Missed days from work and opportunity costs for obtaining an abortion among Cambodian women: a case study

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Abstract: The study examined the number of days missed from work or home in the process of seeking an abortion and the subsequent opportunity costs in terms of personal income and family income lost among women presenting at public and private sector induced abortion providers in Cambodia. Data were collected through client exit interviews and descriptive analysis was used to examine the two outcomes of missed days and opportunity costs against a number of explanatory variables. The results indicate that first trimester abortions were least expensive. Private sector midwives were the most efficient in terms of low opportunity costs. Clients approaching public health abortion providers had the fewest missed days. Private physicians and NGOs came second with comparatively higher opportunity costs and days lost. Vacuum aspiration (either manual or electric) was the most widely used uterine evacuation method. While the number of visits to various providers added to the days and income lost by the woman and her family, those working outside the home for a wage or income in the non-agricultural sector had the most to lose. Consequently the results show that market vendors, factory workers, home business operators and other money income earners often end up with greater opportunity costs than housewives and agricultural workers for every lost day from work.

Introduction

In 1997 the kingdom of Cambodia changed its abortion law to permit the termination of pregnancies of up to 12 weeks without any clinical justification. For pregnancies more than 12 weeks termination is allowed in the cases of fetal abnormality or if the woman's life is at risk (Long and Ren 2001). The new law has transformed Cambodia into one of the most liberal countries in South-east Asia with regard to abortion legislation (Hill and Ly 2004). In reality, however, women seeking an abortion may spend several days trying to access the right provider to perform this service for them. Abortion is rarely discussed and little is known about the availability or accessibility of elective abortion services (ibid). Many providers and clients still perceive abortion services as illegal and the resulting high prices charged by providers pose a major barrier to women (Lester 2002). Further, previous studies conducted in Cambodia and other South-Asian countries indicate that in general, reproductive health services are not well known and women who do not live in a social milieu where these services are used are unlikely to know of their availability (Pickering and Huff-Rousselle 2001; Ganatra 2006).

The loss of days from work, school and/or home responsibilities due to the process of seeking an abortion are often substantial for women and for society (Weibe and Janssen 2000). This is especially true in low resource settings where a fine line exists between lost productivity and poverty and where labor time foregone due to a health problem could result in a further loss of livelihood (WHO 1999). Opportunity costs in term of lost productivity can be substantial: a study in Thailand in 1995 estimated the total indirect cost of lost productivity as a result of morbidity associated with treated and untreated cases of tuberculosis to be $57 million (ibid). Similarly, the consumption of a woman's time while seeking any reproductive service is an important expense in terms of the

opportunity cost of her time or the value of what the woman might otherwise have done with her time (Backe and Buhaug 1994).

Research on time lost due to pregnancy or obstetric related morbidity is rare and has been conducted mostly in developed countries (Backe and Buhaug 1994; Gadsby 1994). However, these studies have not looked at pregnancies ending in an abortion and it is possible that inclusion of abortion services would have inflated their estimates of societal costs of obstetrical care. With regard to time lost and the opportunity costs of an abortion, research is nearly absent from the literature. Two studies have examined the time lost due to an elective abortion. Within the context of public sector abortion services in Canada, Weibe and Janssen (2000) compare days lost due to a surgical abortion versus a medical abortion and estimated a mean loss of 10 days from work inside the home for the surgical group and 5.3 days for the medical group. An earlier study conducted in China, Cuba and India on medical versus surgical abortions reported physical restrictions (or the inability to undertake daily routine activities) for an average of 5 days for Chinese women and 3.2 days for Cuban women (Elul et al. 1999).

Pub Med and Medline searches indicate that there is only one published study so far comparing the time lost from work within or outside the home for Canadian women due to an abortion procedure and the resultant opportunity costs defined as the average national hourly wage income foregone by the woman due to the abortion (Limacher et al 2006). In this study, productivity costs due to lost time were an average $829 per procedure representing 59% of the total societal cost of an abortion (ibid). However, opportunity costs of abortion as a sum of both individual income and family income foregone (income of other family members foregone due to caring for the woman having the abortion or her children and dependents) have not been studied so far.

In this paper we examine days lost from work within or outside the home due to an elective abortion and the subsequent opportunity costs of those missed days among a small sample of Cambodian women. This research provides a never before insight into the costs of lost productivity due to a termination of pregnancy and poor abortion accessibility (Weibe and Janssen 2000). Further, an analysis of different contributing factors could facilitate a better understanding of time lost and the cost of that time for women and their household members.

Methods

This was a prospective study involving a convenience sample of women seeking elective abortion services at five public and five private health sites in urban and peri-urban Cambodia.[1]

[1] Women seeking post-abortion care such as treatment for incomplete/missed/inevitable abortions were also interviewed but were not included in this analysis since these services are easily available under emergency obstetric care (EmOC) at any public or private health facility and the treatment for such cases is subject to little variation in terms of missed days and opportunity costs.

The public sites included one national and two provincial referral hospitals and two primary health centers. The private sites included two clinics run by non-governmental organizations, one clinic run by an obstetrician/gynecologist and two midwives' clinics. The selection criteria included women at the ten study sites after they had received care related to an induced or spontaneous abortion and before their discharge from the facility. A total of 160 women consented to participate in the interview and there were no refusals. For this paper we examine a sub sample of 110 women who had undergone an induced abortion.

All exit interviews were conducted at the health facility or in a location in a private area to ensure the confidentiality and reliability of data. The woman's partner or relatives were not invited to participate. The exit interview took approximately 40 minutes to complete and the participants were compensated with US $3 for their time. Women were asked to participate in a follow-up interview two weeks post-procedure. These interviews have not been included in this analysis.

The primary outcome measures were the total number of days lost from work outside and inside the home due to the abortion and the opportunity costs of individual and family income lost as a result of missed days.

i) *Missed days* are the number of days taken off from a woman's normal routine (either within or outside the home) to seek, receive or recover from an abortion.
ii) *Opportunity costs* are defined as the cost of an economic activity foregone by the choice of another activity and include both individual income lost and family income lost due to the time spent in the abortion seeking activity.
iii) *Individual income* lost comprises time taken from work in identifying and negotiating care from various sources, experiencing health problems before deciding to seek abortion care, traveling, waiting, or recovering from post-treatment morbidity.
iv) *Family income* lost comprises lost wages of others in the household from tending to the woman, providing child care, or accompanying the woman while she seeks care. While it was relatively easy for women working outside the home for an income or wage to calculate opportunity costs of income foregone, housewives and women working on family farms were asked to estimate indirectly what they would have had to pay somebody else to do their housework or farm work.

Opportunity cost was calculated as:

Opportunity cost = Individual income lost + Family income lost

The questionnaire asked the respondent questions about the total number of visits she had undertaken to various providers for the abortion and the days taken off from her normal routine (job, household duties or school) to seek care, receive care or to recover. The next question asked if the respondent had lost income because she could not work and if so, how much income had she lost. The final question in this group asked if anyone else in

the respondent's household had lost income because of her illness and if so, how much income had been lost. All costs were self-reported.

Costs were entered in Cambodian Riels but were converted into US dollars at the July 2006 rate of 1 US dollar=4204 Riel for the analysis. The data were entered in EXCEL and transferred into STATA 9 for analysis.

A number of variables were selected for analysis based on their likely impact on missed days and opportunity costs. Independent variables include gestational age at termination, the type of provider, the type of uterine evacuation procedure, the number of health facility visits made for the abortion and the occupational status of the woman. Gestational age was calculated as the difference in weeks between the respondent's date of abortion and her last menstrual period and was then categorized by first and second trimester. The type of health facility includes providers who were visited first for the abortion either prior or at the time of the procedure. Hence it lists some providers who were not part of our study, such as pharmacists and traditional birth attendants (TBA). The other providers are private midwives, doctors and NGO clinics and public health facilities. The variable of type of uterine evacuation procedure includes vacuum aspiration (either manual vacuum aspiration or MVA or electric vacuum aspiration or EVA), followed by sharp curettage (SC), medical abortion and Covac. Covac involves using saline and oxytocin to flush the uterus and is used for second trimester abortions. The number of visits variable documents the visits made by the respondent to different providers in the process of seeking an induced abortion. The number of visits is expected to have an incremental effect on missed days and opportunity costs. The final variable is the occupational status of the woman. Respondents in the study ascribed to six major occupational categories: housewife, agriculturist, market vendor, office worker/military/government worker, factory worker and other occupations including home business/bar/hotel worker.

Besides these variables other controls such as age, marital status, educational level, socio-economic status (based on an assets and utilities index)[2] and parity were included in the sample characteristics but were excluded from the analysis since they were either unlikely to impact missed days and the resultant opportunity costs or their impact was captured by other variables included in the analysis.

Ethical approval for this study was obtained from the Cambodian Ethics Committee for Health Research. The data collection occurred between November and December 2005.

Results

(Table 1 about here)

[2] The questionnaire included questions on the household assets and utilities in the home of the respondent and an index of socio-economic status (low, medium and high) was formulated using principal components analysis

A total of 110 clients completed exit interviews. Table 1 shows the patient characteristics. Women were older, a mean age of 31.5 years. The majority of women were married (82.7%). The educational level of approximately 61% of the group was less than primary and about a quarter had completed secondary or higher education (22.7%). The mean number of previous births was 2.2. Almost half the women (45.5%) reported a medium socio-economic status. Regarding the type of facility that most women first sought for an abortion, 35.5% went to a private midwife followed by 33.6 % going to a private physician or an NGO. The third most popular provider appeared to be the public health facilities where approximately 29% of the women went. The pharmacist and the TBA were the least frequented for an abortion procedure. Most of the pregnancies were first trimester with only 5% in the second trimester. The most common uterine evacuation procedure used was vacuum aspiration (76.4%) while other procedures such as sharp curettage (SC), medical abortion and covac made for only 23.6% of the total. The number of health facility visits that a woman had to undertake for the abortion averaged at 1 visit for 88.2%, 2 visits for 10% of the sample and 3 visits for 1.8% of the respondents.

Respondents reported a range of occupations. More than a third of the respondents were housewives. Amongst the women working outside the home, the largest group was engaged in agriculture (19%) followed by other occupations (16.4%) and market vendors (14.6%). Office/military/government workers and factory workers constituted a smaller percentage of the group at respectively 6.4% and 9.1% of the total.

(Table 2 about here)

Table 2 shows the days lost, the individual income and family income lost and the opportunity cost of the abortion procedure by various explanatory variables. Since the spread of the data is considerable in many cases, standard deviations have been included in parenthesis. It is interesting to note that while the number of missed days differs only slightly with the increase in gestational age of the pregnancy, opportunity cost varies greatly between $4.20 for first trimester abortions and $20.93 for the second trimester. The second category of variables indicate that the private midwife is the least expensive in terms of opportunity cost ($3.28) but women who went for care in the public health facilities missed fewer days (1.88). The private physician/NGO are comparatively more expensive in terms of missed days (5.35) and opportunity costs ($7.9) but are the second most popular provider after the private midwife. For the two women approaching a pharmacist or the traditional birth attendant for abortion services, the missed days and the opportunity costs are very high.

Several different uterine evacuation procedures were used by providers. While the majority of women (76.4%) had either a MVA or EVA, in terms of days lost (3.56) and opportunity cost ($5.24) this procedure is not the most efficient. Sharp curettage was chosen by the second major group of women and was comparable to vacuum aspiration in terms of opportunity costs ($5.23) but resulted in fewer days lost (2.38). Medical abortion (MA) appears to be the most economical both in terms of days lost (2.3) and opportunity costs ($3.81) but it is important to note that only 10 women opted for this

procedure. Covac appears expensive both in terms of missed days (23.33) and costs ($57.88), but was termination procedure of only 3 women.

The number of visits variable shows both the number of days lost and the resultant opportunity costs increasing with each visit. Thus for the first visit the average days lost are 2.29 and the average opportunity cost is $4.97 and for the third visit the days lost increase to 33.5 and the opportunity cost increases to $76.12. However, it is important to note the large variation in the data from the second visit onward.

Days lost as well as opportunity costs showed extensive variation when they were disaggregated by type of employment. The largest proportion of women (34.6%) was housewives and their average number of missed days was 4.63 and opportunity cost was $4.28. Agricultural workers were the next big category and their missed days and subsequent opportunity costs were comparable to housewives. Factory workers indicate 1.9 days missed due to the abortion but indicate that $10.94 were lost in opportunity cost with $8.09 in terms of individual income lost. Similarly, work as a market vendor result in high opportunity costs for each day lost: about $3 per day for each day lost from work. Office workers appear to have the lowest number of days lost from work and low opportunity costs. The third largest category of home business/hotel or bar worker and other occupations experience an average of 3.28 days lost due to an abortion with the opportunity cost at $5.34.

Discussion

Results from the client exit interviews indicate that days missed from work and lost productivity depend on several factors. Missed days from work averaged between 0 and 60 days and the related opportunity costs ranged from an average of 0 to $ 152.24. Total individual income lost ranged from 0- $133.2 and family income lost ranged from 0- $38.1. The great variation in data indicates that the cost of the abortion to the woman in terms of lost productivity is dependent on how early in the pregnancy she has an abortion, which provider she approaches, the kind of uterine evacuation procedure used, the number of visits required for the procedure and the type of occupation she has. Thus the opportunity cost of an abortion increased five times for second trimester pregnancies. However, days lost from work remained similar when compared with gestational age of the pregnancy. Interestingly, the mean number of previous births was 2.2 supporting the profile that worldwide, more than 60% of women seeking an abortion have had one or more children (Boonstra et al 2006).

The majority of women (35%) seeking abortion services from the private midwives support earlier findings of the popularity of this provider both in terms of low opportunity costs and few days lost from work (Long and Ren 2001; Lester 2002). These facilities are known for efficient and timely services but may not always be the cheapest (Lester 2002). The public hospitals such as the national/provincial/public health centers constitute an equally important resource for abortion services and appear to be efficient in term of missed days and opportunity costs. Private physicians/NGOs appear more expensive but are preferred by many women (33.6% or the second largest sub-group of

this sample) possibly due to their experience and confidentiality. Not surprisingly, the traditional birth attendants appear to be less popular in this largely urban/peri-urban population with a greater use of their services in rural and remote areas (Lester 2002). The spread of data for opportunity costs and days lost in the case of the pharmacist and the NGO abortion providers indicate that there is considerable variability and uncertainty for the woman seeking an abortion regarding how much the procedure will cost her. All these different providers constitute a range of technical expertise, costs and accessibility and hence their impact on missed days and opportunity costs are likely to be significant (Lester 2002).

The relative efficacy of the various uterine evacuation procedures in terms of missed days and opportunity costs highlights medical abortion as the cheapest: yet the most popular method is vacuum aspiration probably due to the popularity of this method among abortion providers and its consequent easy accessibility. SC and vacuum aspiration appear comparable both in terms of days lost and low opportunity costs and these results do not corroborate studies conducted elsewhere reporting lower costs associated with vacuum aspiration versus SC (Johnson et al 1993; Billings and Benson 2005). The wide range of data for the highly unsafe Covac procedure shows the lack of standard practices used by providers for this method of uterine evacuation resulting in a large variation of number of days missed and the opportunity costs for women opting for this procedure. Moreover, the many days lost and high opportunity costs relative to the Covac procedure support findings from previous studies in Cambodia regarding the use of this procedure for second trimester abortions and the consequent increase in costs (Lester 2002). All these methods are likely to have different implications in terms of time lost from work and the subsequent opportunity costs.

A look at the number of visits variable indicates a positive incremental relationship between number of visits and days missed and the opportunity costs. The large standard deviations for two and three visits highlight the uncertainty of days lost from work and the subsequent opportunity costs for women having to undertake multiple visits for an abortion service. Regarding the number of visits made to a provider, research indicates that while the majority of women get a successful abortion at their first visit to a health facility, a significant number do not and have to go to the hospital at the provincial or urban level to seek care, either for complications arising out of an abortion done at the first visit or due to the refusal of the initial provider to perform the abortion or due to prohibitive costs (Ganatra 2006; Lester 2002). Some providers do not provide elective abortion services in their public health facility but will do so in their private clinic often charging high prices (ibid).

The last variable indicates that the woman's occupation is an important predictor of days lost and the opportunity costs. The occupational status variable is important since typically, opportunity costs would increase at different rates per missed day by the amount of the daily wage lost and this daily wage would differ according to the woman's occupation. While the number of visits to various providers adds to the days and income lost by the woman and her family as shown by Table 2, it is apparent that women working outside the home for a wage or income in the non-agricultural sector have the

most to lose. Factory workers with daily wages probably dependent on productivity indicate 1.9 days missed due to the abortion but indicate that $10.94 were lost in opportunity cost with $8.09 in terms of individual income lost. Similarly, work as a market vendor results in high opportunity costs for each day lost: market vendors lose a little more than $3 per day for each day lost from work. However, since market vendors have highly variable incomes depending on the nature of their work, there is wide variability in their opportunity costs. Interestingly, the majority of women belonging to the housewife and agriculture categories (52.5%) report a comparatively smaller loss of approx $1.25/day for each day lost from work.

Market vendors, factory workers, women operating a business from home, bar workers and other similar occupations have to ensure minimal days missed from work for the abortion procedure and hence they often end up paying higher prices for such services from private clinics and unregistered providers (Hill and Ly 2004; Lester 2002). Housewives and agriculturists on the other hand, earn less and this reflects in their comparatively lower opportunity costs and longer days lost from work. Thus the study clearly points to the burden of missed days borne by women and their families due to an abortion, especially women working outside the home who are already at considerable stress to earn an income and support a household.

An important limitation of this study is that many of these procedures fit the definition of unsafe abortion as described by the WHO (2003:12) "An unsafe abortion is a procedure for terminating an unwanted pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards or both." Interviews conducted only at the time of the procedure may underestimate subsequent procedure-related morbidity form an ill-performed abortion.

The study was meant to be exploratory with a sampling strategy that did not include a nationally representative study population or the entire range of abortion providers. Nevertheless, the different types of private and public sector facilities chosen for the study and the broad mix of patient characteristics have provided findings that could be useful in future research efforts in this area.

The treatment of opportunity costs may be a further limitation. The estimates for indirect costs due to time and productivity losses at the time of and after the abortion are based on self-reports of the clients and do not adhere to any average earnings rate based on national data for women in the 15-45 age group. The value of their labor is also not adjusted by geographical location. Again, women reporting time lost from work, especially housework or farm work may have been overestimating the costs if they were only functioning at reduced capacity or may have been underestimating the cost of their services to the household or family farm if their services were difficult to obtain in the market. Despite these drawbacks, our examination of days lost and an opportunity cost is informative since abortion clients clearly perceive these aspects of the abortion experience as a cost in addition to the actual monetary costs of the procedure. A study of the monetary costs of elective abortion for these clients has been presented elsewhere (forthcoming publication).

CONCLUSION

Unwanted pregnancies cost individuals, households and communities economically and socially productive time. The above study underscores the need for safer and more affordable abortion services especially among women burdened with the responsibility of earning a livelihood for themselves and their families. Often, losses in productivity due to ill health trap people in poverty (WHO 1999). More research is needed on the time and productivity losses associated with the abortion care-seeking process in order to understand the full cost implications of this procedure (Limacher et al. 2006). In Cambodia, with a liberal abortion law, the biggest barriers to safe and affordable abortion services are delays in the implementation of the law in terms of licensing and training of providers, low awareness in the population of the legalization of abortion services and the proliferation of unregistered providers. These delays in implementation and awareness put a woman's health in jeopardy thereby increasing maternal morbidity and days lost from work (Hill and Ly 2004). It is necessary to make speedy improvements in these areas, especially since the legal climate for provision of safe abortion services is favorable in Cambodia.

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Table 1: Socio-demographic characteristics of women having an induced abortion and responding to the exit interview (N=110)

Variable	N	Mean or %
Age (years)	110	30.2 (SD 0.62)
Marital Status		
Married	91	82.7
Single	19	17.3
Education		
< primary	67	60.9
completed primary	18	16.4
completed secondary or higher	25	22.7
Socioeconomic status		
Low	21	19.1
Medium	50	45.5
High	39	35.5
Previous births		2.2 (SD 0.07)
Type of facility visited first for the abortion		
National/referral/public health facility	32	29.1
pvt physician/NGO	37	33.6
pvt midwife	39	35.5
TBA/ Pharmacist	2	1.2
Type of uterine evacuation procedure		
Manual vacuum aspiration(MVA)/ Electrical vacuum aspiration (EVA)	84	76.4
Sharp Curettage (SC)	13	11.8
Covac	3	2.7
Medical Abortion with/without surgical procedure	10	9.1
Gestational age of current pregnancy (trimester)		
1^{ST} trimester	94	95

2ND trimester	5	5.1
Number of health visits for this abortion		
1 visit	97	88.2
2 visits	11	10
3 visits	2	1.8
Occupation		
housewife	38	34.6
agriculture	21	19.1
market vendor	16	14.6
office worker/military/govt	7	6.4
factory worker	10	9.1
Other (home industry/bar/hotel worker)	18	16.4

Table 2: Days lost from work and the opportunity costs of the abortion by various explanatory variables (n=110)

Independent variables	**Total opportunity costs and missed days due to abortion procedure (standard deviations in parentheses) (n=160) (as of July 2006 1 US dollar=4204 Riel)**			
Independent variables	**Total individual income lost**	**Total family Income lost**	**Total of opportunity costs (individual income lost +family income lost**	**Missed days**
By Pregnancy Duration (trimester)				
1st trimester (n=94)	2.22 (6.81)	1.98 (6.08)	4.20 (10.75)	3.33 (10.32)
2nd trimester (n=5)	20.93 (26.40)	0.00 (0.00)	20.93 (26.40)	3.40 (2.30)
By facility first visited for an abortion				
National/referral/public health facility (n=32)	1.74 (4.88)	1.67 (4.72)	3.41 (6.44)	1.88 (2.70)

Pvt physician/NGO (n=37)	5.80(14.30)	2.10 (6.01)	7.90 (17.75)	5.35 (16.10)
Pvt midwife (n= 39)	2.17 (3.75)	1.10 (3.48)	3.28 (5.51)	2.38 (1.62)
Traditional birth attendant /pharmacist (n=2)	66.60(94.19)	28.54(13.46)	95.15 (80.74)	36.00 (33.94)
By procedure				
Manual vacuum aspiration(MVA)/ Electrical vacuum aspiration (EVA) (n=84)	3.59 (10.22)	1.65 (4.96)	5.24 (12.72)	3.56 (10.87)
SC (n=13)	3.93 (4.05)	1.30 (2.81)	5.23 (5.37)	2.38 (1.45)
Covac (n=3)	45.20 (76.23)	12.69 (10.99)	57.88 (82.41)	23.33 (31.82)
Medical Abortion with/without surgical procedure (n=10)	0.00 (0.00)	3.81 (12.04)	3.81 (12.04)	2.30 (3.47)
By number of visits				
1 visit (n= 97)	3.32 (9.60)	1.65 (4.93)	4.97 (12.10)	2.29 (2.53)
2 visits (n= 11)	3.03 (3.78)	4.76 (11.60)	7.78 (11.04)	12.18 (28.95)
3 visits (n= 2)	66.60 (94.19)	9.51 (13.46)	76.12 (107.65)	33.50 (37.48)
By woman's occupation				
housewife (n=38)	2.04 (10.83)	2.23 (5.44)	4.28 (11.72)	4.63 (15.89)
agriculture (n=21)	3.19 (3.80)	1.60 (4.26)	4.79 (5.49)	3.05 (2.84)
market vendor (n=16)	13.02 (32.59)	2.30 (5.29)	15.33 (37.27)	6.13 (14.44)
office worker (n = 7)	0.82 (1.77)	0.00 (0.00)	0.82 (1.77)	1.00 (0.00)
factory worker (n=10)	8.09 (18.23)	2.85 (9.03)	10.94 (26.92)	1.90 (1.85)
Other (home business, bar/hotel worker, etc) (n=18)	2.70 (5.20)	2.64 (9.12)	5.34 (10.28)	3.28 (4.06)