answering question on Abortion=901
Number of abortions= 562
Number of abortions per woman= 562/901 =0.6879
Number of abortions to live births = 0.6879/2.114=0.3254

This is equivalent to 3254 abortions per 10,000 live births

From our calculation above, we have 264 sex selective abortions per 10,000 live births

Therefore 264 out of 3254 abortions are sex selective = 8.11%