Kingdom of Cambodia

Current Issues in Reproductive Health in Cambodia: Teenage Fertility and Abortion

Further Analysis of the 2010 and 2014 Cambodia Demographic and Health Surveys

DHS Further Analysis Reports No. 104

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Additional information about the survey can be obtained from the National Institute of Statistics; 386 Monivong Boulevard, Sangkat Boeng Keng Kang 1, Chamkar Mon, Phnom Penh, Cambodia; Telephone: (855) 23-213650; E-mail: ssythan@hotmail.com; Internet: www.nis.gov.kh; and the Directorate General for Health, Ministry of Health, 80 Samdech Penn North Boulevard (289), Sangkat Boeungkak 2, Tuol Kork, Phnom Penh, Cambodia; Telephone: (855) 23-885970/23-884909; E-mail: webmaster@moh.gov.kh; Internet: www.moh.gov.kh. Additional information about The DHS Program can be obtained from ICF International, 530 Gaither Road, Suite 500, Rockville, MD 20850 USA; Telephone: 301-572-0200; Fax: 301-572-0999; E-mail: info@DHSprogram.com, Internet: www.DHSprogram.com.

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EXECUTIVE SUMMARY

This report explores issues related to fertility among young women age 15-19 and to abortion among women age 15-49 in Cambodia, based on two Demographic and Health Surveys (DHS) conducted in 2010 and 2014. In 2014, approximately one in every eight young Cambodian women age 15-19 either already had a live birth or were currently pregnant with their first child. Teenage fertility increased from 8% in 2010 to 12% in 2014. In general, teenage fertility in Cambodia rises with increasing age, lower household wealth, and lower levels of education. The proportion of early childbearing is alarmingly higher among young women without any education. The largest fertility increase among young women between the two surveys was found for those with no education, from 17% in 2010 to 37% in 2014, an increase of 20 percentage points. Teenage fertility also significantly increased between surveys for women age 18, women residing in rural areas, women in the Great Lake and Plateau regions, women not using a contraceptive method, and women regularly exposed to the media. Teenagers currently using contraceptive methods were much more likely to have had a live birth compared with non-users. Early childbearing among young women in Cambodia is nearly exclusively among those in union. It is likely that a significant percentage of young women start using a contraceptive method only after giving birth to their first child.

The prevalence of abortion increased significantly between the two surveys among women age 15-49, from 5% in 2010 to 7% in 2014. Significant increases in abortion were found for many subgroups: the largest were for women in Phnom Penh region, at 7.1 percentage points, for women in the richest wealth group, at 4.3 percentage points, and women in urban areas, at 4.0 percentage points. The reported increase in the abortion rate in Phnom Penh region may be due to an influx of young female migrant workers, among whom contraceptive prevalence is much lower than the national average. There was no substantial increase in late-term abortion between surveys (from 3.3% in 2010 to 3.7% in 2014). A significant increase in late-term abortion was found only for the highest wealth category (1.3 percentage points) and for women in the Plain region (1 percentage point). The prevalence of early abortion, however, increased significantly from 2.6% in 2010 to 4.1% in 2014, particularly among women with non-working husbands, from 1.4% to 10.3%, followed by women residing in Phnom Penh, from 2.3% to 8.0%.

For overall abortion, late-term, and early abortion, the odds of having an abortion were significantly higher among currently contraceptive users compared with non-users. This was evident in both surveys, except for late-term abortion in 2010. This finding implies that following an abortion women are trying to prevent another pregnancy by adopting contractive use. A significant proportion of abortions were performed by unqualified providers (non-skilled birth attendants) or outside of a health facility, although such abortions are against the law in Cambodia. Attendance by a skilled attendant or performed at a health facility was more common among women who had a late-term abortion than among those with an early abortion.

INTRODUCTION

The objective of this analysis is to further explore current issues in two aspects of reproductive health in Cambodia—fertility among young women age 15-19 and abortion among women age 15-49, based on Demographic and Health Surveys (DHS) conducted in 2010 and 2014. The total fertility rate (TFR) in Cambodia has declined steadily over the past 14 years, from 3.8 births per woman in 2000 to 2.7 in 2014 (Figure 1), clearly indicating a fertility transition.

Figure 1. Trend in the total fertility rate from 2000 to 2014, Cambodia

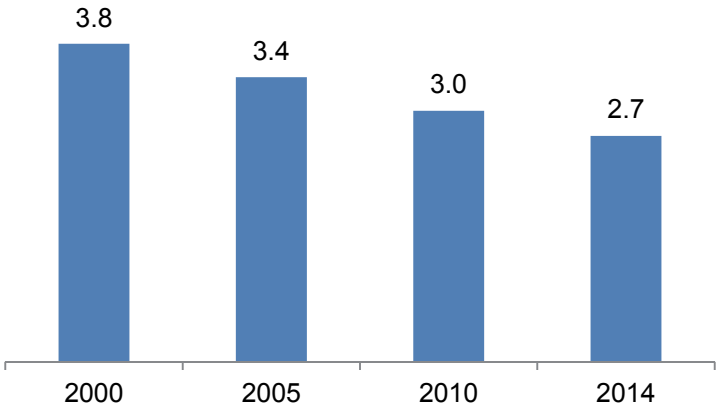
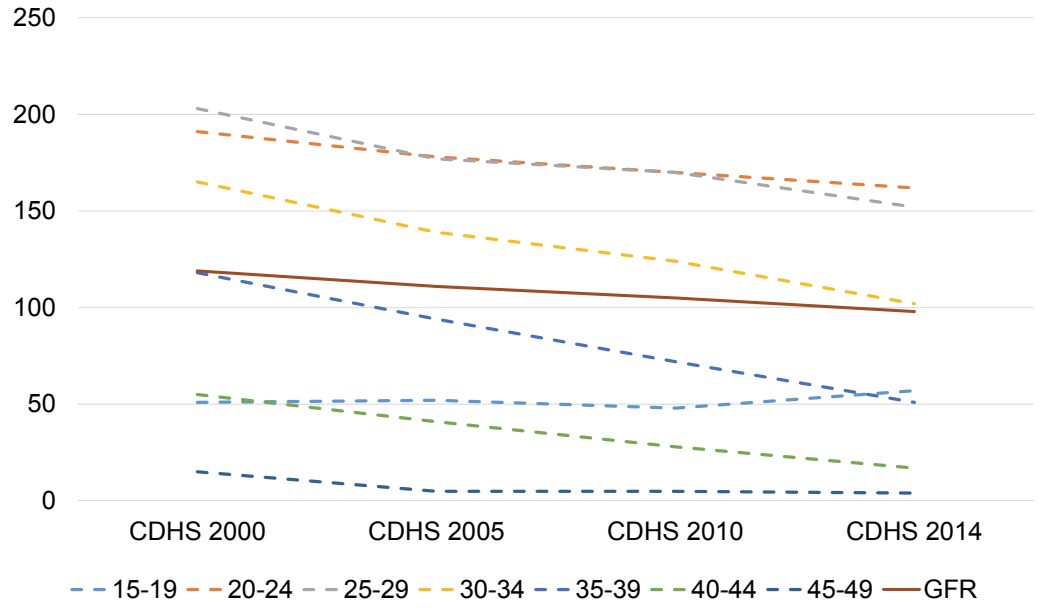


Figure 2 shows that the general fertility rate (GFR)—the annual number of births per 1,000 women—also has declined during this period, from 119 in 2000 to 98 in 2014. Figure 2 also shows that all but one age group shows a similar steadily declining trend in fertility. The exception is for young women age 15-19, among whom the ASFR has increased regularly since the 2000 DHS. Notably, teenage fertility continued increasing between 2010 and 2014 even as fertility declined among women in every other five-year age group.

Figure 2. Trend in general fertility rate and age specific fertility rate from 2000 to 2014



PART I. TEENAGE FERTILITY

1. INTRODUCTION

This analysis examines differentials in teenage fertility in Cambodia by selected socio-demographic characteristics of young women age 15-19 and explores trends between 2010 and 2014. Childbearing during the teenage years is a major health concern because of the high risk of illness and death to teenage mothers and their children. Teenage fertility also can curtail chances for education and employment for many women. Early initiation into childbearing is also often associated with higher lifetime levels of fertility.

2. METHODS

2.1. Data

Data from the 2010 and 2014 Demographic and Health Surveys of Cambodia were used in the analysis. These are the two most recent DHS surveys performed in Cambodia. In the 2010 survey a total of 18,754 eligible women age 15-49 were interviewed, of whom 9.9% were age 15-19 (National Institute of Statistics/Cambodia, Directorate General for Health/Cambodia, and ICF Macro 2011). In the 2014 survey a total of 17,578 women age 15-49 were interviewed, of whom 7.9% were age 15-19 (National Institute of Statistics/Cambodia, Directorate General for Health/Cambodia, and ICF International 2015).

2.2 Measures

The measure used for teenage fertility is based on the survey question asked to women whether they have had a live birth or are currently pregnant with their first child. Women age 15-19 who either have a live birth or are currently pregnant with their first child are classified as having early childbearing or teenage fertility.

The independent variables used in the analysis include socio-demographic variables such as age (<18, 18, 19), education (none, primary, secondary or more), wealth quintile (lowest, second, middle, fourth, highest), place of residence (rural, urban), region (Phnom Penh, Plain, Great Lake, Coastal, Plateau[1]). Other independent variables include contraceptive use (not using, using traditional or modern) and exposure to at least three forms of media (newspaper, radio, television) at least once per week.

2.3 Analysis

Descriptive statistics with chi-square tests of association between teenage fertility and the independent variables are produced for each survey. In addition, statistical testing of differences in the proportions was performed to determine whether the differences in teenage fertility both at the national level and within subgroups were statistically significant. Logistic regression was also performed for teenage fertility and for each survey separately. All analyses accounted for the complex survey design of the DHS and weights for unbiased estimates.

[1] Phnom Penh is the capital city. Plain region includes the provinces of Kampong Cham, Kandal, Prey Veng, Svay Rieng and Takeo. Great Lake region includes the provinces of Banteay Meanchey, Battambang, Pailin, Kampong Chhnang, Kampong Thom, Poursat and Siem Reap. Coastal region includes the provinces of Kampot, Koh Kong, Kep and Preah Sihanouk. Plateau/mountain region includes the provinces of Kampong Speu, Kratie, Mondol Kiri, Preah Vihear, Rattanak Kiri, Stung Treng, and Otdor Mean Chey.

3. RESULTS

Table 1 shows that the fertility among young women age 15-19 significantly increased between the two surveys from 8% in 2010 to 12% in 2014. The table also shows significant associations between all of the background variables and teenage fertility rates. In general, teenage fertility is higher with increasing age, lower levels of education, and lower household wealth. Significant increases were found within some subgroups; the largest was among young women with no education, from 17% in 2010 to 37% in 2014, an increase of 20 percentage points.

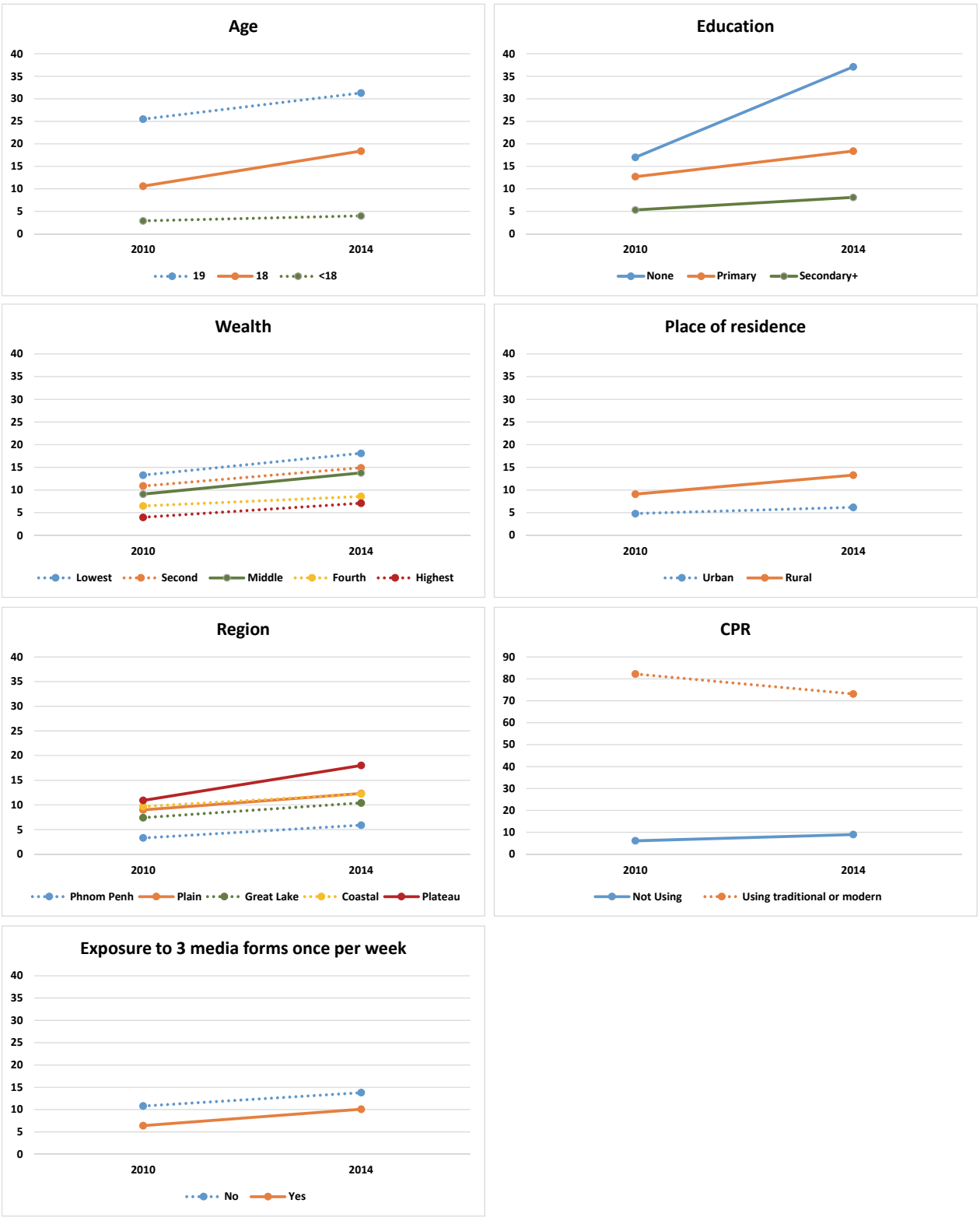
Figure 3 depicts these trends in teenage fertility between the surveys. The same scale was used for all of the plots except contraceptive use, which required a different scale due to the large difference in teenage fertility between the categories. Only education had significant increases for all three of its categories. For the other background variables only one or two subgroups exhibited a significant increase between 2010 and 2014. For instance, only the middle wealth group had a significant increase in teenage fertility, and by region the Great Lake and Plateau regions exhibited significant increases. Teenage fertility also significantly increased between surveys for women age 18, women residing in rural areas, women not using a contraceptive method, and women exposed to the three forms of media at least once per week.

Table 1. Percentage of women 15-19 who are pregnant or had a live birth by background characteristics

	Cambodia 2010				Cambodia 2014				
Variable	**%**	**N**	**C.I.**	**p-value[1]**	**%**	**N**	**C.I.**	**p-value[1]**	**Difference[2]**
Age									
19	25.5	618	[20.6, 31.1]	<0.001	31.3	542	[26.5, 36.6]	<0.001	5.8
18	10.6	735	[8.3, 13.3]		18.4	577	[14.9, 22.6]		7.8**
<18	2.9	2,381	[2.2, 3.9]		4.0	1,774	[3.0, 5.2]		1.1
Education									
None	17.0	132	[11.9, 23.7]	<0.001	37.1	82	[24.8, 51.3]	<0.001	20.1**
Primary	12.7	1,248	[10.8, 15.0]		18.4	852	[15.6, 21.7]		5.7**
Secondary+	5.3	2,354	[4.1, 6.8]		8.1	1,959	[6.8, 9.7]		2.8**
Wealth quintile									
Lowest	13.3	559	[10.1, 17.4]	<0.001	18.1	458	[14.0, 23.1]	<0.001	4.8
Second	10.9	653	[8.2, 14.3]		14.9	552	[11.6, 19.0]		4.0
Middle	9.1	728	[6.6, 12.4]		13.8	578	[10.5, 17.8]		4.7*
Fourth	6.5	872	[4.7, 8.9]		8.6	630	[6.1, 11.8]		2.1
Highest	4.0	920	[2.8, 5.7]		7.1	675	[5.1, 9.7]		3.1
Place of residence									
Urban	4.8	813	[3.4, 6.6]	<0.001	6.2	532	[4.6, 8.5]	<0.001	1.4
Rural	9.1	2,921	[7.8, 10.7]		13.3	2,361	[11.7, 15.1]		4.2***
Region									
Phnom Penh	3.3	432	[1.6, 6.8]	0.009	5.9	316	[3.4, 10.1]	<0.001	2.6
Plain	9.0	1,301	[6.7, 11.9]		12.3	959	[9.5, 15.7]		3.3
Great Lake	7.4	1,156	[5.8, 9.4]		10.4	906	[8.3, 12.8]		3.0*
Coastal	9.7	288	[6.8, 13.6]		12.2	202	[8.7, 16.8]		2.5
Plateau	10.9	557	[8.5, 13.9]		18.0	510	[14.8, 21.7]		7.1**
Contraceptive use									
Not using	6.1	3,630	[5.1, 7.2]	<0.001	9.0	2,760	[7.9, 10.4]	<0.001	2.9***
Using traditional or modern	82.2	103	[71.2, 89.6]		73.1	133	[59.9, 83.1]		-9.1
Exposure to 3 media forms at least once/week									
No	10.8	1,486	[8.7, 13.3]	<0.001	13.8	1,483	[11.8, 16.1]	0.012	3.0
Yes	6.4	2,248	[5.3, 7.7]		10.1	1,410	[8.3, 12.2]		3.7**
Total	**8.2**	**3,734**	**[7.1, 9.4]**		**12.0**	**2,893**	**[10.6, 13.5]**		**3.8*** **

[1] p-value of association test for each year.
[2] Percentage point difference between 2014 and 2010 with significant tests for the difference in proportions.
p-values *<0.05, **<0.01, ***<0.001

Figure 3. Trends in teenage fertility by background characteristics, Cambodia



Note: A solid line indicates a significant change between surveys, while a dotted line indicates no significant change.

Table 2 summarizes the estimates of the adjusted logistic regression of teenage fertility. On average, in both surveys the odds of teenage fertility were 90% lower for women under age 18 compared with women age 19. In 2010, young women with no education had 2.5 times the odds of teenage fertility compared with those with secondary or more education. In 2014 this odds ratio increased to 4.4. In both surveys there was no significant difference in teenage fertility between urban and rural women. There was also no significant difference between the wealth categories in teenage fertility except for the lowest category in the 2010 survey, where the poorest women had 2.4 times the odds of teenage fertility compared with the richest women. In 2010, young women in the Coastal and Plateau regions had three times the odds of teenage fertility compared with Phnom Penh; however, in 2014 there was no significant difference between regions. Exposure to media was only significant in 2010, where women age 15-19 with exposure to media form were less likely to have a child or be pregnant. The highest odds ratios were for contraceptive use. Women using traditional or modern methods had 70 times the odds of teenage fertility compared with non-users in 2010, and 15 times the odds in 2014. It is important to note that these high odds ratios are due to the small number of women age 15-19 using contraceptive methods, as shown in Table 1. It is likely that most young women start using a contraceptive method only after giving birth to their first child.

Table 2. Adjusted odds ratios of teenage fertility adjusting for socio-demographic characteristics, contraceptive use, and media exposure

Variable	Category	Cambodia 2010	Cambodia 2014
Age	19	1	1
	18	0.4***	0.5**
	<18	0.1***	0.1***
Education	None	2.5**	4.4***
	Primary	2.2***	1.8***
	Secondary+	1	1
Wealth quintile	Lowest	2.4*	1.6
	Second	1.9	1.3
	Middle	1.8	1.5
	Fourth	1.5	0.7
	Highest	1	1
Place of residence	Urban	1	1
	Rural	1.2	1.6
Region	Phnom Penh	1	1
	Plain	2.4	1.5
	Great Lake	1.8	1.2
	Coastal	3.1*	1.9
	Plateau	2.6*	2.0
Contraceptive use	Not using	1	1
	Using traditional or modern	69.5***	15.2***
Exposure to 3 media forms at least once/week	No	1	1
	Yes	0.7*	0.8

*p<0.05, **p<0.01, ***p<0.001

4. DISCUSSION

In Cambodia, early childbearing occurs almost exclusively among young women who are currently in union. The increase in teenage fertility between 2010 and 2014 occurred simultaneously with a substantial increase in the proportion of women age 15-19 who were in union, from 10% to 16%. Education

is an important risk factor associated with teenage fertility, and the proportion of early childbearing is alarmingly higher among young women without education compared with women with primary or higher education. There are two possible directional relationships: young women dropout of school, getting married and become pregnant and young women became pregnant and had to stop going to school. Since data are cross-sectional, the direction of this relationship could not be decisively determined. Nonetheless, education should be strongly considered as part of a policy to reduce teenage fertility, with a focus on teenagers without any schooling. Another factor strongly associated with teenage fertility is contraceptive use. Because of the cross-sectional nature of this study, a causal relationship between early childbearing and contraceptive use is difficult to establish. As mentioned, however, it is reasonable to assume that young married women are more likely to use a contraceptive method after giving birth to a first child rather than beforehand.

PART II. INDUCED ABORTION

1. INTRODUCTION

This analysis examines levels and trends of induced abortion among women age 15-49 between the DHS surveys in 2010 and 2014, focusing on differentials by selected socio-demographic characteristics, type of assistance received, and place of abortion. According to the Medical Dictionary (Medical Dictionary, accessed April 4, 2017), abortion is defined as the termination of a pregnancy before it can survive outside the uterus. The term abortion is more commonly used as a synonym for induced abortion—the deliberate interruption of pregnancy—while miscarriage refers to a spontaneous or natural loss of the fetus.

Abortion in Cambodia is allowed by law under certain conditions. The National Abortion Law enacted in November 1997 determines the rules and criteria for abortion. For example, women can only request an abortion for a pregnancy of less than 12 weeks, and it must be performed by a qualified health professional and in a health care facility. Abortion for pregnancy beyond 12 weeks is permitted only if the mother's life is in danger or the newborn may have a serious and incurable disease (World Law Guide, accessed May 23, 2011).

2. METHODS

2.1 Data

Data from the 2010 and 2014 Demographic and Health Surveys of Cambodia were used in the analysis. To collect information on induced abortion, questions on its practice were integrated into the reproductive section in both the 2010 and 2014 surveys.

2.2 Measures

Women age 15-49 who had at least one induced abortion in the last 5 years before the survey were identified. In both surveys, women were asked the same question on whether they ever had a pregnancy that miscarried, was aborted, or ended in a stillbirth. Those who answered yes were then asked when the pregnancy ended and if the pregnancy ended in an induced abortion. Women who reported that they had an induced abortion were asked further questions, including the place of abortion and who performed the abortion. For the current analysis, the timing of abortion was of interest and therefore two variables were constructed to identify late and early abortion. Among women age 15-49, those who had an induced abortion after two or more months of pregnancy were considered to have had a late-term abortion. Women age 15-49 who had their abortion before reaching two months of pregnancy were considered to have had an early abortion. Therefore, for this analysis three outcome variables were examined—overall abortion, late-term abortion, and early abortion.

The independent variables used in the analysis included socio-demographic variables of age (15-24, 25-34, 35-49), education (none, primary, secondary or more), women's occupation (not working, agriculture/labor, professional/services), wealth quintile (lowest, second, middle, fourth, highest), place of

residence (rural, urban), and region (Phnom Penh, Plain, Great Lake, Coastal, Plateau)[2]. Other independent variables included contraceptive use (not using, traditional, modern), exposure to at least three forms of media (newspaper, radio, television) at least once per week, husband's education, and husband's occupation.

Among women who had an abortion, the place of abortion and attendance during abortion were identified. The place of abortion was defined as either at a health facility or at home. Assistance during abortion was identified as either from a skilled birth attendant (SBA) or from a non-SBA. In both surveys an SBA is defined as a doctor, nurse, midwife or other professional health worker.

2.3 Analysis

For each of the three abortion outcomes, descriptive statistics with chi-square tests of association between the outcome and the independent variables were produced for each survey. Statistical testing of differences in the proportions was performed to determine whether the differences in abortion both at the national level and within subgroups were statistically significant. Logistic regression was also performed for each of the abortion outcomes and for each survey. Among women who had an abortion, cross-tabulations were performed between timing of abortion (late or early) and the type of assistance during abortion and place of abortion. All analyses accounted for the DHS sample design and weights.

3. RESULTS

Table 3 shows that the overall level of abortion in Cambodia in the last 5 years for women age 15-49 significantly increased, from 5% in 2010 to 7% in 2014. The abortion rate appears to have been increasing steadily since 2000, as measured by earlier DHS surveys, from 1.9 percent in 2000 and 3.5 percent in 2005. In the 2010 survey there was no significant association found between abortion and place of residence, wealth, media exposure, husband's education, and husband's occupation. However, in 2014 all variables were significantly associated with abortion except for husband's occupation. In both surveys prevalence of abortion was comparatively higher among women age 25-34 and among women with primary education.

[2] For definition of region, see footnote 1

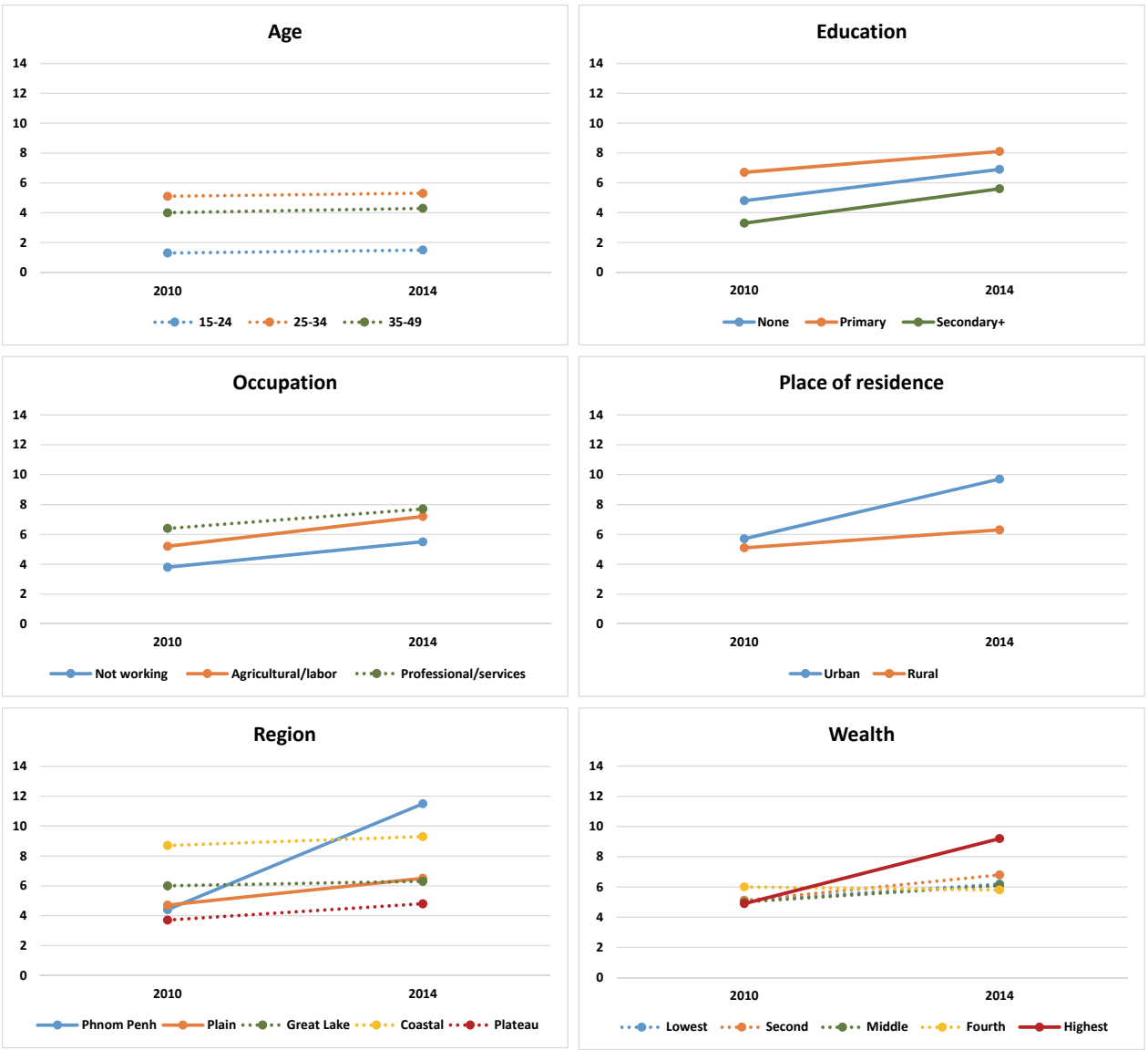
Table 3. Percentage of women age 15-49 in a union who have had an abortion in the last 5 years before the survey by background characteristics

	Cambodia 2010				Cambodia 2014				
Variable	**%**	**N**	**C.I.**	**p-value[1]**	**%**	**N**	**C.I.**	**p-value[1]**	**Difference[2]**
Age									
15-24	2.1	6,889	[1.7, 2.6]	<0.001	3.1	5,910	[2.6, 3.7]	<0.001	1.0**
25-34	8.0	5,429	[7.1, 9.0]		10.2	5,882	[9.3, 11.3]		2.2**
35-49	6.2	6,437	[5.4, 7.1]		7.5	5,786	[6.6, 8.5]		1.3*
Education									
None	4.8	2,973	[4.0, 5.7]	<0.001	6.9	2,250	[5.8, 8.3]	<0.001	2.1**
Primary	6.7	9,265	[5.9, 7.5]		8.1	8,281	[7.2, 9.0]		1.4*
Secondary+	3.3	6,516	[2.8, 3.9]		5.6	7,047	[4.9, 6.4]		2.3***
Women's occupation									
Not working	3.8	3,612	[3.1, 4.8]	0.001	5.5	3,729	[4.5, 6.6]	0.006	1.7*
Agricultural/labor	5.2	11,008	[4.6, 5.8]		7.2	9,384	[6.5, 7.9]		2.0***
Professional/services	6.4	4,122	[5.5, 7.4]		7.7	4,375	[6.8, 8.8]		1.3
Place of residence									
Urban	5.7	3,936	[4.8, 6.9]	0.241	9.7	3,251	[8.3, 11.3]	<0.001	4.0***
Rural	5.1	14,818	[4.5, 5.6]		6.3	14,327	[5.7, 6.9]		1.2**
Region									
Phnom Penh	4.4	2,183	[3.1, 6.4]	<0.001	11.5	1,994	[9.3, 14.1]	<0.001	7.1***
Plain	4.7	7,300	[3.9, 5.6]		6.5	6,276	[5.5, 7.6]		1.8**
Great Lake	6.0	5,479	[5.1, 7.0]		6.3	5,304	[5.6, 7.1]		0.3
Coastal	8.7	1,330	[7.1, 10.7]		9.3	1,192	[7.4, 11.6]		0.6
Plateau	3.7	2,462	[2.8, 4.9]		4.8	2,812	[4.0, 5.7]		1.1
Wealth quintile									
Lowest	5.1	3,388	[4.2, 6.1]	0.427	6.2	3,143	[5.2, 7.3]	<0.001	1.1
Second	5.1	3,516	[4.2, 6.2]		6.8	3,314	[5.7, 8.0]		1.7
Middle	5.0	3,594	[4.2, 6.0]		6.1	3,381	[5.1, 7.3]		1.1
Fourth	6.0	3,827	[5.1, 7.0]		5.8	3,612	[5.0, 6.9]		-0.2
Highest	4.9	4,428	[4.1, 5.8]		9.2	4,128	[8.0, 10.6]		4.3***
Contraceptive use									
None	3.2	12,858	[2.8, 3.7]	<0.001	4.1	10,805	[3.6, 4.6]	<0.001	0.9**
Traditional	10.6	1,823	[8.7, 12.9]		13.0	2,095	[11.3, 15.1]		2.4
Modern	9.1	4,073	[8.1, 10.3]		10.8	4,678	[9.6, 12.0]		1.7
Exposure to 3 media forms at least once/week									
No	5.5	8,415	[4.8, 6.2]	0.275	7.4	10,151	[6.7, 8.1]	0.033	1.9***
Yes	5.0	10,339	[4.4, 5.6]		6.3	7,427	[5.6, 7.1]		1.3**
Husband's education									
None	6.4	1,626	[4.9, 8.5]	0.219	7.3	1,341	[5.6, 9.4]	<0.001	0.9
Primary	7.4	5,781	[6.6, 8.3]		8.2	5,915	[7.2, 9.2]		0.8
Secondary+	8.2	5,273	[7.2, 9.3]		10.7	5,792	[9.6, 11.9]		2.5**
Husband's occupation									
Not working	5.8	124	[2.8, 11.7]	0.712	11.7	83	[7.4, 18.1]	0.055	5.9
Agricultural/labor	7.6	9,886	[6.8, 8.4]		8.7	10,024	[8.0, 9.6]		1.1*
Professional/services	7.3	2,942	[6.2, 8.5]		10.6	2,939	[9.2, 12.3]		3.3**
Total	**5.2**	**18,754**	**[4.7, 5.7]**		**6.9**	**17,578**	**[6.4, 7.5]**		**1.7*** **

[1] p-value of association test for each year.
[2] Percentage point difference between 2014 and 2010 with significant tests for the difference in proportions.
p-values *<0.05, **<0.01, ***<0.001

Figure 4 shows significant increases in abortion for many subgroups between the 2010 and 2014 surveys; the largest increases were found in the Phnom Penh region, at 7.1 percentage points, in the richest wealth group, at 4.3 percentage points, and in urban areas, at 4.0 percentage points (also see Table 3). By wealth status, increases in abortion occurred only in the highest quintile, with the other wealth categories showing no significant increase. Similarly, only Phnom Penh region exhibited a significant increase in overall abortion between the surveys, while the other three regions showed no significant increase.

Figure 4. Trends in overall abortion in the last 5 years for women age 15-49 by background characteristics, Cambodia



Note: A solid line indicates a significant change between surveys, while a dotted line indicates no significant change.

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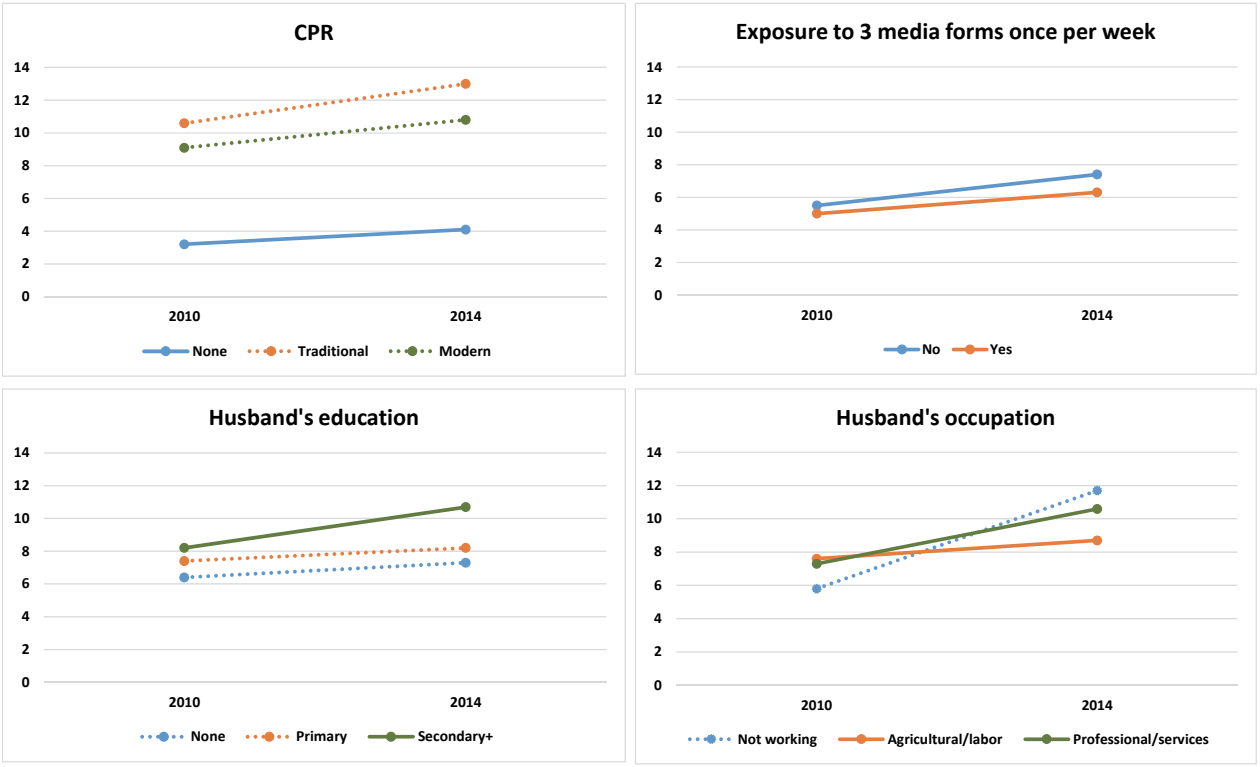
Figure 4.—*Continued*



Note: A solid line indicates a significant change between surveys, while a dotted line indicates no significant change.

Table 4 shows the prevalence of late-term abortion in the last 5 years among women age 15-49. The increase in late-term abortion was not statistically significant, from 3.3% in 2010 to 3.7% in 2014. In both surveys there were no significant associations between late-term abortion and place of residence, wealth, husband's education, and husband's occupation. In 2010, women's occupation and media exposure also were not significantly associated with late-term abortion.

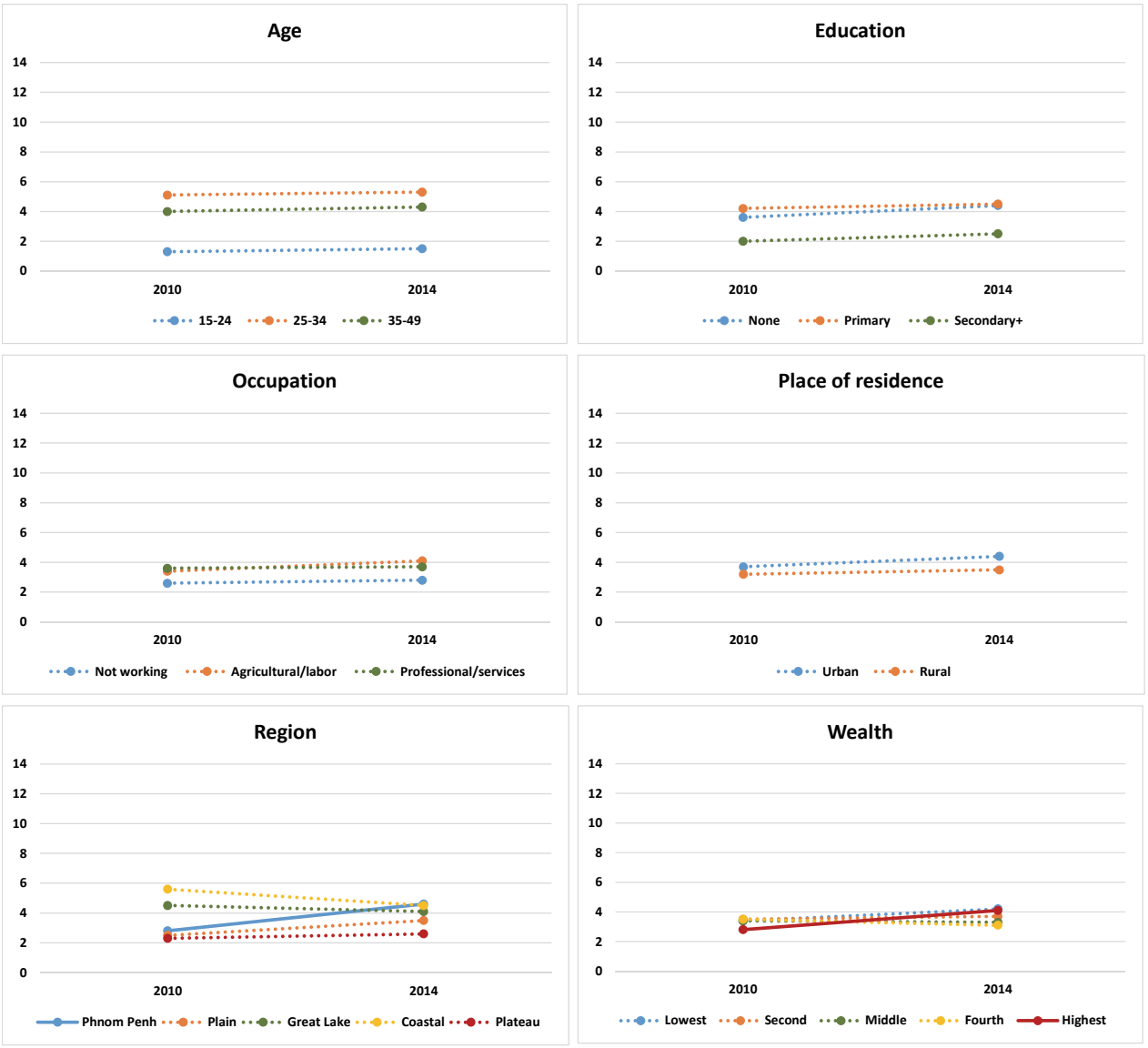
Table 4. Percentage of women 15-49 in a union who have had a late-term abortion (after two or more months) in the last 5 years before the survey by background characteristics

	Cambodia 2010				Cambodia 2014				
Variable	**%**	**N**	**C.I.**	**p-value[1]**	**%**	**N**	**C.I.**	**p-value[1]**	**Difference[2]**
Age									
15-24	1.3	6,889	[1.0, 1.7]	<0.001	1.5	5,910	[1.2, 2.0]	<0.001	0.2
25-34	5.1	5,429	[4.4, 5.8]		5.3	5,882	[4.6, 6.1]		0.2
35-49	4.0	6,437	[3.4, 4.6]		4.3	5,786	[3.6, 5.0]		0.3
Education									
None	3.6	2,973	[3.0, 4.4]	<0.001	4.4	2,250	[3.5, 5.6]	<0.001	0.8
Primary	4.2	9,265	[3.6, 4.8]		4.5	8,281	[3.9, 5.1]		0.3
Secondary+	2.0	6,516	[1.6, 2.4]		2.5	7,047	[2.1, 3.1]		0.5
Women's occupation									
Not working	2.6	3,612	[2.0, 3.4]	0.108	2.8	3,729	[2.1, 3.6]	0.029	0.2
Agricultural/labor	3.4	11,008	[3.0, 3.9]		4.1	9,384	[3.6, 4.6]		0.7
Professional/services	3.6	4,122	[3.0, 4.4]		3.7	4,375	[3.1, 4.6]		0.1
Place of residence									
Urban	3.7	3,936	[2.9, 4.7]	0.359	4.4	3,251	[3.5, 5.6]	0.112	0.7
Rural	3.2	14,818	[2.8, 3.6]		3.5	14,327	[3.1, 4.0]		0.3
Region									
Phnom Penh	2.8	2,183	[1.7, 4.5]	<0.001	4.6	1,994	[3.2, 6.6]	0.044	1.8
Plain	2.5	7,300	[2.0, 3.2]		3.5	6,276	[2.8, 4.2]		1.0*
Great Lake	4.5	5,479	[3.8, 5.2]		4.1	5,304	[3.5, 4.7]		-0.4
Coastal	5.6	1,330	[4.4, 7.0]		4.5	1,192	[3.3, 6.1]		-1.1
Plateau	2.3	2,462	[1.8, 3.0]		2.6	2,812	[2.0, 3.3]		0.3
Wealth quintile									
Lowest	3.4	3,388	[2.8, 4.2]	0.629	4.2	3,143	[3.4, 5.2]	0.229	0.8
Second	3.5	3,516	[2.8, 4.4]		3.7	3,314	[3.0, 4.5]		0.2
Middle	3.4	3,594	[2.7, 4.3]		3.3	3,381	[2.6, 4.3]		-0.1
Fourth	3.5	3,827	[2.8, 4.2]		3.1	3,612	[2.5, 3.8]		-0.4
Highest	2.8	4,428	[2.2, 3.6]		4.1	4,128	[3.3, 5.1]		1.3*
Contraceptive use									
None	2.3	12,858	[1.9, 2.6]	<0.001	2.4	10,805	[2.0, 2.8]	<0.001	0.1
Traditional	5.4	1,823	[4.2, 7.0]		6.3	2,095	[5.0, 7.9]		0.9
Modern	5.7	4,073	[4.9, 6.6]		5.6	4,678	[4.8, 6.5]		-0.1
Exposure to 3 media forms at least once/week									
No	3.5	8,415	[3.0, 4.0]	0.355	4.1	10,151	[3.5, 4.6]	0.022	0.6
Yes	3.2	10,339	[2.8, 3.6]		3.2	7,427	[2.7, 3.8]		0.0
Husband's education									
None	4.6	1,626	[3.2, 6.6]	0.655	4.4	1,341	[3.2, 6.1]	0.395	-0.2
Primary	4.6	5,781	[4.0, 5.3]		4.7	5,915	[4.1, 5.3]		0.1
Secondary+	5.1	5,273	[4.4, 6.0]		5.2	5,792	[4.5, 6.1]		0.1
Husband's occupation									
Not working	4.4	124	[1.8, 10.4]	0.595	1.4	83	[0.3, 5.8]	0.144	-3.0
Agricultural/labor	4.9	9,886	[4.3, 5.5]		4.7	10,024	[4.2, 5.3]		-0.2
Professional/services	4.4	2,942	[3.6, 5.3]		5.5	2,939	[4.4, 6.9]		1.1
Total	**3.3**	**18,754**	**[2.9, 3.7]**		**3.7**	**17,578**	**[3.3, 4.1]**		**0.4**

[1] p-value of association test for each year.
[2] Percentage point difference between 2014 and 2010 with significant tests for the difference in proportions.
p-values *<0.05, **<0.01, ***<0.001

Figure 5 shows that there were almost no significant increases in late-term abortion among the different subgroups between 2010 and 2014, with two exceptions—a significant increase in late-term abortion for women residing in the Plain region, from 2.5% in 2010 to 3.5% in 2014, and a significant increase for the richest women, from 2.8% in 2010 to 4.1% in 2014.

Figure 5. Trends in late-term abortion (after two or more months of pregnancy) by background characteristics, Cambodia



Note: A solid line indicates a significant change between surveys, while a dotted line indicates no significant change.

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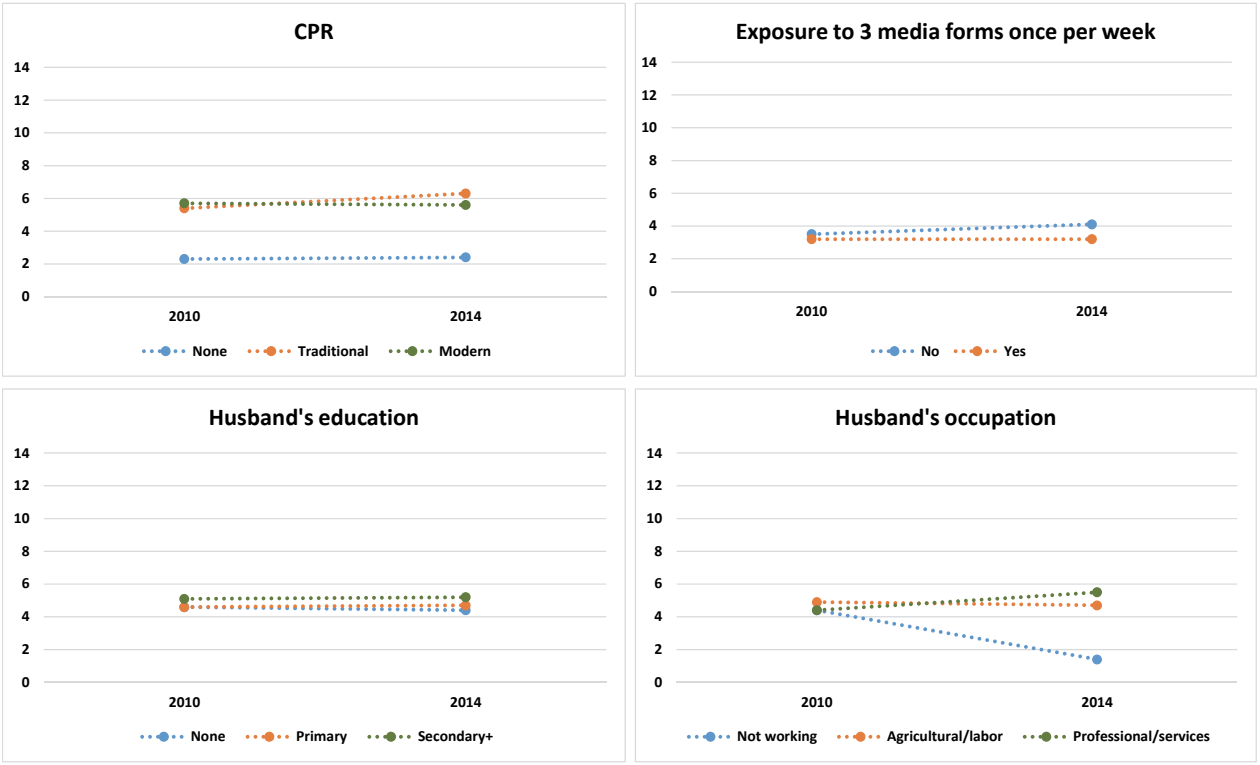
Figure 5.—*Continued*



Note: A solid line indicates a significant change between surveys, while a dotted line indicates no significant change.

Table 5 shows a significant increase in early abortions between surveys, from 2.6% in 2010 to 4.1% in 2014. In both surveys exposure to the three forms of media at least once per week and husband's occupation were not significantly associated with early abortion. In 2010, place of residence and husband's education also showed no significant association with early abortion, and in 2014 women's education showed no significant association with early abortion.

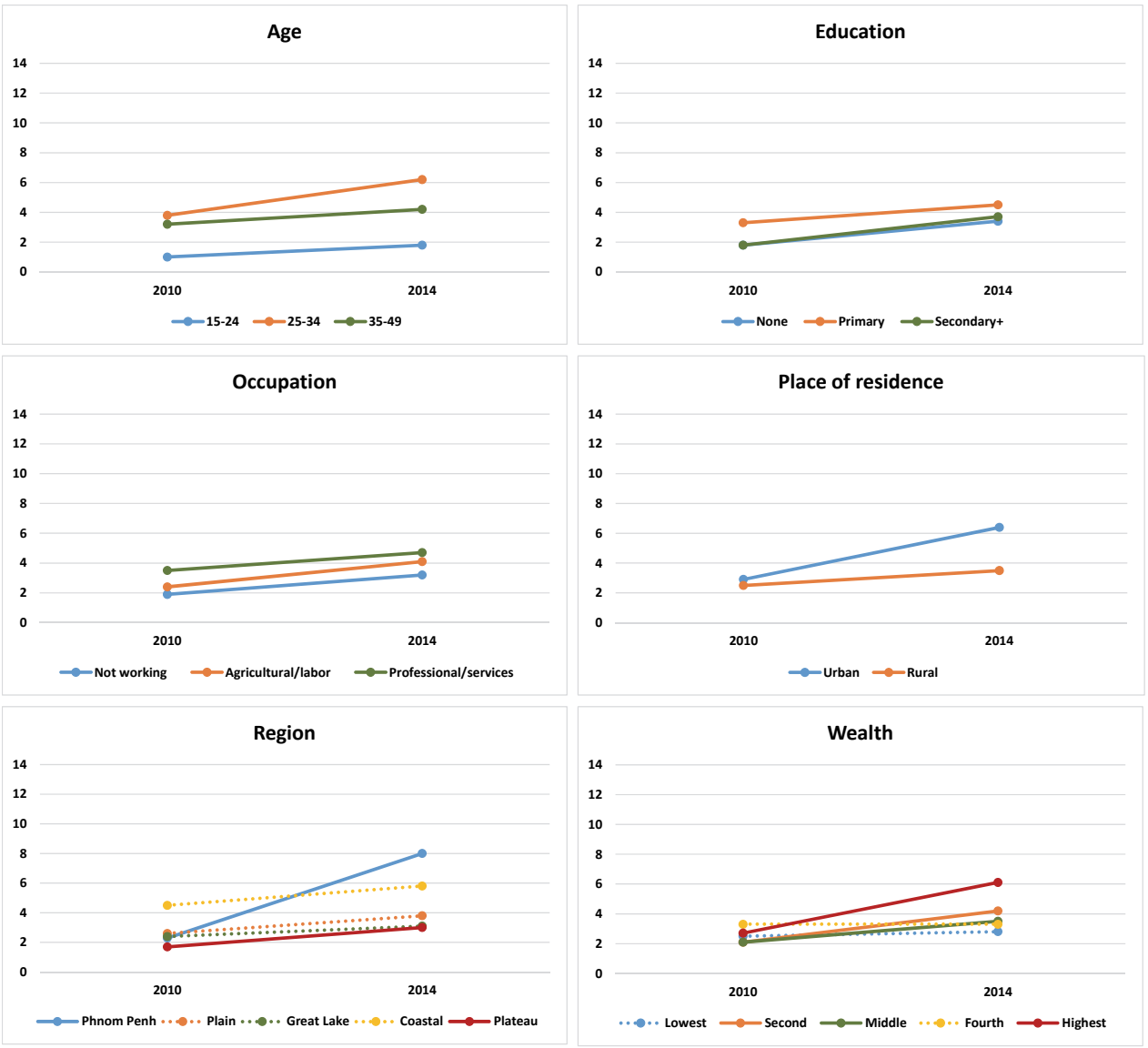
Table 5. Percentage of women 15-49 in a union who have had an early abortion (after two or more months) in the last 5 years before the survey by background characteristics

	Cambodia 2010				Cambodia 2014				
Variable	**%**	**N**	**C.I.**	**p-value[1]**	**%**	**N**	**C.I.**	**p-value[1]**	**Difference[2]**
Age									
15-24	1.0	6,889	[0.7, 1.3]	<0.001	1.8	5,910	[1.4, 2.3]	<0.001	0.8**
25-34	3.8	5,429	[3.2, 4.6]		6.2	5,882	[5.4, 7.0]		2.4***
35-49	3.2	6,437	[2.6, 3.8]		4.2	5,786	[3.6, 5.0]		1.0*
Education									
None	1.8	2,973	[1.3, 2.5]	<0.001	3.4	2,250	[2.7, 4.3]	0.057	1.6**
Primary	3.3	9,265	[2.8, 3.9]		4.5	8,281	[3.9, 5.2]		1.2**
Secondary+	1.8	6,516	[1.5, 2.2]		3.7	7,047	[3.1, 4.4]		1.9***
Women's occupation									
Not working	1.9	3,612	[1.3, 2.6]	0.002	3.2	3,729	[2.5, 4.1]	0.024	1.3**
Agricultural/labor	2.4	11,008	[2.0, 2.9]		4.1	9,384	[3.6, 4.7]		1.7***
Professional/services	3.5	4,122	[2.9, 4.2]		4.7	4,375	[4.0, 5.6]		1.2*
Place of residence									
Urban	2.9	3,936	[2.3, 3.6]	0.222	6.4	3,251	[5.4, 7.5]	<0.001	3.5***
Rural	2.5	14,818	[2.1, 2.9]		3.5	14,327	[3.1, 4.0]		1.0***
Region									
Phnom Penh	2.3	2,183	[1.5, 3.5]	0.005	8.0	1,994	[6.4, 10.0]	<0.001	5.7***
Plain	2.6	7,300	[2.2, 3.2]		3.8	6,276	[3.0, 4.6]		1.2
Great Lake	2.4	5,479	[1.8, 3.2]		3.1	5,304	[2.6, 3.7]		0.7
Coastal	4.5	1,330	[3.5, 5.8]		5.8	1,192	[4.5, 7.4]		1.3
Plateau	1.7	2,462	[1.2, 2.5]		3.0	2,812	[2.3, 3.8]		1.3*
Wealth quintile									
Lowest	2.5	3,388	[1.9, 3.3]	0.047	2.8	3,143	[2.2, 3.6]	<0.001	0.3
Second	2.1	3,516	[1.5, 2.8]		4.2	3,314	[3.4, 5.2]		2.1***
Middle	2.1	3,594	[1.6, 2.8]		3.5	3,381	[2.7, 4.4]		1.4**
Fourth	3.3	3,827	[2.6, 4.2]		3.3	3,612	[2.6, 4.1]		0.0
Highest	2.7	4,428	[2.2, 3.3]		6.1	4,128	[5.1, 7.1]		3.4***
Contraceptive use									
None	1.4	12,858	[1.2, 1.7]	<0.001	2.4	10,805	[2.0, 2.8]	<0.001	1.0***
Traditional	6.0	1,823	[4.7, 7.7]		8.1	2,095	[6.6, 9.8]		2.1
Modern	4.6	4,073	[3.8, 5.4]		6.2	4,678	[5.3, 7.2]		1.6**
Exposure to 3 media forms at least once/week									
No	2.7	8,415	[2.3, 3.2]	0.347	4.2	10,151	[3.7, 4.8]	0.321	1.5***
Yes	2.4	10,339	[2.1, 2.9]		3.9	7,427	[3.3, 4.5]		1.5***
Husband's education									
None	2.9	1,626	[2.1, 4.1]	0.195	4.2	1,341	[3.1, 5.7]	<0.001	1.3
Primary	3.6	5,781	[3.0, 4.3]		4.4	5,915	[3.7, 5.2]		0.8
Secondary+	4.1	5,273	[3.5, 4.9]		6.7	5,792	[5.9, 7.6]		2.6***
Husband's occupation									
Not working	1.4	124	[0.3, 7.1]	0.418	10.3	83	[6.4, 16.2]	0.147	8.9**
Agricultural/labor	3.6	9,886	[3.1, 4.2]		5.2	10,024	[4.6, 5.9]		1.6***
Professional/services	3.9	2,942	[3.2, 4.9]		6.0	2,939	[5.0, 7.2]		2.1**
Total	**2.6**	**18,754**	**[2.2, 2.8]**		**4.1**	**17,578**	**[3.6, 4.5]**		**1.5*** **

[1] p-value of association test for each year.
[2] Percentage point difference between 2014 and 2010 with significant tests for the difference in proportions.
p-values *<0.05, **<0.01, ***<0.001

Figure 6 shows that many of the subgroups exhibited a significant increase in early abortion between the two surveys. The largest increase was in Phnom Penh, from 2.3% in 2010 to 8.0% in 2014. There was also a significant increase in early abortion in the Plateau region, but only by 1.3 percentage points. The Plain, Great lake, and Coastal regions showed no significant increases in early abortion. There were also relatively large increases in early abortion among urban women, from 2.9% in 2010 to 6.4% in 2014, as well as among the richest women, from 2.7% in 2010 to 6.1% in 2014.

Figure 6. Trends in early abortion (before two months of pregnancy) by background characteristics, Cambodia



Note: A solid line indicates a significant change between surveys, while a dotted line indicates no significant change.

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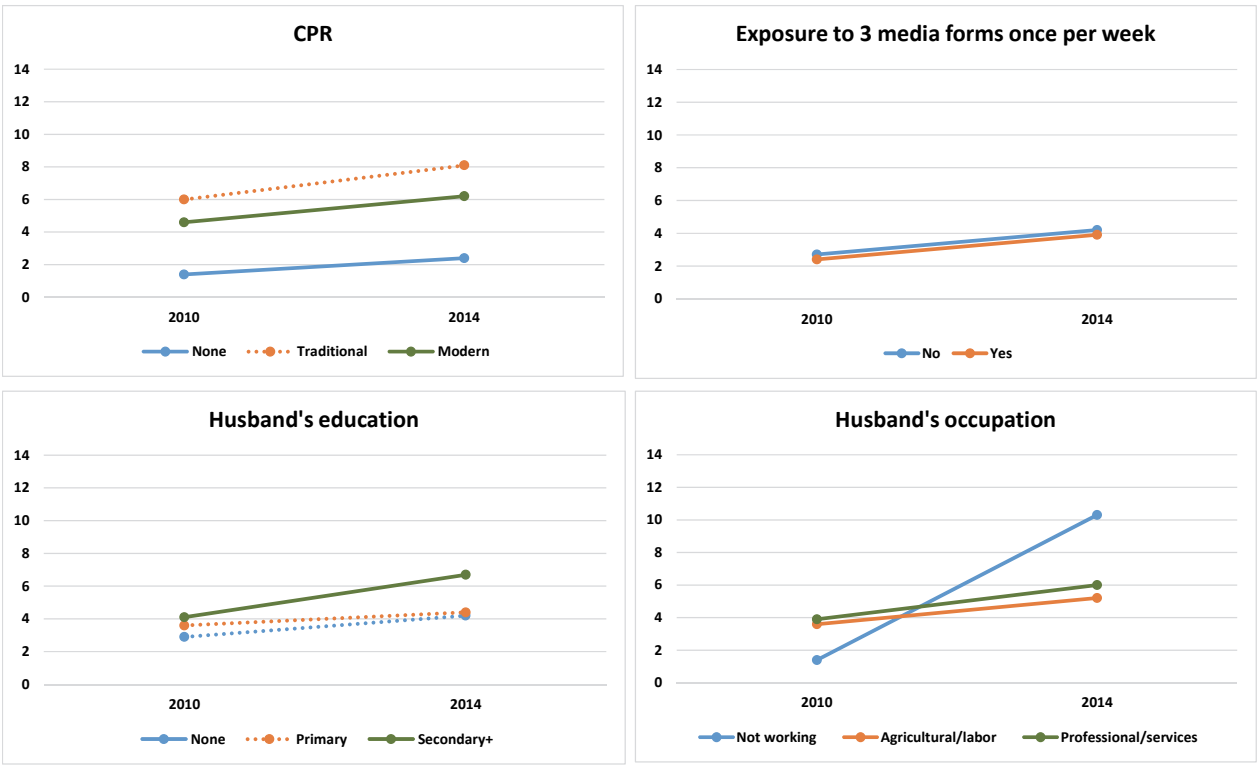
Figure 6.—*Continued*



Note: A solid line indicates a significant change between surveys, while a dotted line indicates no significant change.

Table 6 summarizes the estimates of the logistic regression for the three abortion outcomes: overall abortion, late-term abortion, and early abortion. For all abortion outcomes and in both surveys, women age 25-34 had 1.3 to 1.5 times the odds of having an abortion, whether overall, late, or early, compared with women age 15-24. The exception was in the 2010 survey for early abortion, where there were no significant differences between the age groups. There were also no significant differences between the education categories for overall abortion and early abortion in the 2014 survey. In 2014, however, women with primary education had 1.3 times the odds of having a late-term abortion compared with women with no education. In both surveys women residing in rural areas were significantly less likely to have an abortion compared with urban women. However, for late and early abortions, there was no significant difference between rural and urban women in the 2014 survey. In the 2010 survey, women in the Coastal region had significantly higher odds of abortion compared with Phnom Penh, but in 2014 this significance was lost for all three abortion outcomes. For overall and early abortion, in the 2014 survey women in the Plain, Great Lake, and Plateau regions had significantly lower odds of abortion compared with the Phnom Penh region. The highest odds ratios in the regressions were found for current contraceptive use. Women using contraception at the time of the survey, whether traditional or modern, had almost twice the odds of having experienced an abortion or an early abortion in the last 5 years before the survey compared with women not using contraception at the time of the survey. In the 2014 survey, for late-term abortion women using traditional or modern contraception had approximately1.5 times the odds of having a late abortion compared with non-users. There were no or very few significant differences between the groups by women's occupation, wealth, exposure to media, and husband's education.

Table 6. Adjusted odds ratios of overall abortion, late-term abortion, and early abortion in the last 5 years for women 15-49 in a union

		Overall Abortion		Late-term Abortion		Early Abortion	
Variable	**Category**	**2010**	**2014**	**2010**	**2014**	**2010**	**2014**
Age	15-24	1.0	1.0	1.0	1.0	1.0	1.0
	25-34	1.3*	1.4**	1.4*	1.4*	1.3	1.5**
	35-49	1.0	1.0	1.1	1.1	1.0	1.0
Education	None	1.0	1.1	1.2	1.3	0.7	0.9
	Primary	1.5***	1.2	1.5**	1.3*	1.4*	1.1
	Secondary+	1.0	1.0	1.0	1.0	1.0	1.0
Women's occupation	Not working	1.0	1.0	1.0	1.0	1.0	1.0
	Agricultural/labor	1.0	1.2	1.0	1.3	1.0	1.2
	Professional/services	1.1	1.0	0.9	1.1	1.2	0.9
Place of residence	Urban	1.0	1.0	1.0	1.0	1.0	1.0
	Rural	0.6**	0.7*	0.6**	0.7	0.7*	0.7
Region	Phnom Penh	1.0	1.0	1.0	1.0	1.0	1.0
	Plain	1.0	0.6***	0.8	0.8	1.3	0.5***
	Great Lake	1.5*	0.6***	1.6	1.0	1.3	0.4***
	Coastal	2.2**	0.9	1.9*	1.0	2.3**	0.8
	Plateau	0.9	0.4***	0.7	0.5*	0.9	0.4***
Wealth quintile	Lowest	1.1	0.8	1.3	1.0	1.0	0.7*
	Second	1.1	0.9	1.4	0.9	0.8	0.9
	Middle	1.1	0.8	1.4	0.9	0.8	0.8
	Fourth	1.4*	0.7*	1.4	0.8	1.3	0.7*
	Highest	1.0	1.0	1.0	1.0	1.0	1.0
Contraceptive use	None	1.0	1.0	1.0	1.0	1.0	1.0
	Traditional	1.8***	1.8***	1.3	1.5**	2.1***	1.7***
	Modern	1.6***	1.6***	1.3**	1.4**	1.7***	1.5***
Exposure to 3 media forms at least once/week	No	1.0	1.0	1.0	1.0	1.0	1.0
	Yes	0.9	0.8*	0.9	0.8	0.9	0.9
Husband's education	None	1.0	1.0	1.0	1.0	1.0	1.0
	Primary	1.0	1.0	0.9	1.1	0.9	0.9
	Secondary+	1.1	1.2	1.2	1.3	0.9	1.1

* p<0.05, **p<0.01, ***p<0.001

Table 7 describes type of assistance during abortion and place of abortion among women who had an abortion in the last 5 years before the survey. In both surveys there was a significant association between assistance by a skilled birth attendant (SBA) and the timing of abortion. SBA use was more common for women with a late-term abortion compared with early abortion, but with slightly overlapping confidence intervals. The place of abortion was only significantly associated with the timing of abortion in the 2010 survey. The prevalence of abortion that took place in a health facility was higher for late-term abortion compared with early abortion, but also with slightly overlapping confidence intervals.

Table 7. Cross-tabulation of timing of abortion with the helper and place of abortion

	Cambodia 2010					Cambodia 2014				
	<2 months of pregnancy		2+ months of pregnancy			<2 months of pregnancy		2+ months of pregnancy		
	%	C.I.	%	C.I.	p-value	%	C.I.	%	C.I.	p-value
SBA helper during abortion	60.3	[53.9, 66.4]	71.7	[66.7, 76.2]	0.003	56.5	[51.3, 61.5]	67.1	[61.5, 72.2]	0.008
Abortion occurred in a health facility	49.9	[42.9, 56.9]	61.9	[56.6, 67.0]	0.009	58.0	[52.8, 63.2]	61.6	[56.0, 67.0]	0.346

Note: * SBA includes doctor, nurse, midwife or other professional health worker

4. DISCUSSION

DHS surveys show that abortion rates in Cambodia have increased steadily over the past 14 years. Among women age 15-49, the proportion having at least one abortion in the 5 years before the survey was 1.9 percent in 2000, 3.5 percent in 2005, 5.2 percent in 2010, and 6.9 percent in 2014. The increase in abortion between 2010 and 2014 was largely a result of an increase in early abortion, at 0-7 weeks of pregnancy, with an increase from 2.6% to 4.1%. The increase in prevalence of late-term abortion at two or more months of pregnancy, from 3.3% in 2010 to 3.7% in 2014, was not significant. Compared with early abortion, late-term abortion is associated with higher risk of complications (Gaufberg, 2008). The observed increase in abortion rates could also reflect a reduction in reporting bias due to changes in the social acceptability of having an induced abortion. Thus, over time more women may be reporting having an induced abortion. This is a possible limitation of this analysis.

There is some evidence that early abortion, which is generally associated with lower risk of complications, could have been performed as a substitute to contraceptive use for unwanted pregnancies (Westoff et al., 2013). In its 2015 Annual Report, the Ministry of Labor and Vocational Training (MLVT) indicated that there are about one million internal migrant workers in Phnom Penh region, with an overwhelming majority being young women (73-95%). Among these women, 80% did not use any contraceptive method, compared with less than half of women nationwide. DHS survey results indicate that prevalence of abortion in Phnom Penh region is significantly higher compared with other regions. Between 2010 and 2014, there was an increase of 7.1 percentage points in overall abortion in Phnom Penh versus only 0.3-1.8 percentage points in other regions. In 2014, women in Phnom Penh region were significantly more likely to have early abortion compared with other regions. These findings, along with the figures from the 2015 Annual Report, support the above assumption that particularly in Phnom Penh region abortion may be used as a substitute for contraception.

Data on husband's working status show a noteworthy relationship with early abortion. Overall, the abortion rate increased substantially among women whose husbands were not working at the time of the survey, from 5.8% in 2010 to 11.7% in 2014. The increase was even larger among women who had an early abortion, from 1.4% to 10.3%. Couple's financial hardship may play a role in this observed trend.

The regression results for the different types of abortion revealed that women who were currently using any form of contraception were more likely to have had any type of abortion compared with non-users. Since we are looking at current contraceptive use in relation to past abortions, it is most likely that

women start using contraception after they have experienced an abortion. In addition, certain groups of women were more likely to have experienced abortion. For instance, as mentioned in the Results section, women age 25-34 had significantly higher odds of abortion compared with women age 15-24, with the exception of early abortion in 2010. In both surveys women with only a primary education were significantly more likely to have had a late-term abortion compared with women with secondary or more education.

Even though Cambodia's National Abortion Law dictates that abortion can only be performed by qualified providers and in a health facility, the DHS surveys found that a significant percentage of abortions were performed by unqualified providers outside of a health facility (i.e. at home). The use of a skilled birth attendant and attendance in a health facility were more common for women with a late-term abortion compared with an early abortion. This is as expected, since late-term abortions would be of greater difficulty with higher risk than early abortions. However, this indicates that a high proportion of women are having early abortion outside of a health facility and thus may be placing themselves at risk. Education programs are required to inform women of the risk of performing any type of abortion outside of a health facility and without assistance from a skilled provider.

REFERENCES

Dorland's Medical Dictionary for Health Consumers, s.v. "abortion," (retrieved April 4, 2017), http://medical-dictionary.thefreedictionary.com/abortion

Gaufberg, S.V., s.v. "Abortion complications," (Accessed 2008), http://emedicine.medscape.com/article/795001-overview

National Institute of Statistics/Cambodia, Directorate General for Health/Cambodia, and ICF Macro. 2011. *Cambodia Demographic and Health Survey 2010*. Phnom Penh, Cambodia: National Institute of Statistics, Directorate General for Health, and ICF Macro. http://dhsprogram.com/pubs/pdf/FR249/FR249.pdf.

National Institute of Statistics/Cambodia, Directorate General for Health/Cambodia, and ICF Macro. 2015. *Cambodia Demographic and Health Survey 2014*. Phnom Penh, Cambodia: National Institute of Statistics, Directorate General for Health, and ICF Macro. http://dhsprogram.com/pubs/pdf/FR312/FR312.pdf.

Westoff, Charles F., K. Bietsch, and R. Hong. 2013. *Reproductive Preferences in Cambodia.* DHS Further Analysis Reports No. 87. Calverton, Maryland, USA: ICF International.

World Law Guide, Legislation Cambodia. (Accessed on May 23, 2011), http://www.lexadin.nl/wlg/legis/nofr/oeur/lxwecam.htm