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Thinking of the children:

Unintended Pregnancy and Inadequate Antenatal Care (ANC) in the Philippines

By

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Master of Public Health

Global Health

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Roger Rochat, MD

Committee Chair

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By

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B.A., Social Anthropology

Harvard College

2010

Thesis Committee Chair: Roger Rochat, MD

An abstract of

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Abstract

Thinking of the children:
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By Lydia Burnett Karch

Objective: This research examines the association between self-reported unintended pregnancy in women in the Philippines between the ages of 15 to 49 who reported being pregnant in the 5 years prior to the DHS survey implementation, and late or inadequate antenatal care (ANC) for that same pregnancy. The researcher hypothesizes a positive association between reporting an unintended pregnancy (both mistimed and unwanted) and receiving late or inadequate ANC.

Method: Using 2008 Demographic Health Survey (DHS) data from the Philippines, the researcher evaluated the prevalence of and risk factors for unintended pregnancy among women ages 15-49 who reported a live birth in the 5 years prior to the survey. The researcher also evaluated the association between unintended pregnancy and ANC in this population.

Results: This assessment reveals a high frequency of unintended, unwanted, and mistimed pregnancies among women ages 15-49 in the Philippines. More than a third of all women reported having an unintended pregnancy, while 1 in 5 reported having a mistimed pregnancy, and 16% reported having an unwanted pregnancy. This study also reveals significant associations between unintended pregnancy and late or inadequate ANC; the associations persisted even after accounting for identified differences in risk characteristics and behaviors, including wealth, education, religion, age, parity, and modern method contraceptive use.

Conclusion: Unintended pregnancy was found to be significantly associated with late or inadequate antenatal care (ANC) in the Philippines. Mistimed pregnancies were found to have a higher odds of late or inadequate ANC than unwanted pregnancies, which suggests that more research should be done to examine the perceived and reported differences between these two categories, particularly over time. The associations presented in this study are a small piece of evidence that might be used to advocate for greater access to highly effective contraceptives, in order to protect the health of future generations. Where women's rights arguments have failed to expand contraceptive access, an argument in favor of better care for future babies might have more of an impact. More research is necessary, however, to fully explore this association and determine any causality before it can be brought into the public arena.

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Chapter 1. Introduction

Unintended pregnancy remains a problem for both developed and developing countries alike; 41% of the world's 208 million pregnancies in 2008 were unintended, nearly half of which (41 million out of 86 million) ended in abortion (Singh, Sedgh, & Hussain, 2010). Since the vast majority (185 out of 208 million) of pregnancies occur in the developing world, the burden of unintended pregnancy falls more heavily on developing countries, where the unintended pregnancy rate also remains 36% higher (57 pregnancies per 1,000 women vs. 42) than in the developed world. Unintended pregnancies pose a serious risk to women's health when they lead to an unsafe induced abortion (as roughly 25% do), and also may place an undue burden on a woman who is not ready or able to take care of a child (Marston & Cleland, 2003). In particular, a woman at risk of an unintended pregnancy due to socioeconomic or behavioral factors may also be limited in her ability to obtain adequate antenatal care (ANC), one of two target goals for achieving UN Millennium Development Goal 5: Improving Maternal Health (UN, 2011). ANC is important not only for ensuring adequate maternal and fetal nutrition, but is also a crucial intervention point for ensuring a safe pregnancy and delivery, the second target goal necessary for achieving MDG 5.

Problem Statement

From 1990 to 2010, the Philippine population increased by more than 50% (from 60.70 million to 92.34 million) (National Statistics Office, 2012). In July of 2012, the Philippines is estimated to be the 12th most populous country in the world

(The World Factbook, 2012). More than half of all pregnancies (54%) in the Philippines are unintended (Darroch, Singh, Ball, & Cabigon, 2009). Nearly a third (31.5%) of these end in induced abortion, which presents a serious risk to women's health, as abortion is almost completely criminalized in the Philippines, and women receiving induced abortions are likely to receive them under unsafe conditions (Singh, Juarez, Cabigon, Ball, Hussain, & Nadeau, 2006). For unintended pregnancies that do not result in induced abortion, pregnancy itself carries health risks: globally, 94 women died from pregnancy-related causes for every 100,000 live births in 2008 (WHO, UNICEF, UNFPA, & The World Bank, 2010). Studies from the United States have established that women with unintended pregnancies are at risk for delayed initiation of antenatal care (ANC), which in turn increases the chance of pregnancy complications going unnoticed or untreated (Gipson, Koenig, & Hindin, 2008; Ronsmans & Graham, 2006). The exact nature of this association in the Philippines has been largely unstudied, but would contribute to upcoming debates on the proposed reproductive health bill ensuring free or subsidized contraceptive coverage for poor women (Khan & Aquino, 2012).

Purpose Statement

The purpose of this research is to describe the frequency and predictors of unintended pregnancy in the Philippines, as well as to assess the association of unintended pregnancy and late or inadequate ANC. Final recommendations will point to future avenues of research, as well as potential policy options.

Research Question

This research examines the association between self-reported unintended pregnancy in ever-married women between the ages of 15 to 49 who reported being pregnant in the 5 years prior to the survey's implementation, and late or inadequate antenatal care (ANC) for that same pregnancy. The researcher hypothesizes a positive association between reporting an unintended pregnancy (both mistimed and unwanted) and receiving late or inadequate ANC.

Significance Statement

Lack of contraceptive use accounts for the vast majority (90%) of unintended pregnancies in the Philippines, and poor women are most likely to have an unmet need for family planning (Darroch, et al., 2009). This discrepancy in access is reflected in the different rates of unwanted fertility across wealth quintiles; women in the lowest quintile on average have 2 more children than they would have liked, as compared to women in the highest quintile, who only have 0.3 more children than they would have liked (Guttmacher Institute & Likhaan Center for Women's Health, 2010). USAID played an important role in public provision of contraceptives through 2004, but phased out of the country in 2008, leaving a vacuum that the government has been unable to completely fill. PhilHealth, the national health insurance program, only provides coverage for a few contraceptives: tubal ligation, vasectomy, and intrauterine device (IUD) insertion. While these are the most highly effective modern methods available, two out of the three are (largely) irreversible, making them undesirable choices for women who wish to have children later

(Zieman, Hatcher, Cwiak, Darney, Creinin, & Stosur, 2010). Only 3.7% of ever-married women ages 15-49 were currently using an IUD in 2008, while 9.2% reported obtaining female sterilization (Philippines 2008 DHS Final Report, 2009). In contrast, 15.7% of ever-married women reported using the Pill, the most popular modern contraceptive method by far. A subsequent shift in women's sources for modern contraceptives reflects the inadequacy of PhilHealth provisions: 20% of women obtained their method from a government center in 2003 while 17% obtained it from a pharmacy, whereas 40% obtained their method from a pharmacy in 2008 and just 12% obtained it from a government center (Guttmacher Institute & Likhaan Center for Women's Health, 2001). If all women with unmet family planning needs were supplied with an effective modern contraceptive method, 1.6 million pregnancies could be averted per year, in turn resulting in 500,000 fewer abortions, 200,000 fewer miscarriages, and 800,000 fewer unintended births (Guttmacher Institute & Likhaan Center for Women's Health, 2001).

Apart from the health risks posed by an unintended pregnancy (through a potentially risky pregnancy or delivery or an induced abortion), a woman also incurs an economic risk from an unplanned child (Darroch, et al., 2009). Unintended pregnancies may lead to complications, risky delivery, and/or death and prevent women from participating in the workforce or caring for their families, which in turn might pull other family providers (e.g. husbands, older children) out of the workforce to take care of younger children. Additionally, women who have more control over family planning are free to pursue greater educational and economic opportunities (Singh, Bankole, Hussain, Fehling, Wulf, & Donovan, 2002). Finally, by

averting morbidity and mortality due to unsafe induced abortions, reducing unintended pregnancy rates ensures greater health for women and children overall.

Definition of Terms

Unintended pregnancy

The Centers for Disease Control and Prevention (CDC) define unintended pregnancy as "a pregnancy that is either mistimed or unwanted at the time of conception" (CDC, 2010). Santelli et al. (2003) further clarify the difference between mistimed and unwanted pregnancies:

Mistimed – Occurred earlier than desired

Unwanted – Occurred when no children, or no more children, were desired

Unintended pregnancy data is generally collected retrospectively, but attempts to measure the woman's intentions at the moment that she became pregnant; this, unsurprisingly, leads to complications in assessing the data, in particular due to the unique nature of recall bias in regards to an unintended pregnancy resulting in a live birth (Joyce, Kaestener, & Korenman, 2000). Other problems with current measures for unintended pregnancy will be discussed more thoroughly in the Discussion section of this thesis. In the absence of a widely accepted alternative measure, retrospective measures for unintended pregnancy continue to be employed in surveys such as the Demographic Health Survey (DHS) used for this analysis.

Antenatal Care

The WHO (2007) outlines several standards for effective antenatal care (ANC), including timely initiation and a minimum number of visits. The first ANC visit should take place during the first trimester, as research shows that potential problems or complications with pregnancy can be effectively treated or addressed if identified early (Carolli, Villar, Piaggio, Khan-Neelofur, Gülmezoglu, Mugford, Lumbiganon, Farnot, & Bersgjø, 2001). In countries with low resources, all necessary interventions and information can be delivered over four visits; ideally, women would be able to receive ANC more frequently, but the generally accepted standard for adequate ANC is four visits minimum (Villar, Carolli, Khan-Neelofur, Piaggio, & Gülmezoglu, 2001).

For the purposes of this analysis, late or inadequate antenatal care (ANC) was defined as consisting of:

a) Antenatal care initiated after 12 weeks of pregnancy (i.e. the first trimester)
b) Fewer than 4 antenatal care visits throughout the duration of the pregnancy

Chapter 2. A Global Review of Unintended Pregnancy: Frequency, Risk Factors, and Consequences

Unintended pregnancy remains a challenge for many countries at the beginning of the 21st century. This review pulled literature from around the world, with specific attention to unintended pregnancies in North America (48%), western and central Africa (30-36%), South America (64%), East (33%) and Southeast (48%) Asia, and the Philippines (54%) (Darroch, Singh, Ball, & Cabigon, 2009; Singh, Sedgh, & Hussain, 2010). The purpose of the review was to identify the frequency, predictors, and outcomes of unintended pregnancy and to investigate literature on the association between unintended pregnancy and antenatal care (ANC).

Multi-country studies

A qualitative multi-country study examining perspectives on contraceptive use and induced abortion revealed that couples in at least 5 different countries (Pakistan, Peru, the United States, Mexico, and Nigeria) did not actively engage in either short- or long-term reproductive planning (Tsui, Casterline, Singh, Bankole, Moore, Omideyi, Palomino, Sathar, Juarez, & Shellenberg, 2011). Contraceptives are accessible and available (through both government and private services) in all five countries, and knowledge about contraceptive use and efficacy was reportedly high, yet couples did not appear to be applying that knowledge to regulate fertility. Many of the study participants reported negative opinions of or experiences with contraceptives (especially hormonal methods, such as the Pill or injections), including weight gain, hair loss, physical pain or discomfort, and loss of intimacy

(with male condoms). The day-to-day inconveniences of certain contraceptives overshadowed the long-term risk of pregnancy and its attendant health and economic costs. In sum, short-term costs were perceived by study subjects to outweigh long-term benefits or costs, regardless of the relative magnitude; temporality was the most important factor influencing contraceptive choice and use.

Cleland and Ali (2004) analyzed Demographic and Health Survey (DHS) data from married women in 19 low- and middle- income countries to examine the associations between contraceptive efficacy, unintended pregnancy, and pregnancy outcomes. Analysis revealed contraceptive failure rates for all methods very similar to those measured in the United States; however, the percentage of unintended pregnancies attributed to contraceptive failure was significantly lower (15% vs. 50% in the U.S.). This difference is partly due to the popularity of highly effective contraceptive methods with very low failure rates (e.g. IUDs and injections) in the countries studied. More important, though, are the low rates of contraceptive use in the general population (significantly less than 75% of married or co-habiting couples). Non-use of contraceptives is responsible for nearly all unintended pregnancies in these countries. In order to reduce the number of unintended pregnancies (and subsequent unintended births and induced abortions), the barriers to effective contraception must be removed, whether they are cultural, economic, political, or (most likely) some combination of the above.

The United States

Unintended pregnancy remains a top concern for the U.S. government, in particular due to the high cost of unintended pregnancies among women on public insurance ($11 billion in 2006) (Sonfield, Kost, Gold, & Finer, 2011); as a result, a significant proportion of the body of research on unplanned pregnancy focuses on the United States. Family planning programs are known to be highly cost-effective, saving Medicaid $4.00 USD for every $1.00 USD spent on pregnancy-related care (including prenatal, labor and delivery, post-partum, and infant care) (Frost, Finer, & Tapales, 2008). Additionally, unintended pregnancy rates are particularly high among already vulnerable populations, including teens, Black and Hispanic women, and women living below the poverty line (Finer & Henshaw, 2006). The U.S. government's Healthy People 2020 campaign is currently advocating for greater access to preconception care, which would ideally not only improve contraceptive use and access, but also prenatal care coverage (Johnson, Posner, & Biermann, 2006).

Frequency of unintended pregnancy

The U.S. has one of the highest unintended pregnancy rates in the developed world (Singh, et al., 2010); almost half of all pregnancies (3.2 million out of 6.7 million) each year are unintended (Finer & Zolna, 2011). Rates vary by state (due to demographic variation), but averaged out to 52 unintended pregnancies per 1,000 women in 2006 (Finer & Kost, 2011). Rates also varied by key socioeconomic and demographic factors; the unintended pregnancy rate for black women was more than twice that of non-Hispanic white women (91 per 1,000 vs. 36 per 1,000) (Finer

& Zolna, 2011). Women living below the poverty line had a rate 5 times greater than women in the highest income group (132 per 1,000 vs. 24 per 1,000). Unintended pregnancy rates decreased with both age and level of education; however, the rate among teens is twice as high as among all women, in large part due to the smaller percentage of sexually active teens (Finer, 2010).

Risk factors for unintended pregnancy

A cross-sectional study of African-American adolescents (15-19 years of age) at a prenatal clinic in Atlanta, Georgia, identified several key correlates of unintended pregnancy, including: already having a child, an age of less than 18 years old (e.g. being a legal minor), and perceived lack of parental involvement (Crosby, DiClemente, Wingood, Rose, & Lang, 2003). However, it is difficult to say whether or not these are actual risks for unintended pregnancy, or simply demographic and social factors associated with other conditions that put teens at risk (e.g. socioeconomic status). Analysis of a nationally representative sample from the 2002 and 2004 Behavioral Risk Factor Surveillance System (BRFSS) identified demographic and behavioral risk factors for unintended pregnancy among women using and not using birth control (low-risk and high-risk respectively) (Xaverius, Tenkku, & Salas, 2009). High-risk women differed from low-risk women in the expected demographic categories (race, age, income), but were also less likely to have health insurance or be married. Furthermore, high-risk women were less likely to receive crucial health care services (including Pap and HIV tests, STI counseling, and folic acid supplementation), and were more likely to be obese, smoke, and exercise less. Factors influencing a woman's likelihood of using contraception may

also influence her healthcare seeking and lifestyle decisions, all of which will ultimately impact her health during an unintended pregnancy, and potentially lead to adverse outcomes for both mother and child (Dott, Rasmussen, Hogue, Reefhuis, & Study, 2010).

Outcomes of unintended pregnancy

A retrospective analysis of data on Asian and Pacific Islander women from the Hawaii Pregnancy Risk Assessment and Monitoring System (PRAMS) found that unintended pregnancy was a significant risk factor for Self-Reported Postpartum Depressive Symptoms (SRPDS) (Hayes, Ta, Hurwitz, Mitchell-Box, & Fuddy, 2010). Women who reported an unintended pregnancy were also 40% more likely to have SRPDS. Another study conducted in Baltimore, Maryland, examined the pregnancy practices of African-American women who reported unwanted pregnancies (Orr, James, & Reiter, 2008). Women with an unwanted pregnancy were significantly more likely to engage in a variety of unsafe pregnancy practices, including smoking, drug and alcohol use, and third trimester initiation of prenatal care. All of these behaviors impact fetal development and well-being, and are also harmful to the mother's health.

Latin America

Frequency of unintended pregnancy

In 2008 about 17.1 million pregnancies occurred in the Latin American region, and most (11.3 million) occurred in South America (Singh, et al., 2010). Overall 58% of these pregnancies were reported as unintended; 63% and 64% of

pregnancies in the Caribbean and South America (respectively) were reported as unintended, in contrast to only 43% in Central America. Since 1995, unintended pregnancy rates have declined by 25%, from 96 per 1,000 women aged 15-44 to 72 per 1,000 women.

Risk factors for unintended pregnancy

A secondary analysis of 1995 DHS data from Ecuador examined risk factors for unwanted and mistimed pregnancies (Eggleston, 1999). A woman's odds of having an unwanted pregnancy increased with parity and modern contraceptive use; her odds of having a mistimed pregnancy increased with parity, marriage, a primary school education (vs. no education), and modern contraceptive use. The odds of having an unwanted or mistimed pregnancy also decreased with socioeconomic status and age. These findings suggest that women with prior children are most in need of increased family planning services, and that contraceptive use alone does not decrease the risk of an unwanted or mistimed pregnancy; women who use contraceptives may not be using them efficaciously (a result of good access but poor contraceptive education coverage), and may subsequently have higher standards for controlling fertility, standards which are seriously disappointed when a pregnancy occurs unplanned.

Researchers also looked at the association between intimate partner violence (both physical and sexual) and unintended pregnancy in Peru (Cripe, Sanchez, Perales, Lam, Garcia, & Williams, 2008). Both events were common in the population studied (recently delivered women at a hospital in Lima), with 65.3% of women reporting an unintended pregnancy, and 40.0% reporting experiencing IPV

during a lifetime. Women who experienced lifetime physical or both physical and sexual abuse had a higher risk of an unintended pregnancy. An analysis of 2000 DHS data from Colombia found a similar risk for unintended pregnancy among women reporting recent sexual or physical abuse (Pallitto & O'Campo, 2004). This heightened risk likely reflects an inability to use contraception for fear of partner reprisal, but may also relate to the woman's lack of access to contraception. The association of IPV with unintended pregnancy is particularly concerning, as violence may persist throughout pregnancy, endangering the health of both mother and fetus.

Outcomes of unintended pregnancy

About half of all unintended pregnancies in Latin America (28% of total pregnancies) result in a live birth, although more than a third (22% of total pregnancies) end in abortion (Singh, et al., 2010).

Africa

Frequency of unintended pregnancy

In 2008, about 49.1 million pregnancies occurred in Africa, and most (32.9 million) occurred in the regions of Eastern and Western Africa (Singh, et al., 2010). Overall 39% of these pregnancies were reported as unintended; 46% and 59% of pregnancies in Eastern and Southern Africa (respectively) were reported as unintended, in contrast to 36% in Middle Africa, 38% in Northern Africa, and 30% in Western Africa. Since 1995, unintended pregnancy rates have declined by just 7%, from 92 per 1,000 women aged 15-44 to 88 per 1,000 women.

Risk factors for unintended pregnancy

Researchers in Nigeria looked at the factors associated with unwanted pregnancy using a community-based, cross-sectional survey administered in all four of the country's health zones (Sedgh, Bankole, Oye-Adeniran, Adewole, Singh, & Hussain, 2006). A woman's odds of having an unwanted pregnancy increased with divorce, separation, or spousal death; parity; rural residence; and use of any contraceptive method (both traditional and modern). The odds decreased with religion (Protestant or Muslim) and marriage. Similar to study results published from Latin America, the association of contraceptive use with an unwanted pregnancy implies either use of less effective methods or imperfect use of highly effective methods, problems that could be remedied by better contraceptive education and access. A serious risk with unwanted pregnancies among women using contraception is that it could cause them to doubt, mistrust, or lose faith in the ability of family planning to prevent unwanted births, which could result in overall decreased family planning use (through word of mouth, etc.).

Outcomes of unintended pregnancy

Slightly more than half of all unintended pregnancies in Africa (21% of total pregnancies) result in a live birth, although a third (13% of total pregnancies) end in abortion (Singh, et al., 2010). Sedgh at al. (2006) found in Nigeria that nearly half of all unintended pregnancies resulted in an attempt to terminate the pregnancy, despite the illegality of abortion in that country. The desire for an abortion may be greater than the currently observed levels of practice (especially in countries where abortion is illegal), underlining the need for better family planning to prevent

unwanted pregnancies that result in unsafe or illegal abortions. A study of pregnancy outcomes among teenagers in the South Nyanza Region of Kenya found that teenagers who reported an unintended pregnancy were more likely to have a pre-term birth (Magadi, 2006). This would be risky not only for the mother (depending on her ability to access delivery and health care), but might also increase the likelihood of infant mortality for a premature baby.

Asia

Frequency of unintended pregnancy

In 2008, there were 118.8 million pregnancies in Asia; the majority (60.4 million) of these occurred in South-central Asia (encompassing India and Bangladesh) while 31.7 million occurred in Eastern Asia, 19.2 million in Southeastern Asia, and 7.5 million in Western Asia (Singh, et al., 2010). Overall 38% of these pregnancies were reported as unintended; Southeastern Asia reported the highest percentage of unintended pregnancies (48%), followed by Western Asia (44%), South-central Asia (38%), and finally Eastern Asia (33%). Since 1995, unintended pregnancy rates have declined by 23%, from 64 per 1,000 women aged 15-44 to 49 per 1,000 women.

Risk factors for unintended pregnancy

Stephenson et al. (2008) analyzed risk factors for unwanted pregnancy in three different regions of India, using both prospective and retrospective measures of unwanted pregnancy. The prevalence of unwanted pregnancy reported using each measure varied significantly, from 23% using a prospective measure, to 11%

and 5% using different retrospective measures. The greatest risk factor identified for an unintended pregnancy was parity; women with 3 or more children were significantly more likely to report an unwanted pregnancy than women with 1-2 children (women with no children were excluded from the sample). Additionally, women who reported having a living son were nearly three times as likely to also report an unwanted pregnancy. Other risk factors included spousal physical violence, ever using a temporary method of contraception, primary education, and state of residence.

A smaller study examining the medical records for rural single women seeking abortions after 20 weeks (unobtainable due to illegality) at a teaching hospital in Sevagram, India, found that the vast majority of these women completely lacked information about contraceptives (Chhabra, Palaparthy, & Mishra, 2009). Girls living in rural areas are less likely to attend or advance very far in school, making it more difficult to reach them with pregnancy prevention information. Additionally, girls living in urban areas have access to free contraception, relieving the economic burden for low-income girls.

Bangladesh at the end of the century saw a general decline in the number of unintended births reported, from 38% in 1984 to 22% in the mid 1990s (Gipson, Hossain, & Koenig, 2011). However, serious data discrepancies persist between prospectively measured unintended birth rates with state-level surveys, and retrospective measured rates from the DHS (1993, 1996, and 1999). State-level estimates were, on average, twice as large as the estimates provided by the DHS. Like India, Bangladesh highlights the importance of collecting prospective data on

unintended pregnancies, in order to more fully capture the total number of pregnancies that are unintended when they occur.

Outcomes of unintended pregnancy

Less than a third of all unintended pregnancies (12% of total pregnancies) result in a live birth, while nearly two-thirds (21% of total pregnancies) end in abortion (Singh, et al., 2010). Southeastern and Eastern Asia reported the highest percentages of unintended pregnancies ending in abortion (28% and 25%, respectively) while Western Asia reported the lowest (15%).

The Philippines

Frequency of unintended pregnancy

More than half (54%) of total pregnancies among women ages 15-49 are unintended; 16% of total pregnancies lead to mistimed births (two or more years sooner than desired), 14% lead to unwanted births, and 17% lead to induced abortions (Darroch, et al., 2009).

Risk factors for unintended pregnancy

Less than half (49%) of all women who reported being sexually active but did not want to become pregnant for two years or more (i.e. at risk for an unintended pregnancy) used a modern method of contraception. Nearly a third of at-risk women (29%) reported using no method, and 22% reported using a traditional form of contraception (Darroch, et al., 2009). Low levels of effective contraceptive use among this population are problematic, as more than two-thirds (68%) of unintended pregnancies in 2008 occurred among at-risk women who were not

using any method, while only 8% occurred among at-risk women using a modern method.

Women in the Philippines have several barriers to obtaining contraceptives. The most commonly cited ones include: health concerns (e.g. a fear of side effects), perceived lack of risk (e.g. the woman does not believe she is likely to become pregnant, for specific reasons such as infrequent sex), the cost of contraceptives (a greater barrier for unmarried women than married women), and partner, family, or personal opposition (generally for religious reasons) (Guttmacher Institute & Likhaan Center for Women's Health, 2010). An additional contributor is the phase-out of USAID donations to family planning clinics, beginning in 1999 and completed by 2008 (Darroch, et al., 2009; Guttmacher Institute & Likhaan Center for Women's Health, 2010).

Apart from any role it may have in contraceptive decision-making at the individual level, religion continues to exert enormous power over policy and politics (Austria, 2004). During the Macpagal-Arroyo administration (2001-2010), many influential officials, including the Secretary of Health (a doctor) and the President herself, publicly labeled all several modern contraceptives as abortifacients, including the Pill and intrauterine devices (IUDs) (Austria, 2004). As part of the USAID phase-out, the Department of Health (DoH) also shifted responsibility for provision of contraceptives to the local level, but did not develop any national provisional guidelines, making room for conservative local governments to pass extremely restrictive legislation (Linangan ng Kababaihan, Inc., Reproductive

Health, Rights and Ethics Center for Studies and Training (ReproCen), & Center for Reproductive Rights, 2007).

Outcomes of unintended pregnancy

An unintended pregnancy has one of two major outcomes: birth or induced abortion. The effect of unintended pregnancies on birth rate in the Philippines can be seen in the significant discrepancy between women's desired number of children (2.8) and the average number of children per woman ages 15-49 (3.3) (Philippines 2008 DHS Final Report, 2009). However, the average number of children varies by several different demographic factors, particularly wealth: women in the lowest quintile have an average of 5.2 children, compared to 1.9 for women in the highest quintile. This most likely relates to poor women's inability to access contraceptive services (due to lack of insurance coverage) or abortion services.

Abortion in the Philippines is generally prohibited under the penal code, although under certain circumstances a board of medical professionals may give permission for the procedure in order to save the mother's life (Ralston & Podrebarac, 2008). Problematically, the 1987 Constitution can be interpreted to define life as beginning as the moment of conception, as the state is required to "equally protect the life of the mother and the life of the unborn from conception." (*cited*, Ralston & Podrebarac, 2008). Using hospital data and an indirect estimation method, Juarez et al. (2005) calculated a 2000 medium national annual abortion rate of 27 induced abortions per 1,000 women ages 15-49 (low estimate 22, high estimate 31). The overall rate of induced abortions was largely unchanged from 1994 estimates (25 per 1,000 women), and hospitalization rates for induced

abortion from 1994-2000 made up less than 20% of all estimated abortions (4.4 per 1,000 women) (Singh, 2006). A qualitative study of urban young adults in Cebu City suggests that knowledge of how to access and use misoprostol is widespread, while contraceptive prevalence remains low (Gipson, Hirz, & Avila, 2011). A self-induced medical abortion using misoprostol meets the WHO definitions for an unsafe abortion, putting women in the Philippines at risk of morbidity or mortality due to complications that are not treated in time (Grimes, Benson, Singh, Romero, Ganatra, Okonofua, & Shah, 2006).

Co-occurrence of unintended pregnancy and late or inadequate ANC

The WHO standard for provision of effective antenatal care recommends at least four ANC visits initiated as early as possible in the first trimester in order to:

> "prevent, alleviate or treat/manage health problems/disease (including those directly related to pregnancy) that are known to have an unfavourable outcome on pregnancy, and to provide women and their families/partners with appropriate information and advice for a health pregnancy, childbirth and postnatal recovery." (WHO, 2007).

U.S. and high-income countries

The association between unintended pregnancy and antenatal care has been well-studied in the United States (Gipson, Koenig, & Hindin, 2008). Women who report an unintended pregnancy are also more likely to report engaging in unhealthy behaviors during pregnancy such as smoking tobacco, alcohol use, illicit drug use, and failure to take folic acid and other prenatal vitamins (Dott, Rasmussen,

Hogue, & Reefhuise, 2010; Cheng, Schwarz, Douglas, & Horon, 2009; Hellerstedt, Pirie, Lando, Curry, McBride, Grothaus, & Nelson, 1998; Kost, Landry, & Darroch, 1998). After delivery, women who reported an unintended pregnancy are more likely to be report postpartum depression and smoke postpartum, but are less likely to exclusively breastfeed (Cheng, et al., 2009; Pulley, et al., 2002). Finally, women who report an unintended pregnancy are less likely to initiate ANC during the first trimester or to attend the recommended minimum number of ANC visits (Cheng, et al., 2009; Pulley, Klerman, Tang, & Baker, 2002; Pagnini & Reichman, 2000; Kost, et al., 1998; Sable & Wilkinson, 1998; Mayer, 1997; Joyce & Grossman, 1990). All of these behaviors could potentially lead to adverse health outcomes for both mother and child.

Low-income and developing countries

Marston and Cleland (2003) examined the associations between unintended pregnancy and various maternal and child health outcomes using DHS data from five developing countries: the Dominican Republic, Egypt, Kenya, the Philippines, and Thailand. Of all the outcomes measured, inadequate ANC was the only one associated with unintended pregnancy across all five countries. Other studies in Latin and America and Africa also found an association between unintended pregnancy and inadequate ANC (Eggleston, 2000; Magadi, Madise, & Rodrigues, 2000). However, none of these studies used prospective measures for unintended pregnancy, which may not capture the true scope of unintended pregnancy in these countries.

Other middle-income countries

A cross-sectional survey of women attending their first ANC visit at maternity clinics in Monterrey, Mexico, found that nearly half (47%) of the women reported late initiation of ANC (Quelopana, Champion, & Salazar, 2009). Logistic regression analysis revealed a negative attitude towards pregnancy as the strongest predictor for late initiation of ANC. A negative attitude towards pregnancy was defined as a positive response to one of 11 questions, three of which dealt with unintended pregnancy (e.g. reporting that the pregnancy was unplanned or unwanted). More than half (60%) of the women who reported late initiation of ANC also reported that the pregnancy was unplanned, in contrast to 39.6% of women who reported early initiation of ANC. More than a quarter (28.6%) of late initiators reported being unhappy about the pregnancy (as opposed to 6.0% of early initiators), and 7.6% of late initiators were also thinking of having an abortion (in contrast to 1.5% of early initiators). Although this study was not able to causally demonstrate a link between unintended pregnancy and late initiation of ANC, it did point to serious discrepancies in the prenatal care-seeking behaviors of women reporting unintended pregnancies.

Another cross-sectional survey in Turkey looked more specifically at the effect of unintended, unwanted, and mistimed pregnancy on the adequacy of ANC received by women delivering in a maternity hospital with low socioeconomic status (Erol, Durusoy, Ergin, Döner, & Çiçeklioglu, 2010). Adequate PNC was defined both quantitatively (number of visits) and qualitatively (the types of vaccines, exams, and information delivered). Slightly less than half (47.3%) of all pregnancies surveyed were reported as unintended: 31.3% of all pregnancies were reported as mistimed

and 16.0% reported as unwanted. These percentages were slightly higher than those reported in the most recent DHS survey of Turkey, which most likely reflects the socioeconomic status of the women surveyed. Women with an unintended (both unwanted and mistimed) pregnancy were more likely to delay initiation of prenatal care than women with an intended pregnancy. However, in terms of the qualitative content of care received, women with an unwanted pregnancy were significantly less likely to receive iron and vitamin supplementation and health education than women with an intended pregnancy, whereas women with a mistimed pregnancy did not receive significantly different levels of care than women with an intended pregnancy. In sum, the difference between an unwanted and a mistimed pregnancy appears to significantly impact Turkish women's prenatal care-seeking behaviors, although causality cannot be attributed using this retrospective survey data.

Summary of the Current Problem and Study Relevance

Unintended pregnancy is a well-documented problem among women in the Philippines. While unintended pregnancy has been studied as a risk factor for several aspects of ANC in the United States, this association has not been as widely studied in other countries. Given the high prevalence of unintended pregnancy in the Philippines, this thesis seeks to explore the association between unintended pregnancy and late initiation and/or inadequate use of ANC in the Philippines.

Chapter 3. Methodology

Using 2008 Demographic Health Survey (DHS) data from the Philippines, the researcher evaluated the prevalence of and risk factors for unintended pregnancy among women ages 15-49 who reported a live birth in the 5 years prior to the survey. The researcher also evaluated the association between unintended pregnancy and antenatal care (ANC) in this population.

Study Setting

The Philippine archipelago has a total land area of 298,170.0 km^2 (115124.080 mi^2) spread over 7,107 islands (World Bank, 2011). It is located to the south-east of Asia and north of Indonesia, bounded by the South China, Philippine, and Celebes Seas (Philippines 2008 DHS Final Report, 2009). The population is estimated to be 103,775,002 in July 2012, making it the 12th most populous country in the world (CIA, 2012). The Philippines has two official languages (Filipino, based on Tagalog, and English) along with eight major dialects: Tagalog, Cebuano, Ilocano, Hiligaynon/Ilonggo, Bicol, Waray, Pampango, and Pangasinan. The country's major ethnic groups correspond with these dialects, including: Tagalog (28.1%), Cebuano (13.1%), Ilocano (9%), Bisay/Binisaya (7.6%), Hiligaynon/Ilonggo (7.5%), Bikol (76%), Waray (3.4%), and identified as other (25.3%). Roman Catholicism is the dominant religion (80.9%), although several minority religions include: a local variant of Catholicism (*Aglipay*, 2%), Islam (5%), Evangelical Christianity (2.8%), or another home-grown church, the *Iglesia ni Kristo* (2.3%). The population is predominantly young, with a median age of 22.9 years (male 22.4, female 23.4), split

evenly between males and females (1:1 ratio), and nearly half (49%) live in urban areas.

The Philippines declared its independence from the U.S. in 1946, at which point it established a three-branched republican government with executive (president, vice president, and cabinet), legislative (bicameral Congress), and judicial (Supreme Court, Court of Appeals, and special government corruption court the *Sandigan-bayan*) arms (CIA, 2012). The country is divided into 80 provinces and 120 chartered cities; provinces are further subdivided into cities and municipalities made up of *barangays* (the smallest unit of local government) (Philippines 2008 DHS Final Report, 2009). At the sub-national level, provinces are grouped into 17 administrative regions based on shared characteristics such as ethnic group and/or dialect spoken. Government agencies often operate at the regional (rather than province level); one region, the Autonomous Region in Muslim Mindanao (ARMM) has a separate local government (including governor and assembly), but the rest of the provinces have no formal government structure. The current President Beningno Aquino was sworn in on June 30, 2010, and will remain in office for six years (CIA, 2012).

Since its independence in 1946, the Philippines has undergone severe political and economic troubles; a two decade dictatorship under Ferdinand Marcos ended in 1986 when the People Power movement ushered Corazon Aquino (the current president's mother) into office and sent Marcos into exile (CIA, 2012). The country struggled through the Asian financial crisis of 1997 and presidential corruption charges in the early 2000s, although it was one of only a few countries in

Southeast Asia to emerge from the 2008 global recession relatively unscathed. The 2010 GDP was $199.589 billion, with 7.6% annual growth and a per capita of $2,140 (World Development Indicators, 2011). The majority of the country's income is generated through services (55%), followed by industry (33%) and agriculture (12%) (World Bank, 2011). Unemployment stood at 7.5% in 2009, and 32.9% of the population was below the poverty line in 2006. However, the distribution of family income Gini index is relatively high (43.0 in 2009), with the wealthiest 10% controlling 33.6% of the income share while the poorest 10% control 2.6% of the income source (World Bank, 2011).

Population and Sample

A total of 13,594 women aged 15-49 were interviewed in 2008 (a response rate of 98%). About 96% of women were currently married women (including women who were living in a consensual union). The study population is women ages 15 to 49 who gave birth in the 5 years prior to the study (N=6,563).

Research Design

This evaluation is a secondary analysis of data from the National Demographic Health Survey conducted in the Philippines in 2008 by the National Statistics Office and Macro International, Inc., as part of the worldwide Demographic and Health Surveys (DHS) program. The DHS is a nationwide sample survey designed to collect information on health behaviors and practices, reproductive preferences, domestic violence, HIV knowledge, family planning, fertility, and maternal and child health.

Procedures and Instruments

The National Statistics Office (NSO) conducted the 2008 DHS, with funding and financial support from the Government of the Philippines (GoP) and the United States Agency for International Development (USAID). ICF Macro provided technical assistance for questionnaire design, training, data processing, table generation, weights, and sampling errors. The surveys were implemented through regional statistical offices (with Regional Directors and designated Regional Supervisors), assisted by Provincial Statistics Officers.

Within the 17 administrative regions of the Philippines, a stratified three-stage sample design was used to select households for surveying. In the first stage, primary sampling units (PSUs) were selected using estimated household numbers from the 2000 census. Each PSU was composed of one *barangay* or a group of continuous *barangays*. In the second stage, enumeration areas (EAs) of about 150 contiguous households were established within PSUs with probability proportional to size. In the third stage, housing units within sampled EAs were selected with equal probability.

The 2008 DHS consisted of 794 EAs, with an average of 17 housing units per EA. All households within a housing unit were interviewed, unless there were three or more households in the unit, in which case three households were selected through simple random sampling. Of the 13,764 households selected for the 2008 DHS, 12,555 were occupied, and 12,469 were interviewed (a household response rate of 99%). Three questionnaires were used for the survey: the Household Questionnaire, the Women's Questionnaire, and the Women's Safety Module. All

questionnaires were available in English, Tagalog, Cebuano, Ilocano, Bicol, Hiligaynon, and Waray. The Household Questionnaires were administered to all members in the selected households, and also served the purpose of identifying women eligible for the other two questionnaires. The Women's Questionnaire was administered to all women ages 15-49; the Women's Safety Module was administered to one out of all eligible women within a surveyed household. Three pretests in March, April, and May of 2008 were used to finalize the survey instruments. Data collection took place from August 7 to September 27, 2008, by 57 interview teams consisting of a supervisor, field editor, and 3-6 female interviewers.

Variable Definitions

Unintended Pregnancy:

The respondent reported that at the time of her last pregnancy, she:

a) wanted to become pregnant then (*wanted*)
b) wanted to wait until later (*mistimed*)
c) did not want to have any (more) children at all (*unwanted*)

An *unintended* pregnancy was classified as the sum of all *mistimed* and *unwanted* pregnancies.

Predictors of Unwanted Pregnancy

a) Residential area – urban/rural
b) Region – one of 17
c) Wealth quintile – poorest to wealthiest

d) Education level – highest level of education completed (no education, primary, secondary, or higher)
e) Religion - Roman Catholic, Islam, Born again Christian, Protestant, *Iglesia ni Kristo*, *Aglipay*, Jehovah's Witness, Seventh Day Adventist, Other, and none
f) Age – seven groups (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49)
g) Marital status – married/in a union or never married/divorced/widowed
h) Birth order of most recent pregnancy in the 5 years preceding survey – 1, 2, 3, 4, 5, 6+
i) Contraceptive use – modern method, traditional, folkloric, none
j) Current risk of pregnancy – fecund, pregnant, amenorrheic, or infecund/menopausal
k) Source known for family planning (FP) – none, government, private, shop/church/friend/other
l) Currently breastfeeding – yes/no
m) Ever terminated pregnancy – yes/no

<u>Outcome of Unintended Pregnancy</u>

Late or inadequate antenatal care (ANC), as determined by WHO standards for timely initiation of ANC: at least four ANC assessments by or under the supervision of a skilled attendant (doctor or nurse/midwife), with the first assessment completed during the first trimester (12 weeks) of pregnancy (WHO, 2007)

a) Late ANC was defined as women who reported attending the first ANC visit after completing 3 months of pregnancy (12 weeks)
b) Inadequate ANC was defined as women reporting less than 4 ANC visits total

Data Analysis

For the purposes of this study, the data set was restricted to women ages 15 to 49 who gave birth in the 5 years prior to the study and reported on their antenatal care access and coverage (or lack thereof). The main variable of interest was unintended pregnancy – either mistimed (wanted later) or unwanted (did not want). Unintended pregnancy was considered both as an outcome with demographic and behavioral predictors, and also as a risk factor for late or inadequate antenatal care (ANC). Stata SE 12.0 (College Station, Texas: 2011) was used to perform the following univariate and bivariate analyses and logistic modeling.

Univariate analysis was performed on all demographic and behavioral predictors (Table 1). Bivariate analysis was then used to assess the relationship between the primary study variable (unintended pregnancy), and each predictor (Tables 3 and 4). Logistic regression models were used to calculate the odds ratios between unintended pregnancy and ANC (Table 6). Adjusted models were run to include potential confounders (those predictors that were significantly associated with both unintended pregnancy and ANC). The comparatively small difference

between crude and adjusted models indicates a relative lack of confounding (Table 6).

Limitations and Delimitations

The results of this study apply only to the Philippines. The purpose is to assess the association between unintended, mistimed, and unwanted pregnancies and late or inadequate antenatal care (ANC) in the Philippines. This analysis involved only women ages 15-49 who participated in the DHS survey and reported a live birth in the give years prior to the survey.

A clear limitation is the purely quantitative definition used for the ANC variable. The content and quality of ANC received were not assessed, and for the purpose of this analysis were presumed to be beneficial (e.g. all information and tests received were accurate and pertinent). A second limitation is recall bias for unintended, mistimed, and unwanted pregnancies. Women reporting on their feelings at the time they were pregnant, when the event could have occurred as long as 5 years ago, may assess their feelings differently in light of subsequent events.

The cross-sectional data collected in this study cannot be used to draw conclusions about temporality. Unintended, unwanted, or mistimed pregnancy may or may not influence a woman's likelihood of receiving adequate ANC. The data on ANC may be subject to recall or reporting bias because of the length of time that may have passed and social desirability bias. Because of this, ANC may be over-reported.

Chapter 4. Results

Introduction

This chapter presents the findings of the univariate and bivariate analyses and logistic regression. Expected and unexpected results are discussed, as well as potential explanations for observed data patterns and associations.

Findings

The demographic characteristics of the study population are shown in Table 1. The women surveyed were more or less evenly distributed across the seventeen regions, with a higher proportion of women surveyed from the National Capital (9.54) and Calabarzon (8.18) regions. A slight majority (59%) of women live in rural residential areas, and nearly all of them (96%) are married or in a union. A little more than half (51%) were between the ages of 25 and 39, and the vast majority (91%) practice some form of Christianity. The population was not equally distributed amongst wealth quintiles, with slightly more (29%) in the poorest quintile and slightly smaller percentages (16% and 12% respectively) in the richer and richest quintiles. Most of the women have some education (96%), although less than a quarter have a greater than secondary education (21%). Most women (70%) already had another child at home during the pregnancy, and a little more than one-tenth (11%) reported having more than 6 children at the time of the pregnancy. While a majority (73%) are at risk for pregnancy, half do not know where to obtain any method of family planning (50%), and only about 3 in 10 (34%) know where to obtain a modern method of family planning. Slightly more than a third (34%) of

women reported using a modern method of contraception, while 15% reported using a traditional method, and 50% reported none. Additionally, 20% of women reported currently breastfeeding. Despite the fact that abortion is illegal, over a quarter (28%) of women have ever terminated a pregnancy.

Unintended pregnancy is not uncommon in the Philippines (Table 2). About 2 in 5 women characterized their last pregnancy as unintended (37%), with slightly more of those reporting the pregnancy as mistimed (21%) than unwanted (16%). Almost a quarter (24%) received less than four ANC visits, while slightly less than half (46%) initiated ANC after the first trimester. Overall, 52% of all women reported receiving late or inadequate ANC.

The distributions of potential demographic predictors for unintended pregnancy are shown in Table 3. Residential area and marital status are not significantly associated with any category of unintended pregnancy at the 0.0001 level, although marital status is associated with unwanted and unintended pregnancy at the 0.05 level; unwanted and unintended pregnancies are significantly more prevalent amongst never married, widowed, or divorced women. The region in which a woman lived was significantly associated with each category of pregnancy at the 0.0001 level. Wealth quintile was statistically significant at the 0.0001 level for unwanted pregnancy, with a skewed distribution of prevalence peaking in the 2nd quintile (poorer) and tapering off towards the 5th quintile (richest). Education level is significantly associated with mistimed and unwanted pregnancy at the 0.0001 level, although the skewed distribution of prevalence is different. Prevalence of unwanted pregnancies peaks for women with a highest level

of primary education, while prevalence is lowest in this group for mistimed pregnancies (women with a higher education have the highest prevalence of mistimed pregnancy). Religion was statistically significant at the 0.0001 level for unwanted and unintended pregnancy, although distribution of prevalence is again different between the two. *Iglesia ni Kristo* members and Jehovah's Witnesses have the highest levels of unwanted pregnancy, and Jehovah's Witnesses also have the highest levels of unintended pregnancy, followed closely by Seventh Day Adventists, Protestants, and members of the *Iglesia ni Kristo*. Strikingly, Muslim women have by far the lowest levels of unintended, mistimed, and unwanted pregnancy. Age is significantly associated with all categories of unintended pregnancy at the 0.0001 level; women ages 20-24 have the highest prevalence of mistimed pregnancy, women ages 45-49 have the highest prevalence of both unwanted and unintended pregnancy. Birth order was also significantly associated with all categories of unintended pregnancy at the 0.0001 level; second-order pregnancies were most likely to be mistimed, while sixth-order or higher pregnancies were most likely to be unwanted or unintended.

The distributions of potential behavioral predictors for unintended pregnancy are shown in Table 4. Current risk of pregnancy is not significantly associated with any category of unintended pregnancy, while source known for family planning and currently breastfeeding is only statistically associated with mistimed and unintended pregnancy at the 0.05 level. Contraceptive use is significantly associated with unintended pregnancy at the 0.0001 level, with the highest prevalence amongst women using traditional methods of contraception.

Terminating a pregnancy was statistically significant with mistimed and unwanted pregnancies at the 0.0001 level, with a higher prevalence of mistimed pregnancy among women who have never terminated a pregnancy and a higher prevalence of unwanted pregnancy among women who have ever terminated a pregnancy.

The frequency of late or inadequate ANC according to unintended pregnancy is shown in Table 5. Among women who reported an unintended pregnancy (mistimed or unwanted), 58% reported receiving late or inadequate ANC. Late or inadequate ANC was not significant at the 0.0001 level for mistimed pregnancies, although it did fall below the 0.05 threshold. Women who reported a mistimed (AOR 1.42 [1.22-1.65]) or unwanted (AOR 1.26 [1.08-1.47]) pregnancy were statistically more likely to receive late or inadequate ANC (Table 6). Women who reported any form of unintended pregnancy (mistimed and unwanted) were 35% more likely to receive late or inadequate ANC than women who did not report any form of unintended pregnancy. Notably, women who reported a mistimed pregnancy were more likely to receive late or inadequate ANC than woman reporting an unwanted pregnancy.

Summary

All forms of unintended pregnancy examined in this analysis are statistically associated with late or inadequate antenatal care.

Chapter 5. Discussion

This assessment of a nationally representative survey data set reveals a high frequency of unintended, unwanted, and mistimed pregnancies among women ages

15-49 in the Philippines. More than a third of all women reported having an unintended pregnancy, while 1 in 5 reported having a mistimed pregnancy, and 16% reported having an unwanted pregnancy. This study also reveals significant associations between unintended pregnancy and late or inadequate ANC; the associations persisted even after accounting for identified differences in risk characteristics and behaviors, including wealth, education, religion, age, parity, and modern method contraceptive use.

Frequency of Unintended Pregnancy

The prevalence of unintended pregnancy in the Philippines as determined using this data is slightly lower than global and regional estimates. An estimated 41% of all pregnancies among women ages 15-44 were unintended in 2008, a rate of 55 unintended pregnancies per 1,000 women (Singh, Sedgh, & Hussain, 2010). In Southeastern Asia, 48% of all pregnancies were unintended, at a rate of 66 per 1,000 women. This could be due to differences in regional representation; a slightly higher proportion of women from the National Capital Region (9.54%) were included in this study. Additionally, prevalence estimates will vary depending on whether prospective or retrospectives measures for unintended pregnancy were used, and the time at which the survey was administered (Santelli, et al., 2003).

Risk factors of Unintended Pregnancy

The risk factors identified for unintended pregnancy in this study were not unexpected. Darroch et al., (2009) reported extremely low levels of contraceptive use among women in the Philippines who reported not wanting any more children,

which implies a serious dearth in coverage, access, and education. The USAID family planning program phase-out by 2008 left a service gap that has yet to be filled, especially for women without the resources (financial or educational) to obtain contraceptives and information through other channels (Guttmacher Institute & Likhaan Center for Women's Health, 2010). Religion also plays a crucial role in mediating women's access to contraceptives; Roman Catholicism has been the dominant faith in the Philippines since Ferdinand Magellan claimed the country for Spain 1521 (World Factbook, 2012). During the 1980 "people power" revolt, the Catholic Church played an influential role in supporting and sustaining populist uprisings against Ferdinand Marcos, and Manila's Cardinal Jaime Sin also spearheaded demonstrations (via mass prayer vigils) against President Joseph Estrada in 2001 (Philpott, 2004). President Gloria Macpagal-Arroyo thus owed her office in no small part to the Catholic Church's democratic activism. Perhaps not surprisingly, President Macpagal-Arroyo's family planning policy subsequently followed Catholic Church pronouncements and opinion, rather than scientific evidence or public need and demand (Linangan ng Kababaihan, Inc., Reproductive Health, Rights and Ethics Center for Studies and Training (ReproCen), & Center for Reproductive Rights, 2007). Certain fundamentalist church attitudes continue to be reflected in national law and policy, such as the exclusion of all non-married and underage (i.e. adolescent) women from family planning services (Austria, 2004).

Unintended Pregnancy as a risk factor for Late or Inadequate ANC

As hypothesized, unintended pregnancy was significantly associated with late or inadequate ANC in this study of the Philippines. This most likely reflects women's inability to access any form of healthcare, both contraceptive and antenatal care included. The demographic and behavioral factors associated with an unintended pregnancy are also those that prevent or inhibit a woman's ability to obtain adequate care, particularly wealth, education, and age. Additionally, an unintended pregnancy may occur when a woman has no time or resources to obtain ANC; she may not have the money, or the ability to take off work or obtain childcare, or a means of transportation to the nearest clinic (especially if she lives in a rural area). However, further studies should examine the causal relationship between unintended pregnancy and late or inadequate ANC, as this cross-sectional analysis cannot definitively establish a temporal link from unwanted or mistimed pregnancy to delayed initiation of ANC.

The most surprising finding of this study was the higher odds of late or inadequate ANC among mistimed pregnancies than among unwanted pregnancies; common sense might dictate the opposite. One potential explanation for this difference is that women with an initially unwanted pregnancy who delayed or were unable to seek care later reported their pregnancy as mistimed, due to shifting pregnancy perceptions over time (Joyce, et al., 2000). Use of limited and mutually exclusive categories such as mistimed/unwanted also makes it difficult to truly capture a woman's feelings and situation throughout the duration of the pregnancy,

as well as post-partum. At the very least, this discrepancy highlights an important potential avenue for future research.

Unintended Pregnancy Measurement Flaws

Casterline and El-Zeini (2007) compared unintended pregnancy prevalence estimates using the normal DHS retrospective measure with a newly proposed aggregate prospective estimator; estimates were significantly higher when using the prospective measure. Koenig et al. (2006) found similar discrepancies when comparing prospective and retrospective reports of unintended pregnancy among the same cohort of women in rural India. However, Joyce et al. (2002) complicate these findings by highlighting the ethical implications of unstable reported pregnancy intentions. A birth that is prospectively reported as unwanted but retrospectively labeled as wanted would have serious implications for policy design; should all births that were unintended during pregnancy be targeted for prevention or only the ones that persist as unintended after birth? Other researchers point to the problem of conflating "wanting" (e.g. being happy about) and "planning" (e.g. preparing one's life for) a pregnancy, and the role of environment (e.g. a woman's particular context and situation) in determining whether or not a pregnancy is perceived and reported as unintended (Bachrach & Newcomer, 1999; Sable, 1999).

Future Research Directions

As mentioned previously, prospective research studies are necessary in order to establish a causal relationship between unintended pregnancy and late or inadequate ANC. Such a study would be able to make use of prospective measures

for unintended pregnancy (which are likely to uncover previously undetected risk factor associations), and would also be able to demonstrate the exact pathway from unintended pregnancy to late or inadequate ANC. Additionally, future studies should further explore the context and complexity of unintended pregnancies, including the factors that influence a woman's feelings about her pregnancy and her perceived ability to provide and manage a pregnancy at a particular moment in time.

Policy Recommendations

A conceptual model developed using information from the global literature review underlines the importance of policy in mitigating access to contraceptives and adequate ANC (Figure 1). In general, a Harvard School of Public Health legal analysis found that few of the Philippines national laws are actually obstructionist in terms of family planning services, but neither are they facilitative, contributing to a large amount of confusion and inaction regarding modern method provision (Mello, Powlowski, Nañagas, & Bossert, 2006). For example: no new contraceptive pills have been added to the Philippine National Drug Formulary (PNDF) since the 1980s, and at present PhilHealth (the national insurance program) only covers surgical methods of contraception, effectively blocking women from receiving or being reimbursed for other methods, such as injectables or modern oral contraceptives. Additionally, confusion regarding the exact letter of the law can be seen in the large number of providers who reported a provision in the Philippines Family Code requiring spousal consent before a tubal ligation; however, no such specific provision currently exists. Women seeking a tubal ligation may therefore be

presented with an additional, unnecessary obstacle, and the means for resolving this misunderstanding are uncertain, as changing attitudes about the law can be difficult, especially when the penalty for a perceived crime is very high.

While the previous president was resistant to national support for modern contraceptive methods, the current president of the Philippines is backing a reproductive health bill that would offer free or subsidized contraception through the national insurance plan (Khan & Aquino, 2012). The bill has been regularly introduced every 3 years since 1998, but did not stand a chance of passing during the anti-family planning administration of President Gloria Macpagal-Arroyo. With President Aquino's support, the bill could be voted on by June of 2012. In the wake of USAID's phase-out in 2008, the Philippines has not instituted a national family planning program, leaving service provision largely to the discretion of regional and local officials. In a particularly extreme situation, the pro-life mayor of Manila completely banned public provision of contraceptives in the city (Guttmacher Institute & Likhaan Center for Women's Health, 2010). If the bill passes, and a national policy is created, the Philippines will face the challenge of ensuring an effective and well-stocked delivery reproductive health system.

Nevertheless, providing for modern contraceptive methods under the national insurance plan will be an important and necessary step towards addressing the nation's unmet family planning needs. Given the previously discussed religious and moral opposition to family planning for women perceived as wanton or sinful, it may be necessary to reframe the need for contraceptives in terms of unwanted children and poor ANC. Such a strategy has been suggested for dealing with

particularly intransigent members of the U.S. Congress (Blow, 2011). Thus the analysis presented in this thesis could be used to argue for family planning coverage as a means of protecting infant and child health – a cause that very few politicians would refuse to champion.

Conclusion

Unintended pregnancy was found to be significantly associated with late or inadequate antenatal care (ANC) in the Philippines. Mistimed pregnancies were found to have a higher odds of late or inadequate ANC than unwanted pregnancies, which suggests that more research should be done to examine the perceived and reported differences between these two categories, particularly over time. The associations presented in this study are a small piece of evidence that might be used to advocate for greater access to highly effective contraceptives, in order to protect the health of future generations. Where women's rights arguments have failed to expand contraceptive access, an argument in favor of better care for future babies might have more of an impact. More research is necessary, however, to fully explore this association and determine any causality before it can be brought into the public arena.

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Tables and Figures

Table 1. Demographic Characteristics of the Study Population

Characteristics	N=28,518	%
Residential Area		
Urban	11,683	41.0
Rural	16,835	59.0
Region		
Ilocos Region (I)	1,319	4.6
Cagayan Valley (II)	1,176	4.1
Central Luzon (III)	2,162	7.6
Calabarzon (IV-A)	2,332	8.2
Mimaropa (IV-B)	1,436	5.0
Bicol Region (V)	1,878	6.6
Western Visayas (VI)	1,885	6.6
Central Visayas (VII)	1,773	6.2
Eastern Visayas (VII)	1,608	5.6
Zamboanga Peninsula (IX)	1,349	4.7
Northern Mindanao (X)	1,456	5.1
Davao Peninsula (XI)	1,534	5.4
Soccsksargen (XII)	1,422	5.0
Caraga (XIII)	1,410	4.9
National Capital Region (NCR)	2,720	9.5
Cordillera Administrative Region (CAR)	1,183	4.2
Autonomous Region in Muslim Mindanao (ARMM)	1,874	6.6
Wealth Quintile		
Poorest	8,235	28.9
Poorer	6,721	23.6
Middle	5,492	19.3
Richer	4.513	15.8
Richest	3,557	12.5
Education level		
No education	1,029	3.6
Primary	9,854	34.6
Secondary	11,590	40.7
Higher	6,045	21.2
Religion		
None	61	0.2
Roman Catholic	21,081	73.9

Islam	2,394	8.4
Born again Christian	1,959	6.9
Protestant	1,432	5.0
Iglesia ni kristo	776	2.7
Aglipay	443	1.6
Jehovah's Witness	177	0.6
Seventh Day Adventist	167	0.6
Other	28	0.1
Age		
15-19	235	0.8
20-24	1,486	5.2
25-29	3,458	12.1
30-34	4,868	17.1
35-39	6,211	21.8
40-44	5,974	21.0
45-49	6,286	22.0
Marital status		
Married/ In a union	27,452	96.3
Never married / Widowed / Divorced	1,066	3.7
Birth order*		
1	8,639	30.3
2	6,726	23.6
3	4,827	16.9
4	3,147	11.0
5	2,021	7.1
6+	3,158	11.1
Contraceptive use		
Modern method	9,737	34.1
Traditional	4,376	15.3
Folkloric	181	0.6
None	14,224	49.9
Current risk of pregnancy		
Fecund	20,898	73.3
Pregnant	1,436	5.0
Amenorrheic	2,452	8.6
Infecund, menopausal	3,732	13.1
Source known for FP§		
None	18,767	66.2
Government	5,060	17.9
Private	4,296	15.2
Shop, church, friend, other	218	0.8
NGO	7	0.0

Currently breastfeeding		
Yes	5,830	20.4
No	22,688	79.6
Ever terminated pregnancy		
Yes	7,971	28.0
No	20,547	72.1

§=missing values, *=of most recent pregnancy in the 5 years preceding the survey

Table 2. Prevalence of Unintended Pregnancy and Adequate Antenatal Care (ANC) in the Philippines

	n=6,572	%
Unintended Pregnancy§		
Mistimed	1,348	20.5
Unwanted	1,106	16.9
Unintended	2,454	37.4
Antenatal care (ANC)§		
Less than 4 ANC visits§	1,120	23.8
ANC initiated after 12 weeks§	2,087	46.2
Late or inadequate ANC	2,467	52.5

§=missing values

Table 3. Demographic Predictors and Unintended Pregnancy

Potential Risk Factors	**Overall (N=6,563)**	**Mistimed (n=1,348)**	**Unwanted (n=1,106)**	**Unintended (n=2,454)**
Residential Area				
Urban	42.5	20.2	16.3	36.5
Rural	57.5	20.8	17.3	38.0
Region				
Ilocos Region (I)	4.8	7.3***	4.7***	6.1***
Cagayan Valley (II)	4.4	3.9	4.9	4.4
Central Luzon (III)	7.4	6.8	5.0	6.0
Calabarzon (IV-A)	9.0	6.6	6.2	6.4
Mimaropa (IV-B)	5.1	4.7	5.2	4.9
Bicol Region (V)	6.6	7.1	8.6	7.8
Western Visayas (VI)	6.3	6.4	9.2	7.7
Central Visayas (VII)	6.5	7.3	8.9	8.0
Eastern Visayas (VII)	5.4	8.2	7.8	8.0
Zamboanga Peninsula (IX)	5.0	3.8	4.1	3.9
Northern Mindanao (X)	5.0	5.0	5.2	5.1
Davao Peninsula (XI)	5.2	3.9	6.2	4.9
Soccsksargen (XII)	4.6	5.0	3.5	4.4
Caraga (XIII)	5.1	5.4	8.9	7.0
National Capital Region (NCR)	9.7	8.8	8.2	8.6
Cordillera Administrative Region (CAR)	3.9	6.2	2.7	4.6
Autonomous Region in Muslim Mindanao (ARMM)	6.3	3.7	0.8	2.4
Wealth Quintile				
Lowest	30.5***	20.1	17.7***	37.8*
2	24.2	20.1	19.8	39.8
3	18.1	22.4	17.5	39.8
4	15.8	20.1	13.4	33.5
Highest	11.4	20.4	12.2	32.6
Education level				
No education	2.1	21.4***	8.6***	30.0
Primary	25.9	14.9	21.7	36.6
Secondary	46.8	22.0	16.9	38.9
Higher	25.3	23.6	12.5	36.1

Religion				
None	0.2	35.7*	7.14***	42.9***
Roman Catholic	75.2	21.2	17.96	39.2
Islam	8.0	11.2	3.32	14.5
Born again Christian	6.6	18.4	17.74	36.2
Protestant	4.9	24.5	18.50	43.0
Iglesia ni kristo	2.4	22.0	20.75	42.8
Aglipay	1.5	23.5	16.33	39.8
Jehovah's Witness	0.6	25.6	25.64	51.3
Seventh Day Adventist	0.6	27.8	16.67	44.4
Other	0.1	50.0	25.00	75.0
Age				
15-19	3.6	23.8***	9.79***	33.6***
20-24	19.5	27.6	6.73	34.3
25-29	28.8	25.9	11.36	37.2
30-34	22.5	16.3	17.67	34.0
35-39	16.1	14.5	25.90	40.4
40-44	7.4	9.5	37.53	47.0
45-49	2.2	7.0	46.48	53.5
Marital status				
Married/ In a union	97.3	20.5	16.67*	37.2*
Never Married/ Widowed / Divorced	2.7	22.9	23.43	46.3
Birth order				
1	28.7	18.0***	4.89***	22.9***
2	22.3	30.0	6.64	36.6
3	16.4	22.5	18.09	40.6
4	11.6	18.1	26.52	44.6
5	7.4	15.5	31.13	46.6
6+	13.7	13.0	41.11	54.1

*=p-value <0.05, ***=p-value <0.0001

Table 4. Behavioral Predictors and Unintended Pregnancy

Potential Risk Factors	**Overall (N=6,563)**	**Mistimed (n=1,348)**	**Unwanted (n=1,106)**	**Unintended (n=2,454)**
Contraceptive use				
Modern method	34.2	22.6*	17.2	39.8***
Traditional	16.4	21.2	19.0	40.2
Folkloric	0.6	19.5	12.2	31.7
None	48.8	18.9	16.0	34.9
Current risk of pregnancy				
Fecund	71.9	20.2	16.9	37.1
Pregnant	7.9	20.4	13.3	33.7
Amenorrheic	18.7	21.6	18.0	39.5
Infecund, menopausal	1.5	23.5	21.4	44.9
Source known for FP§				
None	66.3	19.5*	16.6	36.1*
Government	14.7	23.0	19.8	42.8
Private	18.0	22.5	14.9	37.4
Shop, church, friend, other	1.1	14.5	17.4	31.9
Currently breastfeeding				
Yes	42.5	21.9*	17.4	39.2*
No	57.6	19.6	16.5	36.0
Ever terminated pregnancy				
Yes	21.0	15.7***	20.4***	36.1
No	79.0	21.8	15.9	37.7

§=missing values, *=p-value <0.05, ***=p-value <0.0001

Table 5. Frequency of Late or Inadequate ANC among Unintended, Mistimed, and Unwanted Pregnancies

Pregnancy Intention	**Late or Inadequate ANC (n=4,702)**	**p-value**
Mistimed		
Yes	56.4	
No	51.5	0.006
Unwanted		
Yes	59.0	
No	50.0	<0.0001
Unintended		
Yes	57.7	
No	49.0	<0.0001

Table 6. Crude and Adjusted Associations between Unintended Pregnancy and Late or Inadequate ANC

Pregnancy Intention	**Crude OR**	**95% CI**	**Adjusted OR**	**95% CI**
Intended	1.0		1.0	
Mistimed	1.22	1.06, 1.41	1.42	1.22, 1.65
Unwanted	1.39	1.20, 1.61	1.26	1.08, 1.47
Unintended	1.42	1.26, 1.60	1.35	1.18, 1.53

Figure 1: Conceptual model of risk for an unintended pregnancy and late or inadequate antenatal care (ANC)