

Estimating clandestine abortion with the confidants' method.

Results from Ouagadougou, Burkina Faso.

Clémentine Rossier

Institut National d'Etudes Démographiques

France

clementine.rossier@ined.fr

George Guiella

Unité d'Enseignement et de Recherche en Démographie

Université de Ouagadougou

Burkina Faso

guiella@yahoo.com

Abdoulaye Ouédraogo

Unité d'Enseignement et de Recherche en Démographie

Université de Ouagadougou

Burkina Faso

abdoulaye@noos.fr

Dr Blandine Thiéba

Unité de Formation et de Recherche en Sciences de la Santé

Université de Ouagadougou

Burkina Faso

thieba@fasonet.bf

Paper presented at the Population Association of America 2004 annual meeting, Boston, April 1-3

This research was enabled by a grant from the Rockefeller Foundation (Grant n° RF99040#102) to UERD. We thank Dr Angèle Ouangré, Gabriel Pictet, Mamadou Niang and Abdramane Soura for their contribution to this project. This text has benefitted from the comments of Banza Baya, Batya Elul, Dr Séni Kouanda, Pr. Jean Lankoandé, Idrissa Ouili, Laurent Toulemon and Younoussi Zourkhaleini.

Abstract

Data on illegal abortion in sub-Saharan Africa are rare and non-representative. This study presents a new method to collect quantitative data on clandestine abortion, the confidants' method, applied in 2001 in Ouagadougou, Burkina Faso. According to our estimates, there is 40 induced abortions per 1000 women aged 15 to 49 in Ouagadougou annually, and even more among adolescents (60 per 1000 women 15-19); adverse health consequences affect 60% of women who had an abortion, and 14% enter the city's hospitals, which receive an estimated 1100 abortion complications a year. Hospital data indicate that these centers admit about 1000 induced abortions annually; the age distribution of patients admitted for induced abortion also corresponds to the confidants' method's projections. These two results argue in favor of the reliability of the method. A comparison with similar data collected in rural Burkina indicate that abortion rates increase with the entry into the fertility transition.

Key words

Induced abortion – illegal abortion – estimation technic – social networks – postabortion care – health outcomes – fertility control – demographic transition – Africa - Burkina Faso

Background and objectives

Induced abortion in Africa : a context of secrecy

Induced abortion is illegal in Burkina Faso, as in almost all African countries (United Nations 2001). Pregnancy terminations are forbidden in Burkina, except in case of incest, rape, fetal defect, or when the woman's life is endangered. In actuality, the country's medical staff seldom performs legal abortions, and clandestine abortion providers or clients are rarely prosecuted.

Abortion is an object of shame in Sub-Saharan Africa. This practice is blamed because it conceals the consequences of failed abstinence. Traditional visions of abortion are multilayered, however: pregnancy interruptions are strongly disapproved of in general, but tolerated once improper sexual relations have led to an unwanted pregnancy. Abortion is then a means of "avoiding shame", that is, of avoiding the shame of a mistimed birth (Bleek 1981, p.203); abortion becomes the "lesser shame" (Johnson-Hanks 2002, p.1337). Abortion is more univocally condemned where local meanings merge with western representations of early life (Rossier et al. forthcoming).

Collecting data on an illegal practice which infringes on the rules of honorable sexual conduct is particularly difficult. Providers as well as clients try to keep their abortive practices secret in such context. As a result, quantitative data on clandestine abortion are rare in sub-Saharan Africa (Guillaume 2003).

Existing data are non representative

The main source of data on induced abortion in sub-Saharan Africa are statistics of post-abortion care patients. In Burkina Faso, four medical studies describe the country's post-abortion care load in recent years (Ky 1998; Tapsoba 1999; Ouattara 2003; Traore, 2003). These studies detail the patients' clinical status on admission, their socio-demographic characteristics, the type and cost of care administered, and the treatment's issue. Such studies are crucial to promote the quality of post-abortion care, but cannot be used to determine the number and characteristics of women who have abortions at the population level. Indeed, women admitted for post-abortion care in hospitals represent only a sub-group of all women who have abortions : they choose particularly dangerous techniques to

terminate their pregnancy, and have enough resources to reach hospitals once faced with complications.

Another source of quantitative data on induced abortion in sub-Saharan Africa are pregnancy histories recorded in community surveys. Abortion is usually underreported in this type of inquiry (Rossier 2003). For example, in recent French and U.S. surveys, women report only 30% to 60% of their voluntary pregnancy interruptions (induced abortion, although legal, remains the object of important normative conflicts in these countries). A number of community-based surveys asking women about their induced abortions have recently been conducted in West Africa (Desgrées du Loû et al. 1999; Konate et al. 1999; Guillaume et al. 2001). Although these studies provided for precious indications in an area of research where little is known, abortions are probably underreported in these instruments as they are underreported in surveys in most parts of the world. These data are probably non-representative, since the rate of underreporting is probably unevenly distributed among different groups of women.

Objectives and hypotheses

This study has both a methodological and an empirical objective. On a methodological level, we develop a new method to collect quantitative data on clandestine abortion, the *confidants' method*, which we apply in Ouagadougou, capital of Burkina Faso. The principle of this method is to interview survey respondents on the abortions occurring in their close social network. We validate the confidants' method by comparing the number and age of post-abortion care patients it estimates against hospital data.

The existing literature on induced abortion in sub-Saharan Africa (Guillaume 2003) suggests four hypotheses:

- 1) The recourse to induced abortion is high in urban sub-Saharan Africa today.
- 2) The recourse to induced abortion is higher at younger ages in urban sub-Saharan Africa.
- 3) The recourse to induced abortion severely affect women's health in urban sub-Saharan Africa.
- 4) The recourse to induced abortion increases as African populations enter their fertility transitions.

The empirical objective of this study is to test these four hypotheses using this new source of data on clandestine abortion: women's social network, in the case of Ouagadougou, capital of Burkina Faso. Using the confidants' method, we estimate a city-wide annual rate of induced abortion, age-specific abortion rates, as well as complication and hospitalization rates for women undergoing induced abortions in Ouagadougou. A comparison with the results of a similar study conducted in rural Burkina Faso allows us to underscore the critical role played by induced abortion at the beginning of African fertility declines.

Method and data

An anthropological approach

The main author developed the confidants' method during a five-months stay in a village in Burkina Faso in 2000 (Rossier 2002). Participant observation and conversations with key informants showed that villagers were unwilling to talk about their own abortions, whether in informal conversations or in structured interviews. On the other hand, villagers were surprisingly well-informed on-, and more keen to talk about-, the abortions of others. Rossier (2002, pp.121-143) explained this phenomenon as follows :

- 1) In the context of rural Burkina Faso, abortion providers do not operate openly : villagers know that abortion services exist, but they do not know who performs abortions and how. In other words, abortion services are clandestine, and individuals are unable to access them directly.
- 2) Finding abortion services constitutes a major problem for women or couples who want to interrupt an unwanted pregnancy in this context. They solicit their network of close friends (their confidants) to locate and access abortion services. These friends search in their own networks of relations someone who had an abortion in the past and could introduce them to a provider.
- 3) These individuals who help abortion seekers locate abortion services are bound to secrecy either by the links of intimacy, or by the bond of shared transgression. The secret inevitably leaks out of this first small group of persons, however, and given the intensity and role of gossip in small dense societies, the secret then diffuses rapidly throughout the village.

Accessing abortion services in Ouagadougou : the role of confidants

We conducted a qualitative investigation to assess the role played by confidants in accessing abortion services in urban Burkina Faso. In July 2001, four (male and female) interviewers led 30 informal interviews in two contrasted areas of Ouagadougou : one central neighborhood situated close to the university, and one informal settlement located at the city's periphery. Respondents of both sexes and different ages were asked to narrate in detail their own abortion, or abortions that occurred to friends or family members. Informations were collected on: the woman's reaction at the discovery of her pregnancy, the couple's interaction, their decision to terminate the pregnancy, actions undertaken to locate abortion services, different attempts at getting an abortion, and possible consequences on woman's health. At each stage of the narrative, special attention was paid to third parties intervening in the abortion process.

These data show that women usually tell their partner about the pregnancy (3 cases out of 4); in most cases (2/3), they also tell female third parties (their close friends and, more rarely, close female relatives) about the unwanted pregnancy. The decision to abort is taken by the partner(s); female friends usually play a role of listeners at this stage of the abortion process. Female friends (and to a lesser degree, the partner's male friends), however, play a pivotal role once the decision to abort has been taken. In most abortion narrations (5/6), friends (or sometimes female relatives) are indeed solicited to help find an abortion provider.

« (My girlfriend) started with tablets [chloroquine], but she was afraid because it's too bitter, she didn't want it. She procrastinated, until one month and a half. I gave her 2500 FCFA [about 4 euros] for roots, there too, there was nothing to be done. Her girlfriend took her to another healer, they paid 6000 FCFA [about 9 euros], which I paid back afterwards. She told me she was feeling it was coming out, we were all glad, and then, nothing (...) Ah ! I saw that if we did not hit hard, things were going to be difficult ; I explained the deal to my friend who repairs mopeds, who talked to other friends of his, and they showed him [the health worker working at] Lafitenga. They took him there, he scouted the place out for me, and two days later, him, the girl and myself took off [to have an injection at Lafitenga, 15000 FCFA, about 23 euros.] » (young man, single, 26 years old, living in a peripheral neighborhood)

As we can see here, several attempts can be necessary to interrupt an unwanted pregnancy in Ouagadougou: the couple first tries the cheaper and less effective abortive techniques, and moves on to more effective methods only after the first ones have failed. The number of third parties involved grows as the number of trials and the difficulty of each attempt increases. In most stories we collected, however, women or couples succeed with their first trial. Even in these cases, third parties always help women (or couple) find the abortion provider, except when the provider is him/herself a close friend or relative. As our example illustrates, third parties implied during the abortion process in Ouagadougou are mostly peers of the young couple (confidants): family members are more rarely involved. Third parties are mainly females early in the process; male third parties intervene more frequently at a later stage, and especially when the abortion reveals to be difficult to get, or complicated.

The confidants' method

The inaccessibility of abortion services and the networking developed by abortion seekers to locate them opens the possibility of exploiting an original source of data on clandestine abortion in the study context : the abortion seekers' social network. Since almost all women seem to confide to third parties (and apparently first to female peers) during the abortion process, individuals (and especially women) can be thought to be aware of their close female relations' abortions.

The principle of the confidants' method is to collect quantitative data on induced abortion by asking survey respondents about the abortions of women in reproductive age with whom they share a close relationship. This approach is similar to the sisterhood method used to estimate maternal mortality rates (Graham et al. 1989; Boerma and Mati 1989), where survey respondents are asked to report on the survival status of their sisters, except that sisters are replaced by close female friends.

Four questionnaire sections

The confidants' method can be applied using four questionnaire sections in any conventional population survey with a large random sample.

- 1) In the first section, we use a *network generator question* to list the respondent's close female relations of reproductive age. Thus doing, we draw a second sample of women (their confidants) from the first sample of respondents. The network generator question is likely to be context-specific. In the present case, we asked respondents to list all women aged 15-49 who shared, or could have shared, an intimate problem with them over the past year.
- 2) In the second section, we collect information on each of the respondents' close female relations listed in the first section. These data are used to compute exposure to the risk of abortion (the denominator of the abortion rate) and the characteristics of women who have abortions, as well as to assess -and correct for- the representativity of the second sample. In the present case, we asked for each close relation : her age, duration of relationship, type of relation (friend, sister, cousin,..), and residence during the five years preceding the survey.
- 3) In the third section, we ask whether each close female relation has had induced abortions in each of the few years preceding the survey, in order to obtain the numerator of the abortion rate. In the present case, and to reduce recall biases, we restricted the inquiry to the five years preceding the survey.
- 4) In the fourth section, we collect additional information on each declared case of induced abortion. In the present study, we asked whether the case was spontaneous or a failed abortion (to eliminate misreported cases), the type of abortion provider, the technique used, whether the woman suffered negative health outcomes, and where she received care.

Sampling and fieldwork: Enquête Santé de la reproduction à Ouagadougou (ESRO 2001)

We administered this questionnaire to a representative sample of men and women living in Ouagadougou in November 2001. We adopted a two-stage cluster sampling procedure. Using city-wide data from the 1996 census, updated for non-zoned areas, we randomly drew 57 census tracks weighted by their population. We then enumerated the population in the selected census tracks, and randomly drew households weighted by their size. All women aged 15 to 49 were interviewed in the selected households. A separate sample of households was constituted for the sample of males (aged 15 and above). 82% of the selected men and 84% of the selected women completed the

questionnaire : altogether, 963 women aged 15 to 49 and 417 men aged 15 and above were interviewed. Data entry was performed with Access. Weights were calculated for each individual, to render the two samples representative of reproductive age women and men of Ouagadougou. Analyses were performed with STATA.

Validating the confidant's method with hospital data

To validate the data generated by the confidants' method, we collected data on all admissions for abortion in the city's hospitals. Based on an inventory of public and private health centers in Ouagadougou, we selected all five health centers equipped to treat severe abortion complications as the city's referential health centers in matters of abortion¹. All admissions for abortions were recorded during four months (September-December 2001) in these hospitals. Questionnaires were completed by medical staff supervised by an intern ; questions were designed to distinguish spontaneous from induced cases according to the WHO protocol (Figa-Talamanca et al. 1988). According to this protocol, abortions are classified as « certainly induced» when the woman or her entourage admits to an induced abortion, or when there are unmistakable traces of an induced abortion (vaginal or uterine lesions, presence of abortive objects). Abortions are classified as « probably induced » when the case is complicated *and* the pregnancy is unwanted, spontaneous abortions being seldom complicated. Abortions are classified as « possibly induced » when the case presents complications *or* the pregnancy is unwanted. Altogether, 464 admissions for abortion were collected during the study period ; one of the (peripheral) selected health center was non-operational during the study period.

Results

The total fertility rate is 3.4 children per woman in Ouagadougou according to ESRO 2001. The age-specific fertility rates observed in ESRO 2001 are close to the curve observed in the 1998-99 DHS (Figure 1). Fertility is slightly lower at each age in 2001, as expected when projecting to 2001 the fertility decrease observed in Ouagadougou between the 1993 and the 1998-99 DHS (INSD 1994;

¹ Centre Hospitalier National Yalgado Ouédraogo, Centre Médical avec Antenne Chirurgicale Paul VI, Centre Médical avec Antenne Chirurgicale Kossodo, Centre Médical Sainte Camille, Clinique Suka.

INSD 2000). This result speaks favorably of the representativity and quality of the data collected in ESRO 2001.

Figure 1 about here

We analyzed separately men and women's responses about the abortions occurring in their female social networks. Abortion rates calculated from men's reports are somewhat lower than those calculated from women's reports, but only for older women. This result can be explained by the fact that older women and their girlfriends have more resources on their own and are less likely to ask for the help of their male friends, compared to younger women. Complication rates, and the proportion of abortion performed by health workers, are slightly higher in men's reports compared to women's reports.

Our qualitative evidence indicate that men know about a selected subset of all abortions in their social network: they are more likely to know about difficult cases, or instances where women and their girlfriends have less resources on their own (as when they are young). They also showed a quasi-systematic implication of female peers at the beginning of the abortion process, while male peers seem to intervene less systematically, and usually later, in the abortion process. We therefore use the female respondents' reports on their social network's abortions to generate our estimates.

1. Characteristics of female respondents' social network

A little less than one half (43.6%) of our female respondents reported that women aged 15 to 49 confide in them. These respondents report between 1 and 17 women confiding in them (2.7 on average) : altogether, the original sample of women (n=963) reported 1150 close feminine relations.

The age structure of the sample of relations (mean age: 26.6) is similar to the age structure of the sample of women (mean age 27.3). A linear regression on the female respondents' number of close female relations shows that this variable depends on their social capital: women who have more resources (are more than 20 years old, were not born in a village, have a high educational level, have a professional activity) declare more close relations. Different types of capital (cultural, economic,

relational, ..) are indeed usually possessed concomitantly. Although we did not collect information on our respondents' relations' social network, this result holds for them as well. Women with more relations (that is, more resources) were probably more likely to be captured in the sample of relations. We will come back to this bias in the discussion.

Our network generator question' defines a relation as a person sharing intimate information with the respondent. Women reported in their network of relations foremost friends (41.1%), neighbors (16.9%), sisters (16.5%) and cousins (11.0%), and rarely nieces (3.5%), daughters (2.0%) or mothers / aunts (2.8%): relations of intimacy and confidence are, as expected, established between peers.

2. Induced abortion rate and age-specific abortion rates

We calculated the denominator for the abortion rate by counting the number of close relations exposed to the risk of abortion in 1997, 1998, 1999, 2000 and 2001. To be considered as exposed to the risk of abortion, the respondent's relation had to be aged between 15 and 49, had to live in Ouagadougou, and already share a relationship with the respondent at the time. The number of exposed relations diminishes in the years further removed from the survey, as part of the listed network either did not yet know the respondent or did not yet live in Ouagadougou.

The numerator is calculated as the number of years when exposed relations had induced abortions in 1997, 1998, 1999, 2000 and 2001. Altogether, on all the relation-years of exposure, respondents did not know whether their relation had an induced abortion or not in only 8% of cases. Respondents know that their relations had an abortion in 4% of cases, and that they did not have an abortion in 88% of cases. Respondents are less well informed for the years 1997, 1998 and 1999 (12% unknown) than in the two years directly preceding the survey (4% unknown in 2000 and 2001).

Figure 2 presents induced abortion rates calculated from the respondents' reports on their close female relations' recourse to abortion between 1997 and 2001 in Ouagadougou. Over the entire period, the annual induced abortion rate in the respondents' social networks amounts to 41 abortions per 1000 women aged 15 to 49. Estimated for each year, the abortion rate increases between 1997 and 1999, and remains stable between 1999 and 2001. The sample's age structure is an important factor to

be taken into account here, since abortion rates vary greatly by age, and the sample of relations becomes younger in the years further removed from the survey. The Total Abortion Rates (TAR) controls for the sample's age structure across years: as we can see, once we correct for age, the frequency of abortions in the respondents' social network remains stable between 1997 and 2001. According to the TAR, women would have 1.1 abortion during their life on average if they experience at every age the age-specific abortion rates observed in the respondents' social network in 1997-2001 in Ouagadougou.

Figure 2 about here

Figure 3 shows age-specific induced abortion rates estimated from the same data. Adolescents (women aged 15 to 19) have the highest probability of having an abortion in the respondents' social networks during the 1997-2001 period: every year, 61 out of 1000 of them have an induced abortion. The abortion rate then diminishes linearly by age.

Figure 3 about here

We apply the estimated age-specific induced abortion rates to the weighted sample of female respondents', that is, to the female population of reproductive age in Ouagadougou (there were about 195,000 women aged 15 to 49 in this city in 2001). We obtain an overall induced abortion rate of 39.9 per 1000 women aged 15-49 for Ouagadougou in 2001; according to our projections, 7764 abortions are induced annually in the city.

3. Abortion providers and abortion techniques

We collected 168 cases of induced abortion in the respondents' social networks. We did not ask about the entire chain of abortion attempts experienced by the respondents' friends, but asked about the last (successful) attempt. Respondents know who provided their friends' abortions in 86% of the reported cases (143/168). According to these data, 61% of abortions in Ouagadougou are

induced by health workers (or pseudo health workers), 26% of abortions are self-administered, and 13% are practiced by traditional healers. Figure 4 shows that adolescents who abort are more likely to induce their abortion themselves than older women. When choosing an abortion provider, the younger the woman, the likelier she is to turn to a medical worker instead of a traditional healer. This trend can probably be explained by a generation effect, younger women being more used to turn to the modern health sector than older women.

Figure 4 about here

Respondents know what abortion technique was used in about half (56%) of their friends' abortion cases (96/168). These data indicate that traditional healers' most common abortifacients are plant infusions in Ouagadougou. Women who abort on their own do so mostly by overdosing on household drugs. Health workers induce abortions using injections of labor-inducing drugs, and to a lesser degree, DC. Our qualitative data suggest that the latter technique was rarely used by abortion provider at the time of inquiry. Altogether, abortions are mainly induced in Ouagadougou by injection (1 abortion in 3), DC (1 abortion in 5), and women overdosing on household drugs (1 abortion in 8). Informal interviews with reproductive health staff conducted in September 2001 suggest that the use of Mifepristone remains confidential in this study setting.

4. Complication and hospitalization rates

We asked respondents whether their friends encountered adverse health effects following their abortion. Abortion complications are defined here inter-subjectively, and we do not distinguish between different types of negative health outcomes. The complication status is known for 83.5% of the abortions reported in respondents' social network (145/168). Among known cases, the rate of complication is 60%. Among women who experienced negative health outcomes (87/145), a little less than half (44.7%) got no medical care, one third (31.3%) got post-abortion care in one of the city's secondary health centers, and one quarter (23.9%) sought post-abortion care in one of the five referral health centers of Ouagadougou. Altogether, 33% of all induced abortions end up in a secondary

health centers of Ouagadougou, and 14% are admitted in one of the five referral centers. Admissions for induced abortion recorded in these five centers should therefore be multiplied by 7 to obtain the total number of abortions at the city level.

Figure 5 shows that abortions induced by women on their own have a higher complication rate (81%) than abortions induced by healers (62%) or health workers (57%). Abortions induced by healers and health workers have about the same complication rate; in case of complications, however, women who had their abortion with a health worker are much more likely to get post-abortion care (42.6%) compared to women who had their abortion with the help of a traditional healer (14.4%).

Figure 5 about here

Complication rates decrease after age 30 according to our data. This trend can be explained by the fact that women's capacity to access safe abortion services is likely to increase with age, as older women are more resourceful than younger ones in the study context.

Using the confidants' method, we projected the number of induced abortions admitted annually for post-abortion care in the five referral centers of Ouagadougou. We already projected the total number of induced abortions occurring every year in Ouagadougou by applying the age-specific induced abortion rates estimated from the respondents' social network data to the city's female population, and obtained 7,764 induced abortions. We apply to this figure the complication rate estimated from the same data, and thus project that 4,645 induced abortions require care every year in Ouagadougou. Applying the similarly estimated hospitalization rate (14.3%) to the 7,764 induced abortions, we project that 1112 induced abortions are admitted annually for post abortion care in Ouagadougou's five referral centers.

5. Validating the confidants' method

We observed 464 admissions for post-abortion care in these five hospitals during a period of four months in 2001. Among these 464 cases, 270 were collected at the Centre Hospitalier National Yalgado Ouédraogo (CHN-YO). In comparison, Ky (1998) collected during four months in 1997 291

admissions for abortion at the CHN-YO. Applying the WHO protocol, we find 27% (73/270) “certainly” induced abortions among the admissions collected at the CHN-YO in 2001; Ky found 32% (94/291) “certainly” induced abortions among the admissions collected in 1997, a comparable level.

Figure 6 shows the distribution of “certainly induced”, “probably induced”, “possibly induced”, and “spontaneous” abortions among post-abortion care patients recorded in 2001. The overall proportion of induced abortions among admissions for post abortion care is usually estimated by adding all “certainly”, “probably” and “possibly” induced abortions (Rossier 2003). We thus estimate that 71% (328/464) of the admissions we recorded are induced. We further multiply 328 by three to obtain an annual figure of hospital admissions for induced abortions in the city. We conclude that the five referral health centers of Ouagadougou receive annually 984 induced abortions for post abortion care.

The confidants’ method estimates that there are 1112 admissions for induced abortions in the city’s five referral centers a year. We recorded that 948 induced abortions were admitted in these hospitals in 2001, using the broad definition of induced abortion in the WHO protocol. We conclude that both sources of data concord with an estimated 1000 hospitalizations for induced abortions a year in Ouagadougou’s five referral centers.

Figure 6 about here

The results displayed in Figure 6 suggest that the WHO protocol underestimates the proportion of induced abortions among cases admitted for post-abortion care at younger ages, and to overestimate this proportion at older ages. Indeed, the distribution of spontaneous abortions among all hospitalizations for abortion should not be constant across ages, as in Figure 6: it should be weaker at younger ages, and stronger at higher reproductive ages, when women have less induced - and more spontaneous abortions. The share of “certainly” induced abortions among all post abortion care admissions by age seems to be more conform to expected patterns, on the other hand. By postulating that the addition of “certainly”, “probably” and “possibly” induced abortions gives the correct level of

induced abortions among abortion patients, we therefore assume that the number of spontaneous abortions mistaken for induced abortions at older ages perfectly compensates for the number of induced abortion mistaken for spontaneous ones at younger ages. In the absence of other data, we have to postulate that the “certainly” induced category gives the correct age distribution of hospital patients admitted for induced abortions; there is indeed no reason to believe that women’s likelihood to tell the medical staff about their abortion (the main reason why women are classified in this category) depends on their age.

Figure 7 about here

Let us compare the observed age distribution of patients hospitalized for induced abortion in 1997 and 2001 (“certainly” induced abortion only) with the age distribution of women hospitalized for induced abortion as projected by the confidants’ method. To obtain this projection, we submit the weighted sample of women to age-specific induced abortion rates calculated from the social network data; we apply age-specific hospitalization rates estimated from the same data to the projected age-specific numbers of induced abortions. We see on Figure 7 that the age distribution of hospital patients for induced abortion as projected by the confidants’ method corresponds exactly to the observed age distribution of women for induced abortions in the city’s hospitals (using the restricted definition of induced abortion in the WHO protocol).

6. Role played by induced abortion at the beginning of African fertility declines

We can investigate the role of induced abortion at the beginning of the fertility transition in Burkina Faso by comparing the present study’s results with similar data collected in nine villages belonging to one health circumscription in the Bazega province in 2000 (Rossier 2002). These nine villages, located about 30km of Ouagadougou, had an average total fertility rate of 6.2 children per woman in 2000. This average is slightly lower than the fertility level for rural Burkina as a whole (TFR=7.3, 1998-99 DHS). Fertility levels varied between the nine villages from 6.6 to 5.3 children per woman (Figure 8), and lower rates were observed in the villages lying closer to the road to

Ouagadougou. Ouagadougou, with a total fertility rate of 4.7 in the 1993 DHS, 4.0 in the 1998-99 DHS, and 3.4 in 2001 is more advanced in its fertility transition.

Important social changes taking place in West Africa explain why fertility has declined in its urban centers during the last few decades, and (slightly) in a few rural areas. In rural as well as in urban West Africa, marital behaviors are changing as young people gain more autonomy, and young women marry later; in urban areas, demand for children is moreover decreasing; at the same time, abstinence is becoming less central as a means to regulate fertility, and this trend contributes to increase demand for other fertility control strategies (contraception and abortion) (Caldwell et al. 1992; Bledsoe and Cohen 1993; Kirk and Pillet 1998).

Figure 8 about here

Do people indeed use more contraceptives and abortions, as they start reducing their fertility in Burkina Faso? Figure 8 shows that abortion rates and the use of modern contraceptives increase simultaneously, and symmetrically, to declining fertility rates in Burkina Faso today.

Discussion

We first discuss the validation of the confidants' method, its possible biases, and its potential for generalization. In a second stage, we discuss the empirical results obtained by applying the confidants' method in Ouagadougou.

Methodological discussion

To validate our new method, we compared the number and age of women admitted in the city's five referral centers estimated by the confidants' method to observed hospital data. We found a strong congruence between both sources of data. We conclude that the estimates of the confidants' method are correct for hospitalized abortions cases, assuming our hospital statistics are correct (i.e. assuming that the total number of hospitalized induced abortions is given by adding all "certainly", "probably" and "possibly" induced case distinguished by the WHO protocol, and assuming the

correct age distribution of hospitalized induced abortion is given by “certainly” induced cases). We infer from this result that the method’s estimates for non-hospitalized abortions cases are correct as well.

Two major biases could affect our application of the confidants’ method. The first bias pertains to the representativity of the second sample, the sample of relations. The greater a woman’s social network, the greater her probability to be drawn as a friend in the second sample. Each draw in the second sample (the sample of relations) should therefore be weighted by its probability of being drawn, which we did not do here. If the probability of having an abortion depends on the size of a woman’s network, this bias will lead to a substantial overestimation of the abortion rate.

The second major bias concerns the greater implication of third parties in complicated abortions or abortions involving several attempts. Our qualitative data indeed shows that the number of implied parties increases as the abortion process drags on. Each abortion case should therefore be weighted by its probability of being known to close relations, which we did not do here. If complicated abortions are more likely to be known to the couple’s close relations, this bias will lead to an important overestimation of the complications rate.

The positive validation of the confidants’ method estimates against hospital data seems to indicate that these two biases have a small effect in the present case. In other words, it seems that, in Ouagadougou, the probability of having an abortion does not depend greatly on the size of one’s network of close relations, and that the probability of an abortion case to be known in one’s network of close relations does not increase greatly with the occurrence of complications. However, future surveys should, and could, control for these two biases. By asking for every woman listed in the respondent’s network how many close friends she has, weights could be computed to control for the first bias. By asking respondents how many of her friend’s friends knew about the abortion, weights could be computed to control for the second bias.

Can the confidants’ method be generalized to other contexts? This method was recently tested in India (Elul 2003), where it gave mediocre results: women reported less abortions for their friends than for themselves. This result is explained by the characteristics of access to induced abortion in India. Abortion is legal there, and although most abortions are not performed according to existing

regulations, access to abortion services is not clandestine. Women and couples do not need to solicit their networks of friends to find an abortionist, they have a direct (and therefore more confidential) access to abortion services. This result is extremely important, in the sense that it suggests that the confidants' method is only suited to contexts where two conditions are met: 1) abortion services are clandestine and difficult to access; 2) individuals can solicit their social network to find abortion providers.

Empirical discussion

The confidants' method estimates that 40 per 1000 women aged 15 to 49 have an induced abortion in Ouagadougou in 2001, or said differently, that every woman has on average 1 induced abortion in her life in Ouagadougou today. This result can be compared to a single other study in Africa: Henshaw et al. (1998) used hospital data on induced abortion and a multiplier conjectured from interviews with health staff to estimate the level of recourse to abortion in Nigeria. These authors estimate that, respectively, 32 and 46 induced abortions occur annually per 1000 women aged 15 to 44 in the urbanized south eastern and south western regions of Nigeria. Our estimate for urban Ouagadougou falls within a reasonable range of these estimates for urbanized regions of Nigeria.

How does the level of recourse to induced abortion in Ouagadougou compare to abortion rates worldwide? Abortion statistics exist only for countries where abortion is legal and abortion services available, that is, in developed countries and in (former) communist states (Henshaw et al. 1999). According to these statistics, western countries with strong family planning programs have the lowest national levels of abortions (minimum: Netherlands, 1996: 6.5 abortions for 1000 women aged 15-44), and communist countries promoting abortion as a cheap and safe fertility regulation method to achieve low fertility record the highest national abortion rates (maximum: Vietnam, 1996: 83.3 abortions for 1000 women aged 15-44). The level of induced abortion in Ouagadougou falls in the middle of these two extremes: such a level is considerable for a population which does not promote pregnancy termination as a means of fertility regulation.

When desegregating this level by age, we find that the younger the woman, the greater her probability to have an abortion in Ouagadougou. We estimate that the city's adolescents have an

abortion rate of 60 per 1000. Our data also show that one third of women aged 15 to 19 induce their abortion themselves; this proportion is significantly lower in other age groups. We saw that self-administrated abortions have the highest complication rate (80%). Altogether, these results underscores the particular vulnerability of adolescents towards induced abortion in the study context, as hypothesized.

We estimate that 14% of all abortions in Ouagadougou end in one of the city's five referral health centers. In other words, the number if induced abortion case admitted in these five structures should be multiplied by 7 to obtain the total number of abortions in the entire city. This number is in the range of multipliers (between 1 and 10) used in studies which estimate abortion rates from hospital post-abortion care statistics (Singh and Wulf 1994; Singh et al. 1997; Henshaw et al. 1998; Huntington et al. 1999; for a summary of these studies, see Rossier 2003). If 14% of abortions are hospitalized, 60% are followed by negative health outcomes, and 33% are admitted in a secondary health centers. These results indicate that most induced abortions have a negative impact on women's health in urban sub-Saharan Africa, and that demand for postabortion care is substantial.

Comparing fertility, abortion, and contraceptive behaviors in rural and urban Burkina Faso, we found that the rate of induced abortion, like contraceptive prevalence, increase at the same pace than fertility declines. This evidence confirms the theory of Davis (1963), Tietze and Bongaarts (1975), Frejka (1985): these authors hypothesized that the incidence of induced abortion increases at the beginning of fertility declines, to level off and decline in later phases of the transition. A time lag between the increase in demand for fertility control and the use of contraceptive methods is thought to produce a momentary increase in the recourse to induced abortion at the beginning of fertility transitions. A handful of studies confirmed recently this theory for the Latin American and Asian fertility transitions (Hollerbach 1980; Frejka and Atkin 1996; Singh and Sedgh 1998; Westoff et al. 1998; Ahmed et al. 1998).

Simultaneous variations in abortion and contraceptive use are observed as long as contraceptive use remains relatively low; after a certain level of contraceptive use is reached, however, contraception starts replacing abortion, and the two means of fertility control have complementary patterns of use (Frejka 1985; Leridon et al. 1987; Bongaarts and Westoff 2000).

Abortion rates will therefore probably decrease as contraception continues to diffuse in Burkina Faso, even if at the moment, the recourse to induced abortion is increasing along contraceptive use. From a policy perspective, this result is a strong invitation to pursue efforts in developing family planning programs in Burkina Faso.

Conclusion

This study pursued both a methodological and an empirical objective. We first developed a new method to collect quantitative data on induced abortion adapted to contexts where this practice is clandestine, and where women or couples rely on their peers to locate and access abortion services. The principle of this method is to interview survey respondents about the abortions occurring in their network of close friends and other individuals with whom they share a trusting relationship. We applied this method, the confidants' method, to Ouagadougou, capital of Burkina Faso, in 2001. The discussion reveals that two biases could affect the obtained estimates, pertaining to the selection of the sample of relations and to the varying number of third parties involved in the abortion process. These biases could lead to an overestimation of the abortion and complication rates. However, they seem to play a small role in the case of Ouagadougou, since we were able to validate our estimates (which are not controlled for these biases) against hospital data. After projecting the number of women admitted for abortion to Ouagadougou's hospitals and their age distribution with the confidants' method, we compared these projections to statistics of hospitalizations for abortions collected in 2001, and found congruent results. A number of assumptions are, however, also involved in producing these "observed" data. We indicate how future applications of the confidants' method could control for the two mentioned biases.

We tested a number of hypotheses on the recourse to induced abortion in sub-Saharan Africa today: this practice is frequent in urban areas, especially at younger ages, and dangerous; this practice increases as fertility starts declining. We found indeed the incidence of clandestine abortion to high in Ouagadougou: 40 abortions per 1000 women aged 15-49, and even higher among adolescents (60 abortions per 1000 women aged 15-19). The complication rate is important as well: 60% of all abortions are followed by adverse health effects, and 14% end up in the city's hospitals. Comparing

these results with similar data collected in a study conducted in a rural area close to Ouagadougou, we showed that induced abortion plays indeed an important role at the beginning of the fertility decline in Burkina Faso. Pre-transitional fertility rates are accompanied by low contraceptive prevalence and abortion rates in Burkina Faso; as fertility rates start declining, the use of contraception and the recourse to abortion increase simultaneously. These results confirms existing theories on the role of induced abortion at the beginning of fertility declines; similar trends were observed in the case of Asian and Latin American fertility transitions.

This match between existing data, theory and the evidence we produce, and the congruence between our estimates and hospital data, speak in favor of the capacity of the confidants' method to collect complete and representative data on induced abortion in the sub-Saharan African context.

References

- Ahmed, Kapil M., Mizanur Rahman, and Jeroen van Ginneken. 1998. Induced abortion in Matlab, Bangladesh: Trends and determinants, *International Family Planning Perspectives* 24(3): 128-132.
- Bledsoe, Caroline, and Barney Cohen (eds). 1993. *Social Dynamics of Adolescent Fertility in Sub-Saharan Africa*. National Research Council. Washington, DC: National Academy Press.
- Bleek, Wolf. 1981. Avoiding shame: The ethical context of abortion in Ghana, *Anthropological Quarterly* 54(4): 203-209.
- Boerma, J. Ties and J. K. G. Mati. 1989. Identifying maternal mortality through networking: Results from coastal Kenya, *Studies in Family Planning* 20(5): 245-253.
- Bongaarts, John, and Charles E. Westoff. 2000. The potential role of contraception in reducing abortion, *Studies in Family Planning* 31(3): 193-202.
- Caldwell John, I. Orubuloye, and Pat Caldwell. 1992. Fertility decline in Africa: a new type of transition?, *Population and Development Review* 18(2): 211-242
- Davis, Kingsley. 1963. The theory of change and response in modern demographic history, *Population Index* 29: 345-366.
- Desgrées du Loû, Annabel, Philippe Misellati, Ida Viho, Christiane Wellfens-Ekra. 1999. Le recours à l'avortement provoqué à Abidjan: Une cause de la baisse de la fécondité?, *Population* 54(3): 427-446.
- Elul, Batya. 2003. Program associate, Population Council New York. Personal communication.
- Figa-Talamanca, Irene, T. A. Sinnathuray, Khairuddin Yusof, Chee Kin Fong, V. T. Palan, Nafisah Adeeb, Percy Nylander, Ayodele Onifade, Ayse Akin, Münevver Bertan, Santiago Gaslonde, Karin Edström, Olusola Ayeni, and Mark A. Belsey. 1986. Illegal abortion: an attempt to assess its cost to the health services and its incidence in the community, *International Journal of Health Services* 16(3): 375-389.
- Frejka, Tomas. 1985. Induced abortion and fertility, *International Family Planning Perspectives* 11: 125-129.
- Frejka, Tomas, and Lucille C. Atkin. 1996. The role of induced abortion in the fertility transition of Latin America, in J. M. Guzman et al. (eds), *The Fertility Transition in Latin America*. NY: Oxford University Press, pp. 179-191.
- Guillaume, Agnès, and Annabel Desgrées du Loû. 2002. Fertility regulation among women in Abidjan, Côte d'Ivoire: Contraception, abortion or both?, *International Family Planning Perspectives* 28(3):159-166.
- Guillaume, Agnès. 2003. *L'avortement en Afrique. Une revue de la littérature des années 1990 à nos jours*. Paris : CEPED.
- Graham, Wendy, William Brass, and Robert W. Snow. 1989. Estimating maternal mortality: The sisterhood method, *Studies in Family Planning* 20(3): 125-135.
- Henshaw, Stanley K., Susheela Singh, Boniface A. Oye-Adeniran, Isaac F. Adewole, Ngozi Iwere, and Yvette P. Cuca. 1998. The incidence of induced abortion in Nigeria, *International Family Planning Perspectives* 24(4): 156-164.
- Henshaw, Stanley K., Susheela Singh, Taylor Haas. 1999. The incidence of abortion worldwide, *International Family Planning Perspectives* Supplement to volume 25: S30-S38.
- Hollerbach, Paula E. 1980. Recent trends in fertility, abortion and contraception in Cuba, *International Family Planning Perspectives* 6(3): 97-106.
- Huntington, Dale, Barbara Mensch, and Nahid Toubia. 1993. A new approach to eliciting information about induced abortion, *Studies in Family Planning* 24(2): 120-124.
- Institut National de la Statistique et de la Demographie and Macro Inc. (INSD). 1994. *Enquete Demographique et de Sante, Burkina Faso 1993*. Calverton (Maryland): Macro International Inc.
- Institut National de la Statistique et de la Demographie and Macro Inc. (INSD). 2000. *Enquete Demographique et de Sante, Burkina Faso 1998-99*. Calverton (Maryland): Macro International Inc.
- Johnson-Hanks, Jennifer. 2002. The lesser shame: abortion among educated women in southern Cameroon, *Social Sciences and Medicine* 55: 1337-1349.

- Kirk, Dudley, and Bernard Pillet. 1998. Fertility in Sub-Saharan Africa in the 1980s and 1990s, *Studies in Family Planning* 29(1): 1-22.
- Konaté, Mamadou, Fatouma Sissoko, Mouhamadou Guèye, Baba Traoré and Dr. Diallo Diabaté. 1999. *Les Conséquences Sociales de l'Avortement Provoqué à Bamako*. Bamako (Mali): CERPOD.
- Ky, André. 1998. *Les avortements dans les maternités de la ville de Ouagadougou : aspects épidémiologiques et cliniques. Evaluation de la prise en charge*. Unpublished doctoral thesis. UFR des Sciences de la Santé, Université de Ouagadougou.
- Leridon, Henri, Yves Charbit, and Philippe Collomb. 1987. *La Seconde Révolution Contraceptive. La Régulation des Naissances en France de 1950 à 1985*. Cahier n° 117, Paris: INED / PUF.
- Ouattara, Souleymane. 2003. *Prise en charge des avortements à risque. Qu'en est-il cinq ans après introduction des SAA dans le service de gynécologie-obstétrique du CHU Yalgado Ouédraogo ?* Unpublished. Mémoire pour l'obtention du Certificat d'Etudes Spéciales (CES) de Gynécologie-Obstétrique. UFR des Sciences de la Santé, Université de Ouagadougou.
- Rossier, Clémentine. 2002. *Measure and meaning of induced abortion in rural Burkina Faso*. Unpublished PhD dissertation. UC Berkeley: Demography.
- Rossier, Clémentine. 2003. Estimating Induced Abortion Rates : A Review, *Studies in Family Planning* 34(2): 87-102.
- Rossier, Clémentine, Pictet Gabriel, and Christine Ouédraogo. Forthcoming. Is Modern Contraception the Same as Induced Abortion? Discourses on Different Forms of Birth Control and Visions of Reproduction in Rural Burkina Faso, in A. Carter and S. Watkins (eds), *The Production and Circulation of Population Knowledge*. IUSSP: Oxford University Press.
- Singh, Susheela and Deirdre Wulf. 1994. Estimated levels of abortion in six Latin American countries, *International Family Planning Perspectives* 20(1): 4-13.
- Singh, Susheela, Josefina V. Cabigon, Altaf Hossain, Haidary Kamal, and Aurora E. Perez. 1997. Estimating the level of abortion in the Philippines and Bangladesh, *International Family Planning Perspectives* 23(3): 100-107.
- Singh, Susheela, and Gilda Sedgh. 1997. The relationship of abortion to trends in contraception and fertility in Brazil, Colombia and Mexico, *International Family Planning Perspectives* 23(1): 4-14.
- Tapsoba, Ahmed Sidyalcéré. 1999. *Les avortements dans les Centres Hospitaliers Nationaux du Burkina Faso: évaluation de l'impact de la prise en charge intégrée pour le traitement des complications*. Unpublished doctoral thesis. UFR des Sciences de la Santé, Université de Ouagadougou.
- Tietze, Christopher, and John Bongaarts. 1975. Fertility rates and abortion rates: Simulations of family limitation, *Studies in Family Planning* 6: 114-120.
- United Nations, Population Division. 2001. *Abortion Policies. A global review - vol I Afghanistan to France*. New York: United Nations.
- Westoff, Charles et al. 1998. *Replacement of Abortion by Contraception in Three Central Asian Republics*. Washington (DC): The Policy Project and Calverton (MD): Macro International.
- Yaméogo, Claude Linda Traoré. 2003. *Soins après avortement à la maternité du centre hospitalier universitaire Yalgado Ouedraogo en 2002. Evaluation de la prise en charge intégrée*. Unpublished doctoral thesis. UFR des Sciences de la Santé , Université de Ouagadougou.

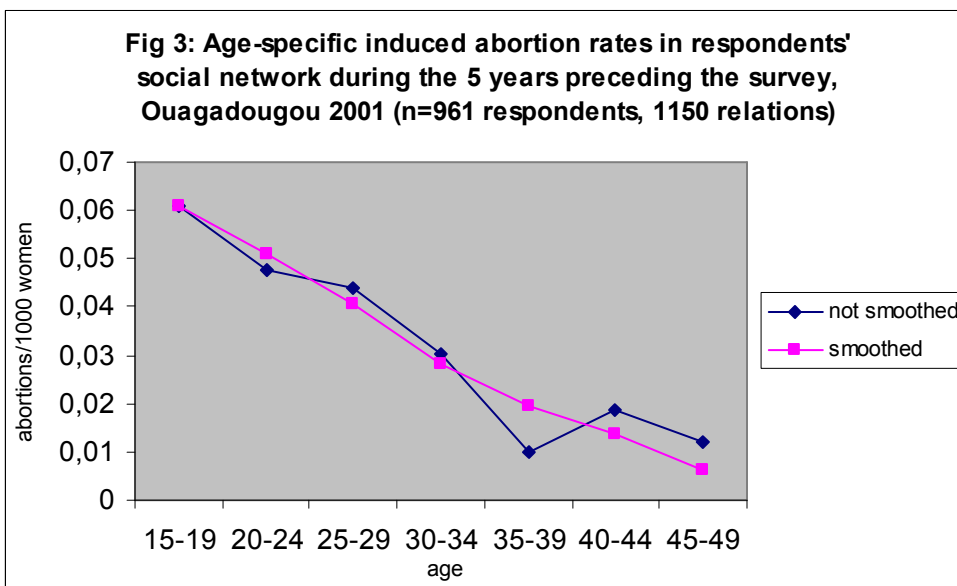
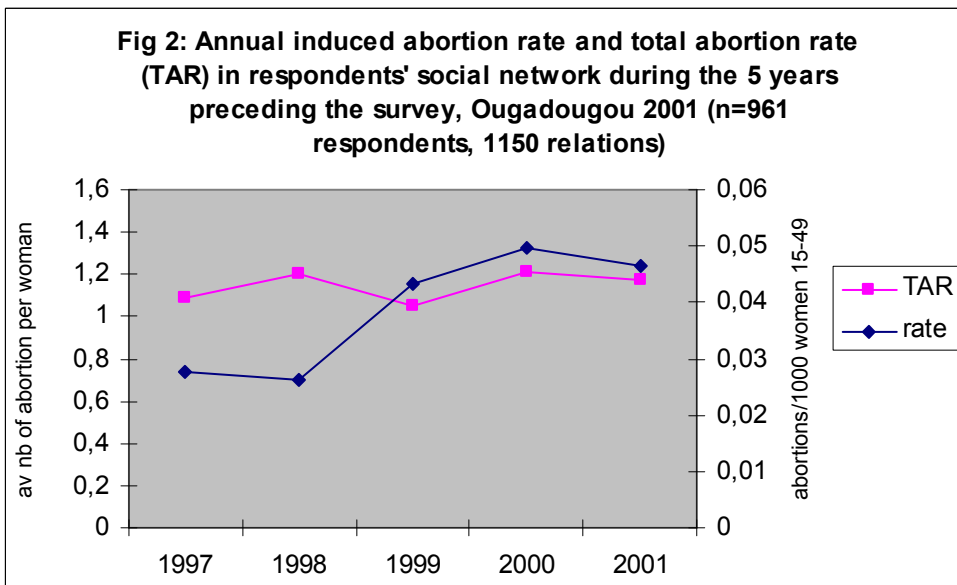
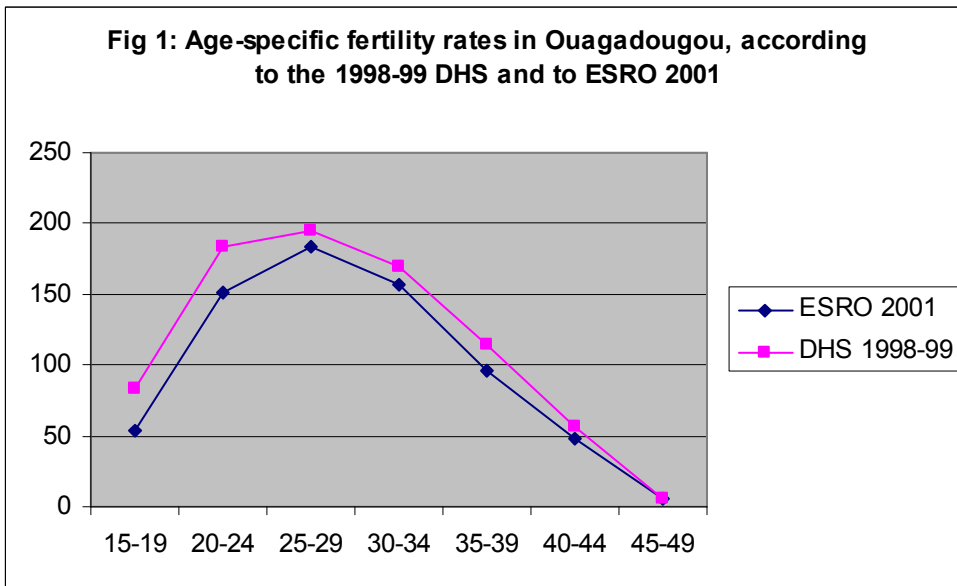


Fig 4: Abortion provider depending on age at abortion in respondents' social network, Ouagadougou, 1997-2001 (n=961 respondents, 1150 relations, 168 abortions)

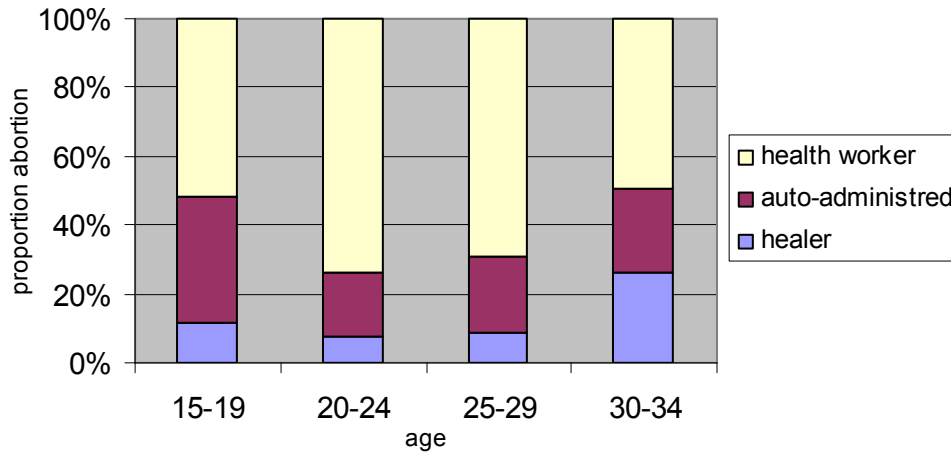


Fig 5: Complication and hospitalization rates for abortions in respondents' social network, Ouagadougou, 1997-2001, (n=961 respondents, 1550 relations, 168 abortions)

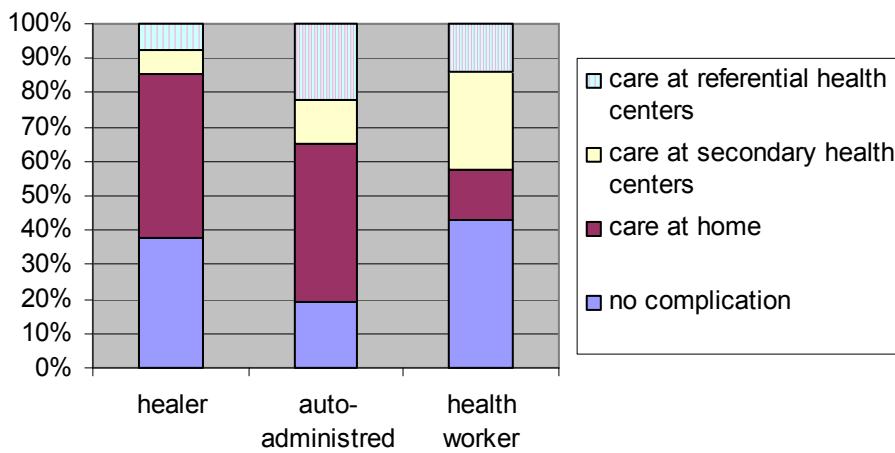


Fig 6: Admissions for post-abortion care in 5 referral health centers in Ouagadougou, 2001, by age: distinguishing induced from spontaneous abortions (WHO protocol)

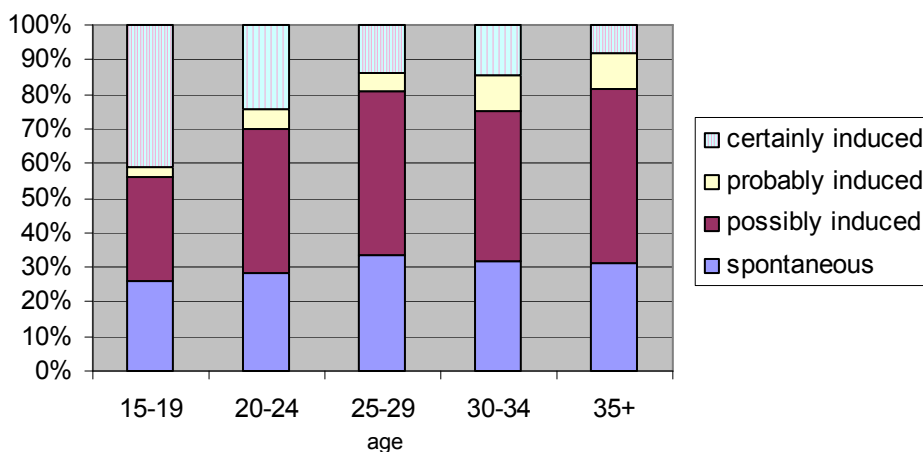


Fig 7: Age distribution of hospitalizations for induced abortion in Ouagadougou, hospital statistics in 1997 and 2001, and confidants' method, ESRO 2001

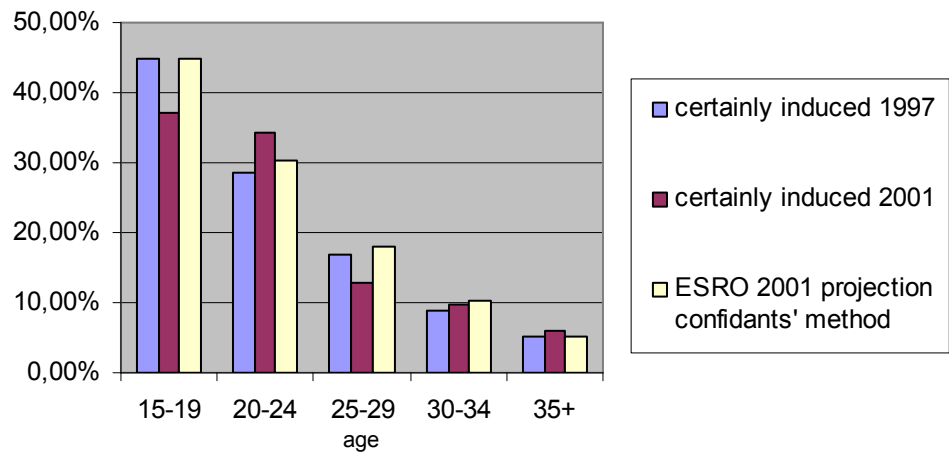


Fig 8: Fertility, contraception, and induced abortion in rural Burkina (DHS 1998-99), in 9 villages in Bazega province in 2000 (n=1055), and in Ouagadougou in 2001 (n=963)

