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Ministry of Health

Teenage Fertility and its Socio-Demographic Characteristics and Risk Factors

Further Analysis of the Cambodia Demographic and Health Survey

PHNOM PENH
April, 2013

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April 2013

This report presents findings from a secondary analysis study undertaken as part of the follow-up to the 2010 Cambodia Demographic and Health Survey (CDHS). Additional information about the survey can be obtained from the National Institute of Statistics, Ministry of Planning; 386 Monivong Boulevard, Sangkat Beong Keng Kang 1, Chamkar Mon, Phnom Penh, Cambodia; Telephone: (855) 12-723107, (855) 16-644454; E-mail: linahang2002@gmail.com; Internet: www.nis.gov.kh and the Directorate General for Health, Ministry of Health 151-153 Kampuchea Krom Boulevard, Phnom Penh, Cambodia; Telephone: (855) 12-222773; E-mail: rathavy@online.com.kh; Internet: www.moh.gov,kh.

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Preface

The Cambodia Demographic and Health Surveys (DHS) collect a high quality of data on the demographic and health characteristics of populations in Cambodia. The available data allow researchers to perform further, in-depth analyses to examine issues related to the population and health conditions in Cambodia, as well as to inform policy makers using evidence-based results which are useful for national programs and projects.

This Cambodia DHS Further Analysis focuses on teenage fertility which includes women who are having a live birth and who are pregnant at the time of interview. The principal objective of this analysis is to study the factors associated with this problem of early childbearing and to provide information for policy formulation at the national level. When applicable, data from previous Cambodia DHS surveys are used to evaluate trends over time.

This topic is selected by the analysts of the Ministry of Health in consultation with the National Institute of Statistics and United Nations Population Fund (UNFPA).

It is anticipated that the findings from this analysis will enhance the understanding of important issues of reproductive health among young women in Cambodia by health analysts and policymakers.

H.E. Prof. Eng Huot
Secretary of State
For Minister of Health

H.E. Ouk Chay
Secretary of State
For Senior Minister
Minister of Planning

Acknowledgement

The further analysis of the 2010 Cambodia Demographic and Health Survey (2010 CDHS) was conducted by the Directorate General for Health of the Ministry of Health and by the National Institute of Statistics of the Ministry of Planning. This analysis represents the continuing commitment and efforts in Cambodia to build the capacity of the Cambodia researchers. It reflects interest in obtaining additional information and data needed to develop policies and programs for the country.

We would like to thank Dr. Rathavuth Hong for assistance with data analysis, and the reviewers for their comments on the draft. Special thanks are given to the National Institute of Statistics of the Ministry of Planning and the Directorate General for Health of the Ministry of Health, which provided guidance on this work, and the United Nations Population Fund (UNFPA), which provided funding for this project.

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We would like to express our appreciation for the researchers, whose dedicated efforts ensured the quality and timeliness of the analysis,

Her Excellency, Ms Hang Lina
Director General
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Executive Summary

Teenage mothers and their children face poorer prospects in life than do women who delay childbearing. Understanding of the risk factors associated with early fertility is important for the prevention of teenage pregnancy and effective intervention programs. This study uses data from the 2010 Cambodia Demographic and Health Survey to examine factors associated with teenage fertility and seeks to make contributions to improve the conditions related to the problem of teenage fertility. The analysis included 4,734 teenage women aged 15 to 19 years old interviewed in the survey. Fertility in this study is defined as having had a live birth or being pregnant. Associations of selected demographic and socioeconomic factors with teenage fertility are estimated using descriptive methods and multivariate logistic regression methodology. Because most of these associations are independent of one another, there is potential merit in intervening to prevent unintended fertility at several points in a young woman's life. Primary preventive efforts are needed to improve the prospect of teenage mothers and reduce the prevalence of teenage fertility in the country.

Teenage fertility rates remain unchanged over the past ten years, even though total fertility rates for all women have declined. Almost all of these are marital fertility which occur within the legal age of marriage for Cambodian women, and not likely the results of indiscriminate sexuality. It is not clear to what extent pregnancy thwarts the academic ambitions of young women, or to what extent poor educational performance leads to a need to seek personal fulfillment in other than academic goals by young women. Thus, interventions designed to influence the age of first marriage as well as to improve educational performance, both have the potential to impact teenage fertility rates. The other important factor determining the chances of teenage fertility appear to be a young woman's exposure to mass media. In terms of outcomes, teenage mothers are less likely to be employed, and more likely reside in the lower socioeconomic strata in remote areas of the country. In spite of these risk factors, this study found that teenage fertility is also positively and significantly associated with the use of contraception, high exposure to mass media and specifically, to family planning messages delivered through the mass media. These factors are significant in preventing early child bearing among young Cambodian women. These associations provide the opportunity for effective program interventions in teenage fertility, improve the prospects of young women for a quality life, and increase the chances of continued education and employment, whether they are already in a sexual union or not.

1. Introduction

1.1. Background

As the country continues to develop and modernize, young people usually delay their sexual union and reproductive activities in favor of the lengthy process of integration into the society. This process of integration is included but not limited to obtaining marketable skills and professions through formal or informal training, and ultimately securing stable incomes through employment or business (Wellings K, Wadsworth J, Johnson A, et al. 1999). Today, on average only a small proportion of young adults begin their reproductive life at the same time as their biological reproductive maturity.

Teenage fertility is one of major public health concerns in developing and developed countries. Annually, 13 million children are born to women under age 20 worldwide. More than 90 percent of these births occur to women living in developing countries (Mayor S 2004). In Southeast Asia the prevalence of teenage fertility ranges from as low as 4 percent in Vietnam, 8 percent in the Philippines, to as high as 72 percent in Bangladesh and 73 percent in Indonesia (Khan S, Mishra V 2008).

The disadvantages of early childbearing before securing economic independence are evident. Young parents and in particular young mothers will experience the direct difficulties supporting their families financially. The family of the teenage mother as well as the society will inherit the burdens in providing support to young parents, particularly in finding employment, providing for continuous education, and accessing social services and healthcare for young mothers and their babies (Moore K, Morrison D, Greene A 1997; Cabral CS 2005; Brandão ER, Heilborn ML 2006;).

Complications during teenage pregnancy, particularly in developing countries are well documented. These complications include higher risks of anemia, lower birth weight babies, higher risks of perinatal mortality of infants, and a higher incidence of spontaneous abortions (Carlson DO, Labarba RC, Sclafini JD, et al. 1986; Cornelius MD, Goldschmidt L, Leech SL, et al. 2009). In addition to physical and medical consequences, there are also social consequences of early childbearing. Evidence from previous studies illustrate that teenage mothers terminate their education early, have poorer employment prospects and become vulnerable to negative aspects of society (Chilman C 1980; Phipps-Yonas 1980; Simms and Smith 1986; Furstenberg et al. 1987). Meanwhile, other studies have demonstrated that children born to teenagers are disadvantaged, they are more vulnerable to injuries, are at higher risk of physical abuse, have lower developmental scores, and do not perform well compared to the children of more mature mothers (Bury J 1984; Wadsworth J, Taylor B, Osborn A, et al. 1984; Phoenix A 1991).

1.2. Objective of this Study

There is very little literature which discusses the problems related to teenage fertility in Cambodia. Moreover, the studies which do exist only describe the issue in brief and do not

examine the determinants of early child bearing. This analysis of the data from the Third Cambodia Demographic and Health Survey (DHS) which was carried out in 2010, examines the risk factors associated with teenage fertility and seeks to contribute to an understanding of risk and beneficial factors associated with early fertility. DHS collects high quality data which represent the situation at the national and regional level. The multivariate logistic regression analysis used in this study produces a model which controls for confounding effects in which factors may correlate with each other and allow for the interpretation of the results in a multidimensional setting.

2. Data and Methods

2.1. Study population

This study analyzed data from the 2010 Cambodia Demographic and Health Survey (CDHS). The survey included information from a nationally-representative sample of 18,754 women aged 15 to 49, nested in a sample of 611 clusters or enumeration areas (EA). The sample design provides the estimates for the national level, urban and rural residences, and 19 domains (provinces and groups of province) in Cambodia. The survey was based on a master sampling frame of the 2008 General Population Census that consisted of 28,764 EAs. The sampling design was a two-staged, stratified process with a household response rate of 99.0 percent, and an individual woman response rate of 97.5 percent. Details of the sample design are available in the main CDHS report (National Institute of Statistics (NIS), Directorate General for Health (DGH), and ICF Macro, 2011). This study is limited to 4,734 young women aged 15 to 19 who completed the interview in the survey.

The CDHS collects information on fertility of all eligible women including those aged 15-19. Fertility in this analysis is defined as a woman who has had a live birth or was pregnant at the time of interview.

The factors thought to be associated with the fertility among teenagers were selected based on the review from previous studies and the availability of variables in the 2010 CDHS. These variables included a woman's age (15, 16, 17, 18, 19 years old), religion (Buddhist, Muslim, Christian or other), education level (no education, primary, secondary or higher), employment status (not currently working, currently working), household wealth index quintile (lowest, lower, middle, higher, highest), exposure to mass media: newspaper, radio, television, at least once per week (no exposure, one medium, two media, three media), exposure to family planning messages through three mass media outlets within the past month (no exposure, one medium, two media, three media), use of contraception (not using, currently using a method), recent sexual activity (never had sex or had but not in the last 4 weeks, had sex in the last 4 weeks), residence (urban, rural), survey domain – for descriptive analysis only (Phnom Penh, Kampong Cham, Kandal, Prey Veng, Svay Rieng, Takeo, Banteay Mean Chey, Battambang and Pailin, Kampong Chhnang, Kampong Thom, Pousat, Siem Reap, Kampot and Kep, Preah Sihanouk and Koh Kong, Kampong Speu, Kratie, Mondol Kiri and Rattanak Kiri, Preah Vihear and Stung Traeng, Otdor Mean Chey, and geographic region – for descriptive and multivariate analysis (Phnom Penh, Plain, Great Lake, Coastal, and Plateau/Mountain), and whether or not they currently attended school (currently attending school, not currently attending school).

2.2 Analysis

The relationships between factors which are associated with teenage fertility are estimated using both descriptive analysis and a multivariate logistic regression procedure in the statistical analysis software package, STATA, version 10.1 (Stata Corporation, Inc 2010). Using the

multivariate model, in order to improve the statistical power and to avoid small numbers in each category of the study's domain, provinces or groups of provinces are further grouped into 5 regions : the capital city of **Phnom Penh** is itself considered a region; **Plain** region includes the provinces of Kampong Cham, Kandal, Prey Veng, Svay Rieng and Takeo; **Great Lake** region includes the provinces of Banteay Mean Chey, Battambang, Pailin, Kampong Chhnang, Kampong Thom, Pousat and Siem Reap; **Coastal** region includes the provinces of Kampot, Koh Kong, Kep and Preah Sihanouk; and **Plateau/Mountain** region includes the provinces of Kampong Speu, Kracheh, Mondol Kiri, Preah Vihear, Rattanak Kiri, Stung Traeng, and Otdor Mean Chey. The variables of recent sexual activity and currently attending school were not included in the multivariate model due to a nearly perfect association between these two independent variables and teenage fertility. In fact more than 70 percent of teenagers who have had recent sexual intercourse (in last 4 weeks) were pregnant or already had a child. Additionally, less than three percent of those who did not have recent sexual intercourse were pregnant or have had a child (Table 9). Moreover, almost none of the teenagers who were attending school were pregnant or have had children at the time of interview (Appendix Table).

In the survey, certain categories of respondents were over-sampled and non-response rates varied from one geographical area to another. In our analysis weights were used to restore the representativeness of the sample (Rutstein SO, Rojas G. 2006). Results are presented as odds ratios (OR) with the appropriate level of statistical significance (*p*-values) and at a 95 percent confidence interval.

2.3 Ethics

This study is based on secondary analysis of existing survey data with all identifying information removed. The survey acquired informed consent from women included in this study before asking any questions.

3. Results:

3.1. Sample Distribution

Table 1 represents the distribution of women aged 15-19 included in this analysis. Age distribution from 15-18 years of age is very similar, however the proportion of women aged 19 is slightly smaller. The majority of young women practiced Buddhism (97 percent), had at least a primary education (96 percent), did not currently use any contraception (97 percent), and were not currently sexually active (92 percent). Only about half the women worked (52 percent) and 42 percent attended school at the time of interview. The proportion of the sample increases slightly by level of wealth index quintile. About three-quarters (75 percent) of the women were exposed to at least one mass media outlet one time per week and about four in five (81 percent) read, heard, or had seen a family planning message within the preceding month of the interview.

Table 1. Sample distribution of women aged 15-19, by selected demographic, socioeconomic, and other characteristics in Cambodia 2010

Characteristics	Percent	Number of women
Age (year)		
15	21.0	784
16	21.2	793
17	21.5	803
18	19.7	735
19	16.6	618
Religion		
Buddhist	97.3	3,634
Muslim	1.1	40
Christian and other	1.6	60
Education		
No education	3.5	132
Primary	33.4	1,248
Secondary and higher	63.0	2,354
Working status		
Not currently working	48.3	1,802
Currently working	51.7	1,931
Wealth index quintile		
Lowest	15.0	559
Lower	17.5	653
Middle	19.5	728
Higher	23.4	872
Highest	24.7	920
Exposure to mass media at least once per week		
No exposure	24.5	913
One medium	37.1	1,385
Two media	29.1	1,087
Three media	9.3	348

To be continued…

Table 1 -- Continued

Characteristics	Percent	Number of women
Exposure to family planning through mass media last month		
No exposure	18.9	705
One medium	28.1	1,048
Two media	33.3	1,242
Three media	19.8	738
Use contraception		
Not using	97.2	3,630
Using a method	2.8	103
Recent sexual activity		
Have had sex, not in last 4 weeks	92.1	3,438
Have had sex, in last 4 weeks	7.9	296
Residence		
Urban	21.8	813
Rural	78.2	2,921
Region		
Phnom Penh	11.6	432
Plain	34.9	1301
Great Lake	31.0	1156
Coastal	7.7	288
Plateau/Mountain	14.9	557
Currently attending school		
Currently attending school	42.4	1,584
Not currently attending school	57.6	2,150
Total	100	3,734

The proportion of young women by region (group of provinces) is comparable to that of the total women sample (NIS, DGH, ICF Macro 2011).

3.2. Descriptive Analysis

Table 2. Trends in age-specific and total fertility rates (TFR) in Cambodia 2000, 2005, and 2010

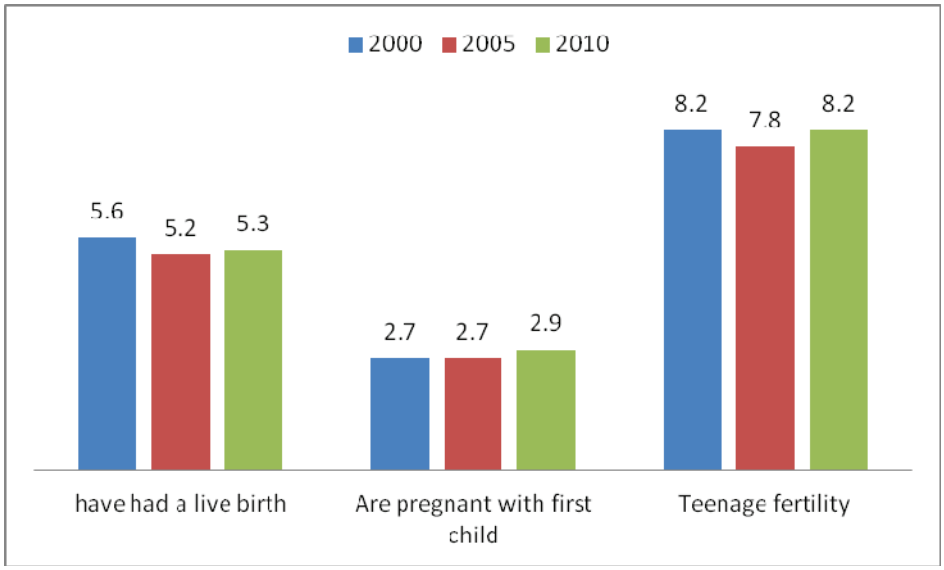
Mother's age at birth	CDHS 2000[1]	CDHS 2005[2]	CDHS 2010[3]
15-19	51	52	48
20-24	191	178	170
25-29	203	177	170
30-34	165	139	124
35-39	118	94	72
40-44	55	41	28
45-49	15	5	5
TFR	4.0	3.4	3.0

Note: Age-specific fertility rates are per 1,000 women. CDHS 2000, 2005, and 2010 rates pertain to the five-year period preceding the survey.
[1] NIS, DGH, and ORC Macro, 2001
[2] NIPH, NIS, and ORC Macro, 2006
[3] NIS, DGH, and ICF International, 2011

The total fertility rate has declined but fertility among teenagers remains unchanged: During the past 10 years (2000-2010), the total fertility rate (TFR) or the average number of children that a women should have during her reproductive life (15-49 years old) in Cambodia decreased. According to the Cambodia Demographic and Health Surveys (CDHS), the TFR sharply declined from 4.0 children per woman in the 2000 to 3.4 children per woman in 2005. This trend continued through 2010 with the TFR down to 3.0 children per woman. A decline in fertility during this period was observed among women aged 20-49 years. There was almost no change among women aged 15-19. According to the CDHS 2000, 2005 and 2010 studies, the age-specific fertility rate for women aged 15 through 19 was approximately 51, 52 and 48 per one thousand women respectively.

Proportion of teenage fertility in 2010 is at the same level as of 2005 and 2000: In 2000, one in every 12 Cambodian teenage girls (8 percent) had a live birth or was pregnant at the time of the interview (teenage mother). Approximately two-thirds of these young women have had a live birth and one-third were pregnant with their first child. This figure remains unchanged over the 10 years period: 2000-2010 (Figure. 1.)

Figure 1. Level and trend of teenage fertility in Cambodia in 2000 2005 and 2010



Childbirth to unmarried women including teenage women is rarely reported in Cambodia: According to the 2010 CDHS, births to unmarried women are not commonly reported in Cambodia. Childbirth outside marriage is rarely reported in all age groups including young women aged 15-19. The proportion of single mothers (who were formerly married but not currently in a union) increased by age. Less than one percent of teenage mothers are single mothers.

Table 3. Percent of women aged 15-49 by motherhood and marital status by age group in Cambodia 2010

Age	Not a mother	Unmarried mother	Married mother	Widowed, separated, divorced mother	Total	Number
15-19	91.9	0.0	7.7	0.4	100	3,734
20-24	49.2	0.0	48.1	2.7	100	3,155
25-29	20.5	0.0	75.6	3.9	100	3,262
30-34	11.2	0.0	81.7	7.0	100	2,167
35-39	8.8	0.1	83.9	7.3	100	2,044
40-44	8.1	0.0	78.9	13.0	100	2,300
45-49	8.9	0.0	73.9	17.2	100	2,093
Total percent	34.4	0.0	59.3	6.3	100	
Total number	6,445	3	11,119	1,187		18,754

Teenage fertility varies by age, residence, religion, level of education, and province (or group of provinces): The percent of teenage fertility increases as age increases. In 2010, one in four teenage girls aged 19 in Cambodia had a live birth or was pregnant. However only one in ten teenagers aged 18 had a live birth or was pregnant at the time of interview. Relationship between age and the fertility level is observed in both urban and rural residence. However the overall teenage fertility level in the rural category is twice as much as the level in the urban area.

Table 4. Percent of teenage fertility by age and by residence in Cambodia 2010

	Percent of teenage mother			
Age	Urban	Rural	Total	Number
15	0.5	0.3	0.4	784
16	0.1	2.0	1.6	793
17	5.9	7.0	6.8	803
18	5.0	12.6	10.6	735
19	11.9	30.0	25.5	618
Total percent	4.8	9.1	8.2	3,734
Total number	813	2.921	3,734	

In 2010, the majority of young women in Cambodia reported that they practiced Buddhism, while only a small number of them declared that they belonged to either the Muslim or Christian religion. The prevalence of teenage fertility was higher among young women who were Muslims or Christians. Nonetheless, this finding should be interpreted with caution due to the small number of Muslims (40) and Christians (60) in the sample.

Table 5. Prevalence of teenage fertility by religion and according to whether mother had a live birth or was pregnant, Cambodia 2010

Religion	Have a live birth	Pregnant with first child	Had a live birth or pregnant with first child	Number
Buddhism	5.1	2.8	7.9	3,634
Muslim	14.6	0.4	15.0	40
Christian or other	10.5	12.0	22.5	60
Total	4.8	9.1	8.2	3,734

The impact of level of education on teenage fertility is evident. Even though the number of young girls who were not in school is relatively small (132), they were three times more likely to be at risk of having a child or becoming pregnant at a younger age than girls who were enrolled full-time in a secondary education institution. Urban teenage girls who were not in school were twice as likely as rural girls to become teenage mothers.

Table 6. Prevalence of teenage fertility by level of education and by residence in Cambodia 2010

Level of Education	Percent of teenage fertility			Number
	Urban	Rural	Total	
No schooling	34.2	16.4	17.0	132
Primary	10.3	13.3	12.7	1,248
Secondary	2.6	6.3	5.5	2,258
Higher	0.5	0.0	0.4	96
Total percent	4.8	9.1	8.2	3,734
Total number	813	2.921	3,734	

Figure 2. Prevalence of teenage fertility by province or group of provinces in Cambodia in 2010

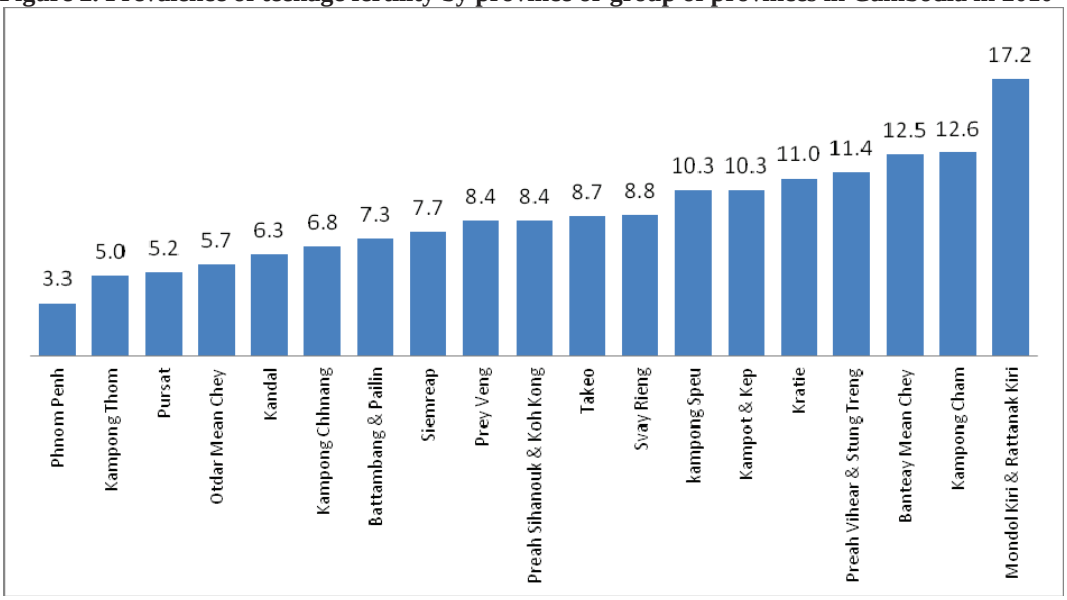


Figure 2 shows the prevalence of teenage fertility by province or group of provinces. In more than half of the provinces or groups of provinces the prevalence is higher than the national average of 8.2 percent. The prevalence in Phnom Penh was lowest (3.3 percent) while the prevalence in Mondol Kiri and Rattanak Kiri was the highest (17.2 percent).

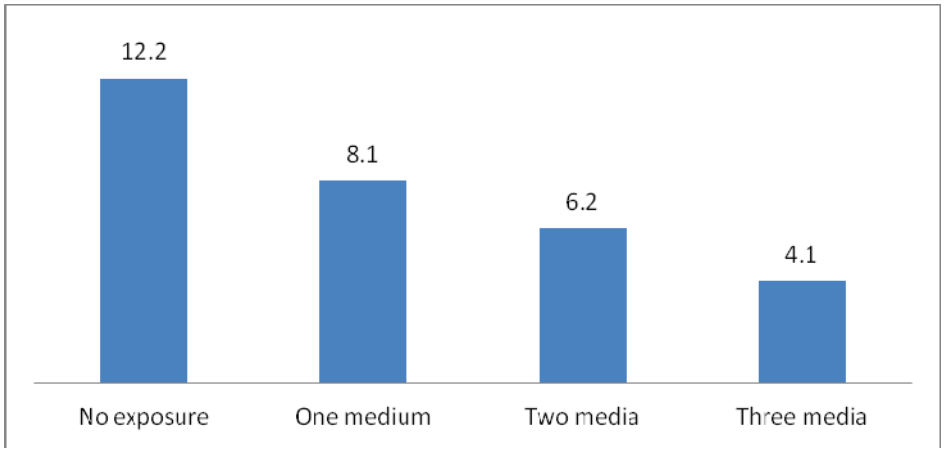
The economically disadvantaged young women are at higher risk of early childbearing: In 2010, slightly more than half of teenage girls aged 15-19 were working at the time of the interview. The prevalence of teenage fertility among working teenaged girls, and those who were not working was not very different: that is 8.7 percent among working women and 7.6 percent among non-working women respectively. However the risk of becoming a teenaged mother increased as the level of socioeconomic decreased, placing teenagers in the bottom of the economic stratum (lowest household wealth quintile) at the highest risk of becoming pregnant. The relationship between level of poverty and early childbearing is equally observed among teenagers who work and those who do not work at the time of interview.

Table 7. Prevalence of teenage fertility by wealth index quintile and by working status in Cambodia 2010

Wealth index quintile	Percent of teenage fertility			
	Not working	Working	Total	Number
Lowest	14.6	12.6	13.3	559
Lower	11.5	10.4	10.9	653
Middle	9.4	8.9	9.1	728
Higher	6.1	6.9	6.5	872
Highest	3.5	4.9	4.0	920
Total percent	7.6	8.7	8.2	3,734
Total number	1,802	1,931	3,734	

Exposure to mass media and exposure to family planning messages through mass media prevent early childbearing among teenagers: The prevalence of teenage fertility clearly varies by the level of exposure to mass media (newspaper, radio, or television). Exposure to the mass media is defined as reading the newspaper, listening to the radio, or watching the television at least once per week. The prevalence of teenage fertility among young women who do not have any exposure is about 12 percent, while the teenage fertility among young women who are exposed to one medium is only 8 percent. The prevalence among those who are exposed to two media outlets is only half (6 percent) of those who do not have any exposure and to those who are exposed to three mediums is only one-third (4 percent).

Figure 3. Prevalence of teenage fertility by level of exposure to mass media in Cambodia in 2010



Overall, young women who read, listen, and watch family planning messages, which often including health education on reproductive health, are three times less likely to have had a child or to become pregnant than those who are not exposed to any message. This relationship is particularly observed in the rural parts of Cambodia. In the urban areas this relationship is not consistent according to the level of exposure.

Table 8. Prevalence of teenage fertility by level of exposure to family planning and by urban rural residence in Cambodia 2010

Exposure to family planning through mass media last month	Urban	Rural	Total	Number
No exposure	5.3	12.4	11.8	705
One medium	3.2	10.2	8.5	1,048
Two media	8.3	8.3	8.3	1,242
Three media	1.8	5.0	4.1	738
Total percent	4.8	9.1	8.2	3,734
Total number	813	2.921	3,734	

Early child bearing evidently associated with being sexually active and as a result, leads to increased use of contraceptives among teenagers: Results from this analysis confirm that the large majority of sexually active teenagers (71 percent) are either currently pregnant with their first child (23 percent), or have already had a live birth (48 percent). In contrast, only 3 percent of young women who said they were not sexually active are currently pregnant (1 percent) or had previously had a live birth (2 percent).

Table 9. Percentage of women age 15-19 who have had a live birth or who are pregnant with their first child, and percentage who have either, by whether they are sexually active, Cambodia 2010

Have had sex in last 4 weeks	Had a live birth	Pregnant with first child	Had a live birth or pregnant with first child	Number
No	1.6	1.2	2.8	3,438
Yes	47.6	23.4	70.9	296
Total percent	5.3	2.9	8.2	3,734

The analysis also reveals a strong relationship between being a teenage mother and the use of contraception. Even though causal relationships cannot be established in these cross-sectional data, the fact that a large majority of teenagers who currently use contraception, have had a live birth (82 percent), although none of them is currently pregnant, may indicate that the use of contraception is rather the consequence of early childbearing, and the use of a contraceptive method aims to prevent future pregnancy. Only 6 percent of teenagers who do not currently use any contraceptive method have had a live birth (3 percent) or were pregnant (3 percent) at the time of interview.

Table 10. Percentage of women aged 15-19 who have had a live birth or who are pregnant with their first child, and percentage who have either, by contraceptive use, Cambodia 2010

	Percentage of women age 15-19 who			
Use contraception	Had a live birth	Pregnant with first child	Had a live birth or pregnant with first child	Number
No	3.1	3.0	6.1	3,630
Yes	82.2	0.0	82.2	103
Total percent	5.3	2.9	8.2	3,734

3. 3. Multivariate analysis

The descriptive results presented above are from a bivariate analysis of the data. The bivariate relationships between each characteristic and indicator of interest (teenage fertility) are observed independently. However, in the population these characteristics do not exist independently but interact and sometimes become confounded with each other. Therefore the associations observed above may not be due to the effects of those characteristics themselves and may in fact, be due to interactions between other characteristics. In this section we discuss associations that are statistically-significant, controlling for interaction and confounding effects using a full multivariate model.

Table 11. Multivariate association between teenage fertility and selected demographic, socioeconomic, and other characteristics in Cambodia 2010

Characteristics	Odds Ratios	p-value	95% Confidence Interval	
			Lower	Upper
Age				
15	1.00	—	—	—
16	3.89	0.045	1.03	14.67
17	22.16	0.000	6.56	74.92
18	35.41	0.000	10.54	118.91
19	105.59	0.000	31.71	351.67
Religion				
Buddhist				
Muslim	1.00	0.995	0.30	3.39
Christian and other	3.76	0.001	1.69	8.39
Education				
No education				
Primary	1.13	0.691	0.62	2.04
Secondary and higher	0.47	0.018	0.25	0.88
Working status				
Not currently working				
Currently working	0.52	0.000	0.38	0.71
Wealth index quintile				
Lowest				
Lower	0.90	0.646	0.58	1.40
Middle	0.78	0.276	0.50	1.22
Higher	0.70	0.150	0.43	1.14
Highest	0.51	0.038	0.28	0.96
Exposure to mass media at least once per week				
No exposure				
One medium	0.68	0.037	0.47	0.98
Two media	0.47	0.001	0.31	0.72
Three media	0.43	0.022	0.21	0.88
Exposure to family planning message within last month				
No exposure				
One medium	0.95	0.789	0.64	1.41
Two media	1.02	0.910	0.68	1.54
Three media	0.51	0.014	0.29	0.87
Use of contraception				
Not using				
Using a method	67.54	0.000	36.30	125.69
Residence				
Urban				
Rural	1.16	0.595	0.67	2.01
Region				
Phnom Penh				
Plain	2.88	0.014	1.24	6.70
Great Lake	1.98	0.109	0.86	4.54
Coastal	3.08	0.016	1.23	7.71
Plateau/Mountain	2.80	0.022	1.16	6.76

Variables (characteristics) which are included in the full multivariate model include age, religion, education, working status, household wealth index quintile, exposure to mass media, exposure to family planning messages, use of contraception, residence, and region. Variables concerning sexual activity, marital status, and school attendance were not included in the multivariate model.

After controlling for the effects of all other characteristics, the risk of early child bearing increases dramatically as age increases. Young women aged 19 are at a much higher risk of having a live birth or becoming pregnant with their first child than teenage mothers aged 15 (OR=105.6, p=0.000). The risk of being a teenage mother among young women aged 16, 17 and 18 is also significantly higher than those aged 15 (OR= 3.0, p=0.045; OR=22.2, p=0.000; OR=35.4, p=0.000 respectively). Young women who reported being Christian or belonged to other religions were about four times more likely to be a teenage mother than those who said they were Buddhist (OR=3.8; p=0.001).

Socioeconomic determinants strongly and significantly affect early child bearing among younger women. As would be expected, young women who have a secondary education are at a statistically-significantly lower risk of early childbearing than those who have no secondary education (OR=0.45; p=0.018). Young women who are currently working are much less likely to bear a child than those who are not working (OR=0.52; p=0.000). Also young women who have a better socioeconomic status (middle, higher and highest wealth index quintiles) are less likely to bear a child at this younger age than those who are in the poorest households. The association is statistically significant among the wealthiest women (OR=0.51; p=0.038).

Exposure to mass media proves to have a “protecting effect” on early childbearing. Young women who are exposed to one medium (either newspaper, or radio, or television) per week have a 68 percent chance of becoming a teenage mother compared to those who have never had any exposure or are exposed less frequently than once per week (OR=0,68; p=0.037). Among those who were exposed to two or three media once per week, the odds of having a child or becoming pregnant are less than half of those who have never had any exposure or are exposed less frequently than once per week (OR=0.47, p=0.001; OR=0.43, p=0.022 respectively). Exposure to family planning messages through three mass media within one month prior to the interview, is significantly associated with lower chances of becoming a teenage mother than no exposure (OR=0.51; p=0.014). However, exposure to the message from less than three media neither increases nor decreases the chance.

A strong and significant association between the use of contraception and child bearing (OR=67.5, p=0.000) can only be explained as a “reversed causality” where a teenage mother is using contraception to prevent or delay future pregnancy.

There is no significant difference in the risk of being a teenage mother in rural areas compared to urban areas (OR=1.16, p=0.595). Young women who live in the regions are about two to three times more likely to being pregnant or having a child than young women who live in Phnom Penh city.

4. Discussions and Conclusions

This study found that the level of teenage fertility in Cambodia is among the lowest in South and Southeast Asia (Khan S, Mishra V 2008). Nevertheless, teenage fertility rates remain unchanged over the past ten years and almost all of the teenagers who were pregnant or have had a child were currently married. This observation suggests that those fertilities were not usually the results of discriminate sexuality but rather, come from a marriage relationship. Moreover, most of these fertilities occurred at age 18 or higher, which is the legal age of married women in Cambodia. This is confirmed by the fact that the median age at first sexual intercourse and median age at first married among Cambodian women is more that 20 (NIS, DGH, and ICF Macro 2011). Even though the majority of teenage fertility happens within the social norm, lack of education and employment, two of the significant factors negatively associated with teenage fertility, put young women at a disadvantage in providing support to themselves and to their family. This finding is consistent with other studies (Chedraui P, Hidalgo L, Chavez M, et al. 2004; Sayem AM and Nury AT MS 2011). This result could be bidirectional. Teenage mothers find themselves in a closed cycle of not being able to find work and not being able to continue her education. They need education to obtain decent work, and they need to work to support their young family and to continue their education. However these findings could be interpreted in an opposite direction that young women who have longer education and who currently work, do not plan to establish a sexual union or bear a child too early. Further study is needed to identify which direction is more plausible.

Exposure to mass media or to family planning messages through the mass media has a significant negative association on teenage fertility. This association is indicative that awareness raised through mass media campaign about disadvantages of early or teenage pregnancy may help women to make better informed decisions on bear children immediately after marriage, or even in getting married early. Using a contraceptive method is strongly associated with fertility. This is applies to women who have had a child and not to those who were pregnant. The only possible explanation for this may be that the majority of teenage women who already have had a child have decided to space apart or limit their future births. The insignificant results in the multivariate analysis of urban rural residence is indicative of the importance of other factors than residence to influence teenage fertility in multidimensional settings. These factors are socioeconomic (represented by household wealth index) and geographic region. The chances of being pregnant or having a child among teenagers belonging to the poorest quintile is twice as high as those belonging to the wealthiest household. This finding is consistent with previous studies by Hoffman et al. (Hoffman SD, Foster EM, Furstenberg FF Jr. 1993). The odds-ratio of teenage fertility in all geographic regions is two to three times higher than the odds-ratio of teenage fertility in Phnom Penh. This regional effect could be a combination of many other factors such as education, socioeconomic status, and urban versus rural (Phnom Penh is more highly urban that other regions).

Our analysis found that the majority of women aged 15-19 had experienced teenage marital fertility and these married were within the legal age of marriage for women in Cambodia and the majority of these women used contraception after give birth to their first child. This indicates a serious public health concern since the first-born child might not be a planned fertility. However,

due to a lack of knowledge about family planning and contraception prior to childbearing, women may have started using a contraception method after their first child. This assumption is reinforced by the fact that many young women who have been exposed to mass media and family planning messages through the mass media are negatively associated with teenage fertility. However, having had a child immediately after becoming married may not be an accident but intentional due to family and social pressure to give birth as proof of marital binding and fertility normalcy of the couple. Therefore, it is only after the first birth that a young couple begins using contraception. However, it is difficult to ascertain this association and further studies are required in this area.

For either reason we recommend that interventions should be focused on the reduction of teenage fertility because of its relationship with poor socioeconomic status, low levels of education or no education, and lack of engagement in economic activities. The data suggest that special emphasis should be given to women born in rural areas outside of Phnom Penh. Finally, since mass media exposure appears to have significance in multi-dimensional social settings, the utilization of mass media should continue to be one of the methods of choice in implementing these interventions.

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Appendix

Table 12. Percentage of women aged 15-19 who have had a live birth or who are pregnant with their first child, and the percentage who have begun childbearing (fertility), by selected demographic, socioeconomic, and other characteristics in Cambodia 2010

Characteristics	Have had a live birth	Are pregnant with first child	Have begun childbearing	Do not have a live birth or is pregnant
Age				
15	0.1	0.3	0.4	99.6
16	1.0	0.6	1.6	98.4
17	3.2	3.6	6.8	93.2
18	7.3	3.3	10.6	89.4
19	17.7	7.9	25.5	74.5
Religion				
Buddhist	5.1	2.8	7.9	92.1
Muslim	14.6	0.4	15.0	85.0
Christian and other	10.5	12.0	22.5	77.5
Education				
No education	11.3	5.7	17.0	83.0
Primary	8.3	4.4	12.7	87.3
Secondary and higher	3.3	2.0	5.3	94.7
Working status				
Not currently working	4.8	2.8	7.6	92.4
Currently working	5.7	3.0	8.7	91.3
Wealth index quintile				
Lowest	9.0	4.4	13.3	86.7
Lower	7.2	3.7	10.9	89.1
Middle	5.1	4.0	9.1	90.9
Higher	4.0	2.4	6.5	93.5
Highest	2.9	1.1	4.0	96.0
Exposure to mass media at least once a week				
No exposure	6.6	5.6	12.2	87.9
One medium	5.7	2.4	8.1	91.9
Two media	4.5	1.7	6.2	93.8
Three media	2.3	1.8	4.1	95.9
Exposure to family planning through mass media last month				
No exposure	6.7	5.1	11.8	88.3
One medium	5.4	3.1	8.5	91.5
Two media	5.6	2.7	8.3	91.7
Three media	3.1	1.0	4.1	96.0
Use contraception				
Not using	3.1	3.0	6.1	93.9
Using a method	82.2	0.0	82.2	17.8
Recent sexual activity				
Have had sex, not in last 4 weeks	1.6	1.2	2.8	97.2
Have had sex, in last 4 weeks	47.6	23.4	70.9	29.1
Residence				
Urban	3.3	1.5	4.8	95.2
Rural	5.8	3.3	9.1	90.9
Region				
Banteay Mean Chey	6.9	5.6	12.5	87.6
Kampong Cham	6.7	5.9	12.6	87.4
Kampong Chhnang	3.6	3.2	6.8	93.2
kampong Speu	7.3	3.0	10.3	89.8
Kampong Thom	2.5	2.5	5.0	95.0

To be continued…

Table 12 – Continued

Characteristics	Have had a live birth	Are pregnant with first child	Have begun childbearing	Do not have a live birth or is pregnant
Kandal	4.5	1.9	6.3	93.7
Kratie	9.0	2.0	11.0	89.0
Phnom Penh	3.0	0.4	3.3	96.7
Prey Veng	7.3	1.1	8.4	91.6
Pursat	4.6	0.6	5.2	94.8
Siemreap	5.7	1.9	7.7	92.3
Svay Rieng	4.3	4.5	8.8	91.2
Takeo	3.9	4.8	8.7	91.3
Otdar Mean Chey	3.0	2.7	5.7	94.3
Battambang & Pailin	5.2	2.1	7.3	92.8
Kampot & Kep	6.7	3.6	10.3	89.7
Preah Sihanouk & Koh Kong	5.3	3.2	8.4	91.6
Preah Vihear & Stung Treng	6.2	5.3	11.4	88.6
Mondol Kiri & Rattanak Kiri	10.8	6.4	17.2	82.8
School Attendant				
Attendance school	0.0	0.0	0.1	99.9
No attendance school	9.1	5.1	14.2	85.8
Total	5.3	2.9	8.2	83.6

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