

Contraceptive Use in Cambodia: A Multi-Method Examination of Determinants and Barriers to  
Modern Contraception

Ghazaleh Samandari

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Approved by:

Ilene Speizer

Herbert Peterson

Susan Ennett

Kate O'Connell

Sandra Martin

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## ABSTRACT

GHAZALEH SAMANDARI: Contraceptive Use in Cambodia: A Multi-Method Examination of Determinants and Barriers to Modern Contraception

In Cambodia, 79% of married women of reproductive age wish to limit or delay births, yet only 27% are using a modern method of contraception. The purpose of this mixed-method dissertation is to examine the determinants and barriers to contraceptive use in this population. The two specific aims are to 1) use quantitative data examine the associations between social support and contraceptive use among Cambodian women of low vs. high parity; and 2) use qualitative data to understand the different characteristics and barriers to method use of women who use contraceptives, women who have discontinued contraceptive use and women who have never used a modern method. The quantitative study (aim 1) surveyed a representative sample of married women ages 15-49 from two rural provinces in Cambodia (Kampong Thom and Kampot) and measured current contraceptive use, demographic characteristics and items related to contraceptive social support of husbands, peers and elders. Multivariate logistic regression methods were used to measure the association between contraceptive use and social support and models were stratified by low ( $\leq 2$  live births) versus high parity ( $\geq 3$  live births), The qualitative study (aim 2) used in-depth interviews and focus group discussions with different contraceptive user types to understand unique barriers and motivations of users, discontinuers and non-users of contraceptive methods. The quantitative paper shows significant associations between husband's support and contraceptive use. For all women, a husband's positive attitude towards methods and ease of communication with the husband are associated with higher

contraceptive use; however, when the husband has full decision-making power, the likelihood of method use decreases among high-parity women. For low-parity woman, perceiving that peers use modern methods increases the likelihood of contraception. In both groups elders' negative opinions about contraceptive use decrease actual use. The qualitative findings show that rumors of myths and misconceptions about side effects are main barriers to the use and were widespread among all women. Differences between the three user types show that positive husband support, access to health providers and a high degree of self-efficacy for contraceptive use contribute to successful initiation and continuation of modern methods.

This dissertation is dedicated to Vandy Ly.

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## **Chapter 1: Introduction and Specific Aims**

The purpose of this dissertation is to examine the association between barriers to contraceptive use and current contraceptive use among women of reproductive age (WRA) in Cambodia. The specific focus is to a) determine how individual behavioral attributes and perceived social support affect a woman's use of modern birth spacing methods and b) develop a richer understanding of the misconceptions about and perceived barriers to contraceptive use among this population. These data are needed to fill substantial gaps in our understanding about determinants of contraceptive use in Cambodia and to help create targeted program strategies to improve health outcomes among WRA in this population. The dissertation incorporates quantitative and qualitative methods to expand our knowledge of factors related to contraceptive use in Cambodia.

Demographic and health surveys (DHS) in Cambodia taken in both 2000 and 2005 show that while a substantial portion of WRA have a desire to delay or prevent a future birth, a relatively small proportion of these women utilize modern methods of contraception. This gap is especially wide in poor, rural areas, which suffer the highest levels of fertility-related health repercussions (i.e., maternal mortality, infant mortality, etc.). However, a small number of research studies have demonstrated that barriers to contraceptive use in Cambodia may go beyond those related to the structural context (i.e. access, availability, etc) and may have broader social/behavioral causes.

While there is ample literature on the manner in which individual behaviors and social support can shape use of contraceptives in a variety of settings, there are no such studies conducted in the Cambodian setting. Furthermore, more depth of understanding is needed with regards to the role of misconceptions and barriers to contraceptive use in this setting. The disparity between fertility preferences and actual contraceptive use demonstrated by the Cambodian DHS necessitate further investigation into this area. By learning more about the elements that contribute to the continued unmet need for contraceptive use, more effective programs can be devised to help women achieve their desires for birth spacing or pregnancy prevention. To fill the gaps in our understanding of contraceptive use in Cambodia, I propose:

- 1) To investigate the association between social support on current use of modern contraceptives among women of reproductive age (ages 15-49) in Cambodia, with specific attention to the differential relationship for women of low versus high parity; and
- 2) To examine the misconceptions and barriers to use of contraceptives through a qualitative analysis of Cambodian women's experiences with contraception. Specifically, I will examine the different experiences of women who are current users of contraceptives, women who have discontinued use and women who have never used modern contraceptive methods.

## **Dissertation Outline**

This dissertation is comprised of two main papers, each focusing on one of the specific aims. Along with the original research presented here, this monograph provides an extensive

background on the issue of contraception both globally and specific to Cambodia. The organization of the paper is as follows:

**I. Background and Introduction to Contraception in Cambodia (5 sections)**

- 1) The first section of the background details the current status of contraceptive use in Cambodia and compares findings to other countries in the region.
- 2) Section two details the physical, social and economic risks posed by unmet need for family planning, and explains the current consequences of unmet need in the Cambodian population.
- 3) The third section reviews the known basic determinants of contraceptive use (i.e., common demographic and community-level factors), both generally and as is specific to Cambodia. This section in particular synthesizes the current research in Cambodia and, by doing so, demonstrates the need for investigation into both specific aims.
- 4) Section four delves more deeply into the role that social support plays in contraceptive use and provides a theoretical framework for examining their effect on women's contraceptive behavior. This latter section in particular is related specifically to the first paper of the dissertation.
- 5) The final section of the background examines the continuing gaps in our understanding of contraceptive issues in Cambodia and provides a basis for an in-depth qualitative exploration.

**II. Paper 1: The Role of Social support and Parity on Contraceptive Use in Cambodia**

- 1) Methods

2) Results

3) Discussion

**III. Paper 2: “If we can endure, we continue”: Understanding Differences between Users, Discontinuers and Non-Users of Contraceptive Methods in Cambodia**

1) Methods

2) Results

3) Discussion

**IV. Conclusions and Implications for Application**

## **Chapter 2: Background and Introduction to Contraception in Cambodia**

### **Section 1 –The State of Contraceptive Use in Cambodia**

The tumultuous modern history of Cambodia severely impeded its population's access to effective methods of family planning in recent decades. The Khmer Rouge regime of the 1970's and the ensuing Vietnamese occupation of the 1980s and early 1990s created a state of economic and social turmoil that all but destroyed the country's health infrastructure and rendered family planning programs virtually inoperable for over twenty years.<sup>1-3</sup> Not until 1994 was there an internationally supported, government-led effort to reinstate family planning campaigns within the country.<sup>4</sup> Even then, efforts were considerably hampered by the country's poor infrastructure, leading to very low contraceptive prevalence rates and concomitantly high rates of fertility and maternal mortality.<sup>5</sup> Since that time, Cambodia has experienced a massive influx of development aid and has greatly improved its family planning programs. The efforts of government and non-governmental agencies over the past decade have contributed significantly to increases in contraceptive use and declines in birth-related indicators such as total fertility rates (TFR).<sup>6,7</sup> In the period from 2000 to 2005, the contraceptive prevalence rate among all Cambodian women increased from 11% to 33.7%, while the TFR dropped from 4.0 to 3.4 births per woman.<sup>6,7</sup>

Despite these gains, however, major shortcomings in family planning in Cambodia remain. The most recent Cambodian Demographic and Health Survey (CDHS) from 2005 reports that that 1 in 4 married women in Cambodia has an unmet need for family planning.<sup>7</sup> A woman



with unmet need is defined by as any woman who is 1) married, in a non-marital union or sexually active, 2) fecund, 3) does not want to have a child in at least the next two years, and 4) is not currently using contraception (either modern or traditional). Furthermore, 57% of women report a desire to delay or avoid future pregnancies, yet the contraceptive prevalence rate (CPR) is only 27.2%.<sup>7</sup>

Compared to other countries in the Southeast Asia region, Cambodia falls below its neighbors on every key measure of fertility and family planning. Table 1 shows the total fertility rate, contraceptive prevalence rate and unmet need for family planning within Cambodia and other countries in Southeast Asia, where available. The TFR in Cambodia is higher than nearly all other countries in the region, while the CPR is the lowest among these comparison nations.<sup>8,9</sup> Among those countries in Southeast Asia where information on unmet need is available, Cambodia has the highest regional unmet need for family planning methods. On a global level, in terms of CPR – which according to the World Health Organization serves as an indicati

on of overall population health, development and women's empowerment – Cambodia ranks 130th out of 177 countries for the 1995-2003 period.<sup>10</sup> These dire indicators carry with them real consequences for the health and well-being of populations.

## **Section 2 – Consequences of Unmet Need for Family Planning: Global and Cambodian Perspectives**

A common way of conceptualizing the impact of underutilization of contraception within populations is to use a measure of “unmet need” for family planning. Unmet need for family planning takes a variety of forms in the literature, but is most often defined as the proportion of sexually active women who wish to delay or stop childbearing but are not using a modern contraceptive.<sup>11-14</sup> Numerous studies have shown that unmet need for family planning can have significant consequences for the health and well-being of women and children<sup>11-16</sup>

A key consequence of unmet need is unintended pregnancy (pregnancies that were not wanted at the time the time of pregnancy, or at any time in the future), the burden of which is primarily borne by women.<sup>11-16</sup> Pregnancy carries with it inherent risks of increased morbidity and mortality for women, and these risks are only compounded in the context of unintended pregnancy.<sup>17-19</sup> Women with unintended pregnancies are at increased risk of complications during pregnancy (such as hypertensive disorders), difficulties at the time of delivery (such as hemorrhaging or obstructed labor) and lingering risks after birth (such as postpartum depression or increased risk of intimate partner violence.), all of which increase the risk of maternal mortality.<sup>19-23</sup> In developing countries, the rate of unintended pregnancies is high and the risk of maternal mortality is amplified due to poverty, malnutrition and lack of adequate health care.<sup>24-27</sup> In developing countries one in six women die during pregnancy or childbirth.<sup>26</sup> Another common

outcome of unintended pregnancies is unsafe abortion, which accounts for 13% of all maternal deaths and is the leading source of maternal morbidity worldwide.<sup>28-31</sup> Risks associated with abortion are particularly prevalent in developing countries where the practice is often illegal, or where abortion service provision and care are woefully inadequate.<sup>29,30</sup> In an assessment of maternal mortality and morbidity in 2005, the World Health Organization stated that the provision of adequate family planning is the principal means by which to reduce deaths and injury related to pregnancy.<sup>32</sup>

In addition to the risks to women's health, children born of unintended pregnancies are also at greater risk of health and developmental difficulties. Studies have found that infants of unintended pregnancy are at greater risk of being born prematurely or underweight, which decreases their chances of long-term survival and typical development.<sup>33-36</sup> As expected, these risks are higher in developing country settings, where resources to care for children can be scarce. In the developing world, studies have shown that children born as a result of unintended pregnancy are more likely to die in their first year, to be weaned from breastfeeding prematurely, to experience stunting or wasting and to be deprived of resources such as food, clothing, health care or education.<sup>37-41</sup> Children of unintended pregnancy are also at higher risk of abuse.<sup>42,43</sup> Poor outcomes for children of unintended pregnancies can be due either to poor care during the pregnancy (women with unintended pregnancies are less prone to seek prenatal care and engage in more risk behaviors such as smoking or drinking) or to increased risk of neglect after birth.<sup>43-</sup>

Beyond the immediate health consequences, unmet need - and the resulting unintended pregnancies - can limit the financial, educational, social and political resources of women, families and societies.<sup>31</sup> Unintended pregnancies often result in either abortion or higher-than-desired fertility rates.<sup>29,30</sup> In the case of the latter, women who have a high number of births are less likely to complete their education, to participate in the labor force and to have high levels of income.<sup>15,31</sup> On the other hand, women who use contraceptives have been shown to have improved quality of life and better social status and autonomy.<sup>31,48-51</sup> In addition to the direct effects on women's social status, health care costs associated with complications due to pregnancy and birth can also strain families with limited resources.<sup>52,53</sup> In countries where resources for health care are low and health care systems are weak, high fertility can further encumber fragile health systems.<sup>52-56</sup> In contrast, increased availability and use of family planning has been linked to improved economic and social development of families and communities.<sup>31, 52-56</sup>

### *Cambodia*

The consequences of unmet need are evident among women of reproductive age in Cambodia. The latest data from the 2005 Cambodian Demographic and Health Survey indicate that 25% of women have an unmet need for family planning.<sup>7</sup> Consequently, 28% of births in Cambodia are unintended, and the *wanted* fertility rate (2.8) is lower than the *actual* fertility rate (3.4).<sup>7</sup> As a result of this dearth in family planning, Cambodia has some of the worst reproductive health outcomes in the region. The maternal mortality ratio of 450 deaths per 100,000 live births is one of the highest in the region, and is a leading cause of death of WRA.<sup>7,8</sup> Factors such as obstructed labor, hemorrhaging, sepsis and co-morbidity with malarial disease and anemia are

common causes of maternal death in Cambodia.<sup>7,57-59</sup> Rates of emotional, physical and sexual violence also increase for Cambodian women, as parity increases.<sup>7</sup> In addition, 8% of Cambodian women reported having at least one induced abortion, though other research suggests that this estimate may be vastly underreported.<sup>7,60</sup> Despite legalization of abortion in Cambodia in 1997, lack of knowledge about the abortion law, continued stigma and lack of access to adequate abortion services force many women to seek abortions from unqualified individuals including traditional doctors or untrained medical personnel, greatly increasing the risk of health complications.<sup>60,61</sup>

The effect of high fertility and unintended pregnancies is also apparent in the health outcomes of Cambodia's children. The infant mortality rate in Cambodia reaches above most regional estimates, at 97 deaths per 1,000 live births.<sup>7</sup> Moreover, children in Cambodia born of a birth order higher than 3 (which is above the reported wanted fertility rate of 2.8 children per woman) are more likely to be reported as smaller than average at birth, which increases the likelihood of neonatal death by more than three times.<sup>7</sup> Short birth intervals, another phenomena commonly associated with unintended pregnancies and unmet need for family planning, also greatly affect child survival. In Cambodia, children born under two years after a preceding birth are more than twice as likely to die within the first month as children born after a 2-year birth spacing period (71 deaths per 1,000 live births compared with 29 per 1,000, respectively).<sup>7</sup> In Cambodia, malnutrition is also common among children, particularly those in larger families that reside in impoverished rural areas.<sup>62</sup> Thus, the consequences of unmet need for family planning also exact a heavy burden upon Cambodian children.

The association between high fertility and reduced financial, educational and social capacities is clearly reflected in outcomes for both Cambodian women and the broader Cambodian population. Women with the highest fertility in Cambodia are also those with the lowest levels of schooling and in the lowest quintile of wealth.<sup>7</sup> In terms of the healthcare system, although Cambodia has made notable gains in health care in the past decade, expenditure of GDP on health care remains among the highest in the region, and 72% of that expense is shouldered by families.<sup>63</sup> Health care costs associated with poor maternal and infant health is high in this context, and is only exacerbated by the additional risks brought on by high fertility. As noted earlier, increased family planning use can be a catalyst for improved economic and social development within low-resource countries. Accordingly, in Cambodia, where family planning use is low, economic development also remains low, with 30% of all families living on less than one dollar a day.<sup>64</sup> Given the dire health and economic situation in Cambodia, mistimed or unwanted pregnancies can add considerable burden to families and the society as a whole, making improvements in contraceptive use imperative.

The negative outcomes associated with unmet need for family planning in Cambodia call for an urgent response to improving contraceptive use within the country. However, in order to devise effective strategies for improving contraception, one must first assess the factors related to contraceptive use (and non-use) both generally and within Cambodia, specifically.

### **Section 3 – Basic Determinants of Contraceptive Use, Generally and within Cambodia**

Contraceptive use has been shown to be associated with a number of individual, community and policy-level factors. Individual-level factors, such as education, knowledge of contraceptives,

urban-rural residence, age, income and women's status can all have an effect on a woman's contraceptive uptake and continuation.<sup>65-77</sup> Higher education, knowledge of contraceptive methods and urban residence are all associated with increased use of modern contraceptives.<sup>65-72</sup> Age can also have an effect on contraceptive use; women in the lowest and highest age groups (adolescents or women over 40) usually have lower rates of contraceptive use than women between the ages of 20 and 40.<sup>65,67,75</sup> Income and employment status also have positive relationships with contraceptive use.<sup>70,72</sup> Some studies have shown that a measure of women's status (or empowerment) - often derived from variables such as education, income and decision-making power - is associated with women's contraception, such that those with higher status have higher use of contraceptives.<sup>76,77</sup>

A woman's parity, or the number of live births she has experienced, has also long been recognized as an important determinant of contraceptive use. Data from numerous countries show that a woman's contraceptive use generally increases with the number of live births that she experiences.<sup>24</sup> Consequently, women of low parity (often defined as those who have two or fewer children) may be less likely to use contraceptives, even if they have a strong desire to delay or space their next pregnancy.<sup>58</sup> At the same time, women of high parity face some of the greatest risk of negative consequences associated with unwanted childbearing (maternal death), making parity a methodologically interesting point of delineation among women with unmet contraceptive need.<sup>7</sup>

According to the social-ecological model of health, an individual's behavior can also be affected by community factors, political or institutional factors, and interpersonal relationships.

Contraceptive behavior is no exception.<sup>78</sup> The most common community-level factors influencing contraceptive use are accessibility, availability and affordability of modern contraceptive methods.<sup>79-84</sup> Communities in which contraceptives are consistently available in numerous outlets and are easily accessible by the majority of community members have higher levels of contraceptive use.<sup>80,81,83,84</sup> Prohibitively high pricing of contraceptives has also been shown to be a barrier to use, particularly in areas where household resources are low.<sup>79,82,83</sup> Community situations are often dictated by broader political and social contexts of reproductive health.<sup>84</sup> Political support for reproductive health (often expressed through financial expenditure on related programs) can improve the overall reproductive health environment and, in turn, improve contraceptive use rates.<sup>85-87</sup> In addition to political support, the social context of modern contraceptives is also closely related to contraceptive utilization. Social support for contraception is most clearly conveyed through interrelationships that influence contraceptive use. The effect of social support on contraceptive use will also be examined more closely in section 4.

### *Cambodia*

Given the turbulence of its recent history, collection of current health and development data in Cambodia was only possible starting in the late 1990's. Because of its poor post-war infrastructure and bureaucratic obstacles, conducting research in this setting has proven difficult in the past, leaving significant gaps in our understanding of the country's reproductive health status.<sup>88</sup> Demographic and Health Survey data from 2000 and 2005 document an upward trend in contraceptive use, but there are only limited accounts of the factors that contribute to this use.<sup>6,7</sup>



The available research from Cambodia shows that some of the individual-level and community-level determinants of contraceptive use described above also apply in the Cambodian context. Cambodian women who are more educated, have more income and live in urban areas are more likely to use modern forms of contraceptives.<sup>7</sup> In Cambodia, DHS data also demonstrate a strong relationship between parity and contraceptive use, with use being substantially higher among women who have had any children, as opposed to none.<sup>7</sup> As well, the reported desire to limit births among this group rises dramatically at parities 2 and 3 (by parity 3 over 70% of women express a desire for no more children). However, by parity 3 only 28.2% of women report using a contraceptive method, suggesting an unmet need for family planning to limit births among women with more live children.<sup>7</sup>

In contrast to actual use, knowledge of family planning methods in Cambodia is high; 98.6% of women report knowing a modern method of contraception. Most women also report that contraceptive methods are affordable.<sup>7</sup> However, access to and quality of contraceptive methods in Cambodia remains a challenge. While modern methods of contraception are priced low and are distributed through pharmacies, markets and both private and public health clinics, availability of methods can be irregular, particularly in rural areas.<sup>7</sup> Availability of contraceptive methods has improved somewhat in recent years, as the Cambodian government has directed more political and financial support towards reproductive health efforts; however, gaps in accessibility remain.<sup>89</sup>

Studies conducted by development agencies working within Cambodia indicate that while access and availability to methods are still in need of improvement, other social and individual

behavioral elements may be playing a role in contraceptive use.<sup>90,91</sup> An evaluation of Cambodian family planning programs by the United States Agency of International Development showed that underutilization of family planning persists even in areas where methods are readily available, such as in the capital city of Phnom Penh. This report also suggests that although basic knowledge of methods is high, women may have incorrect information about the effectiveness or side effects of modern methods and may not be able to correctly identify and utilize appropriate methods.<sup>90</sup> Results from a qualitative study on abortion behaviors funded by the Department for International Development in 2008, indicate that above and beyond structural components such as pricing and proximity to contraceptive outlets, women's contraceptive use in Cambodia may be influenced by negative attitudes towards the methods and by input from members of their social networks.<sup>88</sup>

Reports from Cambodian government and aid agencies also indicate the need for more data on misconceptions of and perceived barriers to contraceptive use among women of reproductive age in Cambodia. A planning report from the Cambodian Ministry of Health recommends more targeted research to understand potential barriers to contraceptive use such as misconceptions about modern contraceptives, difficulties in communication with providers or cultural or gender-based obstacles to using modern methods of contraceptives.<sup>89</sup> Other reports by the World Health Organization and the Reproductive and Child Health Alliance suggest that myths about side effects and distrust of method effectiveness may prevent Cambodian women's long-term contraceptive use.<sup>92</sup> Some data on perceptions of contraceptives and barriers to long-term use in Cambodia do exist; however, these data are either out of date or focus only on a subgroup of Cambodian women of reproductive age, such as adolescents or commercial sex workers.<sup>93-96</sup>

Although there is some evidence on the determinants of contraceptive use in Cambodia, current data on contraceptive utilization are sparse. More data are needed on the nature of women's attitudes towards contraception and its consequent effect on the use of modern family planning methods. The degree and direction of social support on contraceptive use is another area in need of exploration. Reports suggest the presence of social support on a woman's contraceptive decision-making process, yet the strength and direction of this influence are uncertain. Furthermore, questions remain as to other unknown barriers to use that may exist in this environment, such as cultural myths associated with contraception or provider-related access barriers.<sup>91</sup>

#### **Section 4 – Social Support, Parity and Contraceptive Behavior**

Studies from various countries show that a woman's attitudes and contraceptive decision-making may be influenced by the number and types of relationships within her social network and by her perceptions of prevailing social norms around use.<sup>97-104</sup> In particular, there is evidence to suggest that in cases where women are uncertain of the merits of modern contraception, they make decisions about methods using word-of-mouth communication with network members.<sup>100</sup>

Studies from low-resource, high-fertility settings such as Kenya, Thailand, Cameroon and the Philippines demonstrate that a woman's contraceptive use is positively related to perceived encouragement given by social network members and negatively associated with perceived disapproval or discouragement.<sup>98,105-107</sup> For example, a study in Cameroon showed that women who perceived the approval of network members for contraceptive use were 16 times as likely to have ever used a contraceptive than those women who did not perceive encouragement from

network members. Moreover, significant associations have been made between women with strong interpersonal connections to contraceptive users/non-users and their eventual decision to use/not use, respectively.<sup>107,108</sup>

The types of individuals who have been found to have a prominent effect on a woman's contraceptive decision-making include husbands, elder women in the community and a woman's female peers.<sup>109,110-113</sup> Especially in a context where the majority of sex occurs within marriage, such as is the case in Cambodia, the spousal relationship proves unrivaled in the hierarchy of social support on contraceptive use.<sup>114-119</sup> The importance of a husband's sway over contraception has been demonstrated through numerous studies that look at husbands both as actors within a social network as well as partners within the marital union.<sup>114-119</sup> Indeed, in Cambodia, 99% of husbands have knowledge of their partners' use of contraception, indicating that their involvement and influence on decision-making may be considerable.<sup>7</sup> Elders also play an important role in Cambodian society, making their input on contraceptive norms potentially influential.<sup>120</sup> A literature search turned up no quantitative studies on these phenomena directly in Cambodia, but qualitative data from a DIFD study on abortion suggest that social support may play a role in contraceptive use in this setting.<sup>88</sup>

Similarly, a search of the peer-reviewed literature turned up no quantitative studies of social support and contraceptive use specific to Cambodia. However, qualitative data from a 2007 Population Services International report on contraceptive use highlight the significance of social support on contraception in Cambodia.<sup>121</sup> According to the report key social network members, specifically husbands and elders, may contribute to a woman's willingness and ability to obtain

and properly use contraceptives. Moreover, this report hints at a potential difference in social support depending on the parity of the woman. The findings indicate that women perceive contraceptives to be socially inappropriate to use while the woman is young or before she has born at least 2 or 3 children.<sup>121</sup>

Social support is thought to operate through a number of theoretical frameworks. This dissertation draws its theoretical basis from the concept of subjective norms in Azjen's Theory of Planned Behavior (TPB). This construct posits that an individual's actions will conform to the perceived expectations of important referent groups within the person's social network. This conformity is based on a combination of both the individual's perceived behavioral expectations of the referent group (normative beliefs), as well as their motivation to comply with these expectations.<sup>122</sup> The TPB, along with its antecedent (the Theory of Reasoned Action), has been applied in numerous previous studies on contraceptive use. These studies have found that constructs from the TPB, such as subjective norms, help to explain between 16% and 64% of the variance in intentions to use contraception.<sup>123-125</sup>

The concept of subjective norms is particularly appropriate in a Cambodian sample, as respect for and, consequently, motivation to comply with referent groups such as elders is high.<sup>56</sup> Although this study is not specifically testing the theoretical constructs of the TPB, survey measures and data interpretations were made in light of this theoretical basis. Few studies have looked at constructs from this model in relation to multiple modern methods of contraception; the majority of TPB-based research has been around condom use alone.<sup>126</sup> Most studies using constructs from the TPB have also only looked at intention to use contraceptives, rather than

actual use.<sup>125126-130</sup> Furthermore, constructs are often represented by multiple individual items, rather than a comprehensive factor that captures the latent concept of the construct. In the case of subjective norms, studies do not always differentiate the sources of social support by each particular actor (for example, peers vs. partner). Nor have any studies examined the way that these associations may play out for women of low versus high parity. In the interest of programmatic application, it would be important to clearly distinguish each source of perceived social support in the target community and to understand the specific needs of women at different levels of fertility.

### **Section 5 – Myths, Misconceptions and Barriers to Contraception in Cambodia**

In addition to information on social support, the current body of contraceptive research in Cambodia demonstrates a need for more in-depth knowledge on other factors influencing women's contraceptive decisions. Although 98% of women report having knowledge of at least one type of modern contraceptive method, the main reason for nonuse of contraception among women in Cambodia (aside from infertility) is health concerns (36%).<sup>7</sup> This difference between reported knowledge and continued fear of contraceptives indicates the presence of misgivings that may be hindering contraceptive use. Indeed, reports from government and non-government agencies within the country hint at the existence of rumor-generated fears of contraceptive methods, a mistrust of contraceptive effectiveness and other potential unseen barriers occurring in the nexus between a women's desire for family planning and actual utilization of modern methods.<sup>88-91</sup> However, in-depth information on the misconceptions and barriers associated with contraception in Cambodia are not available in the current peer-reviewed literature.

Qualitative methods have previously been used to assess Cambodian women's preferences for and beliefs about contraceptives. In 1999, Sadana and Snow used focus group interviews to ascertain women's experiences with and preferences for modern contraceptives.<sup>93</sup> The results showed that most women had a low level of knowledge about methods yet experienced a high level of adverse side effects that often led to contraceptive discontinuation. This study concluded that better access to a variety of methods and more information on their effects was needed; however, these data were collected in 1994, during a time when family planning programs in Cambodia were far less developed than they are today. No in-depth qualitative account of women's current experiences exists. Other studies on family planning in Cambodia have focused primarily on condom behaviors of commercial sex workers (CSWs).<sup>94,95</sup> Results from these studies show that CSWs greatly value the use of condoms with clients for disease prevention, but are less inclined to use an additional method to prevent pregnancy, due to fears of side effects or lack of availability.<sup>94,95</sup> The studies of CSWs, while more current than Sadana and Snow's, focus on populations that may be behaviorally and culturally disparate from the average Cambodian women of reproductive age. Thus, findings from these studies are not applicable to the broader population of women.

Several studies in other international settings have examined misconceptions about and barriers to contraceptive use through qualitative methods. These studies, which include populations from Turkey, Ghana, Egypt, India, Jordan, Latin America and the U.S., demonstrate that women often hold exaggerated fears about pain, discomfort and long-term infertility associated with side effects of contraceptive use.<sup>131-137</sup> Rumors of side effects are promulgated through women's close social networks, and are often based on word-of-mouth rather than first-hand accounts.

Due to the reliance on interpersonal communication for contraceptive information, women's knowledge of contraceptives may be superficial, and greater emphasis is needed on deconstructing long-held cultural myths about contraceptive side effects. Findings have also shown that women may lack the ability to communicate with partners and perceive them as barriers to accessing methods.<sup>131-144</sup> Although qualitative examinations of contraceptive behaviors have been performed in previous studies, gaps in the literature remain. Specifically, a forum on contraceptive continuation issues held by several international family planning organizations in 2005 found that more qualitative research is needed to understand the differences between users, discontinuers and non-users of methods in order to identify appropriate intervention strategies for increasing continuous contraceptive use.<sup>145</sup>

While the issues of misconceptions and barriers to contraceptive use have been explored in the literature, no current data exist which examine these factors in the unique case of Cambodia. Moreover, no current study, either in Cambodia or elsewhere, provides differentiation of beliefs and experiences between women who are current users of contraceptives, those who have discontinued use and those who have never used modern methods.<sup>92</sup> Although non-users of contraceptives are often the focus of family planning efforts, by incorporating the ideas and experiences of both users and non-users of contraceptives, we will be able to better understand why, given a similar set of contextual factors, some women use contraceptives effectively and others do not.



## **Research Rationale**

There is a significant gap in our understanding about the determinants of contraceptive use in Cambodia. Though some information on factors associated with contraceptive use within the country exists, no study has yet been conducted that takes into account the effect of social support and individual behavioral factors. Nor is there current in-depth information on other barriers to use that may be perceived by women, such as misconceptions about side effects. The literature on these topics, conducted in other populations, shows the importance of measuring these factors in relation to contraceptive use. Furthermore, in-country evaluations of Cambodian family planning programs demonstrate a need for assessing determinants of contraceptive use that go beyond traditional barriers such as knowledge and access. In light of the limited research, current data on contraceptive behaviors in Cambodia are needed to create a more complete understanding of factors affecting contraception. This information is not only helpful in contributing new insights to this body of research, but is also particularly pertinent to the development of targeted strategies to improve contraceptive accessibility and use among women of reproductive age in Cambodia.

This dissertation takes a multi-faceted approach to examining the influences on and barriers to contraceptive use in Cambodia. The dissertation is comprised of two original research papers. The first paper examines the association between such factors as social support and women's individual contraception-related attitudes and abilities and the outcome of contraceptive use, with particular focus on the different effects among women of low versus high parity. The second paper uses a qualitative approach to obtain in-depth insights into the misconceptions and perceived barriers to contraceptive use among women of reproductive age in Cambodia.

Specifically, the qualitative paper differentiates between characteristics of current users of modern methods, women who have discontinued use of a modern method and women who have never used modern contraceptives.

## **Chapter 3: The Role of Social support and Parity on Contraceptive Use in Cambodia (Paper 1)**

As suggested by previous literature and in-country agency reports, social support may be related to a woman's choice to use modern contraceptive methods, and this may vary by her level of parity. The purpose of this study is to examine the association between social support and contraceptive use in Cambodia. Moreover, it will determine if and how the association between social support and current use is different by a woman's current level of parity. Findings from this study will not only help identify the specific social support that women encounter during the contraceptive decision-making process, but will also generate an understanding of how these forces change at different points during a woman's fertility.

### **Methods**

The first paper of the dissertation uses data from the 2007 Population Services International (PSI) Reproductive Health study in rural Cambodia. I participated in the survey and sampling design for this study during a research consultancy with PSI-Cambodia in the summer of 2007. The original study was aimed at establishing a baseline dataset of contraceptive behaviors and determinants in two rural provinces in Cambodia. This study will use items from the PSI survey to examine social support on current contraceptive use.

### *Study Population*

The target group for this study was adult females who were 1) between the ages of 15 and 49; 2) currently married; 3) sexually active (in the last 12 months); and 4) who wish to delay future pregnancy for at least one year. The choice was made to limit the study population in this manner both because the majority of sex in Cambodia takes place within the marital union and also because a woman who wishes to delay/prevent future births is most likely to be using or in need of contraception. Individuals were sampled from two diverse provinces of Cambodia: Kampong Thom province in the North and Kampot province in the South. The populations of these two provinces are largely rural and poor, and have educational, health utilization, wealth and employment characteristics that are similar to much of the rest of Cambodia (Figure 1).<sup>7</sup> These provinces also have some of the highest risk of maternal mortality and other complications related to mistimed/unwanted birth, and were thus strategically chosen for PSI data collection and program implementation.<sup>7</sup>

### *Sampling, Instrumentation, Procedure*

A representative sample of the target population was taken using a two-stage stratified sample design. The first stage sampled towns within provinces, using probability proportional to size. The second stage sampled households within towns, starting at a randomly selected household and using a constant interval to ensure an equal probability of selection per household. A total of 15 households from each selected town were included. Information from the 1998 population census was used to estimate geographic area and create the sampling frame. To be eligible, the woman had to be between 15-49 years old, be Cambodian, be a resident of the targeted province, be married and wish to delay birth for at least at the time of interview. After selecting households

to participate, eligibility of resident females for the first three criteria (age, marital status, sexual activity) in the house was determined through a household listing. If a woman was listed as married, she was assumed to be sexually active. Women in the household who met the first three criteria were then privately queried on their fertility preferences to determine if they wished to delay birth at the time of interview. Only one eligible participant from each selected household was interviewed. If more than one eligible woman resided in a sampled household, one participant was selected randomly among all eligible women using the Kish grid method. A total sample size of 750 eligible women was targeted in Kampot and Kampong Thom provinces, based on calculations made for PSI programmatic purposes. Of these, 706 women were successfully recruited for participation in the study, resulting in a 94% response rate. A post-hoc power analysis, performed to ensure that the final sample size is appropriate for this analysis, resulted in a power of 0.92 (Appendix 1).

A structured questionnaire was used to collect data on items related to contraceptive use and perceived social support. The questionnaire was developed in English, translated into Khmer and back-translated into English to ensure accuracy of the questions. The surveys were then administered to eligible respondents on an individual basis, using female interviewers.

### *Measures*

To measure social support, several scaled items representing the perceived social acceptability of contraception among peers, partners and elders were used. These items captured women's perceptions about support for contraceptive use related to each social group. In the case of partners, items related to communication and decision-making were also included. All items

were measured on a four point scale ranging from strongly agree to strongly disagree. For parity, women were classified as having “low” (two children or fewer, including no children) vs. “high” (3 or more children) parity. This cut off was chosen based on distribution of births in the sample and the current desired fertility level in Cambodia, which is less than three.<sup>7</sup>

The outcome variable in this model is a yes/no item that measures current contraceptive use. A positive response was recorded if the participant was using any form of modern contraceptive at the time of the survey. Modern methods included male or female sterilization, the daily hormonal pill, intrauterine device (IUD), hormonal injection, hormonal implants or condoms. Demographic control variables such as age (in single years), education and socio-economic status (SES) were also measured. Educational attainment was defined as a categorical outcome reflecting no education, primary education or secondary (or higher) education.

It should be noted that the sample was specifically targeted to be poor and rural, due to PSI program needs. However, to account for possible variation of resources within this classification, several items related to household commodities (including such items as radio, television, mobile phone, gas cooker, refrigerator, bicycle, motorcycle, etc.) were collected and used to develop a measure of SES through principal components analysis.<sup>146</sup> The Filmer and Pritchett procedure for principal components analysis yielded standardized factor coefficient scores that were then multiplied by the indicator values to create a household SES index score. Only the first factor produced from this procedure is used to represent the SES index. The resulting index quintiles were then collapsed to reflect low (first and second quintile), medium (third and fourth quintile)

and high (fifth quintile) socioeconomic status. This re-categorization scheme is commonly used in 3-level categorization of SES scores.<sup>147</sup>

### *Analytic Approach*

In the first part of the analysis, logistic regression analyses were used to measure the association between each social support item individually and current contraceptive use controlling for key demographic factors. These regression models were run first with the entire sample, and then stratified by low vs. high parity level. Each model was adjusted for woman's age, education level and socioeconomic status. The full model also controlled for parity.

In the second part of the analysis, multivariate logistic regression was used to examine the association of all the social support items with contraceptive use. Four sets of models were run, each for the full sample, the low parity subjects and the high parity subjects. The first model included any partner social support item that was significant in the earlier analyses. The second model measured all peer social support items that were significant in earlier regressions. In the third model, all elder support items that were significant in earlier analyses were included. Finally, a full model, including all social support items that were significant in earlier analyses, was run. All regression models controlled for woman's age, education, socioeconomic status and, in the case of the full sample, parity. There were no missing data on any of the variables used in the analyses.

## **Results**

### *Characteristics of Study Population*

Table 2 presents the basic demographic characteristics of the study sample. The mean age of the women was 32.7 years, with a fairly equal distribution between the 5-year age groups. Among this economically depressed sample, the majority of households (57.8%) were classified as being in the middle range of household commodities (termed “SES” here), when compared to the overall assets of the sample group. Most women had at least some primary education (63.8%), while 12.8% had no formal schooling. The mean number of children in this sample is 1.6, with the distribution of “low” to “high” parity women (those who had 2 or fewer children vs. those who had 3 or more at the time of interview) being 47.6% to 52.4%, respectively.

Current use of modern contraceptives in the overall sample is 42.5%; however, current contraceptive use is significantly higher among the high-parity group as compared to the low-parity group (46.2% vs. 38.4%,  $p < 0.05$ ). The survey also captured women’s knowledge of contraceptives, as well as the perceived availability of methods. There was very little variation in these variables, with nearly all women reporting high levels of knowledge of modern methods and a high belief that methods are available when needed. Over 92% of the sample wished to either limit or space child birth for at least two years, and all women in the sample reported that it was important to prevent pregnancy at the time of interview.



## *Associations between Each Social Support Area Contraceptive Use*

### Husbands

The adjusted odds ratios of contraceptive use by each social support factor are presented in Table 3. These data show results both for the overall sample, and stratified by parity group. Of the five items measuring partner support, three bore a significant association with contraceptive use in the overall sample. Women who agreed with the statement “Husband thinks it is a good idea for you to use a birth spacing method” were nearly three times as likely to use a contraceptive method than those who disagreed (OR: 2.76;  $p < 0.001$ ), controlling for key demographic factors. Those who agreed that the “husband is the one who makes the final decision about birth spacing” or “feel nervous about discussing birth spacing with the husband” were significantly less likely to use contraceptives than women who disagreed with these statements (OR: 0.50,  $p < 0.001$ ; 0.60,  $p < 0.01$ , respectively). For low-parity women, having the husband think birth spacing is a good idea was related to increased use, while feeling nervous about discussing birth spacing with the husband was related to decreased contraceptive use (OR: 2.48,  $p < 0.05$ ; OR: 0.55,  $p < 0.05$ , respectively). The relationship of the husband support statements to contraceptive use for high-parity women echoed those relationships found among the overall population. Husband’s support of birth spacing and encouragement to use birth spacing methods were not associated with actual use for any of the sample groups.

### Peers

Only two of the peer support statements were significantly related to contraceptive use controlling for key demographic factors (Table 3). First, among the full sample, women who reported receiving encouragement to use birth spacing methods from peers were 44% more

likely to use contraceptives than those who did not receive encouragement. Also, among low-parity women, those who agreed with the statement “Most couples you know have used a birth spacing method” were almost four times as likely to use contraceptives than low-parity women who disagreed with the statement. None of the peer support statements were significantly related to contraceptive use in the case of high-parity women.

### Elders

Table 3 also presents the results of elder support on contraceptive use controlling for key demographic factors. Women in the full sample who agreed that “Elders in your community think young women should not use birth spacing methods” or “If an elder says not to use a birth spacing method, you should not use it” had a significantly lower odds of contraceptive use than women who disagreed with these statements (OR: 0.70,  $p < 0.05$ ; OR: 0.62,  $p < 0.05$ , respectively). These statements were similarly important for high-parity women (OR: 0.52,  $p < 0.01$ ; OR: 0.54,  $p < 0.05$ , respectively), whereas for low-parity women, none of the elder support statements were significantly related to contraceptive use.

### *Multivariate Effects of Social support on Contraceptive Use*

Tables 4, 5 and 6 present findings from multivariate regression models of social support. Each table contains the four models of social support outlined in the methods section; Table 4 presents the results for the full sample, Table 5 presents the results for the low-parity women, and Table 6 presents the results for the high-parity women. Examining the results in this manner will allow for comparison of social support factors which are important overall, and those which are important specifically for low vs. high parity women.

### Social support for All Women

Table 4 presents the multivariate regressions results for the full sample of women. The first three models incorporate all the significant items found in the models presented in Table 3 for each social support group. These results show that even when controlling for the various items for each group and controlling for socio-demographic characteristics, the associations with contraceptive use remained largely intact. The one exception was the statement “Elders in your community think young women should not use birth spacing methods”, for which the association diminished when included in the same model as the other elder item (“elder says not to use”).

The fourth model in Table 4 combines all of the significant social support items into one regression, adjusting for individual characteristics. This model demonstrates the supremacy of the husband when measuring multiple correlates with a woman’s contraceptive behavior. In the full model, the effect of each social support item related to the husband on contraceptive use increased when compared to the individual model. Most notably, the item which measures husband’s positive attitude (“good idea”) towards methods increased from an odds of 2.67(p-value<0.01) to an odds of 3.39(p-value< 0.001). At the same time, the effect of peer encouragement on contraceptive use reduced from a significant odds of 1.43 (p<0.05) in the individual model to a non-significant measure in the full model. The effect of one of the elders items (“elder says not to use”) increased marginally in the full model, from an odds of 0.66 (p-value<0.05) to an odds of 0.53 (p-value<0.01). Interaction models were run for all social support terms in the full model, however none were significant.

In terms of socio-demographic characteristics and contraceptive use, there were strong positive associations with primary education (but not for secondary education), higher levels of SES and higher number of children among the full sample of women.

#### Social support for Low-Parity Women

Table 5 presents the multivariate regression models restricted to low-parity women. Unlike in the full sample, only a few social support items were significant in the first three models. In the separate social support models, husbands attitude towards methods (“good idea”) and peer norms around method use (“most couples you know”) were associated with a significantly increased likelihood of contraceptive use (OR: 2.21, p-value<0.05; OR: 3.46, p-value<0.05, respectively), while apprehension about communication with the husband (“feel nervous”) decreased the likelihood of contraceptive use (OR: 0.59, p-value<0.05). In model 3, neither of the elder items was significant.

Model 4 in Table 5 shows that while elders and husbands have important associations with contraceptive use, peer norms may have the most notable effect on women of low parity. In the full model, including all social support and demographic items, women who perceived that most couples used birth spacing methods were almost four and a half times as likely to use a modern method as women who disagreed with the statement (OR: 4.42, p-value<0.05). The husband’s attitude towards methods (“good idea”) still had a considerable effect on low-parity women’s contraceptive use, as did a woman’s ability to communicate (“feel nervous”) about methods with the husband (OR:3.23, p-value<0.01; 0.60, p-value<0.05, respectively). Interestingly, the effect of elder’s admonishment of methods (“elder says not to use”) became significant in the full

model; women who agreed with the statement were only half as likely to use methods as those who did not agree (OR: 0.53, p-value<0.05).

Higher levels of SES were positively related to contraceptive use, while age and education had no significant effect on contraceptive use among low-parity women.

### Social support for High-Parity Women

Table 6 contains results of the multivariate models of contraceptive use among high-parity women. In the first three models, which measure the relationship of each social group separately, the husband and elders had the largest effect on contraceptive use. In model 1, a husband's positive attitude towards methods led to more than twice the likelihood of using contraceptives (OR:2.52, p-value<0.05), whereas women who reported that the husband is the final decision maker about birth spacing were significantly less likely to use a method than women who disagreed with this statement (OR: 0.31, p-value<0.001). Model 3 also showed significant relationships between both elder support statements and contraceptive use. Perceiving a negative elder attitude towards contraceptive use ("elders in your community think") and deference to an elder's rejection of methods ("if an elder says not to use") both led to decreased odds of contraceptive use (OR: 0.55, p-value<0.01; OR: 0.59, p-value<0.05, respectively). The peer support items were not significantly related to contraceptive use among high-parity women.

The full social support model for high parity women (model 4 of Table 6) shows a strong affect of husbands on contraceptive use. When combined with other dimensions of support and adjusted for socio-demographic factors, perceiving that the husband has a positive attitude

towards methods (“good idea”) is associated with a more than three-fold increase in likelihood of using methods. In the full model, apprehension regarding communication about methods with the husband leads to a decrease in odds of using methods (OR:0.61, p-value<0.05). In contrast to both the full model and the low-parity sample, husband’s decision-making power for family planning had a strong negative effect on contraceptive use; women who reported that the “husband is the one who makes the final decision about birth spacing use” were significantly less likely to use contraceptives than other women, even when controlling for all other social support and demographic factors. In model 4, women who agreed that “if an elder says not to use a birth spacing method, you should not use it” were only half as likely to use contraceptives as high-parity women who did not agree with the statement.

For high-parity women, none of the socio-demographic factors in the multivariate models were significantly associated with contraceptive use,

## **Discussion**

This study is the first to examine the role of social support on women’s contraceptive use in Cambodia. Furthermore, it is the first in any setting to explore the differential associations between social support and method use at different stages of fertility. The recent decade of development in Cambodia has fostered significant increases in access to family planning services, but reported rates of unmet need for contraceptives remain high.<sup>7</sup> This study confirms that knowledge of contraceptives and perceived availability of methods among this population is high, and further, identifies social support of husbands, peers and elders as instrumental factors associated with contraceptive use. These findings are especially pertinent because the sample is

concentrated on poor, rural women, who are most vulnerable to unmet contraceptive need.<sup>50,51, 65, 71, 72, 80</sup> Moreover, even when controlling for key socio-demographic characteristics such as education, age and SES, social support had a large and significant effect on modern method use.

Findings indicate that husbands, peers and elders all bear weight upon the contraceptive choices of women. Furthermore, these effects vary for women of high versus low parity. When a husband's support for methods is positive, contraception increases; conversely, when a woman feels nervous about communicating with her husband or has little contraceptive decision-making power, the likelihood of contraceptive use diminishes. Elders' negative opinions about contraception also decrease women's use of modern methods through the mechanism of deference. In a culture such as Cambodia's, where elders' viewpoints are highly regarded, their negative attitudes towards contraception can pose a significant barrier to use.<sup>120</sup> Finally, although the peers are important in some circumstances (such as with low-parity women), their overall relationship to contraceptive use in the full sample is minor when compared to the other social groups.

In addition to exploring the association between social support and contraceptive use, this study isolated the effect of this relationship for women of different parities. No studies were found that examined parity and social support and contraceptive use, though evidence points to varying family planning needs for women at different stages of their fertility.<sup>65</sup> As shown here, the support of partners, peers and elders can have varying association on women's contraceptive use, depending on whether she has had few or many children. For low parity women, a husband's positive attitude towards methods and ease of communication with the husband are key elements in predicting contraceptive use. Peers also have a notable effect on contraceptive use in this

group; if a woman perceives that most others in her community are using modern methods, she too is more likely to use them, indicating the normative power of peers over contraception. For high-parity women, husband's support and communication are important; however in this group when decision-making power is left to the husband, the likelihood of method use vastly decreases. Both groups are equally susceptible to elders' negative opinions about contraceptive use.

There are several limitations to this study. First, due to the cross-sectional design, the causal direction of the relationships between social support and contraceptive use cannot be determined. Next, there are only a small number of items for each of the three social support categories; it is possible that more numerous or further refined measures could improve our understanding of the relationships between social support and contraceptive use. The concentration of the sample on poor rural women in Cambodia also limits the generalizability of the findings. However, this sample is representative of the most vulnerable population in this country and the group for which such research would be most beneficial. Furthermore, this setting may be similar to other developing country settings where social dynamics play a strong role in women's contraceptive decision-making, rendering the findings useful in a multitude of other situations.

Final conclusions for both papers are located in the last chapter.



## **Chapter 4: “If we can endure, we continue”: Understanding Differences between Users, Discontinuers and Non-Users of Contraceptive Methods in Cambodia (Paper 2)**

The second paper of the dissertation uses qualitative in-depth and focus group interviews to investigate the context in which contraceptive use among women of reproductive age in Cambodia occurs. These interviews were originally conducted by PSI as part of their reproductive health research efforts. The questions asked in these interviews were designed to fill gaps in knowledge about women’s perceptions of contraceptives and their barriers and boosts to contraceptive use. Data from these qualitative interviews are used to elucidate perceived issues around contraceptive use in this population. Specifically, the analysis focuses on the differences between women who use contraceptives, women who discontinued contraceptive use and women who have never used a modern method of contraception.

A qualitative research approach is well-suited for exploring the intricate issue of misconceptions and barriers to contraceptive use. Qualitative methods allow for a free-form investigation into topic areas for which there is little prior knowledge. They are also useful for examining sensitive issues, such as sexual behavior and contraceptive preference.<sup>148</sup> This approach is particularly useful in the context of Cambodian society, where open discussion of sexuality is culturally inappropriate and research related to sex can be difficult.<sup>149</sup>

## **Study Population**

To understand the complexity of factors contributing to and inhibiting use of contraceptive methods, participants from three types of user groups – Continuer, Discontinuer and Non-user - were recruited to participate in focus group discussions and in-depth interviews conducted by the international social marketing group, Population Services International (PSI). The women were divided into these groups in order to be able to focus discussions around the specific beliefs and behavioral characteristics of each type of contraceptive “user” (or non-user, as the case may be).

Continuers are defined as women who report that they currently use hormonal methods to prevent pregnancy, have been using the hormonal method continuously for two years or more, and intend to continue using the methods to prevent pregnancy; Discontinuers are women who have previously used a hormonal method of contraception, report discontinuation in the last three months and have not switched to another method; and Non-users are classified as women who know of but have never used any form of hormonal contraception or condoms. All women in the study reported a desire to prevent further births or delay future births by at least two years. Women fitting each category were recruited from both rural and urban areas of Pursat province (Fig 1). This province was chosen for having both urban and rural populations and having a diversity of women in terms of education, wealth, contraceptive knowledge and health care utilization.

## **Sampling, Instrumentation and Procedure**

A non-probability, purposive sample of the target women living in rural and urban Pursat province was taken using a variety of recruitment methods. Participants were targeted in rural

and urban areas by distributing flyers in private and public health clinics. In addition, small grocery sellers were approached and asked to display recruitment fliers in their shops. A phone number was provided on the fliers asking interested candidates to phone PSI/Cambodia's Strategic Information Department if they were interested in participating. Field coordinators screened people on the phone to ensure that they met eligibility criteria. When possible, health care providers also confirmed the participant's eligibility through contact with field coordinators. Known contraceptive users in rural villages were individually recruited from their homes, using a list of all users in the village identified by local health care workers. Using the snowball technique, women were also asked to suggest other women for recruitment into the study. All techniques were applied for recruiting participants to both focus group discussions and individual interviews.

Focus groups and individual interviews were held over the course of several weeks in December 2006. All discussions were held in private rooms and tape recorded for accuracy. In-depth interviews were conducted one-on-one, while focus groups had one lead moderator and two note-takers. The focus groups were divided by type of user, with each session containing only those women from a specific user group (Continuer, Discontinuer or Non-user). In-depth interviews were also conducted among an assortment of user types from both rural and urban areas. Interviews were carried out until saturation of themes occurred. This resulted in a total of seven focus groups and fourteen in-depth interviews (Table 7). Recordings from all interviews were later transcribed in the original Khmer and translated into English by members of the PSI qualitative research team.

Interview guides with open-ended questions were used to address several key topics related to women's experiences with and impressions of modern contraceptives. Women were asked about their desire for birth spacing methods and about their perceptions of specific methods in terms of both effectiveness and side effects. Women were specifically probed on the sources of these impressions (i.e., rumors, personal experiences, etc.). Questions on motivations, decision-making and perceived barriers to and support for contraceptive use were also included. Finally, specific questions relating to contraceptive experiences were included for each type of user. Continuers were asked about their experiences with side effects, and the motivations for contraceptive continuation. Discontinuers were also probed on their experiences with contraceptives and were asked about their decision to abandon previous methods. Non-users were asked to elaborate upon their reasons for rejecting the use of contraceptives, despite their desire to delay births.

### **Data Analysis**

The content of the interview transcripts were analyzed using NVivo8 qualitative analysis software. Preliminary analysis involved the reading and descriptive (“open”) coding of transcripts. These descriptive codes were then thematically analyzed and arranged into a smaller set of broader themes which capture the main topics emerging from the data. As there is a preconceived set of interest areas in this research, a deductive list of codes (such as “rumors,” “fears,” “barriers,” etc) were used as a general guide for the analytic approach. However, inductive coding was used to allow for themes and patterns to emerge from the data that are representative of the women's true experience.<sup>95</sup>

The frequency with which the themes were reported in each “user” group were analyzed using matrix coding. This procedure helped clarify which themes emerge consistently across all groups and which are idiosyncratic to each type of user. Comparisons were made across the different types of users (Continuer, Discontinuer or Non-user), with respect to the emergent themes. The analytic process was an iterative one wherein formation of themes and their relationships emerged as the analysis proceeded.<sup>95</sup> Findings were verified with in-country staff to ensure accurate representation of the data.

## **Results**

The issue of contraceptive use among women in Cambodia is a complex and multi-faceted one. The findings are organized to reflect the various dynamics that encourage or discourage the uptake and continuation of modern birth spacing methods in this setting (Table 8). The findings follow the sections of Table 8 and provide information on 1) knowledge and perceptions of contraceptive methods; 2) barriers to method initiation; 3) barrier to method continuation; 4) catalysts for continuation; 5) the role of others in women’s use and, finally; 6) profiles of the different contraceptive user types. This final section identifies characteristics of continuous users that may contribute to their success and defines the specific group attributes for each of the user types.

It should be noted that all participants expressed a desire to limit or space birth for at least two years. They also all identified a myriad of reasons for wanting to do so including: health benefits for mother and child, improved economic status for the whole family and achieving general fertility desires.

## **Knowledge and Perceptions of Contraceptive Methods**

### *Knowledge of Methods*

Women's baseline knowledge of contraceptive methods was assessed at the outset of the interviews and focus group discussions. When asked about their awareness of specific contraceptive methods, the majority of respondents were able to spontaneously identify numerous modern methods, including the hormonal pill, condoms, the monthly pill, injection and intrauterine devices (IUD). Not surprisingly, women in the Continuer and Discontinuer groups exhibited the highest levels of knowledge on all types of methods, while Non-users were less familiar with method names and often confused IUD and implants with each other.

Women were also asked about their belief in and use of traditional methods of contraception. Most women dismissed traditional approaches to birth spacing, such as withdrawal or use of traditional Khmer herbs, as being outmoded and ineffective. However, women in the Non-user group could describe more types of traditional methods and reported more actual use of traditional methods than women in the other two groups.

### *Perceived Short and Long-term Side Effects*

Participants in both the focus group and in-depth interviews shared numerous misconceptions about the consequences of contraceptive method use. The myths and misconceptions surrounding modern birth spacing methods centered almost entirely around side effects, some of which were valid clinical effects and others that were exaggerated rumors of ill health. Though some women (in the Continuer and Discontinuer groups) reported experiencing real side effects – such as headaches, dizziness, nausea, bleeding, weight gain and vaginal discharge – it is the belief in perceived side effects that fuel overall concern, particularly among Non-users and Discontinuers. “Infertility”, “blood clotting”, extreme “hemorrhaging”, “hotness in the chest” and “tumors” were all viewed as potential “real” side effects to method use. Women were particularly concerned with rumored long-term harm such as cancer and infertility:

*“We will have abdominal tumor and can’t be cured if we use [hormonal methods] for long time.” – Discontinuer*

*“I have heard them say that if we use these medicines, [afterwards when] we want to have a baby, it’s difficult. Some people who used these medicines can’t have a baby forever” - Non-user*

As a result of this fear, particularly of long-term effects, the common misconception that a woman should not use a modern method until she has already given birth or until she is older abounds in all groups. The role of this “fear” in contraceptive decision-making is further explored in subsequent sections.

### *Perceptions of Specific Contraceptive Method Types*

After identifying specific contraceptive method types, women were asked about their perceptions of the daily hormonal pill, hormonal injections, IUDs and hormonal implants. All groups demonstrated knowledge of and trust in both the daily pill and hormonal injections. These two methods were by far the most familiar and popular in the women's communities. Participants in all groups viewed pills and injections as being easy to find, affordable, readily available, convenient to use and good for the health:

*"If we want to use [the pill] we can buy it...it's not expensive."* – Discontinuer

*"[The advantage of the pill or injection is] good health, it does not hurt the body, our health is good"* - Continuer

On the other hand, women did acknowledge drawbacks to each of these methods, ranging from minor side effects such as vaginal discharge and spotting with the pill to perceived extreme side effects such as tumors and infertility (with injections) injection. In addition, some viewed the daily pill as being less effective because it is "easy to forget," while others feared the short-term irreversibility of injection methods.

Unlike with pills and injections, there was substantial fear and ignorance about IUDs and implants, particularly in the Discontinuer and Non-user groups. Many of the women were not familiar with the IUD or did not have proper knowledge of how an IUD works:

*"We've never heard about IUD, and never have seen it."* – Non-user

Participants also held strong misconceptions about the side effects of the IUD, which ranged from irritation of the uterus and long-term risk of cancer, to far-fetched myths about IUD's interference with subsequent births:



*“The bad point, I say that IUD when used affects the uterus. Irritated uterus becomes vaginal discharge and cancer”* – Discontinuer

*“Sometimes we can have the fetus with the IUD... [a woman I knew] had a pain in her stomach... When she went to check, the doctor said the fetus [was] holding the IUD!”* - Continuer

Furthermore, women (particularly those sampled from rural areas) believed that an IUD is not an appropriate method for those who engage in physical labor. In particular, there was a misconception that heavy labor can lead to the IUD “falling out” and that only urban or wealthy women should use this method:

*“IUD is only for people who don’t work much or carry heavy things, [it is for] comfortable people. They can use it forever. But it also brings side effect like cancer”* -Discontinuer

Knowledge of the hormonal implant is only slightly higher than the IUD and the method is often confused with the IUD in the Non-user and Discontinuer groups:

*“I have never known anyone who uses implant”* – Discontinuer

For those who are familiar with the method, there is still a strong fear of perceived side effects and a belief that it can “wither” the arm or cause obscure illnesses such as polio.

Implants are also one of the least trusted methods and get a similar treatment as IUDs:

*“The group that I don’t trust, I’m afraid of are IUD and implant.”* – Non-user

*“I worry about IUD and Implant. I dare not use them.”* – Non-user

Although condoms were reported to be widely available and effective for “preventing us from diseases” (Non-user), the use of condoms within the marital relationship wasn’t stigmatized for

some women. Participants described condoms as a method primarily utilized during sex with commercial sex workers, making their use within the marital relationship inappropriate:

*“My husband said that if he used condom with me I may say something. He may use it with other girls outside but it's useless to use with his wife”.* – Non-user

The use of condoms in this population was further complicated by the perceived side effects and relative ineffectiveness of condoms as compared to other methods. Women reported myths that condom use can lead to swelling of the uterine lining (endometritis) and cancer:

*“We fear that when using condom our uterus brakes down and we will have endometritis. It'll become cancer”.* – Discontinuer

Furthermore, women complained that condoms are not a reliable method of birth spacing.

Participants viewed condoms as having a high failure rate and being ineffective for pregnancy prevention. Specifically, women expressed concerns about condoms' vulnerability to malfunctions such as breakage or piercing:

*“Condom is not robust, it can pierce sometimes. It's really hard, we just put it and don't know if it is pierced or not”.* – Non-user

Though some participants did report experience with condoms, they were among the least preferred methods available.

### *Sources of Method Misconceptions*

Myths and misconceptions about contraceptive methods are wide-spread among the participants and such rumors are propagated through key players in their social networks. The most important source of these myths, in terms of both frequency and influence, are the elders. Elders can be direct family members or older individuals within the community that offer information and

advice. Their warnings against the use of contraceptives echo the fear of perceived side effects and long-term damage to fertility that many of the participants mention:

*“Elders said that we would be ill after the injection that we could not know in advance...They said that we would have tumor in abdomen, big- belly” - Non-user*  
*“[Elders] said that when we were young and use [hormonal injection], we would ruin ourselves” – Discontinuer*

Elders also put particular emphasis on the notion of an appropriate time and age at which a woman should begin using contraceptives. Women reported that elders often advise delaying method use until after the birth of at least two children or until the woman is over 30 years of age:

*“The elders said that I should not use [contraceptives]... Wait until I have 2 or 3 children, then use it.” – Discontinuer*  
*“[Elders] always said in young age we are not allowed to use [hormonal methods] so I waited ‘til I was old enough. [We] should be older than 30.” – Continuer*

In addition to elders, other women in the community, such as peers or female relatives, served to generate and reinforce pre-existing suspicions of methods. These women often had their own negative experiences with hormonal contraceptives, which they then relayed to the participants. Hearing about others’ adverse experiences with side effects intensified participants’ own fear of methods and made the prospect of method use all but impossible for some women: :

*“My cousin said that the injection didn't suit her and she had fever. Thus, I feel afraid when I heard she said like this.” - Non-user*

Whether these unfavorable experiences with side effects were viewed first-hand by a participant or relayed through others seems less relevant than the actual transmission of such information.

The rumor of side effects was powerful enough, on its own, to create true barriers to method use for some women:

*“When people who use methods [tell me about the side effects], how can I dare use it? – Non-user*

These rumors, regardless of source, seem to have particular sway over the Non-user group.

Discontinuers are also susceptible to rumors of myths/misconceptions, though their experience with methods renders them slightly more knowledgeable about the difference between myth and reality. Continuers are by far the least prone to believing rumors about hormonal methods or having glaring misconceptions of their effect, though they were able to identify similar myths to those presented by the other two groups. It should be noted that many Continuers (as well as Discontinuers) had given birth to at least one child before starting a method, suggesting that there are some pervasive social norms dictating the appropriate timing of method use.

## **Barriers to Initiation of Hormonal Methods**

### *Fear of Methods*

The barriers to initiation of hormonal methods, while complex and intertwined, have mostly to do with fear of real and perceived side effects of methods:

*“We dare not [use methods] because we've heard people talked about its side effects” – Non-user*

These fears often stem from rumors spread among women from elders, family members and other women who may or may not have used methods themselves. Fears are particularly strong for perceived side effects such as cancer, infertility and hemorrhage:

*“People said... that [the pill] causes headache, dizzy, trembling chest. Some people want to delay but they don’t dare to go, they’re afraid of bleeding, these kind of things. They are not afraid of anything beside health affection, women are afraid of the inside body affection”* - Non-user

*“Sometime they are afraid that they will be like the rumor... Like me; they saw me sick and they did not dare. They are very afraid.”* – Discontinuer

The idea of “fear” in this context is not simply one of timidity or reservation, but rather represents a true and deep-seated trepidation that effectively inhibits the use of methods. For some, defeating this fear is the key to ensuring contraceptive use among those who wish to delay or limit births:

*“They are afraid. They fear that their health and body worsen when they use [methods] for long period. If they are not afraid, they would use [contraceptives].”* – Discontinuer

Participants’ fear of side effects went beyond the mere experience of pain and encompassed the economic repercussions that method-related illness could cause. Women, particularly in the Non-user group, feared the medical costs associated with treating potential side effects. This concern was particularly amplified for those who already suffered from a lack of economic resources. Women were conveyed apprehension at the idea of being unable to work or worsening their family’s financial position due to illness;

Interviewer: *“What are you afraid of?”*

Respondent: *“Illness of course. We're poor without money or anything, so we're afraid [of side effects]”* – Non-user

*“I'm not sick and if I get injection and lose weight I'll have to look after myself and lose time. It's even more difficult and my family situation is even worse”.* –

Non-user

As mentioned, the fear of method use stemmed from misconceptions of contraceptives generated by rumors. In some cases, the predominance of these rumors over women's contraceptive decision-making occurred due to an absence of appropriate, accurate information about methods. Many women in the Non-user and Discontinuer groups expressed fear of method use due to a lack of adequate information. As one participant explained

*“If I know the information surely, I won't fear anymore. Although I haven't got any exact information yet”* – Non-user

#### *Social Network Barriers*

Prevailing negative norms within a women's social networks adversely impacted the ability of some to initiate contraceptive methods. This was particularly true among Non-users, many of whom indicated that influential individuals in their networks, including family members, female peers and elders actively discouraged contraceptive uptake. In addition to propagating misconceptions about methods and dampening enthusiasm for their use (as discussed above), family members at times expressly proscribed the use of contraceptives. For some, this prohibition was the determining factor in their failure to initiate method use:

*“I want [to use a hormonal method], but my mother doesn't allow me to”* - Non-user

For others, the fear generated by rumors proved insurmountable, ultimately preventing initiation even among when interest in spacing or limiting births with modern methods was high:

*“I want to get injection, but I dare not because I heard [from other women] that I would be ill.”* – Discontinuer

All women emphasized the importance of husbands in choosing and using a method, but some, especially in the Non-user group, noted that husbands can pose an obstacle to contraception. Participants mentioned that husbands are not only involved in contraceptive decision-making, but their approval of methods is integral to subsequent initiation:

*“My husband and I must agree together, and then I’d use.”* – Discontinuer

Consequently, a prominent barrier to initiation among the Non-user group was lack of husband’s support for contraception. Despite a woman’s own expressed desire to employ modern methods, contraception was reportedly elusive in cases where husbands were not amenable to use.

*“Some people wanted to use [a method] but their partner didn’t want to use”* – Non-user

Reasons for husbands’ refusal to support contraception pertained either to fertility (i.e., the husband preferred to have more children rather than space or limit) or to men’s own fears of methods. Some participants reported that their husband’s belief in and fear of side effects created an unfavorable atmosphere for contraceptive use. Husbands in some cases warned women of potential side effects and served to generate fear of methods. This fear, in turn, resulted in resolute disapproval and sanctioning of method use within the marital union:

*“My husband says that I’ll bring trouble to myself [if I use methods], when I’m not sick at all”.* – Non-user

*“For those who don’t use, sometimes they fear and sometime their husbands don’t use, their husband afraid of health damage, their husband not allow to use.” – Discontinuer (referring to Non-users)*

### *Lack of “Courage”*

Women also revealed a “lack of courage” or lack of confidence to initiate hormonal birth spacing methods. Some participants did not feel confident about their knowledge of methods and even less so about their ability to obtain and use contraceptives. Women expressed a particular lack of “courage” to overcome the fear they felt about perceived side effects of methods

*Interviewer: “Why you don't go get injection?”*

*Respondent: “Because I don't have the courage... I feel afraid when I heard [about side effects].” – Non-user*

The lack of confidence or courage about methods was attributed in part to a lack of information or knowledge of contraception. Women expressed that without information they would continue to fear side effects and would not have the ability to properly use methods.

*Interviewer: “You don't have the courage means you still have wondered?”*

*Respondent: “Yes, I still have. When I decided to use birth spacing I'm still afraid because I'm still not sure about the information.”- Discontinuer*

The role of information in conquering fears and fostering contraceptive use was specifically pertinent to the Non-user group, which had a lower baseline of contraceptive knowledge. As one participant poignantly declared in the midst of an interview:



*“Now after I've known about birth spacing and the education I got from you (the interviewer), I am not afraid any more. I will have injection as soon as I have menstruation.”* – Non-user

### *Lack of Access to Formal Health Care Providers*

Non-users reported little interaction with formal health providers regarding contraception. Overall use of formal health care was low for this group and the few who had attempted to consult a doctor for method use had been unsuccessful due to issues of timing (i.e., not the right time to start a method):

*“When someone asked who would like to use birth spacing, I said that I really want to. I went to health center two or three time already, but doctor told me that I haven't had my menstruation yet.”* – Non-user

Based on the available data, it was not possible to determine whether there was any follow-up on these conversations at later visits or if return visits to providers were ever made. However, for some, interaction with a health care provider was still not sufficient in overcoming the fears that bar initiation of contraceptive use:

*“I often go to health center and see people use injection, but I dare not use it and only watch them”* – Non-user

### **Barriers to Continuation of Hormonal Methods**

#### *Experience of Side Effects*

For women who were able to initiate use, the experience of real side effects created a substantial barrier to continuing the method. Many Discontinuers abandoned their contraceptive method

because it caused symptoms such as irregular bleeding, headache, dizziness and weight gain. The discomfort and pain of side effects were often cited as the primary reason for discontinuation.

Furthermore, many Discontinuers would have continued use if symptoms were managed better.

*“I felt uncomfortable when I injected. I had body trembling so I gave up.” –*

Discontinuer

*“If I had not been ill, I wouldn't have stopped” – Discontinuer*

Along with the discomfort, some reported that their side effects prevented them from working and, thus, method use could not be sustained:

*“When I used [the pill] I had headache and could not do much work” –*

Discontinuer

Some Discontinuers attempted to resolve their health issues by ceasing the method in order to ascertain whether side effects were a result of the method or of unrelated origin. However, in some cases, this “solution” led to complete discontinuation. As one participant explained:

*“I wanted to test myself. What are the differences between when using and stoppage? Was it because of medicine or my disease?” – Discontinuer*

Others attempted to endure their side effects, but were either unable to do so or were experiencing too severe of a reaction to continue:

*“I had itches in all the body. When I got [treatment for] the itches, it became arthritis. Now I am sick for two years and not yet cured. Now I stopped using injection forever.” – Discontinuer*

### *Influences on Discontinuation*

In terms of influences on method discontinuation, Discontinuers were sometimes encouraged by a trusted source, either husbands or physicians, to cease the method. Upon hearing about side effects, some husbands persuaded their wives to discontinue use of a formal method. Husbands' fears about method use mirrored that of their wives, and had often to do with concern for the woman's health, the cost of health care for treating side effects, and the potential loss of the wife's economic or household productivity. In place of the discontinued method, some husbands promoted reverting to traditional methods:

*"I had fever every night so my husband told me to stop using it and we could prevent by ourselves"* – Discontinuer

In addition to their considerable influence over discontinuation, husbands also posed a barrier to re-initiation of methods. For some women, the instruction to suspend contraception was followed by explicit objection to future method use:

*"When [my husband] heard that I was sick he stopped me and did not allow taking pills anymore"* – Discontinuer

*"For those who don't use, sometimes they fear and sometime their husbands don't use. Their husbands [are] afraid of health damage, their husband not allow to use."* – Discontinuer

In some cases, husbands prevented the use of specific types of methods, which further limited a woman's opportunities for re-initiation or continuation with an alternative form of contraception:

*"I told [my husband] that 'I saw people use IUD, so I wanted to use IUD because we didn't want children anymore. I also want to use it'. But my husband replied 'Don't need to use IUD. If we use IUD and work hard or carry heavy thing, we*

*will be infected to cancer. People who are IUD users are very skinny. I don't want you to be that thin.'"* – Discontinuer

Few of the Discontinuers reported consulting a trained health care provider to manage their side effects. When asked specifically about any formal medical follow-up for contraceptive complications, most explained that they decided to abandon the method either on their own or at the behest of their partner, without seeing a provider:

*"No I didn't [consult a doctor]. I just talked to my husband to stop using so I stop. I didn't go to discuss with doctor."* – Discontinuer

Some women in the Discontinuer group did attempt to consult providers regarding their side effects. However, these women reported that they were unable to resolve their issues after consultation with a provider and, in a few cases, were advised by the provider to stop the method. None of the women who sought follow-up care with the provider mentioned being offered an alternative type of contraceptive or given more information about when and how to re-initiate contraceptive use.

*"I wanted to get injection and [the doctor] said that if it brought me any discomforts I should come back to her. I said that I was weak and felt like bouncing. She told me to stop for a while."* – Discontinuer

*"For me the doctor told me to give up using because we have fever, there was blood coagulated in heart. The doctor told not to use."* – Discontinuer

### *Fear of Methods, New and Old*

Fear of alternative methods of modern contraception and continued fear of initial negative experiences were a major hindrance to continuation or switching to a different method. The

experience of these real side effects created concern that the method was doing lasting damage to women's health and lent credence to fears of perceived longer-term effects. Some women were fearful of returning to their original methods for fear of general illness

*“I still worry everyday. Everyday I want to inject but I am afraid there'll be disease”* – Discontinuer (formally used injection)

The fear generated by experiencing side effects was so overwhelming for some that concern spread beyond basic illnesses to include a fear of long-term sickness or even death. Here, as was the case with Non-users, women worried about the burden of incurable sickness on themselves and on their families:

*“[I]feared and worried. I feared that I couldn't be cured when I used injection for too long. What if we couldn't be cured? We would die and leave all the children behind. I feared that I couldn't be treated”* – Discontinuer

Other women not only had negative experiences with their original method, but they also feared trying alternative contraceptive methods, due to rumored side effects such as cancer or infertility. This global fear of methods prevented contraceptive switching for many of the Discontinuers and led to abandonment of method use altogether:

*“They said that when we took the pill for long time we would have abdominal tumor. There was a person who had the same case. I fear it.”* – Discontinuer  
(formally used injection)

Even in the absence of side effects, the fear associated with methods overtook some users and caused them to desert contraception. Although some women were able to prevail over their initial hesitations about methods long enough to commence contraceptive use, continued concern about rumored side effects eventually resulted in method cessation:

*“I feared that it would be going wrong when I got injected. I feared that when it was for too long, I would [not] have children again” – Discontinuer*

## **Catalysts for Continuation**

### *Rejection of Rumors and Confidence in Methods*

A critical factor in successful long-term method use was expressed trust in hormonal contraceptives and the ability to separate fact from rumor. Women in the Continuer group were the least likely of the three user types to report misconceptions of contraceptive methods and displayed more confidence in their knowledge of methods than the other groups. Although they acknowledge hearing rumors, these participants lend little credence to exaggerated myths and instead rely on their own judgment and experience to make contraceptive decisions:

*“There might be some rumors... I heard people said that I would have body temperature if I took the pill. And when I breast fed my baby, my baby would also have body temperature, then the baby would be very skinny. I don't believe them and I continue taking the pill...And my baby is fat.” – Continuer*

Women who continued use of contraceptives were also less likely to report personally knowing of someone who suffered perceived side effects than women in the other two groups. Even so, the prevailing theme among these users was that only their own personal experience or knowledge, rather than misconceptions spread through anecdotes or rumors, could dictate their beliefs about and trust in contraceptive methods:

Interviewer: *“Do you believe that taking pill will face infertility?”*

Respondent: *“I don't believe much on this.”*

Interviewer: *“You don't believe?”*

Respondent: *“Because no one that I know has this problem and I won’t believe unless it happens to me.”* – Continuer

This ability to reject rumors led to a lower pervasiveness of contraceptive misconceptions among women who continued contraceptive methods. Consequently, there was less fear of method use in this group, which contributed to Continuers’ persistence in method use.

#### *Enduring Side Effects and Finding “Appropriate” Method*

A number of Continuers reported troublesome side effects during the early course of contraception, but rather than abandoning their method they attempted to resolve their side effects either by initial enduring side effects or exploring alternative contraceptive methods. Women in the Continuer group often reported waiting out the early symptoms of illness and allowing the side effects of a method to normalize:

*“At the beginning I had few bleeding, fever, headache, and I felt weak and exhausted. However, when I got used to it, those symptoms were gone. There were few discomforts like that at the beginning, and it would be normal when I used it everyday.”* – Continuer

*“Have had the problem [side effects] only when I first used. And when I have used for a long time, I am OK.”* – Continuer

A key contribution to continuation was the “appropriateness” of a method for the body. Women explained that in order to successfully continue a method, one should find a contraceptive that “fits” with the woman’s body. “Appropriateness” often referred to method which did not cause too many side effects or methods on which side effects subsided or were tolerable after a period of time:

Interviewer: *“Why you choose oral contraceptive pill to delay the birth? Why not others method?”*

Respondent: *“Because when I take it, I am appropriate with it. When we are appropriate with any method, we will use it.”* – Continuer

In the event that side effects continued beyond a reasonable period, women sought out different methods until they found one that was effective and “appropriate” for them:

*“For me when I used, I also had vaginal discharge so I gave up taking pill I injected instead.”* – Continuer

While Continuers acknowledge some of the same fears of real and perceived side effects as the other groups (i.e., cancer, infertility, medical cost associated with side effects), the benefits of use outweigh the burdens for this group and the idea of “endurance” and “patience” for side effects is what sets them apart. Continuers’ desire to limit children also overshadowed any fear or discomfort due to method use:

*“I am a bit afraid. When I use long, I am afraid I will get big-bellied like others. But I still endure to use it since I do not want to have children more.”* – Continuer

Interviewer: *“At first you said that you used to feel headache and high temperature, so have you ever thought of giving up this method while you got such problems?”*

Respondent: *“I thought if we stop using, we will be pregnant. [It’s] only little headache, [so] if we can endure, we can continue injection.”* – Continuer



### *Positive Support for Method Continuation*

Continuers described positive support for contraceptive use from individuals in their social networks, especially from husbands and health providers. Women in the Continuer group reported that husbands encouraged them to initiate methods and provided emotional and practical support for continuation. Husbands who motivated their wives to initiate contraception often cited the benefits of birth spacing, such as securing the family's economic stability, as reasons to begin a method. In some cases, the husbands were even able to persuade women who may have been initially reluctant to use contraceptives.

*"I didn't want to do the birth spacing, my husband told that...our children are still young and we don't have a house. So we should do the birth spacing in a long period until our children get grown bigger and we have a house, then we will have another baby. He motivated me like this, so I decided to do the birth spacing."* - Continuer

In addition to supporting women to buy and use contraceptives, husbands also provided their wives with functional support for method continuation. Some Continuers reported that husbands aided them with method compliance, for example reminding them to take the daily pill:

Interviewer: *"[Your husband] encouraged you to buy [pills], right?"*

Respondent: *"Yes, he encouraged me to buy. When I forgot to take, he reminded me to take the pills."*

Interviewer: *"He always reminded you?"*

Respondent: *"Yes. Sometimes I forgot to take the pill. When he was awake at late night, he awakened me and asked if I took the pill already."*

Despite reports of positive support, Continuers still needed to have complete buy-in from husbands for method use. Husbands were essential in the initial contraceptive decision-making process and some wives reported a need for husbands' complete agreement in order for contraception to occur. Sometimes, a husband's fertility preference (for more children) trumped the woman's desire for family planning, and even Continuers felt obligated to defer to husbands' preference for contraception.

*"If we [want] to use, we have to agree with each other. If our husbands don't allow us to use, we don't use [contraceptives]"*. – Continuer

*"I have to discuss with my husband because I can't decide to do it by myself.*

*Sometimes, I don't want to have another baby, but he does."* – Continuer

Husbands' support was also essential to the continuation process. For some women, method use only continued in the absence of severe side effects. Women reported that some husbands shared their fear of side effects and questioned the value of continuation in the face of difficulties:

*"[My husband] said 'If your health was good, let's go to be injected [again], if it's [not good], why would you want to be injected?'"* – Continuer

Besides the support of husbands, women who continued contraceptive methods also had a higher level of consultation and reliance on the advice of health care providers, both for information on methods and subsequent advice on dealing coping with side effects. Continuers found health care providers (mainly identified as doctors) to be a trusted source information on types of methods and their use:

Interview: *"How did you know about contraceptives?"*

Respondent: *"I heard from doctor and bought [the pill]. We have a lot of*

*children, we need to take advice from doctor. Why not take his advice?” –*

Continuer

Providers also actively dispelled common misconceptions about method side effects, putting to rest women’s concerns stemming from rumors:

*“The doctor explained that don’t believe their rumors; it is ok. Then I don’t feel worry at all.” – Continuer*

In addition to providing informational support and reassurance about methods, health care providers prepared Continuers for expected side effects, which enabled them to cope with initial symptoms resulting from method use. Providers often encouraged women to endure the side effects and allow the body to grow accustomed to the new method. By establishing advanced expectations for actual side effects, providers were able to ease women’s concerns about contraception:

*“He advised as if when we have this problem; we thought we are not appropriate to the medicine and he also said we will be fine when we get used to the medicine. And then I trust the doctor and then started to use it.” – Continuer*

For those who experienced side effects, most reported seeking out the advice of health providers to resolve the issues or find a different method to use. Contrary to the Discontinuer group, women in the Continuer group utilized health care providers as their initial and primary source of follow-up care for contraceptive methods (as opposed to husbands or others):

Interviewer: *“The [side effects] you faced, [when you first got the injection], have you met anyone to solve the problem?”*

Respondent: *“[I] went to see the doctor at once, [to see if it was] injected wrongly... if the doctor said that it’s normal, then, we’re normal” – Continuer*

## **Role of Others in Use**

This section summarizes the role that certain individuals in the women's social networks played in their contraceptive use. Although the primary data for these individuals has been presented above, this summary highlights the overall effect of each actor in the social network, both generally and specifically for each group.

### *Husbands*

Of all the social network influences on contraceptive use described by participants, the most prominent was that of the husband. Husbands' input either encouraged or dissuaded women from using a method and they were ubiquitous in the contraceptive decision-making process.

Participants in every user group mentioned the importance of the husband's role. In some cases, husbands were the one to encourage a woman to use, often to better the family's financial situation or to protect the health of mother and child. In other cases, husbands were the ones to impose their fear on the women and suggest discontinuation at onset of side effects. Husbands even overrode a woman's desire to initiate contraceptive use, if he himself wanted more children.

Regardless of husbands' specific attitudes, the overall sentiment among participants is that the husband holds the key to a couple's utilization of a modern method. Secrecy in contraceptive use is not a common occurrence in this population and nearly all women mentioned discussing contraception with their husbands. Husbands were also a source of misinformation or rumor, but to a lesser degree than elders or other women.

The importance of the husband's influence is clearly played out through the experiences of the three different user groups. One prominent barrier to initiation reported by Non-users was the lack of the husband's desire to use contraception. Some Discontinuers cited similar reasons when asked why they did not re-initiate use, and explained that they were sometimes encouraged by their husband to cease a method once side effects appeared. While Continuers reported overall positive support from individuals in their social networks, husbands in particular encouraged these women to initiate a method, work through early side effects and in some cases even help with compliance (for example, reminding them to take pills). However, even in the case of Continuers, contraception only occurred within the boundaries of a husband's complete approval.

#### *Health care providers*

Health care providers, either in practice or in absence, greatly contributed to a woman's use of methods. More Continuers than any other type of user mentioned consulting a provider both before starting a method and during its use, particularly if they experienced side effects.

Discontinuers, as a group, also tended to have consistent interaction with providers, although fewer of them than Continuers reported following up with a doctor once side effects emerged.

Non-users had the least amount of time with providers, although it is unclear whether this is due to accessibility or because of their general hesitation to pursue a method. The varying levels of health care interaction for the three groups imply that access and utilization of health providers may contribute to the initiation and continuation of method use.

Providers' own behavior also influenced women's contraceptive behavior. Notably, the common account among all three groups was that providers did not initiate conversation on methods and did not recommend one over the other. Most Continuers and Discontinuers reported that they themselves initiated the discussion of methods with the provider and either asked for a method with which they were familiar or were given the choice of multiple options without provider influence. With regards to side effects, however, Continuers and Discontinuers relayed that providers often warned of common side effects and encouraged them to follow-up with the doctor should problems persist. Continuers had a higher tendency to take this advice; Discontinuers, on the other hand, often made the decision to quit without the input of a health professional.

#### *Elders and Other Women*

Elders and other women in the participants' communities were the most important source of contraceptive myths. Their warnings against the use of contraceptives instilled and reinforced the fear of perceived side effects and long-term damage to fertility that many of the participants mentioned. Elders also emphasized the notion of an appropriate time and age at which a woman should begin using contraceptives. Other women in the community, who had negative experiences with contraception, also generated and reinforced suspicions of methods. These women most often included female relatives or peers of the participants.

Reports of elders' and other women's influence were made in all three groups. Non-users, Discontinuers and Continuers all made multiple references to cautionary advice relayed to them by elders and to rumors spread amongst female peers. However, Continuers were less likely than

women in the other two groups to rely on elders or other women as a primary source of contraceptive advice.

### **Profiling Continuers, Discontinuers, and Non-users**

The following section summarizes the major delineations between the three user groups' characteristics in an effort to understand their different contraceptive behaviors.

#### *Continuers*

Women in the continuer group had a high knowledge of and trust in modern contraceptive methods. During interviews, women in this group were able to spontaneously identify nearly all modern forms of contraceptives, and expressed a preference in daily pills and hormonal injections as a first-line form of birth spacing. Women in this group report experienced fewer side effects than those in the Discontinuer group.

Continuers are by far the least prone to believing rumors about hormonal methods or having glaring misconceptions of their effects. However, they can still identify similar myths to those presented by the other two groups. Although Continuers acknowledge some of the same fears of real and perceived side effects as the other groups, the benefits of method use outweigh the burdens for this group and the idea of “endurance” and “patience” for these difficulties is what sets them apart. While a number of Continuers report troublesome side effects during the early course of use, rather than abandoning their method they attempt to resolve their side effects either on their own or with the guidance of a provider. In the event that side effects continue

beyond a reasonable period, women seek out different methods until they find one that was effective and “appropriate” for them.

Continuers also express confidence in their ability to select, obtain and use a contraceptive method. When faced with difficult side effects, these women dismiss the mythical threat of perceived side effects, citing their own common sense as reason to endure through the initial period of adjustment to a new method. There is a high degree of self-reliance among Continuers, both in seeking out a method and in persisting through the difficult initial stages of adjustment. Although they acknowledged advice from elders and others as being important, they themselves (in conjunction with their husbands) were the primary contraceptive decision-makers.

### *Discontinuers*

Discontinuers were able to identify numerous modern methods, but had only a vague understanding of IUDs and implants, and at times confused the two methods. When prompted about experienced and perceived side effects, this group named far more side effects than the Continuer group. In particular, Discontinuers identified numerous severe perceived side effects such as cancer, “irritated fallopian tubes” and “spoiled hand” as a result of implant use.

Compared to Continuers, Discontinuers were more fearful of side effects, both perceived and real, and had less tolerance for the initial discomforts of hormonal method use. They were susceptible to rumors of myths, though their experience with methods rendered them slightly more knowledgeable about the difference between myth and reality than those who have never used a method. For this group, the onset of real side effects lent immediate credence to fears of



perceived longer-term effects such as cancer or infertility and can lead to the discontinuation of use. Even in the absence of side effects, the fear associated with methods overtook some users and led them to quit. Along with the discomfort, some women reported that their side effects prevented them from working, suggesting that the actual side effects may be too difficult for some to bear.

Fear of alternative methods of modern contraception and continued fear of initial negative experiences were a major hindrance in continuation or initiation of a new method. Due to negative experiences, greater belief in rumors and a lack of information/knowledge on other methods, Discontinuers were more reluctant to test out a variety of modern methods in order to find an appropriate one. Discontinuers noted that in some cases they were advised by their doctor to cease use of a method following discomfort from side effects.

With regards to their confidence in obtaining and using modern methods, Discontinuers possessed confidence to attempt methods. However, they were more vulnerable to the fears associated with side effects than Continuers and often felt a diminished capacity when it came to re-initiating a method. This group was also more prone to being swayed by the negative influence of others such as elders or female peers and tended to rely on these sources for contraceptive advice. This impediment may be attributable to other factors such as lack of information or lack of social support.

*Non-users*

Non-users had the least amount of knowledge about modern contraceptive methods, compared to the other user groups. Though able to name most methods, Non-users did not have a good grasp of how methods work, particularly IUDs and implants (which are not trusted by this group). Instead, Non-users relied on a variety of traditional methods such as the calendar method, withdrawal and traditional Khmer folk remedies. When queried about the benefits and drawbacks of specific methods, Non-users list fewer benefits of hormonal methods than Continuers or Discontinuers, but named the largest amount of perceived side effects. These perceived side effects ranged from normal symptoms of hormonal methods to exaggerated effects which included tumors, polio and infertility.

This group was the most fearful and accepting of myths associated with contraceptive use. They were greatly impacted by rumors of side effects as well as others' negative experiences. Therefore, Non-users "dared not" even attempt to use contraceptive methods. In particular, they feared the potential medical cost associated with using hormonal methods. Non-users were highly vulnerable to the negative influence of elders and female peers, and could be subject to their husband's full control over contraceptive decision-making.

Women who had never used a contraceptive reported less interaction with formal health providers than women in the other two groups. Overall use of formal health care seemed lower for this group and the few who had attempted to consult a doctor for method use had been unsuccessful due to issues of timing (i.e., not the right time to start a method). For some, interaction with a health care provider is still not sufficient in overcoming the fears that bar initiation of contraceptive use.

Women in the Non-user group displayed a distinct lack of “courage” to use hormonal birth spacing methods. They did not feel confident about their knowledge of methods and were even less secure about their ability to obtain and use contraceptives. Many in the Non-user group lacked the proper information and assurance on methods from a trusted medical source, which only further discouraged use.

### *Similarities between Groups*

Despite their differences, the women in these various groups still had a number of similarities. All women expressed a desire to delay or prevent births and associate such behavior with an increase in benefits such as more time to work, more money for the family and better overall health for both mother and child. Women from each group put trust in modern methods and most viewed traditional forms of birth spacing as being ineffective and outmoded. However, regardless of user type, all women reported knowing of and, in some cases, believing in myths and misconceptions surrounding modern contraceptive use. The most notable of these myths was the association between hormonal methods and cancer risk, a misconception held by women in all three groups. In all cases, husbands were the predominant influence in use, despite the significance of elders or other women in spreading rumors about methods.

### **Discussion**

This study examines the misconceptions about and barriers to contraceptive method use among different contraceptive user types in Cambodia. The analysis revealed an abundance of myths

and misconceptions about contraceptives, especially about exaggerated side effects. Women reported a belief in such side effects as cancer, polio and infertility. Rumors and myths were generated and propagated within women's social networks, most notably from other women, elders and, in some cases, husbands. Rumors, in turn, created a fear of contraceptive use, which hindered some women from initiating methods and inhibited others from continuing once on a method. These findings are similar to evidence from numerous other countries which show that misconceptions about contraceptives are widely prevalent, are disseminated through key actors in a woman's social network, and can contribute to under-utilization of contraceptives.<sup>97-104</sup>

Husbands were also an essential element in contraceptive decision-making. Women who were successful in continuing a method were largely supported by their husbands. However, this study demonstrates that partners affect both initiation *and* continuation of methods in positive and negative ways. Those in the Continuer group explained how their husband supported them both in principle (for example, by supporting the desire to reduce children) and in concrete ways (for example, by reminding them to take their daily pill). On the other hand, those who discontinued method use or who never initiated a method cited husbands as a barrier to contraception.

By looking at the three distinct user groups, this study was able to identify differences between them and to discern the specific characteristics that contribute to Continuers' success. All of the women in the study expressed a desire to delay or limit future births, yet not all succeeded in initiating and continuing a method. Viewing these groups side by side, one can observe that knowledge of a method, initial dismissal of rumors and a husband's support are crucial to initiation. To continue on a method, one must have sustained support from the husband,

continued interaction with health providers and a certain degree of self-confidence. Health providers played a particular role in conveying accurate, reliable information that women could use to combat myths, preparing women for expected side effects, reassuring them to endure side effects and, if need be, helping them select a new method.

The concept of self-confidence was perhaps the most important to the initiation and continuation of contraception. Women who were successful in initiating and continuing methods were able to dismiss myths and rely on their own judgment about methods. Furthermore, Continuers were confident in their ability to dismiss rumors of contraceptives and find a method that was “appropriate” for them. This idea is similar to that of self-efficacy, which describes an individual’s belief that they are capable of achieving a specific goal.<sup>153</sup> Self-efficacy has been shown to predict contraceptive intentions and actual use in numerous populations, and is conceptually parallel to the idea of self-confidence presented here.<sup>154-159</sup>

This study has a few limitations. First, the non-random sampling procedure reduces the representativeness of the results; women who are more interested in contraception may have been more likely to respond to recruitment. The snowball procedure used to recruit additional participants may also have biased the sample; women may be likely to refer women who are like themselves. As with any qualitative endeavor, the richness and depth of data is a trade-off for generalizability of the findings. Future qualitative studies of barriers to contraception should include perspectives from key influences such as partners, physicians or elders in order to better understand each player’s role in generating support or discouragement for contraceptive use.

## **Chapter 5: Conclusions and Implications for Application**

The overarching aim of this dissertation was to understand the determinants of and barriers to modern contraceptive use in Cambodia. Although efforts have been made, over the recent decade, to improve contraception and to empower women's control over their fertility in Cambodia, a considerable number of women continue to experience an unmet need for modern methods. The consequences of this unmet need are reflected in a staggering maternal mortality rate, a high rate of infant mortality, and a total fertility rate that remains above the self-expressed desires of Cambodian women.<sup>7,8</sup> By utilizing novel approaches in both quantitative and qualitative research in Cambodia, this dissertation revealed several key themes in understanding challenges to contraception in this context. These findings not only offer insights into the problem of unmet need in Cambodia, but further, they present new and promising areas for future programmatic applications. This section summarizes the core conclusions of both studies and provides suggestions for translating the research into actionable programmatic strategies.

As shown in both papers, husbands play a critical role in family planning in Cambodia. Findings from the qualitative data reveal that husbands are an essential ingredient to contraceptive initiation and continuation. In some cases, women were not able to initiate or continue a method due to a husband's disapproval, and all women shared that the husband's support was necessary for contraceptive success. The quantitative results show that even when controlling for individual demographic factors and for other social support, the

husband's attitude towards contraceptives played a strong role in determining women's use. Furthermore, if a woman was uncomfortable in communicating with her husband about modern methods, her likelihood of using contraception was also diminished.

The powerful effect of husbands on women's contraceptive use make men a natural target for family planning programming. Male involvement in family planning has been a key message of the field since the 1994 Cairo population conference, and the idea has been supported broadly in other research and policy initiatives.<sup>150-152</sup> However, the caveat demonstrated by this research is that men's full usurpation of the couple's decision-making can result in a reduced capacity for women's contraceptive use. Reproductive health programs should, thus, strive to encourage communication and joint decision-making about contraceptives among couples desiring to space or limit births. Furthermore, programs should aim to increase general knowledge, approval of and support for modern contraceptives among men and should orient men towards becoming advocates for their wife's contraceptive initiation and continuation.

Communication between partners can be fostered through targeted outreach programs that address knowledge of contraceptives and gender issues in contraceptive decision-making. Previous programs aimed at male involvement in family planning have shown that although mass media campaigns can improve men's awareness of contraceptive issues, real change occurs at the interpersonal level.<sup>160-163</sup> Potential program elements include 1) training workshops in which men are educated about contraception and given a "place" in the family planning process; 2) participatory discussions between partners to improve communication about contraception and help balance gender dynamics; 3) community-based discussions and activities about family

planning led and attended by local men; 4) training local men to become advocates for family planning in their own communities (thus creating sustainability of male involvement initiatives) and 5) community mobilization activities (which include family planning-centered events such as theater, music, etc.) that motivate all members of the community to take part in improving men's involvement in family planning. Extolling the economic benefits of family planning, in addition to the benefits to the partner and family as a whole, should be particularly effective for men in countries like Cambodia, where men inhabit traditional gender roles.<sup>163</sup> Furthermore, providers and health clinics can encourage men's involvement in reproductive health by providing services that are more "male-friendly." This could involve hiring more male service providers, providing services that are aimed specifically towards men (such as testing for sexually transmitted disease, vasectomies or general physical exams), improving clinic hours to meet the scheduling needs of men in the community, providing a male-only section or hours to decrease embarrassment men may face when attending reproductive health clinics, ensuring the privacy of all clients (particularly men) and actively reaching out to men in the community through some of the activities suggested above.<sup>164-166</sup> Finally, policy efforts should make male involvement a fundamental tenet of family planning initiatives through explicit funding and policy language for male involvement programs. By creating a better understanding of contraceptive methods among men, they, in turn, can better support their partners' efforts to obtain and utilize contraceptives.

Another important theme emerging from this research is the importance of women's self-confidence in their own contraceptive knowledge and decision-making. Though women reported having "knowledge" of methods (in both papers), qualitative probing revealed that this



knowledge is tainted by incorrect beliefs about exaggerated short and long-term side effects of methods. Moreover, women reported learning of these misconceptions through rumors generated by important members of their social network. The negative effect of detractors such as elders was echoed in the quantitative data, while the normative benefit of peer support was correlated with higher contraceptive use in the case of low-parity women. These findings suggest that although women may be informed of different types of contraceptive methods and their benefits, they are still susceptible to the influence of others, especially in terms of negative influence. Furthermore, women who are able to obtain correct information and have confidence in their knowledge and ability to use methods are better equipped to initiate and continue a modern method. In fact, women who were successfully continuing a contraceptive method in the case of the qualitative data were also those who were able to dismiss myths and to rely on their own informed opinion of contraceptives.

To improve women's ability to effectively use contraceptive methods, programs should work to increase their knowledge of contraceptives and give them confidence in their method choices. Particular emphasis should be placed on combating negative myths associated with contraceptive side effects and on instilling women with the tools needed to address both their perceived fear of side effects as well as the side effects they actually experience. Such change can be achieved through a variety of means. Programs can develop tailored health communication campaigns targeted at the specific fears and misconceptions prevalent within this population. Behavior change communication (BCC) campaigns, which include mass media and interpersonal approaches, have long been utilized in the field of family planning to address both individual and environmental factors and have been correlated with improved reproductive health knowledge

and behavior.<sup>167-171</sup> Mass media and social marketing strategies can use the information obtained from this research to tailor their message to Cambodian women's specific contraceptive fears. These strategies could effectively supplant the harmful influence of individuals such as elders by bolstering women's knowledge of contraceptives and by creating a normative environment for contraceptive use.

Interpersonal communication methods such as client-patient interventions can further develop women's confidence in methods and foster their ability to appropriately manage side effects, once a method has been initiated.<sup>172,173</sup> To this end, the data from this dissertation support a redoubled effort to involve health care providers in educating and supporting women in their contraceptive decision-making. In the qualitative interviews, women expressed a strong trust in the reproductive advice and information relayed by health care providers. Moreover, women who continued on a contraceptive method (in the qualitative study) credited their physicians with establishing expectations for potential side effects and coaching them through either enduring the initial effects of hormonal methods or through selection of an alternative modern method. However, participants did convey that physicians rarely initiate conversations about family planning, placing the burden entirely on women. Evaluations of provider-centered interventions have shown that health care providers can be an effective tool in influencing positive reproductive behavior.<sup>173-175</sup> Programs should, therefore, encourage providers to initiate discussions about contraceptives with female patients and ensure an environment for adequate follow-up aimed at securing contraceptive continuation.

There are several concrete methods by which to strengthen providers' ability to help women meet their contraceptive needs. First, providers themselves should be educated about their role in the family planning process and be given up to date information on the latest available methods. Programs can provide targeted training on family planning for community-based providers (in both private and public clinics), and teach them how to improve client-provider interactions around contraception.<sup>176</sup> Key objectives of this training should be to show providers how to 1) offer the client adequate information on a variety of methods; 2) give individualized care that is specific to the needs and concerns of each client; 3) dispel myths and misconceptions about method side effects and; 4) foster open and honest communication with the client.<sup>177</sup> Particular emphasis should be placed on providing follow-up care. As we saw in the qualitative paper, many women who discontinued contraceptive use did so without proper follow-up referral with their health care providers. Training can educate providers on the importance of scheduling return visits, establishing adequate expectations for side effects, encouraging clients to return if they have problems with their method and offering other appropriate contraceptive methods should initial methods be unsatisfactory.<sup>177</sup> Training of providers take a participatory format, such as workshops or peer-to-peer activities. Furthermore, providers should be trained as trainers themselves, so that they can share their education with other service providers and create a sustainable system for improving reproductive health services.<sup>178</sup>

In addition to programmatic applications, this study unveils new areas for future research. The role of husbands in the contraceptive decision-making process, while demonstrated here, can still be further explicated. In particular, studies should discern the motivations behind men's support for contraceptives (or lack thereof) by including men directly in the research process.

Furthermore, future research should tease apart the etiologic nature of partner dynamics to determine whether women select partners on the basis of characteristics supportive of contraceptive use, or if women shape their partner's attitudes about contraception over time (and vice versa). Such studies would require long-term longitudinal measures, which could capture the evolution of contraceptive decision-making among couples. Longitudinal studies could also be used to evaluate the role of women's fertility intentions and birth spacing motivations in contraceptive use at all stages (including initiation, continuation and discontinuation).

This dissertation uses both women's own words and focused survey research to understand the difference between those women who use modern contraceptive methods and those who do not. The results of this study suggest applications for future family planning programming in several targeted areas. Women need information on contraceptive methods that is not only accurate and trusted, but that can counteract the negative rumors disseminated throughout their social networks. Furthermore, husbands are an indispensable element to contraceptive initiation and continuation; therefore, efforts should aim to garner men's involvement, improve communication about contraception between couples and to encourage men to be advocates for their wife's contraceptive initiation and continuation. Health care providers are in a position to supply women with reliable contraceptive knowledge and help combat misconceptions; thus, they should be trained as effective promoters of modern methods. Finally, future research in both this and other settings should continue to explore the intricacies of individual and interpersonal dynamics on contraceptive use.

Programmatic and research recommendations are made in light of the current development efforts in Cambodia. Despite being a country that only recently recovered from internal conflict, Cambodia has had an influx of development aid and has made enormous advances in reproductive health in the past decade. By addressing the dissertation themes as part of a broader family planning program and policy strategy, stakeholders can better help women meet their fertility desires, subsequently reducing unmet need for contraceptives and improving reproductive health both in Cambodia and beyond.

## References

1. De Walque D. The Long-Term Legacy of the Khmer Rouge Period in Cambodia. World Bank 2004.
2. UNFPA. United Nations Population Fund Annual Report. UNFPA, New York 1991.
3. Cambodia's recent history has major population impact. POPULATION HEADLINERS 1998 Mar-Apr; 263:12
4. Ministry of Health. National Maternal and Child Health Policies and Planning. National Maternal and Child Health Centre: Phnom Penh 1995.
5. United Nations. Report of the International Conference on Population and Development, Cairo. A/conf.171/13, New York 2004
6. National Institute of Public Health, National Institute of Statistics [Cambodia] and ORC Macro. Cambodia. Demographic and Health Survey 2000. Phnom Penh, Cambodia and Calverton, Maryland, USA 2001.
7. National Institute of Public Health, National Institute of Statistics [Cambodia] and ORC Macro. Cambodia. Demographic and Health Survey 2005. Phnom Penh, Cambodia and Calverton, Maryland, USA 2006.
8. World Health Organization. WHO Statistical Information System. Accessed November, 2008: <http://www.who.int/whosis/en/>.
9. ORC Macro. Measure Demographic and Health Survey StatCompiler. Accessed November, 2008: <http://www.statcompiler.com/>
10. United Nations. United Nations Population Division Database. Accessed September, 2008: <http://www.un.org/esa/population/unpop.htm>
11. Casterline JB, Sinding SW. Unmet need for family planning in developing countries and implications for population policy, Popul Dev Rev 2000; 26(4):691–723.
12. Dixon-Mueller R, Germain A. Stalking the elusive “unmet need” for family planning, Stud Fam Plann 1992; 23(5):330–335.
13. Westoff CF, Bankole A. The potential demographic significance of unmet need, Int Fam Plan Perspect 1995; 22(1):16–20.
14. Westoff CF, Pebley AR. Alternative measures of unmet need for family planning in developing countries, Int Fam Plan Perspect 1981; 7(4):126–136.

15. U.S. Agency for International Development (USAID). Family Planning and Reproductive Health Programs: Saving Lives, Protecting the Environment, Advancing US Interests, Washington, DC: USAID, 2006.
16. Sedgh G, Hussain R, Bankole A, Singh S. Women with an unmet need for family planning in developing countries and their reasons for not using a method. *Occasional Report*, New York: Guttmacher Institute, 2007, No. 37.
17. Sulak P. Unwanted pregnancies: Understanding contraceptive use and benefits in adolescents and older women. *Am J Obstet Gynecol* 1993;168:2042–7.
18. Shane B. Family planning saves lives. Washington (DC): Population Reference Bureau, 1997.
19. Klima CS. Unintended pregnancy: Consequences and solutions for a worldwide problem. *Jour Nurse-Midwifery* 1998; 43(6):483-491.
20. Afifi M. Physical violence and some reproductive health variables among currently married Egyptian women. *J Egypt Public Health Assoc.* 2008;83(1-2):49-66.
21. Bourassa D, Bérubé J. The prevalence of intimate partner violence among women and teenagers seeking abortion compared with those continuing pregnancy. *J Obstet Gynaecol Can.* 2007 May;29(5):415-23.
22. Shah IH, Say L. Maternal mortality and maternity care from 1990 to 2005: uneven but important gains. *Reprod Health Matters.* 2007 Nov;15(30):17-27.
23. Cheng D, Schwarz EB, Douglas E, Horon I. Unintended pregnancy and associated maternal preconception, prenatal and postpartum behaviors. *Contraception.* 2009 Mar;79(3):194-8. Epub 2008 Oct 30.
24. Westoff CF. New Estimates of Unmet Need and the Demand for Family Planning. DHS Comparative Reports No. 14. Calverton, Maryland, USA. Macro International, 2006
25. Gillespie D, Ahmed S, Tsui A, Radloff S. Unwanted fertility among the poor: an inequity? *Bull World Health Organ.* 2007 Feb;85(2):100-7.
26. Ronsmans C, Graham WJ. Maternal mortality: Who, when, where, and why.” *Lancet*, 2006; 368(9,542): 1,189–1,200.
27. Forrest J. Epidemiology of unintended pregnancy and contraceptive use. *J Obstet Gynaecol* 1994;170:1485–1488.
28. Fawcus SR. Maternal mortality and unsafe abortion. *Best Pract Res Clin Obstet Gynaecol.* 2008 Jun;22(3):533-48. Epub 2008 Feb 4

29. Ahman E, Shah I. Unsafe abortion: Global and regional estimates of the incidence of unsafe abortion and associated mortality in 2000. Fourth edition. Geneva: World Health Organization 2004.
30. Grimes DA, Benson J, Singh S, Romero M, Ganatra B, Okonofua FE, Shah IH. Unsafe abortion: The preventable pandemic. *Lancet*. 2006; 368(9,550): 1,908–1,919.
31. Singh S et al., Adding It Up: the Benefits of Investing in Sexual and Reproductive Health Care, New York: The Alan Guttmacher Institute (AGI) and UN Population Fund, 2003.
32. World Health Organization. Maternal mortality in 2005: Estimates developed by WHO, UNICEF, UNFPA, and the World Bank. World Health Organization: Geneva, 2007.
33. Joyce T, Kaestner R, and Korenman S. The stability of pregnancy intentions and pregnancy-related maternal behaviors. *Matern Child Health J*. 2000 Sep;4(3):171-8.
34. Kost K, Landry DJ, Darroch JE. The effects of pregnancy planning status on birth outcomes and infant care. *Fam Plann Perspect*. 1998 Sep-Oct;30(5):223-30.
35. Orr ST, Miller CA, James SA, Babones S. Unintended pregnancy and preterm birth. *Paediatr Perinat Epidemiol*. 2000 Oct;14(4):309-13.
36. Sable MR, Wilkinson DS. Impact of perceived stress, major life events and pregnancy attitudes on low birth weight. *Fam Plann Perspect*. 2000 Nov-Dec;32(6):288-94.
37. [http://www.ncbi.nlm.nih.gov/libproxy.lib.unc.edu/pubmed/16684381?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed\\_ResultsPanel.Pubmed\\_DefaultReportPanel.Pubmed\\_RVDocSum](http://www.ncbi.nlm.nih.gov/libproxy.lib.unc.edu/pubmed/16684381?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum)Hromi-Fiedler AJ, Pérez-Escamilla R. Unintended pregnancies are associated with less likelihood of prolonged breast-feeding: an analysis of 18 Demographic and Health Surveys. *Public Health Nutr*. 2006 May;9(3):306-12.
38. Marston C, Cleland J. Do unintended pregnancies carried to term lead to adverse outcomes for mother and child? An assessment in five developing countries. *Popul Stud (Camb)*. 2003;57(1):77-93.
39. Chalasani S, Casterline JB, and Koenig MA. Consequences of unwanted childbearing: A study of child outcomes in Bangladesh.” Paper presented at the Annual Meeting of the Population Association of America, New York, 29–31 March, 2007.
40. Montgomery MR, Lloyd CB, Hewett PC, Heuveline P. The Consequences of imperfect fertility control for children’s survival, health, and schooling. *Demographic and Health Surveys Analytical Reports No.7*. Calverton, MD: Macro International, 1997.
41. Shapiro-Mendoza C, Selwyn BJ, Smith DP, Sanderson M. Parental pregnancy intention and early childhood stunting: findings from Bolivia. *Int J Epidemiol*. 2005 Apr;34(2):387-96.



42. Sidebotham P, Heron J; ALSPAC Study Team. Child maltreatment in the "children of the nineties:" the role of the child. *Child Abuse Negl.* 2003 Mar;27(3):337-52.
43. Zuravin SJ. Unplanned childbearing and family size: their relationship to child neglect and abuse. *Fam Plann Perspect.* 1991 Jul-Aug;23(4):155-61.
44. Joyce TJ, Grossman M. Pregnancy wantedness and the early initiation of prenatal care. *Demography.* 1990 Feb;27(1):1-17.
45. Goto A, Yasumura S, Yabe J, Anazawa Y, Hashimoto Y. Association of pregnancy intention with parenting difficulty in Fukushima, Japan. *J Epidemiol.* 2005 Nov;15(6):244-6.
46. Eggleston E. Unintended pregnancy and women's use of prenatal care in Ecuador. *Soc Sci Med.* 2000 Oct;51(7):1011-8.
47. Magadi MA, Madise NJ, Rodrigues RN. Frequency and timing of antenatal care in Kenya: explaining the variations between women of different communities. *Soc Sci Med.* 2000 Aug;51(4):551-61.
48. Saleem S, Bobak M. Women's autonomy, education and contraception use in Pakistan: a national study. *Reprod Health.* 2005 Oct 21;2:8.
49. Al Riyami A, Afifi M, Mabry RM. Women's autonomy, education and employment in Oman and their influence on contraceptive use. *Reprod Health Matters.* 2004 May;12(23):144-54.
50. Mumtaz Z, Salway S. 'I never go anywhere': extricating the links between women's mobility and uptake of reproductive health services in Pakistan. *Soc Sci Med.* 2005 Apr;60(8):1751-65.
51. Stephenson R, Beke A, Tshibangu D. Contextual influences on contraceptive use in the Eastern Cape, South Africa. *Health Place.* 2008 Dec;14(4):841-52. Epub 2008 Jan 26.
52. Birdsall N, Kelley AC, Sinding SW, eds. *Population matters: demographic change, economic growth, and poverty in the developing world.* Oxford: Oxford University Press, 2001.
53. Lloyd CB. Investing in the next generation: the implications of high fertility at the level of the family. In: Cassen R, ed. *Population and development: old debates, new conclusions.* Washington: Overseas Development Council 1994: 181–202.
54. Bloom D, Williamson JG. Demographic transitions and economic miracles in emerging Asia. *World Bank Econ Rev* 1998; 12: 419–55.
55. Greene ME, Merrick T. Poverty reduction: does reproductive health matter? *Health, Nutrition and Population Discussion Paper.* Washington: The World Bank. 2005.

56. Eastwood R, Lipton M. The impact of changes in human fertility on poverty. *J Dev Stud* 1999; 36: 1–30.
57. Chatterjee P. Cambodia tackles high maternal mortality. *Lancet*. 2005 Jul 23-29;366(9482):281-2.
58. Koum K, Hy S, Tiv S, Sieng T, Obara H, Matsui M, Fujita N. Characteristics of antepartum and intrapartum eclampsia in the National Maternal and Child Health Center in Cambodia. *J Obstet Gynaecol Res*. 2004 Apr;30(2):74-9.
59. Desai M, ter Kuile FO, Nosten F, McGready R, Asamo K, Brabin B, Newman RD. Epidemiology and burden of malaria in pregnancy. *Lancet Infect Dis*. 2007 Feb;7(2):93-104. Review.
60. Fetters T, Vonthanak S, Picardo C, Rathavy T. Abortion-related complications in Cambodia. *BJOG*. 2008 Jul;115(8):957-68; discussion 968.
61. Rahman A, Katzive L, Henshaw SK. A global review of laws on induced abortion, 1985-1997. *Int Fam Plann Persp*. 1998 Jun;24(2):56-64.
62. Anderson VP, Jack S, Monchy D, Hem N, Hok P, Bailey KB, Gibson RS. Co-existing micronutrient deficiencies among stunted Cambodian infants and toddlers. *Asia Pac J Clin Nutr*. 2008;17(1):72-9.
63. The Provision of Health Care in Cambodia at a Glance. Economic Institute of Cambodia, Phnom Penh, Cambodia 2004.
64. Asian Development Bank. A Fair Share for Women: Cambodia Gender Assessment. Phnom Penh 2004.
65. Westoff CF, Bankole A. The contraception-fertility link in sub-Saharan Africa and in other developing countries. DHS Analytic Studies No. 4. Calverton, Maryland, USA. Macro International, 2001.
66. Bongaarts, John and Judith Bruce. 1995. “The causes of unmet need for contraception and the social content of services.” *Studies in Family Planning* 26(2): 57–75.
67. Rutstein SO, 2002. Fertility Levels, Trends and Differentials 1995–1999. DHS Comparative Reports No.2. ORC Macro. Calverton, MD.
68. Khan S, Mishra V, Arnold F, Abderrahim N. Contraceptive trends in developing countries. DHS Comparative Reports No.16. ORC Macro. Calverton, MD, 2007.

69. Gereltuya A, Falkingham J, Brown J. Determinants of current contraceptive use and method choice in Mongolia. *J Biosoc Sci.* 2007 Nov;39(6):801-17.
70. Laskar MS, Mahbub MH, Yokoyama K, Inoue M, Harada N. Factors associated with contraceptive practices of married women in Bangladesh with respect to their employment status. *Eur J Contracept Reprod Health Care.* 2006 Sep;11(3):220-7.
71. Kayembe PK, Fatuma AB, Mapatano MA, Mambu T. Prevalence and determinants of the use of modern contraceptive methods in Kinshasa, Democratic Republic of Congo. *Contraception.* 2006 Nov;74(5):400-6.
72. Lasee A, McCormick JB. Demographic and socio-economic determinants of contraceptive use in a low income community of Karachi. *J Pak Med Assoc.* 1996 Oct;46(10):228-31.
73. Chandhick N, Dhillon BS, Kambo I, Saxena NC. Contraceptive knowledge, practices and utilization of services in the rural areas of India (an ICMR task force study). *Indian J Med Sci.* 2003 Jul;57(7):303-10.
74. Casterline, John B., Zeba A. Sathar, and Minhaj ul Haque. 2001. "Obstacles to contraceptive use in Pakistan: A study in Punjab." *Studies in Family Planning* 32(2): 95–110
75. Stover J. Revising the proximate determinants of fertility framework: what have we learned in the past 20 years? *Stud Fam Plann.* 1998 Sep;29(3):255-67.
76. Saleem A, Pasha GR. Women's reproductive autonomy and barriers to contraceptive use in Pakistan. *Eur J Contracept Reprod Health Care.* 2008 Mar;13(1):83-9.
77. Govindasamy P, Malhotra A. Women's position and family planning in Egypt. *Stud Fam Plann.* 1996 Nov-Dec;27(6):328-40.
78. Brofenbrenner U. *The ecology of human development: Experiments by nature and design.* Cambridge, MA: Harvard University Press, 1979.
79. Green RA. Empty pockets: Estimating the ability to pay for family planning. Paper presented at the annual meeting of the Population Association of America, Atlanta, May, 2002.
80. Casterline JB, Perez AE, Biddlecom A. Factors underlying unmet need for family planning in the Philippines. *Stud Fam Plann.* 1997; 28(3): 173–191.
81. Bertrand JT, Seiber E, Escudero G. Contraceptive dynamics in Guatemala: 1978–1998. *Int Fam Plan Persp.* 2001; 27(3): 112–136.
82. Levin A, Caldwell B, Khuda B. Demand for family planning services in rural Bangladesh: Effect of cash prices and access. Paper presented at the International Union for the Scientific Study of Population Seminar on Family, 2000.

83. Mahmood N, Ringheim K. Factors affecting contraceptive use in Pakistan. *Pak Dev Rev* . 2001; 35(1): 1–22.
84. D’Addio, A. and d’Ercole, M. (2005) Trends and Determinants of Fertility Rates: The Role of Policies, Paris: OECD, accessed January, 2008:  
[http://www.oecd.org/document/4/0,2340,en\\_2649\\_33729\\_2380420\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/4/0,2340,en_2649_33729_2380420_1_1_1_1,00.html)
85. Ensor T, Ronoh J. Impact of organizational change on the delivery of reproductive services: a review of the literature. *Int J Health Plann Manage*. 2005 Jul-Sep;20(3):209-25. Review.
86. Fajans P, Simmons R, Ghiron L. Helping public sector health systems innovate: the strategic approach to strengthening reproductive health policies and programs. *Am J Public Health*. 2006 Mar;96(3):435-40. Epub 2006 Jan 31.
87. Standing H. An overview of changing agendas in health sector reforms. *Reprod Health Matters*. 2002 Nov;10(20):19-28.
88. Hemmings J, Rolfe B. Abortion in Cambodia: Care-seeking for abortion and family planning services. PEER study; Department for International Development; UK 2008.
89. Ministry of Health. National Strategy for Reproductive and Sexual Health in Cambodia 2006-2010. National Reproductive Health Programme; Phnom Penh 2006.
90. Walston N. Country Analysis of Family Planning and HIV/AIDS Programs: Cambodia. Phnom Pehn, Cambodia: USAID; 2005.
91. Domrei Research and Consulting. Family Planning Survey: Contraception among married women of reproductive age in Cambodia. KfW Development Bank; Frankfurt, Germany 2005.
92. Sherman J. Recommendations for IEC at RACHA: 1999-2000 and Beyond. Reproductive Health and Child Health Alliance; Phnom Penh, Cambodia 1999.
93. Sadana R, Snow R. Balancing effectiveness, side-effects and work: women's perceptions and experiences with modern contraceptive technology in Cambodia. *Soc Sci Med* 1999; 49(3): 343-58.
94. Prybylski D, Alto WA. Knowledge, attitudes and practices concerning HIV/AIDS among sex workers in Phnom Penh, Cambodia. *AIDS Care* 1999; 11(4): 459.
95. Delvaux T, Crabbé F, Seng S, Laga M. The need for family planning and safe abortion services among women sex workers seeking STI care in Cambodia. *Reprod Health Matters*. 2003 May;11(21):88-95.

96. World Health Organization. Sexual and reproductive health of adolescents and youth in Cambodia: A review of literature and projects 1995-2003. World Health Organization: Geneva, 2005.
97. Bongaarts J, Watkins SC. Social interactions and contemporary fertility transitions. *Popul Dev Rev* 1996;22(4):639-682.
98. Behrman JR, Kohler HP, Watkins SC. Social networks and changes in contraceptive use over time: Evidence from a longitudinal study in rural Kenya. *Demography*. Nov 2002; 39(4):713-738.
99. Doms M, Vanavermaet E. Majority influence, minority influence and conversion behavior: A Replication. *J Exp Soc Psychol* 1980;16(3):283-292.
100. Kohler HP. Learning in social networks and contraceptive choice. *Demography*. Aug 1997;34(3):369-383.
101. Manski CF. Social learning from private experiences: The dynamics of the selection problem. *Rev Econ Stud* 2004;71(2):443-458.
102. Manski CF. Dynamic choice in social settings: Learning from the experiences of others. *Jour Econometrics* Jul 1993;58(1-2):121-136.
103. Montgomery MR, Casterline JB. Social learning, social support, and new models of fertility. *Popul Dev Rev* 1996;22:151-175.
104. Valente TW. Social network thresholds in the diffusion of innovations. *Social Networks*. Jan 1996;18(1):69-89.
105. Valente TW, Watkins SC, Jato MN, VanderStraten A, Tsitsol LPM. Social network associations with contraceptive use among Cameroonian women in voluntary associations. *Soc Sci Med*. Sep 1997;45(5):677-687.
106. Casterline JB, Perez AE, Biddlecom AE. Factors underlying unmet need for family planning in the Philippines. *Stud Fam Plann* Sep 1997;28(3):173-191.
107. Godley J. Kinship networks and contraceptive choice in Nang Rong, Thailand. *Int Fam Plan Perspect* Mar 2001;27(1):4-10
108. Barnett B. Women's views influence use. *Network* Sep 1995;16(1):14-18.
109. Gage AJ. Sexual activity and contraceptive use: the components of the decision-making process. *Stud Fam Plann*. 1998 Jun;29(2):154-66.
110. Kulig JC. Conception and birth control use: Cambodian refugee women's beliefs and practices. *J Community Health Nurs*. 1988;5(4):235-246.

111. Kansal A, Kandpal SD, Mishra P. Reasons for not practicing contraception in a rural population of Dehradun District. *J Commun Dis.* Mar 2006;38(1):97-101.
112. Kadir MM, Fikree FF, Khan A, Sajan F. Do mothers-in-law matter? Family dynamics and fertility decision-making in urban squatter settlements of Karachi, Pakistan. *J Biosoc Sci.* Oct 2003;35(4):545-558.
113. Kincaid DL. Social networks, ideation, and contraceptive behavior in Bangladesh: a longitudinal analysis. *Soc Sci Med.* Jan 2000;50(2):215-231.
114. Maharaj P, Cleland J. Women on top: The relative influence of wives and husbands on contraceptive use in KwaZulu-Natal. *Women Health.* 2005;41(2):31-41.
115. Mason KO, Smith HL. Husbands' versus wives' fertility goals and use of contraception: The influence of gender context in five Asian countries. *Demography.* Aug 2000;37(3):299-311.
116. Agyei WKA, Migadde M. Demographic and sociocultural factors influencing contraceptive use in Uganda. *J Biosoc Sci.* Jan 1995;27(1):47-60.
117. Musalia JM. Gender, social networks, and contraceptive use in Kenya. *Sex Roles.* Dec 2005;53(11-12):835-846.
118. Smith LA. Partner influence on noncondom use: gender and ethnic differences. *J Sex Res.* Nov 2003;40(4):346-350.
119. Wang RH, Chiou CJ. Relative contribution of intrapersonal and partner factors to contraceptive behavior among Taiwanese female adolescents. *J Nurs Scholarsh* 2008; 40(2): 131-136.
120. Dagan Z. *The customs of Cambodia.* Bangkok: Siam Society, 2001.
121. Population Services International. *Barriers to the Use of Modern Contraceptive Methods among Sexually Active Married Women in Rural and Urban Areas of Cambodia.* Populations Services International, Cambodia; Phnom Penh 2007.
121. Albarracín D, Johnson BT, Fishbein M, Muellerleile PA. Theories of reasoned action and planned behavior as models of condom use: a meta-analysis. *Psychol Bull.* 2001 Jan;127(1):142-61.
122. Doll J, Orth B. The Fishbein and Ajzen theory of reasoned action applied to contraceptive behavior: Model variants and meaningfulness. *J Appl Soc Psychol* 1993; 23: 395–415.
123. Fisher WA. Predicting contraceptive behavior among university men: The role of emotions and behavioral intentions. *J Appl Soc Psychol* 1984; 14: 104–123.

124. Adler NE, Kegeles SM, Irwin CE, Wibbelsman C. Adolescent contraceptive behavior: an assessment of decision processes. *J Pediatr* 1990;116(3):463–471.
125. Fazekas A, Senn CY, Ledgerwood DM. Predictors of intention to use condoms among university women: An application and extension of the theory of planned behavior. *Can J Behav Sci* 2001; 33(2):103-117.
126. Jemmott JB 3rd, Heeren GA, Ngwane Z, Hewitt N, Jemmott LS, Shell R, O'leary A. Theory of planned behaviour predictors of intention to use condoms among Xhosa adolescents in South Africa. *AIDS Care*. 2007 May;19(5):677-684.
127. Lugoe W, Rise J. Predicting Intended Condom Use among Tanzanian Students using the Theory of Planned Behaviour. *J Health Psychol* 1999; 4(4): 497-506.
128. Ravis A, Sheeran P. Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Curr Psychol* 2003; 22(3): 218-233.
129. Trafimow D. Condom use among US students: The importance of confidence in normative and attitudinal perceptions. *J Soc Psychol* 2001; 141(1): 49-59.
130. Sheeran P, Taylor S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *J Appl Soc Psychol* 1999; 29(8): 1624-1675.
131. DeClerque J, Tsui AO, Abul-Ata MF, Barcelona D. Rumor, misinformation and oral contraceptive use in Egypt. *Soc Sci Med*. 1986;23(1):83–92.
132. Sahin HA, Sahin HG. Reasons for not using family planning methods in Eastern Turkey. *Eur J Contracept Reprod Health Care* 2003; 8(1): 11 - 16.
133. Memmel L, Buck J, Pius R, Neustadt A, Nicosia A, Gilliam M. Knowledge, attitudes and practices regarding modern methods of contraception: A qualitative study among women in Asebu, Ghana. *Contraception* 2008; 78(2): 182-182.
134. Kirkconnell-Hall MA, Stephenson R, Juvekar S. Myths and misconceptions: barriers to reversible contraception use in a rural Indian village. *Population Association of America, 2006 Annual Meeting, Los Angeles, California.*
135. Fort AL. Investigating the social context of fertility and family planning: A qualitative study in Peru. *Int Fam Plan Perspect* 1989; 15(3): 88.
136. Farsoun M, Khoury N, Underwood C. In their own words: a qualitative study of family planning in Jordan. Baltimore, MD, Johns Hopkins School of Public Health, Center for Communication Programs 1996;23: 44.

137. Cheung E, Free C. Factors influencing young women's decision making regarding hormonal contraceptives: a qualitative study. *Contraception* 2005; 71(6): 426.
138. Khan ME, Townsend JW, D'Costa S. Behind closed doors: a qualitative study of sexual behaviour of married women in Bangladesh. *Cult Health Sex* 2002 Apr-Jun;4(2):237-56.
139. Rutenberg N, Biddlecom AE, Kaona FA. Reproductive Decision-Making in the Context of HIV and AIDS: A Qualitative Study in Ndola, Zambia. *Int Fam Plann Stud* 2000 Sep;26(3):124-30.
140. Asker C, Stokes-Lampard H, Beavan J, Wilson S. What is it about intrauterine devices that women find unacceptable? Factors that make women non-users: a qualitative study. *J Fam Plann Reprod Health Care*. 2006 Apr;32(2):89-94.
141. Free C, Ogden J, Lee R. Young women's contraception use as a contextual and dynamic behaviour: a qualitative study. *Psychol Health* 2005; 20(5): 673.
142. Gilliam ML, Warden M, Goldstein C, Tapia B. Concerns about contraceptive side effects among young Latinas: a focus-group approach. *Contraception*. 2004 Oct;70(4):299-305.
143. Castle S. Factors influencing young Malians' reluctance to use hormonal contraceptives. *Stud Fam Plann*. 2003 Sep;34(3):186-99.
144. Cebeci Save D, Erbaydar T, Kalaca S, Harmanci H, Cali S, Karavus M. Resistance against contraception or medical contraceptive methods: a qualitative study on women and men in Istanbul. *Eur J Contracept Reprod Health Care*. 2004 Jun;9(2):94-101.
145. Family Health International. Consultation on improving contraceptive continuation. Meeting proceedings, Washington, D.C.: November 29-30, 2005.
146. Filmer D, Pritchett L. Estimating Wealth Effects without Expenditure Data-or Tears: An Application to Educational Enrollments in States of India. *Demography*. 2001;38(1):115-32.
147. Vyas S, Kumaranayake L. Constructing socio-economic status indices: how to use principal components analysis. *Health Policy Plan*. 2006 November 1, 2006;21(6):459-68.
148. Ulin PR. *Qualitative methods in public health: A field guide for applied research*. San Francisco, CA : Jossey-Bass, 2005.
149. Lind van Wijngaaden JW. *Broken women, virgins and housewives: reviewing the socio-cultural contexts of sex work in Cambodia: Phnom Penh; 2001*
150. United Nations, Report of the International Conference on Population and Development, Cairo, 5-13 September 1994, United Nations, New York (1994) Para. 4.27, p. 30.



151. M.E. Greene, M. Mehta, I. Pulerwitz, D. Wulf, A. Bankole and S. Singh, Involving men in reproductive health: Contributions to development. Background paper for the UN Millennium Project [http://www.unmillenniumproject.org/documents/Greene\\_et\\_al-final.pdf](http://www.unmillenniumproject.org/documents/Greene_et_al-final.pdf) (2006)[accessed Nov 20, 2009].
152. The Alan Guttmacher Institute, In their own right: Assessing the sexual and reproductive health needs of men worldwide, The Alan Guttmacher Institute, New York (2003).
153. Bandura A. Self-efficacy. Vol 4. New York: Academic Press; 1994.
154. Brien TM, Thombs DL, Mahoney CA, Wallnau L. Dimensions of self-efficacy among three distinct groups of condom users. *J Am Coll Health*. Jan 1994;42(4):167-174.
155. Hanna KM. An adolescent and young adult condom self-efficacy scale. *J Pediatr Nurs*. Feb 1999;14(1):59-66.
156. Heinrich LB. Contraceptive Self-Efficacy in College-Women. *Journal of Adolescent Health*. Jun 1993;14(4):269-276.
157. Joffe A, Radius SM. Self-efficacy and intent to use condoms among entering college freshmen. *J Adolesc Health*. Jun 1993;14(4):262-268.
158. Lauby JL, Semaan S, O'Connell A, Person B, Vogel A. Factors related to self-efficacy for use of condoms and birth control among women at risk for HIV infection. *Women Health*. 2001;34(3):71-91
159. Harvey SM, Beckman LJ, Gerend MA, Bird ST, Posner S, Huszti HC, Galavotti C. A conceptual model of women's condom use intentions: Integrating intrapersonal and relationship factors. *AIDS Care*. 2006 Oct;18(7):698-709.
160. Interagency Gender Working Group (IGWG). Reaching Men to Improve Reproductive Health for All Implementation Guide. Prepared by the Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs. Baltimore, MD; 2004.
161. Japanese Organization for International Cooperation in Family Planning (JOICFP).A Guidebook for Operationalizing Male Participation and Other Gender Issues in Community-based Sexual and Reproductive Health Programs. Tokyo, Japan; 2000.162.
162. Reproductive Health Outlook (RHO). Men and Reproductive Health Program Examples. Accessed December 27<sup>th</sup>, 2009:  
[http://www.icmer.org/RHO/html/menrh\\_progexamples.htm](http://www.icmer.org/RHO/html/menrh_progexamples.htm)
163. Becker S. Couples and reproductive health: A review of couple studies. *Studies in Family Planning*, 1996; 27 (6): 291-306

164. U.S. Agency for International Development (USAID). Challenges and Opportunities for Male Involvement in Reproductive Health in Cambodia. Washington, DC: USAID, 2005
165. Bixby Center for Global Reproductive Health. Family PACT Fact Sheet on Male Services. University of California, San Francisco. Sacramento, CA. 2008.
166. Population Council. Integration of Reproductive Health Services for Men in Health and Family Welfare Centers in Bangladesh. Dhaka, Bangladesh. 2004.
167. Family Health International (FHI). Strategic Behavioral Communication (SBC) for HIV and AIDS: A Framework. Arlington, VA: FHI; 2005.
168. Vidanapathirana J, Abramson MJ, Forbes A, Fairley C. Mass media interventions for promoting HIV testing. *Cochrane Database Systematic Review*. 2005;20(3):CD004775.pub2.
169. Gupta N, Katende C, Bessinger R. Associations of mass media exposure with family planning attitudes and practices in Uganda. *Studies in Family Planning*. 2003;34(1):19–31.
170. Rogers EM, Vaughan PW, Swalehe RMA, Rao N, Svenkerud P, Snood S. Effects of an entertainment-education radio soap opera on family planning behavior in Tanzania. *Studies in Family Planning*. 1999; 30(3):193–211.
171. Keating J, Meekers D, Adewuyi A. Assessing effects of a media campaign on HIV/AIDS awareness and prevention in Nigeria: results from the VISION project. *BMC Public Health*. 2006;6:123–148.
172. Rudy S. Improving client-provider interaction. *Population Reports*. Series Q, No. 1. 2003;31(4):1–21.
173. Murphy E, Gryboski K. “The Importance of Client-Provider Interactions: Evidence from Family Planning Programs.” In: Haider M, ed. *Global Public Health Communication: Challenges, Perspectives, and Strategies*. Sudbury, MA: Jones and Bartlett Publishers; 2005:199–216.
174. The Quality of Family Planning Programs: Concepts, Measurements, Interventions, and Effects Saumya RamaRao and Raji Mohanam *Studies in Family Planning*, Vol. 34, No. 4 (Dec., 2003), pp. 227-248
175. Halpern V, Grimes DA, Lopez L, Gallo MF. Strategies to improve adherence and acceptability of hormonal methods for contraception. *Cochrane Database of Systematic Reviews* 2006, Issue 1. Art. No.: CD004317.

176. Miller K, Miller R, Askew I, Horn MC, Ndhlovu L. Clinic-based family planning and reproductive health services in Africa: Findings from situation analysis studies. Population Council, New York. 1998.
  
177. Murphy E, Steele C. Analyzing the Organizational Context for Positive Client-Provider Interaction: A Leadership Challenge. MAQ Papers vol. 1, no. 2. Washington, DC: USAID. 2000.
  
178. Godfrey J, Dennick R, Welsh C. Training the trainers: Do teaching courses develop teaching skills? Medical Education, 2004; 38 (8): 844-847.

**Table 1: Total Fertility Rate (TFR), Contraceptive Prevalence Rate (CPR) and Unmet Need among Select Southeast Asian Nations**

	<b>TFR</b>	<b>CPR</b>	<b>Unmet Need</b>
Burma (2001-06) <sup>b</sup>	2.1	37%	--
Cambodia (2005) <sup>a</sup>	3.4	27.2%	25.0%
Philippines (2003)	3.5	33.4%	17.3%
Thailand (2006) <sup>b</sup>	1.8	71.5%	--
Vietnam (2002) <sup>a</sup>	1.9	56.7%	4.8%
Indonesia (2002) <sup>a</sup>	2.6	56.7%	8.6%

a: from Demographic and Health Surveys StatCompiler

b: from World Health Organization Statistical Information System

**Table 2: Age, SES, Education, Parity and Family Planning Characteristics of ALL WOMEN**

	N	%
<b>Age</b>		
15-24	103	14.6
25-29	191	27.1
30-34	127	18.0
35-39	122	17.3
40+	163	23.1
<b>SES</b>		
Low	135	19.1
Middle	408	57.8
High	163	23.1
<b>Education</b>		
None	90	12.8
Primary	446	63.8
Secondary	170	24.1
<b>Parity</b>		
0	13	1.8
1	156	22.1
2	180	25.5
3	137	19.4
4	100	14.2
5	66	9.3
6+	54	7.6
<b>Family Planning</b>		
Current use of modern contraceptive (all)	300	42.5
Current use of modern contraceptives (low-parity <sup>a</sup> )	129	38.4
Current use of modern contraceptives (high-parity)	171	46.2*
Knowledge of modern methods	701	99.3
Believe modern methods are available when needed	684	96.9

a: Low parity = 0-2 children; High parity = 3+ children

\* Chi-square result of current use by high vs. low parity,  $p < 0.0$

**Table 3: Odds of Modern Contraceptive Use by Social support Factors (controlling for socio-demographic factors)**

	All Women (n=706)		Low Parity Women (n=336)		High Parity Women (n=370)	
	%(n) Agree	OR	%(n) Agree	OR	%(n) Agree	OR
<b>HUSBAND</b>						
Husband thinks it is a good idea for you to use a birth spacing method <sup>b</sup>	91.1 (643)	2.76***	89.9 (302)	2.48*	92.2 (341)	2.59*
Husband supports the use of birth spacing methods	96.6 (682)	1.01	96.4 (324)	0.54	96.8 (358)	1.65
Husband is the one who makes the final decision about birth spacing use	44.8 (316)	0.50***	45.2 (152)	0.83	44.3 (164)	0.31***
You feel nervous about discussing birth spacing with your husband	48.3 (341)	0.60**	46.1 (155)	0.55*	50.3 (186)	0.63*
Husband ever gave encouragement to use birth spacing method	41.8 (295)	0.90	67.9 (148)	0.89	64.2 (147)	0.93
<b>PEERS</b>						
Your friends think it is a good idea for you to use a birth spacing method	95.2 (672)	1.12	94.6 (318)	0.74	95.7 (354)	2.05
Women in your community encourage each other to use birth spacing methods	95.2 (672)	0.64	94.9 (319)	0.85	95.4 (353)	0.62
Most couples you know have used a birth spacing method	93.8 (660)	1.33	93.5 (314)	3.61*	93.5 (346)	0.67
Peers ever encouraged you to use birth spacing method	31.73 (224)	1.44*	30.7 (103)	1.32	32.7 (121)	1.54
<b>ELDERS</b>						
Elders in your community think young women should not use birth spacing methods	48.7 (344)	0.70*	49.1 (165)	0.94	48.5 (179)	0.52**
Elders in your family think you should not use a birth spacing method	20.7 (146)	0.85	23.5 (79)	0.94	18.1 (67)	0.73
Elders in the community discourage women from using birth spacing methods	20.3 (143)	0.87	21.2 (72)	1.20	19.2 (71)	0.65
If an elder says not to use a birth spacing method, you should not use it.	24.1 (170)	0.62*	25.0 (84)	0.69	23.2 (86)	0.54*

<sup>a</sup> Sociodemographic controls include age, education, SES, and in the full model, parity.

<sup>b</sup> birth spacing method means any modern method including male or female sterilization, the daily hormonal pill, intrauterine device (IUD), hormonal injection, hormonal implants or condom

**Table 4: Multivariate Odds of Modern Contraceptive Use by Social support Items, ALL WOMEN**

	Model 1	Model 2	Model 3	Model 4
<b>HUSBAND</b>				
Husband thinks it is a good idea for you to use a birth spacing method	2.67** (1.50 – 4.74)			3.39*** (1.85 – 6.23)
Husband is the one who makes the final decision about birth spacing use	0.51*** (0.37 – 0.70)			0.58** (0.40 – 0.84)
You feel nervous about discussing birth spacing with your husband	0.67* (0.49 – 0.93)			0.64* (0.45 – 0.90)
<b>PEERS</b>				
Most couples you know have used a birth spacing method		1.27 (0.68 – 2.40)		1.77 (0.89 – 3.52)
Peers ever encouraged you to use a birth spacing method		1.43* (1.03 – 2.00)		1.22 (0.86 – 1.73)
<b>ELDERS</b>				
Elders in your community think young women should not use birth spacing methods			0.74 (0.54 – 1.01)	0.80 (0.55 – 1.16)
If an elder says not to use a birth spacing method, you should not use it.			0.66* (0.45 – 0.96)	0.53** (0.36 – 0.79)
<b>EDUCATION</b>				
Primary	1.52* (1.01 – 2.27)	1.58* (1.06 – 2.35)	1.58* (1.06 – 2.35)	1.64* (1.08 – 2.48)
Secondary	1.08 (0.70 – 1.67)	1.15 (0.75 – 1.77)	1.12 (0.73 – 1.71)	1.18 (0.76 – 1.83)
<b>SES</b>				
Middle	1.66* (1.10 – 2.52)	1.70* (1.13 – 2.55)	1.71** (1.14 – 2.57)	1.69* (1.11 – 2.57)
High	2.15** (1.33 – 3.46)	2.22** (1.39 – 3.56)	2.17** (1.36 – 3.47)	2.30** (1.42 – 3.74)
<b>PARITY</b>				
2	2.49*** (1.53 – 4.05)	2.34*** (1.46 – 3.76)	2.21** (1.36 – 3.47)	2.32*** (1.41 – 3.81)
3	2.49*** (1.44 – 4.33)	2.13** (1.25 – 3.64)	1.96** (1.15 – 3.36)	2.50** (1.34 – 4.11)
4+	2.21*** (1.26 – 3.88)	2.27*** (1.31 – 3.93)	2.08*** (1.20 – 3.62)	2.09*** (1.18 – 3.70)
<b>AGE</b>				
	1.01 (0.98 – 1.03)	1.00 (0.98 – 1.03)	1.00 (0.98 – 1.03)	1.00 (0.98 – 1.04)

\* p<0.05; \*\* p<0.01; \*\*\* p<0.001; Model 1: Husband with controls; Model 2: Peer with controls; Model 3: Elders with controls; Model 4: Full model all women

**Table 5: Multivariate Odds of Modern Contraceptive Use by Social support Items, LOW PARITY WOMEN**

	Model 1	Model 2	Model 3	Model 4
<b>HUSBAND</b>				
Husband thinks it is a good idea for you to use a birth spacing method	2.21* (1.04 – 4.69)			3.23** (1.43 – 7.34)
Husband is the one who makes the final decision about birth spacing use	0.88 (0.55 – 1.41)			0.93 (0.55 – 1.58)
You feel nervous about discussing birth spacing with your husband	0.59* (0.37 – 0.95)			0.60* (0.36 – 0.99)
<b>PEERS</b>				
Most couples you know have used a birth spacing method		3.46* (1.11 – 10.73)		4.42* (1.32 – 14.78)
Peers ever encouraged you to use birth spacing method		1.26 (0.78 – 2.03)		1.05 (0.63 – 1.73)
<b>ELDERS</b>				
Elders in your community think young women should not use birth spacing methods			0.99 (0.62 – 1.57)	0.84 (0.50 – 1.44)
If an elder says not to use a birth spacing method, you should not use it.			0.69 (0.40 – 1.19)	0.53* (0.30 – 0.95)
<b>EDUCATION</b>				
Primary	1.59 (0.82 – 3.06)	1.50 (0.78 – 2.87)	1.53 (0.80 – 2.91)	1.74 (0.88 – 3.44)
Secondary	0.99 (0.50 – 1.97)	0.98 (0.50 – 1.95)	0.98 (0.50 – 1.93)	1.06 (0.52 – 2.15)
<b>SES</b>				
Middle	2.02* (1.08 – 3.81)	2.10* (1.12 – 3.94)	2.03* (1.09 – 3.80)	2.05* (1.08 – 3.92)
High	3.21 (1.52 – 6.76)	3.52** (1.68 – 7.39)	3.17 (1.52 – 6.59)	3.41** (1.60 – 7.28)
<b>AGE</b>				
	1.02 (0.98 – 1.06)	1.02 (0.97 – 1.06)	1.02 (0.98 – 1.06)	1.02 (0.97 – 1.06)



**Table 6: Multivariate Odds of Modern Contraceptive Use by Social support Items, HIGH PARITY WOMEN**

	Model 1	Model 2	Model 3	Model 4
<b>HUSBAND</b>				
Husband thinks it is a good idea for you to use a birth spacing method	2.52* (1.07 – 5.97)			3.10* (1.26 – 7.64)
Husband is the one who makes the final decision about birth spacing use	0.31*** (0.20 – 0.49)			0.39*** (0.23 – 0.66)
You feel nervous about discussing birth spacing with your husband	0.70 (0.45 – 1.08)			0.61* (0.38 – 0.98)
<b>PEERS</b>				
Most couples you know have used a birth spacing method		0.66 (0.28 – 1.54)		1.04 (0.41 – 2.66)
Peers ever encouraged you to use birth spacing method		1.55 (0.98 – 2.46)		1.36 (0.82 – 2.24)
<b>ELDERS</b>				
Elders in your community think young women should not use birth spacing methods			0.55** (0.36 – 0.85)	0.79 (0.47 – 1.34)
If an elder says not to use a birth spacing method, you should not use it.			0.59* (0.35 – 0.99)	0.48* (0.27 – 0.85)
<b>EDUCATION</b>				
Primary	1.42 (0.84 – 2.40)	1.59 (0.96 – 2.63)	1.63 (0.98 – 2.71)	1.47 (0.86 – 2.55)
Secondary	1.23 (0.70 – 2.12)	1.31 (0.75 – 2.29)	1.29 (0.74 – 2.24)	1.31 (0.73 – 2.36)
<b>SES</b>				
Middle	1.38 (0.79 – 2.42)	1.45 (0.85 – 2.48)	1.51 (0.88 – 3.06)	1.47 (0.83 – 2.60)
High	1.51 (0.80 – 2.85)	1.63 (0.88 – 3.00)	1.64 (0.88 – 3.06)	1.76 (0.92 – 3.40)
<b>AGE</b>				
	1.01 (0.98 – 1.05)	1.01 (0.98 – 1.04)	1.01 (0.98 – 1.05)	1.02 (0.98 – 1.05)

**Table 7: Number of Focus Group and In-depth Interviews by User Type**

User Type	Focus Group		In-depth Interview	
	Urban	Rural	Urban	Rural
Continuer	1	1	2	1
Discontinuer	1	2	4	3
Non-user	1	1	2	2

**Table 8: Attributes of Continuer, Discontinuer, and Non-user Contraceptive Groups**

<b>KNOWLEDGE AND PERCEPTIONS OF CONTRACEPTIVE METHODS</b>			
	<b>CONTINUER</b>	<b>DISCONTINUER</b>	<b>NON-USER</b>
<b>Knowledge of Methods</b>	<p>Modern: wide variety identified (IUD; daily/monthly pill; injection; implants; condoms; sterilization)</p> <p>Traditional: calendar method</p>	<p>Modern: wide variety identified (IUD; daily/monthly pill; injection; implants; condoms). Less knowledge about IUD and implant</p> <p>Traditional: calendar method; withdrawal</p>	<p>Modern: wide variety identified (daily/monthly pill; injection; condoms). IUD and implant sometimes confused</p> <p>Traditional: calendar method; withdrawal; variety of other traditional Khmer methods</p> <p>Information on modern methods is noticeably less than that of the other two groups</p>
<b>Misconceptions of Short and Long-Term Side Effects</b>	<p>Cancer; endometritis; tumor; coagulated blood (in heart or abdomen); hypertrophic uterus; infertility; bruised face; effects on subsequent child</p>	<p>Cancer; endometritis; tumor; coagulated blood (in heart or abdomen); fibroids; vaginal discharge; broken uterus; hypertrophic uterus; infertility; irritation of fallopian tubes; difficulty with future deliveries; implants “spoil the hand”</p>	<p>Cancer; endometritis; shortness of breath; hemorrhage; vaginal discharge; prolonged menstrual period; tumor in abdomen; dizziness; fever; bruised face; trembling; infertility; implants “wither the hand;” polio; problems with subsequent birth (delivery and problems for baby)</p>
<b>Perceptions of specific Contraceptive method types</b>			
<i>Daily Pill</i>	<p><b>Pros:</b> Easy to use/find; affordable; “appropriate” for body; good for health; very temporary</p> <p><b>Cons:</b> may not be “appropriate” for body; side effects; easy to forget; seen as less effective</p>	<p><b>Pro:</b> Easy to use/buy; affordable; effective; very temporary</p> <p><b>Con:</b> Easy to forget; side effects; prolonged bleeding after discontinuation</p>	<p><b>Pro:</b> Good for health; effective</p> <p><b>Con:</b> Easy to forget</p>
<i>Injection</i>	<p><b>Pro:</b> Easy to remember; easy to find; “appropriate” for body; affordable; effective</p> <p><b>Con:</b> may not be “appropriate” for body; fear lack of menstruation; side effects; long fear of infertility; can’t be “undone” easily</p>	<p><b>Pro:</b> Long-lasting; easy to use; effective; affordable</p> <p><b>Con:</b> Fear lack of menstruation; side effects; prolonged bleeding after discontinuation; fear of needles; fear of infertility</p>	<p><b>Pro:</b> Long-lasting; easy to use; effective; good for health</p> <p><b>Con:</b> Fear lack of menstruation; side effects</p>
<i>IUD/Implants*</i>	<p><b>Pro:</b> Long-lasting; effective; easy to use</p> <p><b>Con:</b> Fear lack of menstruation; Side effects; Pain from insertion; Not suitable for laborers/rural women; IUD harmful for fetus; expensive; hard to remove</p>	<p><b>Pro:</b> Long-lasting; effective ; easy to use</p> <p><b>Con:</b> Side effects; pain from insertion; not suitable for rural women; can’t lift heavy things; hard to remove</p>	<p><b>Pro:</b> Long-lasting; effective</p> <p><b>Con:</b> “Don’t dare use!”; severe side effects (worse than other methods); not suitable for rural women; can’t lift heavy things</p> <p>Knowledge of these two methods is very</p>

			limited.
<i>Condoms</i>	<b>Pro:</b> Easy to use, affordable, effective for disease transmission <b>Con:</b> Difficult to use with husbands	<b>Pro:</b> Easy to use, affordable, effective for disease transmission <b>Con:</b> Difficult to use with husbands, not appropriate for married couples, side effects (cancer, endometritis, etc)	<b>Pro:</b> Easy to use, effective for disease transmission, good for skin (referring to lubricant) <b>Con:</b> Hard to apply, breaks easily, difficult to use with husbands, not appropriate for married couples, side effects (cancer, endometritis, etc)
<b>Sources of Method Misconceptions</b>	Elders (primarily), other women (to a lesser extent); Although rumors are heard by this group, they are less susceptible to believing them	Elders and other women in the community who had experience with or heard rumors about methods; Rumors spread by these individuals lead to belief in some myths and fear of method use	Elders and other women in the community who had experience with or heard rumors about methods; Rumors add to existing suspicion of methods and further fuel fear of contraception
<b>BARRIERS TO INITIATION</b>			
<b>Fear of methods</b>	Fear of side effects	Fear of side effects	Fear of side effects; fear of infertility; fear of being blamed if they get sick; cost of sickness; lack of information to combat fears
<b>Social network barriers</b>	Acknowledge importance of husband's approval and potential of rumors to create barriers (though all initiated successfully)	Negative experience of other women (either real or rumored); husbands (control use/want kids); these influence re-initiation or use of other methods	Negative experience of other women (either real or rumored); husbands (control use/want kids); family members forbid use; pressure to have children first
<b>Lack of "Courage"</b>	n/a	n/a	Lack of confidence in knowledge of methods, ability to use and capacity to endure side effects; information key to building confidence and encouraging use
<b>Poor health care access</b>	n/a	n/a	Low level of interaction with health care providers; difficulty receiving appropriate contraceptive care
<b>BARRIERS TO CONTINUATION</b>			
<b>Experience of Side effects</b>	Prolonged bleeding/ hemorrhage; dizziness; hot flashes; exhaustion; weight gain; method "not appropriate with body"	Prolonged bleeding/ hemorrhage; dizziness; hot flashes; exhaustion; weight gain; dizziness; abdominal pain; weight loss; arthritis (back/neck pain); headache; chest pain; method "not appropriate with body"; productivity hindered by side effects; fear lack of menstruation; monitoring side effects	n/a

<b>Others' Effect on Discontinuation</b>	n/a	Husbands fear side effects and encourage discontinuation; providers often not consulted when experiencing side effects; providers advise ceasing methods when side effects occur; no mention of providers offering alternative methods	n/a
<b>Continued Fear of Methods (original and alternative)</b>	n/a	Persistent fear of perceived side effects of method led to discontinuation; fear of side effects prevented re-initiation of previous or new method types; even without actual side effects, some feared long-term use and quit method	n/a
<b>CATALYSTS FOR CONTINUATION</b>			
<b>Rejection of Rumors</b>	Little belief in rumors or misconceptions about methods; rely on own knowledge or experience with methods; have confidence in own judgment about methods	Less apt to reject rumors, which led to discontinuation or inability to switch to different method	n/a
<b>Enduring Side Effects/Finding "appropriate" method</b>	Despite experiencing side effects, endured initial symptoms; willing to try different methods to find one that is "appropriate" for body; had patience to wait until methods normalized in body	Inability to "endure" side effects or find "appropriate" method often barred continuation	n/a
<b>Positive support for continuation</b>	Husbands provided emotional support for initiation and continuation; husbands also helped with method compliance (such as remembering to take pills); husbands' approval seen as integral to use; Health providers offered information and advice on methods; Providers seen as trusted sources; Referred to providers for follow-up care of side effects; Providers able to assuage fear of side effects and dispel rumors	Husbands and doctors often advised ceasing method; some did not follow-up with providers and relied only on own or husband's decision; support for continuation from these sources was low	n/a
<b>ROLE OF OTHERS IN USE (SUMMARY)</b>			
<b>Husbands</b>	Support initiation and encourage continuation; help assuage fear of side effect; assist with compliance (remind to take pills; etc); primary person with whom methods were discussed; husband's support is key	Support initiation and use in some cases; seen as point of control in choosing/using method; need husbands approval in order to use; husband's fear of side effects cause of discontinuation in some cases; primary person with whom methods are discussed	Important source of discussion and advice; often control the final decision on use; major barrier to initiation in this group; husband's fear of or lack of information on methods influence initiation

<b>Providers</b>	Provide knowledge on types of methods; give advice on side effects (what to expect; what to do); support decision for modern method use; explain methods and proper use; dispel rumors; seen as trustworthy; do not usually initiate discussion on contraception	Encourage/support use; give advice on side effects (what to expect; what to do); direct users to stop in some cases; do not normally initiate discussion on methods; seen as trustworthy; sometimes override negative influence of others	Not much interaction with providers; most have not seen a provider regarding contraception; when providers seen, often do not initiate contraceptive conversation or do not provide method
<b>Others (including family members, elders and other women in network)</b>	Offer advice on methods; warn of side effects; spread rumors about method side effects	Source of discussion on methods; spread rumors on side effects; can threaten continuation through “fear”; not as prominent husband or provider in decision-making	Seem to be much more influential in method discussion and decision-making process than for other two groups; spread rumors/fear on side effects; at times actively discourage use

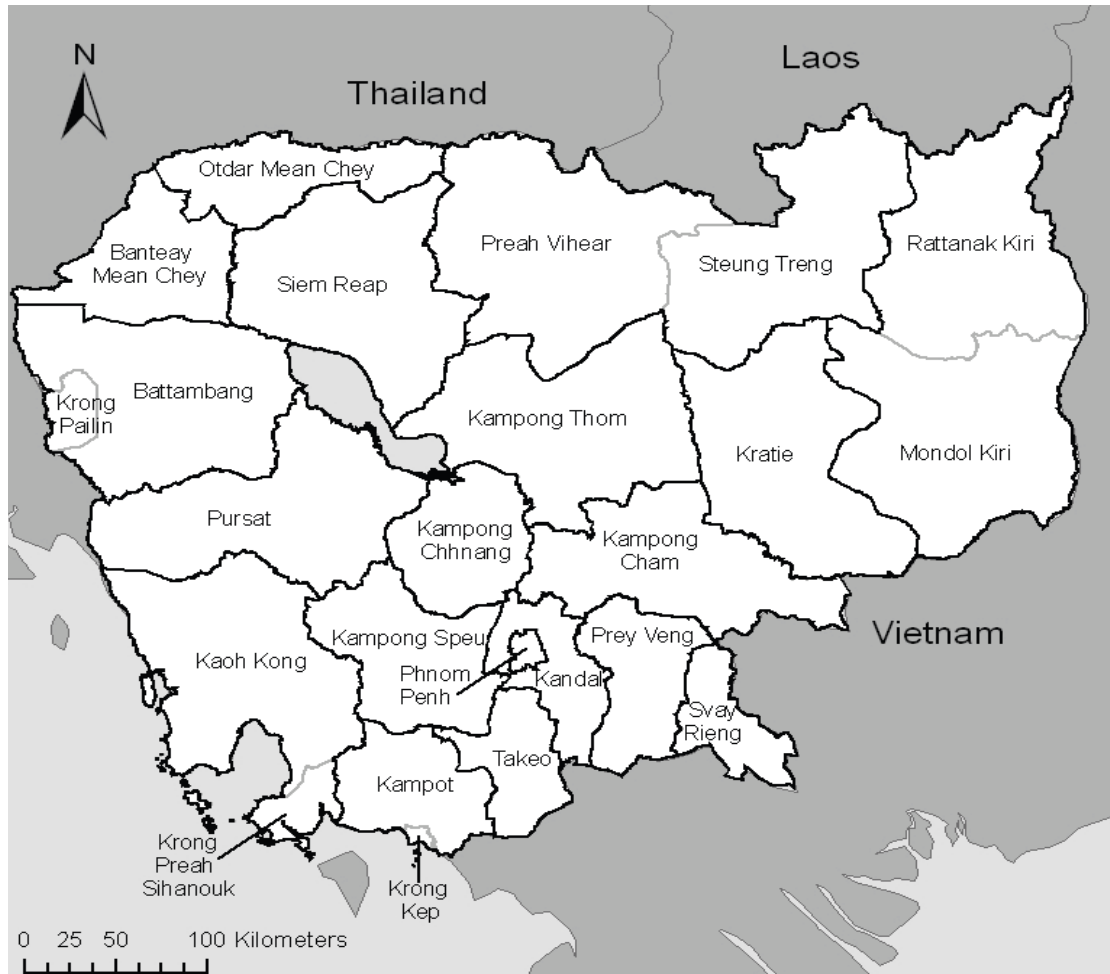
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**SPECIFIC GROUP ATTRIBUTES**

<b>How are they different?</b>	<ul style="list-style-type: none"> <li>- Endure side effects</li> <li>- Try different methods if one is not “appropriate”</li> <li>- Don’t believe the rumors</li> <li>- Try to resolve side effects on their own</li> <li>- Seek help from providers on different methods and resolving side effects</li> </ul>	<ul style="list-style-type: none"> <li>- Do not endure side effects</li> <li>- Have more fear of side effects</li> <li>- Fear trying other methods</li> <li>- Do not have as much information on alternative/different methods</li> <li>- Do not perceive benefits of method use above/beyond real/perceived side effects</li> <li>- Tend to believe rumors of long-term effects more than Continuers</li> </ul>	<ul style="list-style-type: none"> <li>- Have the most fear of side effects “do not dare!”</li> <li>- Especially fear potential cost of medical care for side effects</li> <li>- Believe rumors on side effects</li> <li>- Greatly impacted by others’ negative experiences</li> <li>- Lack knowledge on methods</li> <li>- Lack “courage” to use in light of perceived side effects</li> </ul>
<b>How are they the same?</b>	<ul style="list-style-type: none"> <li>- Desire delaying/preventing births</li> <li>- See the benefits of birth spacing (time; money; health; etc)</li> <li>- Trust modern methods as being effective</li> <li>- Do not trust traditional methods to be as effective</li> <li>- Husbands are integral to decision-making process</li> </ul>		

\*IUDs and implants were often confused and are therefore presented together

**Figure 1: Map of Cambodian Provinces**



## Appendix 1: Power Analysis for Sample Size Calculation

Estimated power for two-sample comparison of proportions

Test Ho:  $p_1 = p_2$ , where  $p_1$  is the proportion in population 1 that uses contraceptives and  $p_2$  is the proportion in population 2 that uses contraceptives.

Assumptions:

$$\alpha = 0.0500 \text{ (two-sided)}$$

$$p_1 = 0.2500$$

$$p_2 = 0.4000$$

Sample sizes for estimated social support effect (based on item on husband support with the most variability)

$$n_2 = 146$$

$$n_2/n_1 = 0.2607$$

**Estimated power: 0.9244**