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# REPRODUCTIVE AUTONOMY: The Context of Pregnancy Intention, A Global to Local Approach

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# REPRODUCTIVE AUTONOMY:
The Context of Pregnancy Intention, a Global to Local Approach

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DISSERTATION

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A dissertation submitted in partial fulfillment
of the requirements for the degree of Doctor
of Philosophy in the College of Nursing at
the University of Kentucky

By
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Lexington, KY

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2018

ABSTRACT OF DISSERTATION

REPRODUCTIVE AUTONOMY:
The Context of Pregnancy Intention, a Global to Local Approach

Globally, in low and middle-income countries 4 out of every 10 pregnancies is reported to be unintended. Having an unintended pregnancy increases the risk of maternal and infant morbidity and mortality, preterm birth, low birth weight, and decreases rates of breast-feeding. The United States (U.S.) consistently has some of the highest rates of preterm birth, infant and maternal mortality of all high-income countries and 45% of all pregnancies in the U.S. are reported to be unintended. The etiology of these outcomes and their relationship to pregnancy intention are complex and multifactorial, but we know this disproportionately effects women living in poverty both in the U.S. and globally.

When couples have the knowledge, access, and power to decide when and whether to become pregnant they are more likely to seek preconception care, thus increasing the likelihood of planned pregnancies leading to improved maternal and child health outcomes. Primary prevention strategies to improve maternal/child health outcomes in the U.S. include sexual and reproductive health considerations such as increasing access to birth control. Globally, strategies include expanding access, as well as focusing on the empowerment of women and improving gender social norms. Focusing on community level norms and individual empowerment can lead to greater reproductive autonomy, which in turn leads to an increase in the uptake of birth control and family planning. This broader consideration of multiple levels of power or autonomy is often lacking in approaches taken in the U.S. More information is needed about the social context and determinants of pregnancy intention in our communities, particularly of women living in poverty.

The purposes of this dissertation were to 1) to describe reproductive autonomy and family planning challenges in a population of marginalized Ecuadorian women; 2) develop a conceptual framework of reproductive autonomy from the global literature; 3) to validate a shortened form of an interpersonal violence scale used in a study of low-income pregnant women in Kentucky; and finally 4) to investigate the association between pregnancy intention and individual, interpersonal and community factors of impoverished women living in Kentucky.

The qualitative study of women in Ecuador identified barriers and facilitators to family planning in a low-resource community. The major themes that emerged were that women's autonomy was limited by men, shame was 'keeping women quiet', systems failed women, and as women aged they were able to build resilience in spite of these challenges. Many reported reproductive coercion, gender-based violence, and regret. Those who could leave unsupportive partners and found social support were more effective at planning their pregnancies. Evidence supports these themes are relatively common in the global literature, particularly of women living in poverty. The comprehensive review of these findings was used to develop a conceptual framework of reproductive autonomy. The Socio-Ecological Model was used to organize the data based on individual, interpersonal or community level determinants of pregnancy intention and reproductive autonomy. This new conceptual model, called the Power and Reproductive Autonomy (PARA) model, was used as a guide to analyze multiple levels of data in a secondary analysis of pregnant women living in poverty in Kentucky. Prior to this secondary analysis study, a measure used in the parent study needed to be validated. A short form of the Women's Experience with Battering (WEB) scale was found to be psychometrically valid to measure of the impact of intimate partner violence for this population. Findings from the secondary analysis included high rates of unintended pregnancy (66%), and women with unintended pregnancy were more likely to report exposure to interpersonal violence, poor social support, and anxiety at the bivariate level. At the community (county) level those with an unintended pregnancy were more likely to live in counties with fewer social associations, and in rural communities. None of the access, gender equity, income inequality, or violence variables were correlated to pregnancy intention. In the final multilevel model, controlling for demographic variables, only being unmarried and answering the question in English were significant predictors of unintended pregnancy. The rate of social associations in a county was marginally significant with pregnancy intention, in that the presence of social associations appeared to decrease the likelihood of unintended pregnancy.

Operationalizing the PARA framework to examine predictors of unintended pregnancy in Kentucky proved to not yield expected results; county level variables related to access, gender equity, and violence were not found to be significantly correlated. Women answering the question in Spanish had significantly higher rates of planned pregnancy, which is a new finding. Having opportunities for social engagement also seemed to be a protective factor in preventing unintended pregnancies. Limitations of cross-sectional data also make it a challenge to capture cumulative life stressors which could contribute to poor reproductive autonomy. Future studies may yield a greater understanding of the social context of pregnancy intention if more interpersonal data related specifically to reproductive autonomy are in the model, such as reproductive coercion, relationship power, communication, and contraceptive decision making. Additionally, further examination of structures or systems that provide economic opportunities in the community is a promising area of reproductive autonomy and pregnancy intention research.

KEYWORDS: Unintended Pregnancy, Reproductive Autonomy, Determinants of Pregnancy Intention, Social Context, Women's Experience with Battering, Sexual and Reproductive Health

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April 7, 2018
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REPRODUCTIVE AUTONOMY:
The Context of Pregnancy Intention, a Global to Local Approach

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This dissertation is dedicated to my family; my supportive husband, my kids who came to the library to spend time with me, and my parents who encouraged community engagement and life-long learning.

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*"It behooves us to remember that the task of prevention, the provision of care, the search for a cure-these never have been simply technical exercises. Instead, they are activities fundamentally shaped by social priorities, by the availability of resources, and by the multiple agendas of those who set and react to these priorities, who control and contest these resources. --Nancy Krieger, PhD*

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## Chapter I: Introduction

### Background

Globally, in low and middle income countries 4 out of every 10 pregnancies is reported to be unintended [1]. Having an unintended pregnancy increases risk of maternal and infant mortality, preterm birth, low birth weight, decreased rates of breast feeding as well as positions the offspring with increased risks of physical disability and poor mental health [2-12]. The United States (U.S.) consistently has some of the highest rates of preterm birth, infant and maternal mortality of all high-income countries and 45% of all pregnancies in the U.S. are reported to be unintended [13-15]. The etiology of these adverse outcomes and their relationship to pregnancy intention is complex and multifactorial, and like many other health conditions these disproportionately affect women living in poverty both globally and in the U.S. [3, 16, 17]. Unintended pregnancy also contributes to the cycle of poverty by decreasing the likelihood of healthy families and significantly limiting future educational and economic opportunities [18].

Primary prevention strategies to improve maternal/child health outcomes in the U.S. include sexual and reproductive health efforts to reduce unintended pregnancy such as increasing access to contraception [19]. Globally, strategies include expanding access to contraception, as well as focusing on the empowerment of women and improving the status of women to increase uptake of contraception and family planning [20-22]. The global approach takes into account the social environment and how this is associated with a woman's ability or power to plan pregnancy [23-28]. This concept is referred to as reproductive autonomy, defined as the power women have in deciding whether and when to become pregnant [29]. The broader consideration of the social environment that impacts

this power is often lacking in approaches to reduce unintended pregnancy in the U.S. The ultimate aim of this dissertation is to frame what we have learned globally about reproductive autonomy and operationalize aspects of this to examine women living in poverty in the U.S., to better understand the relationship between the social environment and pregnancy intention.

The purposes of this dissertation were to 1) to describe the structural, social, economic and cultural context of women's reproductive health, and how these factors influence pregnancy intention in a low-resource, peri-urban community in Ecuador; 2) to introduce a new conceptual framework to demonstrate how power across the individual, interpersonal and community/societal domains can either erode or foster reproductive autonomy; 3) to evaluate the psychometric properties of a shortened version of an interpersonal violence measure used in a study of low-income pregnant women; and finally 4) to identify associations between pregnancy intention and individual, interpersonal and community factors of impoverished women living in Kentucky. These are written as four manuscripts, one addressing each purpose, presented in Chapters Two through Five.

**Summary of the Theoretical Framework and Model**

Nursing theorist, Nancy Milio, proposed the Theory of Prevention in 1976, with the central point that personal choice-making, in regards to a cascade of healthful behaviors, is determined largely by societal options [30]. Health-seeking options are limited by perceived and actual barriers or norms based on the resources, opportunity structures, and values of the community. Milio argues that most of the time, most people will make the easiest choices and our efforts should be focused on how to make health-generating choices the easiest and health-damaging choices more difficult [30]. Even with

the best intentions, a lot of the individual health promotion frameworks can be considered moralistic and lead to victim-blaming. While individuals need to take personal responsibility for their health, we are products of our social environments, which also determines health behavior. Instead of focusing on what individual women did in a 'right or wrong' paradigm in terms of protecting themselves from unintended pregnancies, following Milio's work, we examine the social environment, norms and opportunity structures that enable women the power to decide whether and when to become pregnant.

Bronfenbrenner's Socio-Ecological Model (SEM) complements the work of Milio's by providing a tangible visual framework with which to examine the individual nested in their interpersonal relationships, within the larger social environment. The SEM is used to identify behavioral and societal leverage points for health promotion, public health programming and research [31-33]. This influence of the nested levels can be bi-directional, in that if the individual or family is empowered to change their social environment to promote health, the direction of influence can be outward. When the social environment limits individual efforts to change behaviors that is an inward influence. Bronfenbrenner identified that the individual is often seen as the target of all intervention efforts, however assessing and intervening on multiple or all levels, called an ecological approach, can be more effective than single-level approaches[34]. McLeroy later adapted the SEM to focus on the essential component of health promotion and behavior change by increasing access to power at various levels, especially for those of social disadvantage [33].

To date, there is not a lot of literature about the influences of the social environment on reproductive autonomy and what characteristics of that environment predict high

pregnancy intention in the US. This new paradigm has the potential to impact population health on a larger scale taking into consideration factors such as social and opportunity structures and norms, violence and gender-based power. This approach forces us to look at determinants of health across the life span to leverage innovative community and population level solutions to improve maternal and child outcomes and interrupt the cycle of poverty.

**Chapter Overviews**

*Overview of Chapter Two*

The first manuscript is a qualitative descriptive study of marginalized women in Ecuador to explore the structural, economic, and cultural determinants of pregnancy intention. The major themes that emerged were that 1) women's autonomy was limited by men, 2) shame was 'keeping women quite', 3) systems failed women, and 4) women build resilience in spite of these challenges. Those who left unsupportive or abusive partners and later found social support were better able to decide whether and when to become pregnant in spite of systems barriers. Evidence supports these are relatively common phenomena in the global literature, particularly among women living in poverty.

*Overview of Chapter Three*

The comprehensive review of global findings related to sexual/reproductive risks, autonomy, and pregnancy intention were used to develop a conceptual framework of reproductive autonomy using the Socio-Ecological Model (SEM). Characteristics were identified at the individual, interpersonal or community levels of the SEM which served to erode power or to empower women in relation to planning pregnancies. This conceptual model, called the Power And Reproductive Autonomy (PARA) model, can be used as a guide for researchers and program planners to identify factors that promote reproductive

autonomy in the context of their social environment with the goal of reducing unintended pregnancies.

*Overview of Chapter Four*

A shortened version of the Women's Experience with Battering (WEB) tool was used in the parent study of my final manuscript. The 10 item WEB is a psychometrically valid tool to measure the psychological impact of intimate partner violence (IPV), but it had not been validated in the shorter 6 item form included by the Center for Medicaid and Medicare Innovations in the parent study. The evaluation of the psychometric properties of a shortened version of the WEB instrument in low-income pregnant women indicated it was a reliable and valid instrument. The sample was limited to those who answered the questions in English from the parent study (n=420). Cronbach's alpha = 0.93, convergent validity was demonstrated with a physical partner violence tool that was correlated with the WEB. Additional regression with covariates confirmed that IPV independently predicted depressive symptoms and IPV explained 10% of the variance ($p < 0.001$). IPV is associated with unintended pregnancy, and contributes to the erosion of power at the interpersonal level so this was a key measure needed for the final study [35].

*Overview of Chapter Five*

A cross-sectional, secondary analysis was done with a sample of pregnant women living in Kentucky (n=427) seeking prenatal care and eligible for Medicaid. Participants reported high rates of unintended pregnancy (67%), and those who had an unintended pregnancy were also significantly more likely to report exposure to interpersonal violence, poor social support, and anxiety in bivariate analysis(all had a $p<0.05$). At the community (county) level those with unintended pregnancy were more likely to live in areas with fewer social associations and in more rural communities. Access to a primary care provider,

gender equity (measured in both economic data and representation in government), income inequality or violence (assault and reported sexual offenses) were not correlated to pregnancy intention. The final multilevel model was limited to significant bivariate or correlated variables; being unmarried, answering the question in English (rather than Spanish) were significant predictors of unintended pregnancy. The rate of social associations in the community was marginally significant, in that the presence of social organizations was protective against unintended pregnancy.

## Chapter 2: Reproductive Autonomy of Women in a Low-resource Community in Ecuador: A Qualitative Study


### Abstract

*Objective*: To describe the structural, social, economic and cultural context of women's reproductive health, and how these factors influence pregnancy intention in a low-resource, peri-urban community in Ecuador. The long-term goal of this work is to generate essential data to help design strategies to improve maternal/child health.

*Design*: Qualitative descriptive study.

*Setting*: A peri-urban community in Ecuador.

*Participants*: Women of reproductive age (18-35 years) residing in one of three low-resource communities (N=19).

*Methods*: Participants took part in semi-structured individual interviews that lasted approximately 45 minutes. Interviews were professionally transcribed in Spanish, translated into English, and analyzed in MAXQDA using content analysis.

*Results*: Four themes emerged from the data. 1) Women's autonomy is limited by men, 2) Women Keep Quiet, 3) Systems Failed Women, and 4) Building Resilience.

All but one of the participants reported an unintended or unplanned pregnancy and the majority of pregnancies were unplanned. All of the women reported living in poverty, experiencing gender-based violence in their relationships or witnessing it in their communities, and living in a society where their gender is associated with the responsibility for the family without the systems or resources to support this role. Health systems, limited education, and policies yet to be enforced served as barriers to both empowerment and family planning. In spite of this, many women were able to transition into safety, prevent or delay pregnancy with new partners, and believe in a better future.

*Conclusion* Findings from our study suggest that in order to promote reproductive autonomy, women need to feel safe, productive and valued across the lifespan. Intersectional solutions are needed to address gender-based violence, economic and systemic limitations on women of reproductive age and mothers.

South America has the highest proportion of unintended pregnancies in the world, there were 11.3 million pregnancies in South America in 2008, of these 64% were unintended [1]. As a result, an estimated 24% of the unintended pregnancies ended in induced abortions, which are largely illegal and unsafe in South America contributing to maternal mortality [1]. Contrasting this finding, 76% of women in South America report using modern contraception and only 9% report having an unmet need for contraception [2]. Very little data is available to clarify why there are so many unintended and terminated pregnancies when women report contraception needs are largely being met. Globally, outcomes associated with unintended pregnancy include increased risk of; preterm birth, birth defects, and other infant and maternal mortality and morbidity [3].

In order to improve maternal and child health outcomes, we need to understand the social, economic and structural context of the lives of women who report unintended pregnancies in South America. This study took place in Ecuador, which in 2008 adopted a human rights based approach to reproductive health, acknowledging that all adults, adolescent girls and boys have a guaranteed right to sexual and reproductive health services, and "the right to make free, responsible and informed decisions about their health and reproductive life and to decide when and how many daughters and sons to have" (Art. 66, section 10) [4]. However, policies, dissemination, and training about these rights have

been slow and inconsistent, especially to adolescents and young adults in impoverished communities [5].

Globally, unintended pregnancies are associated with low socio-economic status, lower levels of education, marginalization, young age, intimate partner violence and community violence, as well as poor social support and mental health [1, 6-13]. These risk factors are of particular concern for Ecuador. According to a United Nations report in 2014 women in Ecuador with lower levels of education and in the lowest quartile for income had over five children on average [14]. Ecuador has the second highest percentage of teen births in South America, almost 20% of girls aged 15-19 have more than one child in the household. In addition, gender based violence is common, experienced by 3 out of 5 Ecuadorian women [14]. Mental health data in Ecuador is scarce, but the Pan American Health Organization reported that depression and anxiety are on the rise and there are limited clinically trained mental health professionals [15]. In addition, women of reproductive age in Ecuador have high rates of Zinc deficiency (48% to 58%) and anemia (5% to 19%), insulin resistance, and hypertension[16]. This elucidates the need for preconception health care, however, in order to seek this care, couples need to be actively planning pregnancies and aware of the risks to maternal/child health.

**Purpose**

The purpose of this study is to describe the structural, social, economic and cultural context of women's reproductive health, and how these factors influence pregnancy intention in a low-resource, peri-urban community in Ecuador. The long-term goal of this work is to generate essential data to help design further research and interventions which have the potential to lead to improvements in maternal/child health.

## Methods

*Study Design and Setting*

In Ecuador, the Universidad de San Francisco, Quito (USFQ) Bioethics board approved our study, followed by approval in the United States by the University of Kentucky Institutional Review Board. The study followed a qualitative descriptive approach, which is a suitable methodology to explore a phenomena where the primary focus is the description and experience of participants [17]. The in-depth, semi structured interviews were conducted in the province of Santo Domingo de los Tsáchilas, Ecuador, a peri-urban community on the edge of a large city. The community has experienced a rapid growth over the last 20 years, is accessible to the neighboring city by bus, but services such as roads, electricity, and piped water are limited. The interviews took place in three neighborhoods in this community, which are served by a private clinic funded by an Ecuadorian foundation. This community was selected because there was an established, on-going university-affiliated relationship with the foundation, the private clinic's medical providers and staff.

Prior to interviewing women for the current study, health providers and community leaders were interviewed to better understand the context of maternal and child health. In these preliminary interviews, participants described maternal child health issues as arising from closely spaced pregnancies, having high rates of anemia and poor nutrition, having more children than families wanted or that they could adequately care for, high rates of teen pregnancies, male chauvinism and gender-based violence [18]. In addition, the community leaders described the migratory nature of the neighborhoods, many families had recently moved from rural areas, Columbia, and other indigenous and coastal communities [18].

*Data Collection*

Stratified and purposive sampling strategies were used, to ensure relatively equal representation of women in each of the three neighborhoods with a range of ages and races/ethnicities that represented the community. The community leaders provided us with women's groups or meeting places to initiate recruitment. Two of the three communities had women's groups established by the government for economic development. Between June and December of 2016, nineteen women were recruited and interviewed. Inclusion criteria included being a female of reproductive age (18-45) and residing in one of the three communities. Exclusion criteria included being pregnant or inability to speak Spanish. There were no guidelines regarding previous pregnancy or sexual experience, for the purpose of capturing a wide range of reproductive experiences. A university student from the adjacent city was trained as the research assistant (RA) to promote a more naturalistic paradigm. The RA did not have a health professional background, had completed research courses at the university and completed all study-related training. The RA and the principal investigator (PI) conducted the initial interviews of the community leaders and health providers together, as well as two practice interviews with Ecuadorian women in the community. Furthermore, the local partnering foundation endorsed selection of this RA due to her Ecuadorian status and community engagement experience. Our community partners advocated that all women be interviewed by an endorsed Ecuadorian female, and not the PI from the U.S. who was tied to a funding source, was a nurse, and had relationships with health providers in the community. All of the participants were contacted by the RA and screened for eligibility. If eligible, the purpose of the study was explained and consent obtained by the RA.

The interviews took place in private rooms in community centers and churches, and in mutually agreed upon locations and lasted approximately 45 minutes. A semi-structured interview guide with prompts was used, and brief demographic characteristic questionnaires were completed. All interviews were audio-tape recorded, translated and transcribed by certified translators. Participants were compensated $10 USD (which is the currency of Ecuador) for their time.

*Data Analysis*

Analysis of the interviews included an iterative process by which the audio recordings were all deidentified (assigned a number) and added to a private Dropbox file for the PI (HF) to access within 1 to 2 days of the interview. The PI and RA would record field notes, discuss each interview, and recommend different approaches that would elicit more richness in the conversation. This was a very useful process to understand the context and the emotion, specifically, the sounds of roosters and loud construction, the pauses, the expressions of joy and sorrow. When each of the three neighborhoods were demographically well represented and the women's experiences were very similar both to each other in the same community and between the communities, we determined saturation was reached.

After all interviews were transcribed and translated, a conventional approach was used to do the content analysis, in that the coding categories were largely derived directly from the data [19]. This process entailed reading and re-reading transcripts with open coding by hand in the margins, merging field notes and collaborating with the RA to include her codes from the first four interviews. These initial codes were then used to develop a coding schema in MAXQDA version 12. More codes were added as needed, and several quotes had more than one code and category (Table 2.1). Then earlier

interviews were reviewed to see if they also needed to include the newer codes, this was followed by identifying broader categories. MAXQDA was also used to organize the demographic characteristics by participant and categorize information by communities, and later to cross reference codes and merge into categories and themes. Other approaches to the content analysis included performing a member check discussing categories and themes in August of 2017. There was an enormous amount of data collected so the categories and themes for this paper were limited to those factors that most closely related to women's control over planning or not planning pregnancies, these were then merged into four primary themes.

Table 2.1 Content Analysis Example

| Quote | Code | Category | Theme |
|---|---|---|---|
| "When I was about fourteen, that was the first time I was forced to…I was robbed of what I was" | Rape at young age | -Reproductive Coercion<br>-Violence | Women's autonomy is limited by men |
| "It was also because I was an adolescent and he was quite older, like 10 years" | Dating older men | Men have the power | |
| "I decided to separate after one time that he started the mistreatment. Because what I say is, I mean, if I accept this it would get worse." | -Separated due to IPV<br>-Aware of rights | -Moving forward after violence<br>-Empowered | Building Resilience |
| "I tell him no, I have my own money. I'm going and if they invite me to go somewhere we go even if I have to use my own money, because you can't trust somebody else's pocket" | -When women go back to work<br>- Control of personal finances | -Standing up to men<br>-Social support | |

## Results

*Description of Sample*

There were 19 participants interviewed, women in the study were from a diverse background, with over half representing a minority race or ethnicity in Ecuador. The minorities represented were Montubio, (coastal ethnicity), Afro-Ecuadorian, and two who identified as indigenous (one Tsa'chila and one Amazonian). All but six of the women had not finished high school, nine of whom had elementary education or less. The women had a mean number of four pregnancies each. There was a wide range of the ages of the children, 5 months to 30 years. Of all of the living children, eight were identified as closely spaced pregnancies, a year apart in age. The mean age of the first intercourse was 17, while range in ages of the first pregnancy was 14 to 30 years old. All but three were 18 or younger when they had their first pregnancy, and four participants were 15 years or younger.

The majority of women were currently married or in a free union and underemployed or unemployed. Several of whom reported looking for employment and staying home with children. Of those who reported working, one has full time work cleaning homes and reported a monthly income of $120, another just reported earning $140/month, and several reported informal work; picking up scrap metal, selling items from cleaning products to magazines with variable monthly incomes. When reporting partner or husband incomes, these ranged from $50 to $480/month. Many of the partners also did not have regular work, women reported there was not a consistent income from week to week, or they did not know how much their partners made. All but one stated that the household income was not enough to support the family.

All but one of the women reported having at least one unplanned pregnancy, while only one woman reported receiving preconception care prior to one of her three

pregnancies. Many of the women reported using contraception (most inconsistently, or had just changed the method) when they got pregnant, and three were breastfeeding as a method to prevent pregnancy when they got pregnant. In total, the 19 participants reported 70 pregnancies, of which 47 pregnancies were described as unplanned.

Table 2.2 Participant Demographic Characteristics (N=19)

| Characteristic | *n (%)* |
|---|---|
| Race/Ethnicity | |
| Mestizo | 9 (47) |
| Afro-Ecuadorian | 3 (16) |
| Montubio | 6 (32) |
| Indigenous | 2 (11) |
| Marital status | |
| Married or in 'free union'* | 14 (74) |
| Single | 5 (26) |
| Unemployed | 13 (68) |
| Highest level of education | |
| < Elementary | 1 (.05) |
| Elementary | 8 (42) |
| < High School | 3 (16) |
| High School | 5 (26) |
| College Graduate | 1 (.05) |
| | *Mean (Range)* |
| Current age | 31 (20-45) |
| Pregnancies per woman | 4 (1 to 8) |
| | |
| Age of 1st intercourse (yrs.) | 17 (14 to 25) |
| Ages of children (yrs.) | 15 (0.4 to 30) |
| Age of 1st pregnancy (yrs.) | 19 (14-30) |

*couples in Ecuador who are in free unions (similar to common law marriage or cohabitating) are now mandated to register as married with the municipality, so during the interviews many would report free union but have not registered or not sure how to report their status.

Table 2.3 Reproductive Characteristics in Relation to Total Number of Pregnancies (N=70

| | |
|---|---|
| Unintended pregnancies | 47 (67) |
| Total number of abortions ** | 13 (19) |

** the word in Spanish is the same for elective and spontaneous abortions. Some elaborated on whether they were elected or spontaneous, but we did not specifically ask this.

**Themes**

Four themes emerged from the qualitative data; *1) Women's autonomy is limited by men, 2) Women Keep Quiet, 3) Systems failed women and 4) Building Resilience.*

*1) Women's Autonomy is Limited by Men*

The first theme is related to how women reflect on their early relationships, most of the comments were in reference to their partner's dominance. This played out as reproductive coercion, fear, male chauvinism, men limiting access to social environments outside of the home, inciting shame and embarrassment, and limited their growth and potential in the early years. Refusing to wear a condom or encouraging women not to use contraception is a common occurrence, *"sometimes you tell your boyfriend or husband to use something, but they are male chauvinist and they don't want to wear it [condom]. And when it is your first time, you don't even realize you are pregnant."* Another woman believes the father of her first baby wanted her to drop out of school and get pregnant, *"I think he didn't let me [use contraception] so that I would have a baby, and not study"*. They refer to the double standards of fidelity, *"my husband is a skirt chaser and I think he has transmitted the diseases to me, but I cannot tell him... like, I mean I can't refuse[sex] because he says that if I refuse it is because I have another man, so that's what happens to me."* One woman reflected on the general lack of power of women in the community, *"Like we don't have a voice or opinion, but they [men] decide what gets done"*. Several women described the process of social change, some men found that their way of life was threatened. One woman described some men in her community as *"always there, taking away your opportunity to grow and become someone in life, achieve more than what we already have"*. This is a collective 'we' as women and mothers, as the participants referred to the culture of community at times and their own personal experience in the next breath.

Women primarily used the word '*machismo'*, which several defined as male chauvinism or gender-based violence. The majority referenced experiencing '*machismo*' with partners when they were younger and reported women in their community who were currently victims of violence or maltreatment. They described how this contributed to their own teen pregnancy and teen pregnancy in general, as well as unplanned pregnancy, and reduced the self-esteem of women and adolescent girls.

Several months after the interviews the PI and RA returned to the community to do member checking with several women in the community. We discussed several emerging themes, one of which was the 'tension' of adapting to new policies and laws protecting women, the changing power dynamic in the homes and communities. One participant stopped me and clarified, "this is not tension, that is too soft, it is fear"; fear of changing, fear of reprisal or reaction from partners when they demand their rights, and fear of moving forward without their partners. She also described fear of judgment for being a single mother and the fear of financial loss of the partner's income.

*2) Women Keep Quiet*

The fear was only compounded by the shame and lack of trust and support by other women in the community. For the most part women did not trust each other, did not have social support, and many had left their intergenerational familial support by migrating to this area. One participant from a rural area who had moved away from her family said *"the truth is that I used to confide in my mother, but now that I live here I don't tell anyone my personal things"*. And many described lack of trust, *"it's just that sometimes you talk to someone, and they say, no, I won't tell anyone, but later the news has spread and people come asking at home. If something has happened to me, fine, I just keep it to myself."*

There were lighter moments in the interviews also, when women joked about their carelessness and negligence in getting pregnant, but what was interesting is that they consistently blamed themselves, instead of the couple being careless when they had sex, women took the sole responsibility for not planning. Many women had similar statements to this woman, *"I just didn't look for ways to prevent it…I was pregnant again…In those days I was careless and I got pregnant"*. When men refused to wear condoms, it was the woman's responsibility not get caught up in the moment, to plan ahead, get an appointment, get on the pill a month in advance. One woman described this as a regional issue, *"where we live, it does seem that it is mostly a woman's responsibility, you are the one that has to use methods, you have to do this"*. Another woman described men in general as not getting *"tied down because of a child"*, so they are less motivated to use or discuss contraception as their lives are less effected by parenting.

The subsequent child was also the women's primary responsibility, and even when they were in violent relationships or their men were unfaithful, they felt external pressure to keep the family intact and had a great deal of shame when they reached their tipping point. They were afraid of gossip in the neighborhood and of disappointing their mothers. One woman articulated this very succinctly, and many women had similar experiences.

*"Sometimes you don't split up because you are afraid, you don't split up because what neighbors may say, that was my case. I would tell my mother, once again I have to start over, how embarrassing, what will people say, what will the neighbors in front of us, to the side and the other side say. I mean, that stops you too, but nevertheless the aggression increased. I mean, you either decide to denounce, to speak up or you keep quiet. But if you keep quiet, it becomes your problem, because nobody on the outside knows what goes on inside the home. But we keep quiet for different reasons, fear, shame, because you don't want the family to know, because there are always people that criticize you. I mean, they don't come to offer support but to be critical. That is why you keep quiet"*.

Most of the participants who articulated similar sentiments were describing situations to justify keeping quiet, not only out of shame but for the sake of their children. Most of the women had extremely loving and positive comments about their children, and often prioritized their child's health, safety and well-being over their own. While at the same time, they had regrets about the number of children they had, and the ones who had teen pregnancies reflected about the premature loss of their own childhood and how they were unprepared to be mothers. Women reported enjoying work (either in the past or currently) and having a larger social circle prior to child-rearing, most had to quit to stay at home and keep their children safe well into their late teen years. Then they had a difficult time re-entering the work force, which made them more dependent on their partners and took a toll on their self-esteem. Many women report persisting in spite of poverty, violence and abuse, they persevere for the sake of their families. They described their daily tasks in great detail, of how much rice they can buy, how they make do in lean weeks, and tricks to saving money on children's clothing or materials for school, and keeping their families together.

*3) Systems Failed Women*

Women discussed the challenges of the structures in place to promote health and wellbeing. There is a free Ministry of Health primary care system in Ecuador, which seems to function well in some areas but is overwhelmed in other regions with high poverty rates. Women reported rationing of health care in the community where the interviews took place. Getting appointments, medication, and treatment were a challenge. One woman described her frustration with the public health clinic, *"I would call and call, and they would tell me they did not have appointments, that there were no appointments…what can I do?"* Women cannot get appointments for non-emergency health concerns for

themselves or their children, nor can they rely on consistent contraception from the public system. Women who wanted to avoid pregnancy seemed to seek health care too late for this strained system, they realized they didn't want to be pregnant, got an appointment to start birth control and by the time they are seen they are already pregnant. One woman said of the public clinic, *"you have to beg for a pill"* or go to the pharmacy and try to figure out which medicine to purchase if you have any money. They report stigma and taboo when trying to utilize family planning services when you are unmarried, without children and young. In addition, women were not informed about the concept of preconception care, only one woman took prenatal vitamins prior to conception and it was because she had a child with disabilities and reported that she paid to go to private doctor.

There were extremes of system failures from trafficking of young girls into prostitution rings (legal for women over 18), to not upholding the laws regarding child support and protections for women who face intimate partner violence. One woman describes, when she was 14 years old a man threatened her, took her from her family to make money off of her as a prostitute, *"he got me a fake ID, fake papers of a nineteen year old and so I work almost a year in this"*. She was relieved to find out she was pregnant so that he let her go home. Women who wanted to have a tubal ligation were required to have a signature of the husband in order to get this procedure. And women who did not have a partner, were often denied. In one case, a woman with a serious health history could not get a tubal without her partner's signature.

*"the doctor told me it was also a risk[death] to have a fourth baby….because he didn't want to[sign the tubal papers]…I had my tubes tied, the doctor almost had to force him to sign, because without his signature I couldn't get the tubal ligation"*

According to previous interviews with health providers, this practice is illegal in Ecuador, women do not need the signature of a partner, but it is still in practice in many parts of the country [18].

In addition, the school system has several challenges for adolescents and mothers. First, there is very little education regarding health, the body, and sexual education. This is considered 'taboo' as well, and often not discussed in the home, women reported wanting to learn more about this in school with their peers, rather than from experience. Several women discussed sexual health education in the schools as either non-existent or not effective, one woman who was pregnant at 16 said she learned very little about sexual health *"in school, but just superficially, and since one is curious, restless, wants to know…[learned]More through experience"*. In addition, the school day is only a half day and very few programs are offered in this area for affordable and safe child care. One woman described this as a barrier to working, as compared to an area where she used to live, *"if we knew there was childcare until 4 PM, it would be great to have here"*. Another woman described why she quit her job to protect her teenage son, *"I would realize that if I went to work, my son is going to be there [home alone] all morning, and what could happen? His friends would come in and who knows….no, no"*.

*4) Building Resilience*

The last theme is a result of the women who no longer quiet, were empowered to demand their rights. Many severed ties if partner did not change violent behaviors, and most found new partners who are 'good' men. Overall, this led to greater ability to make strategic life choices including planning pregnancies, and passing on family planning advice to their daughters. One woman tells a detailed story about a woman's advocacy organization in the adjacent city passing out fliers about the rights of women, free of

violence and she has the right to sexual consent, and as a result of this she describes coming home with the flier. *" I presented a demand against him ... I mean, he's afraid, he no longer insists like before"* and later in her interview she recalls that now she is better able to plan when she wants to get pregnant. Another powerful statement about women moving forward was made by one woman reflecting on her life and the moment she decided to end her relationship, *"so you are submissive, you have to be dependent on what he says. But that is a period, until you* ***wake up****…not anymore"*.

Many women describe a "*good man*" paradigm, as those who allow women to work and to leave the house to go shopping, and have friends. One woman described with pride her conversation with her current partner, *"You met me when I was working and you aren't going to prohibit me from working. Because I can't be waiting to get money from you…So we understood each other, he worked on his stuff, and I worked on mine."* In addition, these *"good men"* assisted financially and emotionally with the children (even if they are not theirs by blood), they don't fight, they allow women to use birth control and plan future pregnancies. In addition, several women laughed as they described their realization of what it was like to find pleasure in their intimate relationships, they learned *"what it* ***really*** *was, to have sex and all of that"* in the context of safe, loving relationships.

Although the women were all still living in impoverished communities and reported that they did not have enough funds for their basic needs, they seemed to be reflecting on more difficult times in the past. They were investing in their children, accumulating social capital and hoped this would pay off. In reference to her three children one woman stated *"they are my life. I hope they don't turn their backs on me someday."* Many women had no other safety nets. They felt as if they gave up their youth for their children. They

accepted the rules of prior generations where children took care of their aging parents, particularly their mothers.

Women also had advice for their children, primarily their daughters, based on their early relationship experiences. This included advise to *"have a childhood"*, wait to have a boyfriend, wait to have sex, finish their education, use contraception, insist the boyfriends treat you well. One described a conversation with her daughter in which she said *"Honey, you first have to get prepared in life, use caution, even to have sex, it has to be with someone who will help her* ***be someone****"*. Many of the women interviewed wanted to better provide for their children, so some were taking handicraft courses, trying to learn new skills, and for those who wanted more children, most seemed able to delay future pregnancies until their financial situation improved.

**Limitations**

Initially our research team thought it would be good to interview women who successfully avoided becoming pregnant, women without children. However, this objective proved to be very difficult, we were unable to find women without children in these communities. Our interviews were limited to day time hours and this likely limited our sample to those who were home with children. Our participants also may have been those who were the most visible, perhaps better adapted, as women experiencing depression and self-esteem issues may not have been as willing to be interviewed or to come out of the shadows. Another limitation is that the data about adverse birth outcomes is based on unintended pregnancy but the participants used the term "planificación familiar" meaning family planning referring to planned or unplanned pregnancy, rather than pregnancy

intention. Unintended pregnancy is defined as unplanned, mistimed or unwanted pregnancy and we did not specifically ask about wantedness or timing [20].

The final limitation is that only interviewing women and limiting data collection to their perspective resulted in a focus on the negative attributes of men, as contributing largely to the erosion of women's power. However, men are also victims of many of the social and system failures faced by women in this community and globally men have often wanted to be part of the solution to promote both family planning and gender equality [21].

**Discussion/Conclusion**

Women in our study reported living in poverty, experiencing gender-based violence in their relationships or witnessing this in their communities. Most women reflected upon living in a society where their gender is associated with taking responsibility for the family without the systems or resources to fully support this role. The participants with larger families (4 or more) reported regret in that they wished they had fewer children, many women regret having sex with abusive partners, or wished that they delayed pregnancy for a few years. More than two-thirds of pregnancies were unplanned for a variety of reasons. Living in a region with fractured systems, violence and the chaos of poverty compounds the difficulty in just day-to-day living and constrains life choices and options.

In general, women in this community did not consciously make a life plan and decisions about their family size, spacing of pregnancies and partners, many of the decisions were made in the heat of the moment (more about idealizing love and sexual obligation) and not within the framework of a childbearing decision. The women in our study who expressed desiring more children wanted to wait until their financial situation improved, so they were able to adequately provide for their current children, and when they

had ‘good men’ in their lives. This is not a common scenario in their own communities, and a couple joked that this was not likely happen, so they will likely not have more children. Previous researchers have found that the binary pregnancy intention paradigm (planning or not planning a pregnancy) is not a salient concept in communities where this is not a social norm, that conditions have to be met for planning pregnancy are not seen as realistic in their social environment [22, 23]. There is a general perception in research that measuring pregnancy intention is a challenge, as once women have the desire to plan or avoid pregnancy, their power to act on this desire may be limited by the social, economic, and systemic limitations of their environments [23]. So even if women in our study had clear pregnancy intentions, they were trapped by their circumstances and were not able to act on them.

A better way to examine the context within which pregnancy intention occurs may be through the broader lens of reproductive autonomy, which is the power women have to decide whether and when to become pregnant[24]. Reproductive autonomy is part of the larger construct of women’s empowerment, which is often measured by its inverse relationship to the outcome of unintended pregnancy, and has the potential to greatly improve the lives of women and families [24, 25]. The United Nations Sustainable Development Goal number five recognizes that women’s empowerment and gender equality, which includes the promotion of reproductive autonomy, is vital to eradicate poverty [26]. Shifting the focus to autonomy broadens our understanding of the context in which women exist, to take into account the complex issues surrounding childbearing.

Findings from our study suggest that in order to promote reproductive autonomy women need to concurrently feel safe, productive and valued across the life course. Many

of the women in our study did not feel empowered to prevent unwanted pregnancy, particularly when they were young, they really did not see it as a decision but just as something that happened. Women who were able to give advice, share regret, and hopes for the future informed our conclusion of the ideal scenario when women could have reproductive autonomy. In order to meet this ideal, women conceptualized how family planning can occur in their communities and how they can personally gain from family planning.

Our study elucidated that women need to feel safe, not only free of violence and coercion in their intimate relationships, but also in their communities in order to be empowered to make decisions about their families. Women in our study who felt productive and built resilience were working outside of the home, single or having a say in household finances. This was a challenge for many of our participants due to the low levels of education, early childbearing, lack of all-day schools, safe and affordable childcare, and few low-skilled jobs available to women. Valuing women has great potential to improve reproductive autonomy. This includes being valued in terms of being a woman (gender equality), valued by their partners and by health, social service and justice systems, and valued for their contributions to the family and community. Generally, being valued entails being surrounded by people and systems who invest in them to 'be someone'.

Strategies to improve reproductive autonomy and reduce unintended pregnancies and have long-term impact on maternal/child health need an empowerment component. Ideally, this occurs through all three of these mechanisms, providing safe environments, economic opportunities for women, and adding value to their gender and role in the community. National and regional state-run entities as well as the Catholic Church in

Ecuador currently offer microfinance or loans to women living in poverty to empower and improve their financial status through entrepreneurial efforts. Women in this community could benefit greatly from these programs. Our foundation plans to assist women to create a business plan and pilot projects which would allow them to apply for these funds. This has the potential to empower women to create safe environments, be financially independent and productive, as well as elevate their status or demonstrate their value in the community, thus greatly improving the likelihood of reproductive autonomy and healthier families.

## Chapter 3: Power and Reproductive Autonomy: The PARA Conceptual Framework


### Abstract

Heterosexual, sexually active women can potentially spend over 30 years preventing pregnancy. Reproductive autonomy is a necessary precursor to pregnancy prevention, it is defined as the power women have in deciding whether and when to become pregnant and is part of the construct of women's empowerment [1, 2]. For the purpose of this paper, power is directional and seen as either limiting or enabling the capability of women to achieve their desired outcome [3]. Poverty, belief systems, mental health, relationship issues and the larger values of a society greatly influence women's power over reproductive autonomy [2]. Women who have poor reproductive autonomy are at greater risk of unintended pregnancy, which is associated with adverse maternal/child health outcomes [4]. The purpose of this paper is to describe a new conceptual framework to demonstrate how power across the individual, interpersonal, and community/ societal domains can either erode or foster reproductive autonomy. The Socio-Ecological Model will be used to describe and organize factors that influence reproductive autonomy across the domains. This framework can be used as part of a larger strategy to improve global maternal/child health beginning in the preconception period.


### Introduction

Since the 1980's reproductive autonomy has taken on new bioethical meanings related to reproductive technologies, and morality and politics related to reproductive justice, population control and abortion [5, 6]. While those are valid concerns, we lost sight of the most common use of the term, related to planning families and pregnancy intention to improve global maternal/child health. The United Nations Sustainable

Development Goal number 5 recognizes that women's empowerment and gender equality, which includes the promotion of reproductive autonomy, is vital to eradicate poverty [7]. Autonomy and agency are closely linked, where agency is more action oriented and autonomy is a necessary pre-cursor to act [8]. Following the lead of the United Nations Family Planning 2020, autonomy and agency have been combined in this paper and just referred to as autonomy, as that is more common in reference to reproduction and the construct of power [9]. Although reproduction is not an individual endeavor, the focus of this paper is on the female experience, because it is the woman who carries the pregnancy and is generally impacted the most by child rearing [2]. Individual and relationship issues surrounding reproduction and child bearing are deeply embedded in our social, economic and political environments, which make up the context of where and how reproductive autonomy occurs. Context can be defined as an interwoven and multilayered set of realities, social structures, patterns of social relationships, and shared culture [10].

The new conceptual framework aims to describe and identify universal characteristics or attributes at each level which either inhibit or promote reproductive autonomy to create research and intervention opportunities for social change. It is entitled Power and Reproductive Autonomy, or the PARA framework. The measurable outcome of interest of the PARA framework is pregnancy intention. The majority of published literature on this topic refers to unintended pregnancy as the outcome of interest, which is inversely related to reproductive autonomy [11-13]. Unintended pregnancy is defined as a self-reported unplanned pregnancy which is either mistimed or unwanted [14]. Globally, 4 out of every 10 pregnancies is reported to be unintended [15]. Having an unintended pregnancy increases risk of maternal and infant mortality, preterm birth, low birth weight,

decreased rates of breast feeding, unsafe abortions, and increased risk of physical disability and poor mental health for the child [4, 16-25]. In countries where abortion is illegal, women are taking great risks to terminate their unintended pregnancies, 13% of maternal deaths globally are due to unsafe abortion [26]. Unintended pregnancy also contributes to the cycle of poverty by decreasing the likelihood of healthy families and significantly limiting future educational and economic opportunities [27]. To decrease adverse outcomes and for families to thrive, women need reproductive autonomy to plan healthy pregnancies.

Numerous researchers have focused on individual or couple level contraceptive behaviors with limited long-term success in preventing unintended pregnancy. Interventions that focus on individual intention, knowledge, behaviors and attitudes surrounding the use or non-use of contraception are largely investigating only one dimension of reproductive autonomy [28-36]. While knowledge, access to and use of affordable contraception is vital, they are the not the only factors that influence unintended pregnancy. As with most health behaviors, there are cumulative and complex pathways that lead to the desired health outcomes. In the United States(US), Thomas Frieden, former director of the Center for Disease Control and Prevention argues that to impact public health, interventions should change the context for health to make the healthy decision the default choice, regardless of income, education, service provisions or other societal factors [37]. In spite of new legislation that has made contraception more accessible in the US, it is still not the default choice for everyone as 45% of all pregnancies are unintended [17, 38]. We need to critically examine the layers of the social environment to identify other contextual influences surrounding pregnancy intention and reproductive autonomy.

**Other Frameworks**

Upadhyay et.al. recently developed a conceptual framework of reproductive autonomy to test and validate a reproductive autonomy scale[1]. This scale measures the power in interpersonal relationships and includes 3 subscales; freedom from coercion, communication and decision-making [1]. Originally this scale included equitable gender roles and self-efficacy but these did not yield a strong relationship to reproductive autonomy in the limited sample, so they were not retained. This conflicts with global literature on these topics and needs further study. The reproductive autonomy scale is a rigorous and well defined tool, excellent for ease of use in research and broadens our understanding of some interpersonal power issues which contribute to unintended pregnancies. This scale captures some of the key determinants at the interpersonal level, but it fails to take in to account both personal vulnerabilities and the social context in which the relations occur. In addition, this scale was only validated in the United States, and was tested at a family planning or abortion clinic, so the women seeking both of those services already had a fair amount of autonomy. As suggested by the authors, community and societal level factors should be examined concurrently, so the scale may best be used as one tool along the path to reproductive autonomy, but a more holistic model is needed to guide future research, policy and program planning [1].

Price and Hawkins developed a social analysis framework of reproductive health that focused primarily on the broader social issues influencing HIV transmission and pregnancy, and reproductive health in general without a deeper analysis of autonomy [39]. While this work was vital to the modeling of societal and cultural influences and had a more global and universal approach, their framework did not include many of the

determinants of health such as violence or coercion, and had a limited scope of gender and the individual level issues of influence on pregnancy intention.

**Socio-Ecological Model and the Four Constructs of Power**

The PARA framework is guided by the Socio-Ecological Model (SEM) and four constructs of power. The SEM is a theory-based model which nests the individual within levels of the social environment in order to identify behavioral and societal leverage points for health promotion [40]. The SEM evolved from the ecological models of Bronfenbrenner and McLeroy, and have been modified and widely used in public health programming planning and research [41, 42]. There are many different iterations of the SEM, but in general it is made up of nested, hierarchical levels (individual, interpersonal, community/societal/cultural) [43]. The outermost level influences all other levels, and the next level influences all remaining levels, and the individual is nested within the influences of all levels. This influence can be bi-directional, in that if the individual or family is empowered to change their social environment to promote health, the direction of influence can be outward. Bronfenbrenner identified that the individual is often seen as the target of all intervention efforts, however assessing and intervening in multiple or all levels, called an ecological approach, can be more effective than single-level approaches[43]. The SEM provides a structure to identify influences across dimensions to broaden our understanding of the determinants of reproductive autonomy, the inner-most level factors are described as proximal influences(direct or closer to the individual) and the outer layer factors are distal(indirect and farther from the individual) influences[43]. The SEM is widely used in the Unites States and globally, the Center for Disease Control and Prevention applies the

SEM to our understanding of and to guide interventions related to violence [40], and Unicef uses the SEM as an organizational framework for health promotion in global settings [44].

McLeroy simplified some of the more complex and academic terminology of Bronfenbrenner's SEM and one of the ways he operationalized the ecological approach was in relation to community power [42]. His iteration focused on the essential component of health promotion and behavior change by examining access to power at each level, especially to those of social disadvantage [42]. This influenced the PARA model, as the expression and source of power is the key driver of reproductive autonomy. To analyze and simplify the concept of power throughout the PARA framework, the work of VeneKlasen and Miller was utilized. They identified four sources and expressions of power, one of which is negative, 1) 'Power over' is based on dominance and authority. 'Power over' involves the community and interpersonal forces that perpetuate inequality, injustice and poverty rendering a sense of individual powerlessness [45]. The other three are affirming expressions of power and will be grouped together as enabling power at each level, 2) 'Power to' involves individual ability and agency, 3) 'Power with' is collective action, 4) and 'Power within' is the internal sense of self-esteem and dignity [45]. The erosion of reproductive autonomy and power, and the affirming or enabling constructs that improve resilience and power at each level make up the PARA framework. To date there is not a conceptual framework which uses power and the Socio-Ecological Model to describe and organize the nested influences that contribute to reproductive autonomy.

Some of the more salient and measurable attributes from the literature are in the framework but these are by no means exhaustive, and will require local contextual interpretation. Poverty and gender inequities are embedded and overlap influences at each

level, they are universal risks for poor reproductive autonomy and require critical analysis at each level [2, 8, 46, 47].

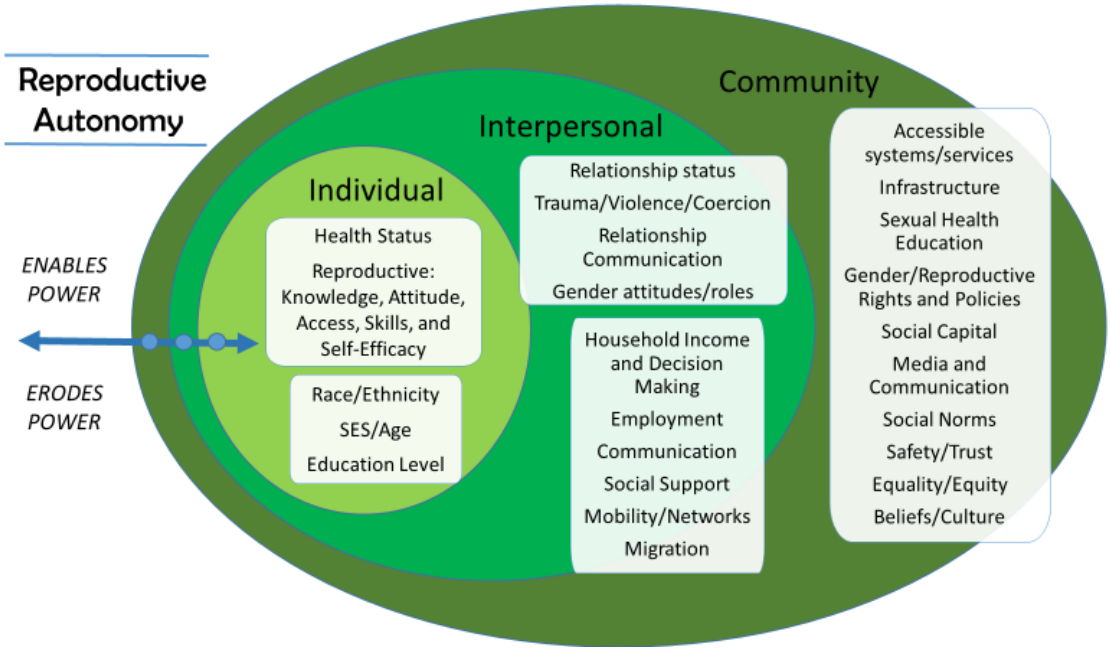


Figure 3.1 The Para Framework

**Individual; Enable Power**

Promoting reproductive autonomy at this level generally refers to improving knowledge, attitudes, beliefs and behaviors regarding the prevention of pregnancy, which may include education and life-skills training [40]. An important individual determinant of power within in terms of reproductive autonomy is self-efficacy. Knowledge, skill and access are precursors to self-efficacy, which is generally defined as the ability to success or accomplish a task or specific action [43]. Self-efficacy has consistently been one of the best individual predictors of intent and using contraception to prevent pregnancy thus promoting reproductive autonomy [48-51].

At the individual level, women who achieve reproductive autonomy have 'power to' access to a wide range of contraceptive choices to meet their unique needs. Some of

the most common barriers to using contraception were fear of side effects from specific methods, and not having consistent access to desired contraception [32, 52, 53]. In low and middle income countries, some investigators reported access to contraceptives as less of a constraint to reproductive autonomy than lack of knowledge and opposition to contraception by others [54]. Interventions related to improving knowledge, skills, behaviors related to contraception use largely lead to positive intentions but not necessarily consistent or long-term use [29, 31, 33, 35, 55, 56]. Qualitative researchers have proposed that intention does not lead to action due to contextual factors in relationships and communities, so knowledge, skills and behaviors are only part of building blocks of the PARA framework [29]

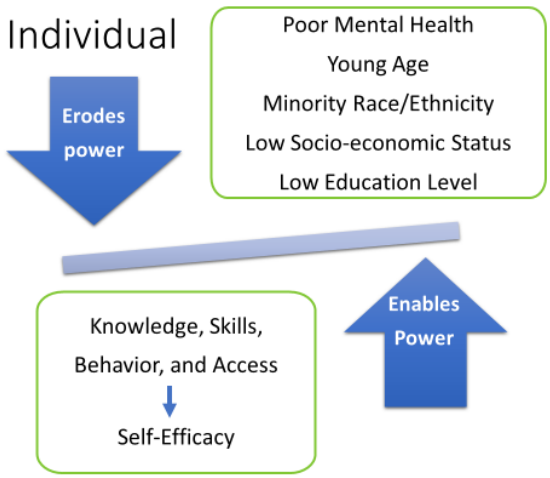


Figure 3.2 Individual Level PAR Framework

**Individual; Erode Power**

Historical or current injustices and inequities can contribute to poor reproductive autonomy measured at the individual level [39]. Women of social disadvantage have increased risks for adverse perinatal outcomes, risk of unintended pregnancy and poor reproductive autonomy; specifically women who are of low socioeconomic status, sexually active and unmarried, have a low level of education or literacy, are of a minority race or ethnicity, or part of a historically marginalized group [57-60]. In the US, women living in poverty were 5 times more likely to report an unintended pregnancy than women of middle to higher income status and women with the fewest years of education were more likely to report an unintended pregnancy [11, 17]. Race and ethnic disparities are also evident, Hispanics and African Americans were 2.5 times more likely to report an unintended pregnancy than non-Hispanic white women [17]. In addition, adverse birth outcomes are associated with pregnancy under the age of 18, especially in low and middle-income countries, but the highest rate of unintended pregnancy in the US is in women between 20 and 24 years old [11, 61]. In young women and adolescents, discrimination and stigma create barrier to accessing contraception and is associated with unintended pregnancy [62, 63]. Many of these trends related to current and historical social inequities are evident globally as well [8, 64].

Another measurable individual issue that can contribute to or be the result of powerlessness is related to the health status of the woman, particularly poor mental health or psychosocial well-being. Poor mental health, specifically depression, anxiety and stress are inversely related to reproductive autonomy and contribute to unintended pregnancy [62, 65-68]. And poor general psychosocial well-being is associated with non-use of

contraception and unintended pregnancy [69]. Poor preconception mental health also increases future challenges for families, as it increased the risk of adverse pregnancy and birth outcomes by 40% [70].

**Interpersonal level; Enable Power**

Reproductive autonomy promotion programs or interventions at this level include couple and family-focused prevention programs, and mentoring and peer programs designed to foster health communication, promote healthy relationships, and gender equality [40]. Equitable gender-roles in interpersonal domains include perceiving that men and women can have equal reproductive and sexual responsibilities, needs and desires [1]. Adolescent couples who believe gender equality is important are more likely to use contraception [55]. Gender empowerment interventions have also been shown to decrease intimate partner violence by 30%, which could in turn lead to greater reproductive autonomy [71]. Other qualitative researchers found that open communication skills in relationships could decrease male chauvinism and control, leading to female empowerment where women could be viewed as capable of making their own decisions and having a career or greater educational attainment [72]. Previous investigators also found that including men in contraceptive counseling, family planning, and developing partner communication skills can increase the uptake of contraception and intervals between births [46, 73].

Reproductive autonomy can be fostered by experiencing new ideas, shared knowledge and behaviors from formal and informal social networks including family, peers, and employment outside of the home [74]. Women openly communicating about contraception use with their peers, navigating choices, and partner issues in the collective

dimension, leads to action in a way that works for them thus improving reproductive autonomy [75]. Social support has a protective effect on health by increasing power with others through social networks, which can decrease stigma, connecting people to the practical and emotional resources they need, particularly women-to-women bonds [76]. Social support promotes a mutual obligation to others, helping people feel loved and valued, and buffers the perinatal harms associated with violence [77].

Household level factors which serve to foster reproductive autonomy include 'power to' make financial and health decisions, be mobile and interconnected, and 'power with' spouses to improve gender equality in the home. The household experiences of women are measured by the Demographic Health Survey (DHS), which is a tool used in low and middle income countries, in which the reproductive health and household questions are directed toward only married women. In the Philippines having a 'final say' in the household and sexual matters with husbands lowers the risk of unintended pregnancy regardless of education and wealth [12]. In Bangladesh, researchers conceived a woman's autonomy scale measuring the 'power to' make household purchases, visit family or relatives (mobility), and obtain healthcare for herself and her children [13]. When controlling for demographic variables they found that for every increase in one unit of the scale (more autonomy) there was a decrease in unintended pregnancy by 16% [13]. And in Ethiopia, a woman's 'freedom of movement' was associated with reproductive autonomy and power to seek health services such as family planning [78]. Ease of movement and interactions with the immediate social environment increases social networks, collective power, and resilience which contributes to reproductive autonomy [79].

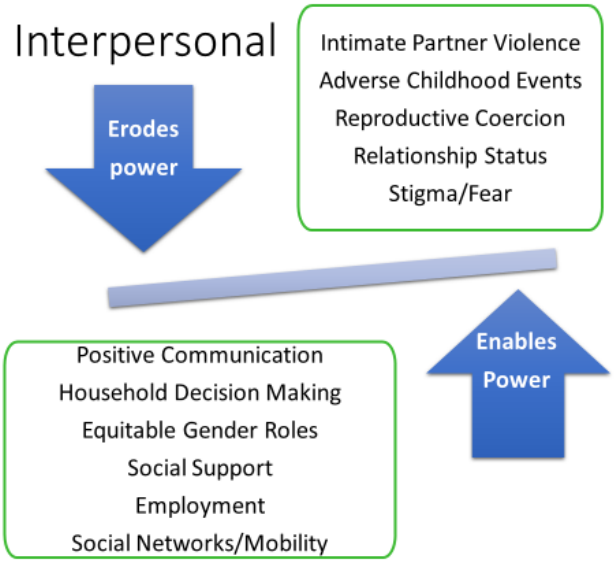


Figure 3.3 Interpersonal PARA Framework

**Interpersonal; Erode Power**

Power dynamics in the immediate social environment can lead to poor reproductive autonomy. Issues can arise from the intimate relationship, the family of origin, household poverty, gender role expectations, and social isolation. Taboos regarding sexual relationships prior to marriage can limit reproductive autonomy of young unmarried women, who are at particularly high risk for unintended pregnancy and report non-use of contraception due to infrequent sex and social stigma of accessing health services [1, 8, 80]. Women in violent and abusive relationships also have less reproductive autonomy, intimate partner violence and reproductive coercion are associated with unintended pregnancy. Previous investigators found that women who experienced intimate partner violence (IPV) had a 2.5 to 4 times greater likelihood of having an unintended pregnancy [81].

In some global studies, investigators reported that 30% of adolescent girls were coerced into their first sexual experience [82]. Reproductive coercion exists when a male partner physically or emotionally pressures or forces a woman not to use birth control, or when the male partner is promoting a pregnancy when the woman wants to prevent pregnancy [83]. Reproductive coercion is consistently associated with unintended pregnancy, in one study in the United States 19% of women reported reproductive coercion and this doubled the risk of unintended pregnancy [83].

Underlying cultural and gender expectations of the women's reproductive role in the family can interfere with reproductive autonomy. Women report fear of a partner's response for suggesting contraception, as their partner desires to have a lot of children as a sign of virility and strength [72]. Women also expressed fear regarding refusal of sex with their spouses, fear related to peers and family criticism and judgement when attempting to limit family size, and fear of abandonment by sexual partner if they used contraception [72, 84]. According to global surveys in 51 countries, 11% of the women interviewed reported non-use of contraception due to a partner (or someone else close to them) who opposed contraception [32]. Women are particularly prone to having poor reproductive autonomy when they are socialized to focus on the health of their family at the expense of their own health needs, also called 'other oriented' [8]. Men generally report women are 'in charge' of family planning and judged for not controlling their fertility, yet most women are not allotted the shared power, financial resources, time, open communication or access to services to control their reproductive health [46].

Issues in the woman's family of origin can also greatly influence reproductive autonomy. Experiencing an adverse childhood event such as sexual abuse, violence and/or

a parent with substance use disorder can increase risk of having an unintended pregnancy in the future [85, 86]. Fear of violence from their fathers and poor health communication regarding sexual and reproductive health in the home were reported as barriers to contraception knowledge and use by young women and adolescents who wanted prevent pregnancy [72]. Young women report low levels of sexual health education and communication in the home due to taboo and stigma, and the desire to keep young women 'innocent' [32, 84, 87, 88].

**Community; Enable Power**

Fostering reproductive autonomy at the community level involves evaluating policies that impact health, access resources and economic opportunities, and education to assure that they create a climate of equality (gender, racial/ethnic, and income) [8, 40]. Access to health care and resources such as contraception are vital to enhancing reproductive autonomy at the interpersonal and individual levels. In countries without universal health care, such as the US, affordable access varies from state to state. Recently, Colorado introduced unfettered and free access to long acting contraceptives, and unintended pregnancy rates dropped 20% to 40% [28, 89].

Access to safe, voluntary family planning services is considered a global human right. One hundred and eighty-nine countries participated in the United Nations International Conference on Population and Development (ICPD) Programme of Action in Beijing in 1995 which established the definition of reproductive rights, to be "the right of couples and individuals to decide free from discrimination, coercion and violence whether to have children, how often and when to do so, having the necessary information and means to make such decisions" p. 13, [90]. Inherent in this definition is that reproductive rights

ensure voluntary right to marry or not marry, the right to attain the highest standard of sexual and reproductive health including access to a comprehensive package of health services including contraception which must be made available in rural and underserved areas [90]. Individual reproductive autonomy has been greatly influenced by these rights, but to date no country has met the goals established in Beijing, in many regions these are largely 'paper rights' and not realized by all women yet. These are important to have in the PARA model as they have the potential to empower a generation of women.

As a result of establishing these rights, private and public funding opportunities looked for innovative ways to foster empowerment of women to meet the goals established in Beijing. Successful community level interventions include those that incorporated media and the arts as part of multilevel reproductive empowerment programs, and gender and power frameworks into sexual health education. Interventions that made widespread use of media, through radio and oral promotion by credible sources, were more likely to influence norms related to gender, knowledge and access to family planning and use of contraception, than those who were only exposed to one level of reproductive health promotion [91]. Utilizing theater and music in family planning and gender empowerment interventions also increased favorability of contraceptive use and partner communication, the more intense or exposure to the intervention the more favorable the participants were [92].

Basic education as well as enhanced education programs promote reproductive autonomy, the longer a girl or young woman stays in school the more likely they are to have the power to plan their families and avoid unintended pregnancy [78]. When gender equality and human rights are tied to education programs, they are more successful in

changing the contraception behavior, reporting an increase in family planning and preventing unintended pregnancy when compared to abstinence programs or comprehensive sex education alone [93]. Another enhanced sexual health education program that included role playing with a focus on gender equality and power in relationships were five times more successful in reducing unintended pregnancy than those with only basic sexual health education [94]. In another region, successful education and empowerment programs that lead to reduced unintended pregnancy included teaching vocational skills and personal development, sports and arts programs with comprehensive sexual health education [82]. A promising large scale reproductive empowerment program for girls in Uganda included an entrepreneurship component and found condom use increased by 50%, teen pregnancy decreased by 26%, and girls reporting non-consensual sex dropped by 50% as compared to a control community [95]. These are key outcomes related to laying the foundation of a lifetime of reproductive autonomy.

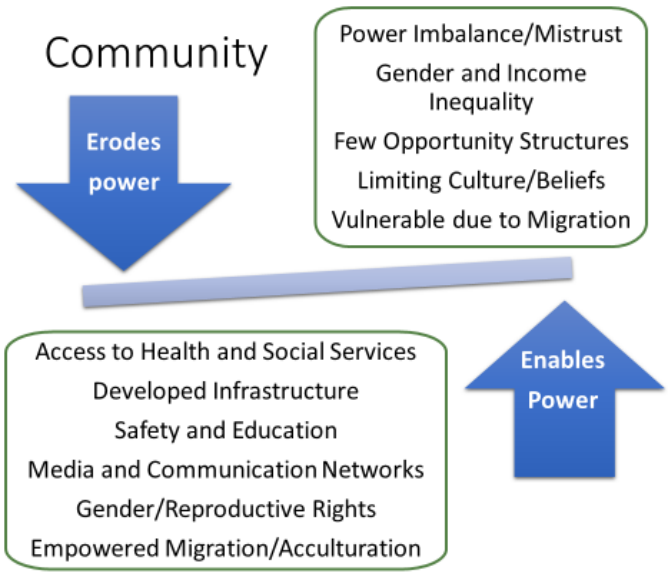


Figure 3.4 Community PARA Framework

**Community: Erode Power**

The community level exerts power over reproductive autonomy by setting the stage for economic, gender, and racial/ethnic equality and justice which can serve to either erode power or enable power. In the PARA model, I have combined community, societal, institutional and policy related factors into one 'community' level of influence to simplify and categorize distal influences as one level. How society interacts with the local community will largely be dependent on the governing policies of the region, each global community will have a different manner of measuring this, aggregating influences at a more local and larger societal levels. In the United States, we can aggregate data by census tract, zip code, tribal, county, and regional health departments which are embedded in state and national policies and laws. For instance, federal policy determines funding amounts for family planning clinics and contraception (through Title X), these clinics are active at the local and regional level and operate differently in every state [96]. Community social norms influencing fertility, pregnancy intention, and/or reproductive autonomy include female unemployment rates, religiosity, marital/divorce rates, median housing value, life expectancy, teen birth rates, and political affiliation [97-99]. Other policies or laws determined and enforced at various levels of the community which contribute to reproductive autonomy include; those governing human rights, child marriage, age of consent, education, violence and safety [47].

Powerful barriers to reproductive autonomy in the community/societal level are those related to gender inequality and neighborhood violence and safety. Previous investigators who studied gender inequality, found that living in a municipality with high male patriarchal control increased the likelihood of a woman having an unintended

pregnancy four-fold [100]. In the same study, non-abused women living in a municipality with high rates of intimate partner violence were also more likely to have an unintended pregnancy [100]. Other researchers found that not feeling safe in one's neighborhood was significantly associated with unintended pregnancy, when other neighborhood characteristics, individual level violence and demographics were controlled for [101].

Other influences at the community level include health provider power over women's choices and trust. Power imbalance contributes to poor reproductive autonomy when women interface with health systems and providers. Researchers have found that low-use of contraception often does not reflect the low demand for contraception, but points to patient-provider power imbalance that results in fewer women meeting their reproductive needs [39, 75]. In the United States, minority and low income women are more likely to report health care providers encouraged them to limit their family size, they feel pressured to use longer acting/permanent methods of birth control more so than white women, and women of color are more likely to discontinue contraceptive use when they do not trust their providers [102-105].

Income inequality is the unequal distribution of income within a population, and can be a community level determinant of poor reproductive health outcomes [79]. Unequal distribution of wealth creates a tension in communities, limits access to opportunity and mobility for those in poverty and contributes to health inequalities [106]. There is conflicting data regarding the impact of income inequality in different contexts, but is included in the PARA framework as a possible contributor to poor reproductive autonomy at the community level [107].

Many of the mechanisms that influence reproductive autonomy at the community level are indirect and may require leaps in our understanding of social influences. In a social analysis of urban communities in the United States, researchers demonstrated that when life expectancy declines across neighborhoods, the median age of pregnancy is significantly younger, with higher rates of teen pregnancies [99]. The authors reflect that this is a result of future discounting, risk acceptance, and unpredictability in relation to a community's life expectancy [99]. It is not known whether the women would classify the pregnancies as unintended, but certainly provides insight into the context and influences of social norms as 'power over' reproductive autonomy. One manner of measuring some of the more abstract mechanisms of action from the global literature can be done by using the United Nation's Human Development Index, which combines life expectancy at birth, infant mortality rates, access to education and economic resources to compare health conditions within the context of societal influences [39].

Poverty and social exclusion can also limit power and have a major impact on health, and is reinforced by racism, discrimination, stigmatization and unemployment [76, 108]. All of which are associated to unintended pregnancy [62, 109, 110]. Women living in rural settings are at a greater risk of social exclusion, intimate partner violence and poor reproductive autonomy, due to poor infrastructure (roads, water and electricity), distance to services, power imbalance with providers, and social norms that may reinforce traditional gender roles and independence [8, 54, 75, 111, 112].

Erosion of power can be compounded by women who are forced to migrate due to poverty, war, or social crisis. Migration can cause a loss of interpersonal relationships(kinship) and intergenerational knowledge, which places women in a survival

mode, adding to the risk of short term, unprotected and opportunistic sexual relations, contributing to poor reproductive autonomy [8, 108]. Similar to other issues related to social context, the opposite can also be true, migration can be empowering to women depending on the location, and norms of the recipient country. In the long-run migration can lead to greater reproductive autonomy, in one study women who immigrated to the United States reported feeling more empowered over time and developed reproductive autonomy that they had not experienced in their home countries [88].

Religion has been implicated in non-use of contraception contributing to shame and stigma associated with sexuality, however recent research in the US has shown that pregnancy intention and use of contraception does not significantly differ across religions but those who report no religious affiliation had higher rates of unintended pregnancy [11, 113]. Specific religions themselves may not impact reproductive autonomy but it falls under the umbrella of culture and beliefs for further inquiry. Globally, cultural identification and belief systems impact reproductive autonomy, traditionally by having 'power over' women and couples, but may also serve to enable collective social support or 'power with' other women [2, 114-116]. Culture and beliefs are included in this framework for further investigation, however, not a well-developed construct as this is very site specific.

**Limitations**

Many of the global studies in low and middle income countries rely on population data where only married women are surveyed about household decision making, empowerment, autonomy and reproductive health. However, in many countries the greatest risk of poor reproductive autonomy occurs in adolescents and young women who are

unmarried. Another limitation is that in general research related to pregnancy intention is done retrospectively, after women are pregnant or have had children, which may bias responses based on current realities. The power paradigm may also be a limitation, according to feminist perspectives, the duality of power over as 'bad' and enable power or empowerment as 'good' may have oversimplified the realities of daily life where these coexist [117]. Looking at power more holistically and in the context of each community may shed more light on the complexities that influence reproductive autonomy than the good/bad paradigm. Finally, a huge limitation to the PARA model is that it focuses on primarily negative attributes of men, as contributing largely to the erosion of women's power. Men are also victims of many of the social and environmental disadvantages faced by women and often want to be part of the solution to promote both reproductive autonomy and gender equality [46].

**Conclusion**

Maternal, child health promotion efforts need to be proactive across the life course, creative and multidimensional. The PARA framework can be used as a guide to assess reproductive autonomy, factors that erode power and those that enable power at three simplified levels of the socio-ecological model. Viewing the individual as nested in their environment can enhance our understanding of the women's experience, and rather than focus on individual behavior change, focus on social change and the determinants of health. There is an excellent analogy about women moving through life without any hindrances as 'moving through air', those with some adverse experiences or inequalities are 'moving through water', and those with multiple hardships are 'moving through landmines' [58]. When only considering the individual level factors, we don't acknowledge the complexity

of navigating in water and through landmines, and the cumulative challenges at each level of the Socio-Ecological Model that contribute to poor reproductive autonomy. Strategies to improve reproductive autonomy and reduce unintended pregnancies need to address multiple levels to have long term impact and improve maternal child health.

## Chapter 4: Evaluating the Psychometric Properties of a shortened version of the Women's Experience with Battering Scale in Pregnant Women who are Medicaid Eligible


### Abstract

Background: Pregnant women who experience intimate partner violence (IPV) are at greater risk for adverse birth outcomes. Women living in poverty are at greater risk of IPV. Accurate measures of pregnant women living in poverty and exposed to IPV are needed to inform clinicians, research and policymakers. The Women's Experience with Battering (WEB) Scale measures the experience of psychological vulnerability associated with IPV. The original WEB tool has 10 items, but a shorted version (6 items) was used in this Center for Medicaid and Medicare Innovations Study without prior validation.

*Aims*

To test the reliability and construct validity of a shortened form of the WEB scale in a sample of Medicaid eligible pregnant women.

*Methods*

This is a cross-sectional secondary analysis of a large interventional study. The sample was Medicaid eligible pregnant women who completed the 6 item WEB scale in English (n=420) during the first prenatal visit in an outpatient clinic. Internal consistency reliability was assessed using Cronbach's alpha. Exploratory factor analysis, construct validity was assessed using a history of physical violence scale (STaT) and regression with covariates was performed using a depression scale (CES-D).

*Results*

Cronbach's alpha was 0.93 supported the internal consistency reliability of the WEB-6 in pregnant women. Inter-item correlations (range 0.61 – 0.81) and item-total

correlation supported homogeneity of the WEB-6. Factor analysis yielded one dimension. Convergent validity was demonstrated with 82% of women experiencing battering also screening positive for a physical partner violence tool ($p < 0.001$), and the intimidation responses were highly correlated with battering, ($r = 0.81$ and 0.87). The regression model confirmed that the WEB independently predicted depressive symptoms and explained 10% of the variance ($p < 0.001$).

*Conclusion*

The 6 item Women's Experience with Battery scale is reliable and valid in pregnant women.

Keywords: Intimate Partner Violence, pregnant women, Women's Experience with Battering, Medicaid, validity, reliability, psychometric.

**Introduction**

One in four women in the United States have experienced intimate partner violence (IPV) in their lifetime and women living in poverty are at greatest risk [1]. IPV includes sexual violence, physical violence, stalking, coercive acts, and psychological aggression and has lifelong health consequences [1]. Exposure to intimate partner violence, particularly incidents leading to erosion of power and control, increases the risk of current poor physical health and depressive symptoms; this exposure also increases the risk of developing future chronic disease and chronic mental illness mental illness [2, 3].

IPV has additional impact when there are children in the home; exposure to psychological or physical violence in the home is an adverse childhood event, and these have been linked to an increased risk of developing heart disease and cancer later during adulthood [4]. Measurement of IPV is a challenge as it is dependent on how women are

asked about the abuse, willingness to disclose, whether the tool used includes both physical and the non-physical attributes, and social norms regarding gender roles [5-7]. Accurate identification of IPV is vital as it not only affects the victims and their offspring, but is a broader public health issue. Costs associated with intimate partner violence in the United States exceeded $8.3 billion in 2003 [3].

Women who are pregnant and experiencing IPV are at greater risk for adverse birth outcomes and women in their childbearing years are at greatest risk of IPV [8]. There is also an increased risk of unintended pregnancy when sexual violence and reproductive coercion are components of IPV. The Center for Disease Control and Prevention reported that 5% of women disclose having an intimate partner who tried to get them pregnant when they did not want to become pregnant [1]. There are inconsistent research findings regarding whether the risks for IPV increase, stay the same, or decrease during pregnancy [6, 9]. This may be due in part because IPV is particularly difficult to capture in pregnant women because there is not uniformity in the way the questions are asked in the clinical setting, and in national/international samples [6].

Many different approaches to measuring IPV have been used to capture the full extent of harm, identify victims in clinical settings, to understand the context of violence, and to advocate for policies to protect women. There are 3 main approaches to measuring IPV, tools that identify specific behavioral tactics primarily related to physical violence, outright asking women to identify with the words abuse and violence, and assessing the impact of IPV on women's lives in the form of power and control [5]. The latter is also referred to as 'battering,' whereby the victim experiences psychological violence, disempowerment and hopelessness; this is the focus of the Women's Experiences with

Battering (WEB) instrument [10, 11]. Historically there has been an emphasis on episodic physical assaults, rather than the long-term context of women's experiences related to loss of power and control [10]. While both have implications for short and long-term health outcomes, investigators suggest that the long-term health consequences are worse for sustained psychological violence [2]. Investigators have also found that psychological violence or battering often precedes physical violence; thus the WEB is a valuable tool for the clinician in terms identifying those who may be most at risk and intervening to prevent physical harm and injury [12].

The purpose of this secondary analysis was to evaluate the psychometric properties of a shortened version of the WEB instrument as a measure of psychological vulnerability associated with IPV in a population of pregnant women who completed the scale. There are two specific aims of the study: 1) to determine the internal consistency reliability of the 6-item WEB scale in a low-income sample of pregnant women using Cronbach's alpha; and 2) to establish construct validity of the WEB scale through exploratory factor analysis and convergent validity. Convergent validity was done with a history of physical violence scale, and regression with covariates was performed to determine whether the psychological components measured of intimate partner violence measured by the WEB were an independent predictor of depressive symptoms.

The WEB framework was developed by Smith, Earp and DeVellis in 1995 from extensive qualitative work. Results from this work included identifying battering as an "enduring, traumatic, and multidimensional experience that is manifested in women's thoughts, feelings and behavior" (p. 175) [11]. This manifestation is the psychological vulnerability associated with IPV, identification of this could prevent physical violence

and injury, or identify a component of IPV that might be more palatable to report in a clinical setting as it may not be seen as a criminal offense or identified as domestic violence. In the development of the WEB, depressive symptoms and physical IPV measures were used to demonstrate construct validity, and it was found to be correlated with WEB scores in a known battered group [10].

Depression is the most common mental health consequence of IPV [13-17]. Pregnant women exposed to IPV are 2.5 times more likely to report depressive symptoms than pregnant women who are not abused [13]. Forty percent of abused women report depressive symptoms [14]. Connell's Theory of Gender and Power has been used to explain the relationship between IPV and depression [18]. The imbalance of societal and interpersonal power, where men hold more power, results in more decision-making roles for men within romantic relationships, which can be preserved partly through violence. Depression is seen as a consequence of IPV due to loss of power in the relationship, as perceived control decreases depression increases [18, 19]. This theoretical foundation was demonstrated empirically in one study of college students were powerlessness was found to be a significant mediator between depression and IPV [20]. The authors of the WEB did not explicitly use this theory driven approach as the instrument development emerged directly from qualitative work, however disempowerment was one of the dimensions that emerged from the women who experienced battering or IPV [11]. In addition, depression, locus of control, and physical IPV were used to evaluate the validity of 10 item WEB [10]. The hypothesis being testing is that IPV scores (WEB) will be an independent predictor of higher depression scores (CESD) when controlling for demographic variables.

## Methods

*Design and Sample*

Data for this secondary analysis were obtained from baseline data from a prospective multicenter study that took place in three regions of Kentucky with recruitment over a 4 year span 2012 to 2016. The parent study is entitled Efforts to Maximize Perinatal Outcomes in Women at Risk (EMPOWR), consisted of Medicaid eligible pregnant women and was funded by the Center for Medicaid and Medicare Innovations Center; Strong Start for Mothers and Newborns Initiative (CMMI). There were 182 CMMI "Strong Start" funded intervention programs across the United States which stipulated inclusion of 6 of 10 items in the Women's Experience with Battering (WEB) scale which to date was not validated in the 6 item form or in pregnant women.

The parent study included women who were pregnant, over the age of 14, Medicaid eligible, and entering the research study at less than 30 weeks gestation. In addition, the women had to demonstrate of at least one risk factor for preterm birth according to the Institute of Medicine (IOM) 2007 criteria, such as a previous preterm delivery, smoking during pregnancy, or having a diagnosis of diabetes [21]. Exclusion criteria included having a current diagnoses or history of a severe mental illness. The current secondary analysis had the same inclusion and exclusion criteria, except the participants were included only if they completed the all 6 questions in English of the variable of interest, the Women's Experience with Battering scale. The sample meeting these criteria were 420 women.

*Measures*

Demographic variables on the survey included age, race, marital status and food insecurity as a proxy for financial status.

*Women's Experience with Battering (WEB) Scale*

The formation of the WEB tool by Smith, Earp and DeVellis was based on six themes; measuring the impact of the chronic and continuous nature of abusive behavior; perceived threat, altered identity, managing, entrapment, yearning, and disempowerment [10, 11]. In the development of the scale, initially there were 40 items, which loaded on 3 dimensions that were identified through exploratory factor analysis, the 10 WEB items that were retained loaded one construct; psychological vulnerability[10]. Smith, et al. defined psychological vulnerability as "women's continuous perceptions of susceptibility to physical and psychological danger, loss of power, and loss of control in a relationship with a male partner" (p. 277) [10]. Examples of the items include; *He makes me feel unsafe even in my own home, He makes me feel like I have no power over my own life, no control, no protection*. The original 10 item WEB used 6 point Likert scale (strongly disagree to strongly agree) with a range from 10 to 60, with higher scores indicating more battering, and a cut point for battered of 20 and above[10]. Internal consistency reliability in former studies has been consistently high for the 10 item WEB, Cronbach's alpha ranged from 0.86 to 0.95 [10, 12, 22, 23]. In the original formation of the WEB scale a known battered and abused group was compared to college students and professors. Depressive symptoms and physical abuse were two of the measures used to demonstrate validity. Both were correlated with the known battered group; depressive symptoms r=0.66, physical abuse r=0.71 [10]. The original paper did not indicate what scales were used for depressive symptoms or physical abuse. Other than the initial development of the WEB instrument, validity has not been reported.

The 6 item WEB in the current study was asked in reference to a current spouse, partner, or boyfriend while in some studies it is asked to describe their most recent partner

[5]. The WEB 6 item tool used a Likert scale with 6 responses, from Disagree Strongly=0, to Agree Strongly=5, with a range of 0 to 30, with higher scores indicating more battering. To date there is no cut-point defined for the 6-item version. In light of no other evidence (interviews, repeated measures, comparison to the 10-item) using the proportional cut-point from the 10 item WEB, greater than or equal to 6 out of 30 would indicate moderate IPV or battering.

*History of Physical Intimate Partner Violence*

The Slapped, Things, and Threatened (STaT) tool is a brief and simple measure designed to screen whether an individual had exposure to the threat of or actual physical aspects of IPV in his or her lifetime [24]. The 3-item, dichotomous (yes/no) tool was developed by Paranjape, and Liebschutz in 2003 for use in emergency departments by testing a large pool of questions with individual interviews. Examples of questions include lower levels of violence and intimidation; *Have you ever been in a relationship where your partner threatened you with violence? Have you ever been in a relationship where your partner has thrown, broken or punched things?* Also one question with a higher level of physical violence; *Have you ever been in a relationship where your partner has pushed or slapped you?* The sensitivity of STaT for lifetime IPV for a score of one or greater is 96% (CI: 90–100%) and specificity is 75% (59%–91%) [24]. A positive screen has a cut-off point of 1, with 2 and 3 indicating more severity. Identifying lower levels of violence captures those at risk in the future for higher levels of violence [24, 25].

*Depressive symptoms*

Depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale Revised (CESD). The CESD is a 10-question, self-report tool used to measure the current level of depressive symptoms with a 4 point Likert scale range from 0

to 30 [26, 27]. Participants were asked how often during the past 7 days they felt depressive symptoms, with response options beginning with 'rarely or none of the time', (scored 0) 'some or a little of the time,' (scored 1) 'occasionally or a moderate amount of time,' (scored 2) and 'most or all of the time' (scored 3). Examples of items include; *I felt depressed, I felt fearful,* and one that was reverse coded; *I felt hopeful about the future*. Higher scores indicate greater depressive symptoms, the cut point ≥10 is widely used to represent positive for depressive symptoms [28]. In the literature, the 10 item version of the CESD as compared with the longer 20 item tool demonstrated concurrent validity and construct validity through factor analysis [26, 29, 30]. The 10 item CESD has demonstrated high internal consistency in a pregnant sample, Cronbach's alpha was 0.88 [26] and 0.86-0.92 in a general population samples [27, 31].

*Procedures*

Participants were recruited from Obstetricians and Midwifery offices in 3 regions of Kentucky. Enrollment took place at University of Kentucky (UK) affiliates and regional Medicaid managed care organization, and referrals from advocates for victims of domestic violence. Recruitment and enrollment occurred through either self-referral, referral from the local health department, or providers. Further information about the procedures are reported in the parent study [32]. Human subjects research protection was provided for the parent study by University of Kentucky's Institutional Review Board (IRB).

*Data Analysis*

Data were analyzed using SPSS for Windows (version 24.0, SPSS, Inc., Chicago, USA). Descriptive statistics, including means, standard deviations, and percentages were used to summarize demographic characteristics. Internal consistency reliability was evaluated using Cronbach's alpha. Homogeneity was assessed using inter-item correlations

and item-total correlations. To demonstrate construct validity, principal component analysis determined dimensionality of the scale and bivariate analysis was used to evaluate convergent validity by testing for associations between the WEB and STaT instruments. In particular, Pearson's product moment correlation assessed the relationship between total scores for the two instruments, as well as for the STaT items most aligned with battering. While the Chi-square test of association determined whether those who screened positive for battering and physical IPV were related. Regression of covariates was performed using the CESD, depressive symptoms scale to evaluate construct validity by first assessing if the mean WEB scores and CESD were significantly related in a bivariate analysis, using Chi-Squared test of association. Finally, a logistic regression model was performed to assess if psychological vulnerability related to IPV was an independent predictor of depressive symptoms (CESD) when controlling for demographic factors.

**Results**

The mean age of the participants was 26 years; they were primarily Caucasian (72%), married and/or living with their spouse or partner (65%), and unemployed (65%). They were largely not food insecure (58%); this was used as a proxy for financial status as many did not answer the income questions. The participants were pre-screened to be Medicaid eligible, so they are all considered living at 138% or below the poverty line. Six percent (27 out of 420) of women scored at least 6 on the WEB, indicating moderate to severe intimate partner violence.

Table 4.1 Sample Characteristics (n=420)

| Characteristics | Mean (SD) number (%) |
|---|---|
| Age in years | 26 ± 5.5 |
| Race | |
| White(Caucasian) | 302 (72) |
| African-American | 64 (15) |
| Other | 54 (13) |
| Marital status | |
| Married and living with spouse | 116 (28) |
| Married and not living with spouse | 10 (2) |
| Living together | 155 (37) |
| In relationship but not living together | 94 (23) |
| Not in a relationship | 40 (10) |
| Employed | |
| No | 272 (65) |
| Yes | 148 (35) |
| Food Insecure | |
| Never | 244 (58) |
| Sometimes | 140 (33) |
| Often | 36 (9) |

*Reliability*

The short form Women's Experience with Battering scale was employed to measure the impact of IPV, this construct had a high level of internal consistency, as determined by the Cronbach's alpha of 0.93 [33]. Inter-item correlations of all items were in the ideal range, 0.2 to 0.8, and the mean was 0.7 [34]. The item-total correlation analysis demonstrated adequate contribution of all of the items to the measure, the correlation coefficients of all 6 items were greater than 0.20 (See Table 2).

Table 4.2 Inter-Item Correlations

| | Unsafe | Ashamed | Scared | React | Prisoner | Lack of Control |
|---|---|---|---|---|---|---|
| 1) Unsafe | 1.000 | | | | | |
| 2) Ashamed | .694 | 1.000 | | | | |
| 3) Scared | .731 | .714 | 1.000 | | | |
| 4) React | .686 | .648 | .805 | 1.000 | | |
| 5) Prisoner | .573 | .705 | .610 | .614 | 1.00 | |
| 6) Lack of control | .746 | .738 | .798 | .705 | .802 | 1.000 |

*Construct Validity*

The principal component analysis (PCA) indicated no sample size issues and that there was adequacy. The Kaiser-Meyer-Olkin (KMO) measure confirmed an adequate sample for this analysis, KMO= 0.85. Bartlett's test indicated that the correlations between items were significantly large for the PCA, ($p < .001$)[35]. In the initial factor extraction one factor was retained with an eigenvalue greater than one, it was 4.53 which explained 75.47% of the variance, and noted drop off was observed after component one. The scree plot also demonstrated one factor. All factors loaded between 0.823 and 0.921 (see Table 3). Given adequate sample size, agreement with the eigenvalues, scree plot and Kaiser's criterion, only one factor was retained. This is in agreement with the original 10-item WEB as the emphasis was on measuring a unique aspect of IPV, not the entire concept.

Table 4.3 Principle Component Analysis for the Women's Experience with Battering scale (WEB) (n=420)

| Item | Factor 1 |
|---|---|
| 1. He makes me feel unsafe even in my own home. | .850 |
| 2. I feel ashamed of the things he does to me. | .863 |
| 3. I try not to rock the boat because I am afraid of what he might do. | .897 |
| 4. I feel like I am programmed to react a certain way to him. | .855 |
| 5. I feel like he keeps me prisoner. | .823 |
| 6. He makes me feel like I have no control over my life, no power, no protection. | .921 |

*Convergent Validity*

Chi-squared tests of association results were significant between women who were battered (WEB) and those who had a positive screen for physical IPV(STaT)($p < 0.001$). Of the 27 women who reported being battered (WEB score > 6), 82% also reported physical IPV (STaT > 2). While the correlation between the two measures was significant, it was not highly correlated, ($r=0.34$, $p< 0.001$). However, when the individual items in the STaT were analyzed with the women who were identified as battered (WEB > 6) the items that aligned with intimidation rather than physical abuse were highly correlated with battering; 'threatened' ($r= 0.87$), and with 'broke things' ($r= 0.81$), but not with 'slapped' ($r=0.27$).

*Regression with Covariates*

Women who were identified as 'battered' also were more likely to have higher depressive symptoms than those who were mildly or not at all battered. The mean depression score (CESD) of those who were battered was 15.3 + 6.6 and those who were 'not battered' was 9.6 + 4.6 ($p < 0.001$). Based on the conceptual framework establishing the relationship between depression and IPV, specifically the psychological vulnerabilities as measured by the WEB, we would expect a strong relationship between these two

variables, when controlling for demographic variables. In order to evaluate whether battering was an independent predictor of depression, hierarchical multiple regression was used to control for the demographic variables (age, race, education, and financial status). The categorical variables were dichotomized. These demographic variables were associated with IPV in previous studies [36]. And the regression was run with slightly smaller sample of 397 women who completed the CESD in its entirety.

All assumptions were met prior to running the final regression model. There were several outliers in the depression scores, but were still within range for the CESD and were also noted to have high anxiety scores therefore these were likely accurate scores, so they were left in the model. The demographic variables were entered in one level and the continuous WEB scores and STaT were entered in a second level. (See table 4). In model one (demographic variables) explained 6.1% of the variance in depressive symptoms and model was significant ($p<0.001$). In model two, the addition of the WEB IPV measure explained an additional 10% of the variance in depressive symptoms, and was also significant ($p<0.001$). Thus, the WEB measure of IPV was an independent predictor of depression which supports the hypothesis and contributes to the construct validity of the shorter measure of WEB.

Table 4.4 Hierarchical Multiple Regression Predicting Depressive Symptoms form Age, Race, Education, Financial Status and IPV (N=397)

| Depressive Symptoms(CESD-10) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 ($R^2$=0.061) | | | | Model 2 ($R^2$ = 0.160), **Change in $R^2$ = 0.099** | | | |
| Variable | B | SE | β | P value | B | SE | β | P value |
| Age | 0.049 | 0.045 | 0.044 | 0.384 | 0.029 | 0.043 | 0.032 | 0.502 |
| Race | -1.037 | 0.544 | -0.094 | 0.057 | -1.232 | 0.516 | -0.111 | 0.017 |
| Education level | 0.132 | .583 | 0.011 | 0.821 | 0.030 | 0.551 | .003 | 0.956 |
| Financial status* | 2.273 | 0.493 | 0.226 | <0.0001 | 2.315 | 0.467 | .231 | <0.0001 |
| WEB-6 | | | | | **0.426** | **0.063** | **0.316** | **<0.0001** |

*Food Insecurity as a proxy.
WEB-6:Women's experience with Battering (6 item)
CESD-10:Center for Epidemiological Studies Depressive symptoms Scale (10 item)
B= unstandardized coefficients
β= standardized coefficients
P value < 0.05 is significant

**Limitations**

One limitation was related to the instructions of the WEB and the consistency with relationship status. The participants in the study were instructed to answer the WEB items if they 'had a spouse, partner or boyfriend right now', however, of the 420 women 40 answered the response 'not in a relationship' in a different part of the survey. There was not a 'not applicable' option for the WEB items so women may have been responding to scale items based on a former relationship, a current non-intimate relationship, or with some other frame of reference. Since we don't know the frame of reference for these participants, the 40 responses were included. An additional limitation is the cross-sectional nature of the study, particularly since previous researchers in this area have determined that responses to items can vary considerably over time given changes in trust, rapport and the current state of the relationship [9, 36, 37]. Future studies may benefit from evaluating this

construct multiple times to evaluate psychometric properties of the WEB given the propensity for change over time.

**Discussion**

The 6 item Women's Experience with Battering instrument demonstrated excellent reliability in low income pregnant women. There is also enough evidence to state that the shortened WEB is valid, it measured the one construct similar to the original instrument, was correlated to physical attributes of violence, and was an independent predictor of 10 % of the depressive symptoms in a regression model with covariates.

Nationally normed studies of women in general, (not necessarily pregnant), reported 7% of current IPV rates were identified by the WEB, and in the current it identified 6% of women as battered [5]. In addition, the WEB captured women that other measures did not, as compared to the Behavioral Risk Factor Surveillance Survey (BRFSS), the WEB identified 11.5% of abused women that the BRFSS did not [5]. However, in general the BRFSS identified more abused women than the WEB because it included a physical abuse dimension [5]. One of the challenges is the time frame, the BRFSS asks if women have 'ever had a partner'. This is a very different measure, particularly when the mean ages of women are older. In the current study, the STaT captured the history of physical abuse dimension similar to the BRFSS, and 26% of the women would have had a positive screen for exposure to violence. One of the strengths of the WEB is that it captures the more immediate risk when associated with current partner, which is imperative with pregnancy and in the clinical setting so referrals can be made quickly. As the original creators of the WEB indicated, and we would continue to recommend that the WEB-6 tool should be used with other measures that identify attributes of physical partner violence and a history of

IPV, to assure we are capturing the short and long terms risks associated with IPV especially during the perinatal period.

**Conclusion**

The validated 6 item WEB is an invaluable and practical tool for clinicians and researchers to capture psychological vulnerability, disempowerment and control issues in a relationship that can often precede physical violence [12]. The 6 item WEB validation in a low-income pregnant population is particularly salient as this population is at an increased risk for adverse maternal and child health outcomes [38]. The shorter valid WEB can now be included in population studies, clinical settings, and used in research. If it is more widely adopted, findings can inform policy, improve maternal/child health outcomes, and be used to further understand the how relationship power and control impacts other aspects of health and wellbeing.

## Chapter 5: Individual, Interpersonal, and Community Associations with Unintended Pregnancy in Women Living in Poverty in Kentucky

### Introduction

The United States (US) consistently has some of the highest rates of preterm birth, infant and maternal mortality of all high-income countries [1-3]. Healthy People 2020 seeks to address these poor maternal/child health outcomes by focusing on improving woman's health prior to conception, with an objective of health promotion and reproductive planning [4-7]. Specifically, preconception care can prevent unintended pregnancy which is associated with increased risks of preterm birth, low birth weight, reduced breast feeding, and subsequent offspring are at increased risk of physical and mental health problems [8-17]. Unintended pregnancy is also a costly public health issue for the US, federal and state expenditures associated with this were over $21 billion in 2010 [18]. Almost half of all pregnancies in the US (45%) are considered unintended, therefore more innovative approaches are needed to expand our understanding of the context of pregnancy intention by exploring the multiple levels of contributing influences across ecological domains from both health and non-health sectors [9].

Gaining more tools to prevent unintended pregnancy necessitates a broader perspective related to gender, socioeconomics, and empowerment. Recently investigators in this field have reclaimed the term 'reproductive autonomy' from one of complex legal/ethical issues surrounding a pregnancy, to a more holistic perspective focusing on issues that influence the decisional power women have in determining whether and when to become pregnant [19-21]. Reproductive autonomy is inversely related to unintended pregnancy and is part of the construct of women's empowerment [19, 22]. Poverty, mental health, household and relationship issues, as well as the larger values of a society greatly

influence reproductive autonomy [22]. Globally, the demographic health survey (DHS) is used to assess population health in over 90 countries (primarily low and middle income) and has been used to identify individual-, interpersonal-, and community-level predictors of reproductive autonomy, unintended pregnancy or women's autonomy in reproductive decision making [23]. Findings from the global literature were not always consistent across borders, but describe local social contexts which contributed to poor reproductive autonomy or unintended pregnancy in the specified region [21, 24, 25].

**Socio-Ecological Model**

The Socio-Ecological model (figure 1) was used to examine individual and interpersonal variables associated with unintended pregnancy or reproductive autonomy nested in the community level. The Socio-ecological model (SEM) is a theory-based framework which nests the individual within levels of the social environment in order to identify behavioral and societal leverage points for health promotion [26]. The SEM evolved from the ecological models of Bronfenbrenner and McLeroy, and has been modified and widely used in public health research [27, 28]. The Center for Disease Control and Prevention applies the SEM to our understanding of and to guide interventions related to violence [26], and UNICEF uses the SEM as an organizational framework for health promotion [29]. There are many iterations of the SEM, it is made up of nested, hierarchical levels (individual, interpersonal, community, and can include societal, organizational and the policy levels) [28]. The community level in this study is used broadly and includes characteristics found in societal or organizational environments as well. The SEM is useful to identify influences across dimensions to broaden our understanding of determinants of health.

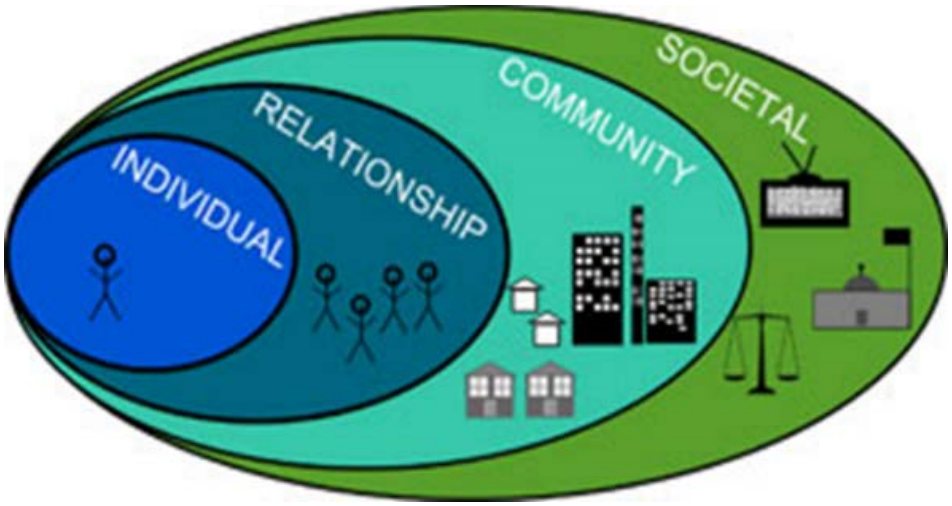


Figure 5.1 The Socio-Ecological Model

The purpose of this study is to utilize the Socioecological Model to identify individual, interpersonal, and community associations with unintended pregnancy in a sample of pregnant women living in poverty in Kentucky. Epidemiologic data will be used related to economic, social and structural determinants of health using geographic indicators contribute to our overall understanding of the context of health [30]. The long-term goal of this work is to identify leverage points to promote reproductive autonomy thus increasing utilization of preconception health services, improving health prior to conception, and increase the rate of intended pregnancies, leading to better maternal and child health outcomes.

**Background**

Individual and interpersonal level issues that influence reproductive autonomy globally and in the US include demographic and psychosocial factors. Unintended pregnancy occurs more frequently in women with a low socioeconomic status, who are unmarried, with lower levels of education, or of a minority race/ethnicity [9, 31-33]. There is also a relationship between poor mental health and poor reproductive autonomy; stress,

depression and anxiety increase the risk of unintended pregnancy [34-36]. The immediate social environment, or interpersonal relationships can erode reproductive autonomy; intimate partner violence (IPV) and history of violence in the home are associated with unintended pregnancy [37, 38]. In addition, low levels of perceived social support are associated with unintended pregnancy [39-41].

Community-level issues that influence reproductive autonomy in the global literature include gender and income inequality, poverty, geography, socialization, and violence [41-43]. Global findings suggest that women in rural environments, women with lower indicators of social status (economic/ government), living in violent communities, or those with greater inequality (income and gender) are at increased the risk of poor reproductive autonomy [20, 21, 41]. These issues are relevant in the state of Kentucky, which is home to some of the highest rates of poverty (particularly of women and children), income inequality, and teen births [44]. In addition, parents struggle to care for their children after birth, Kentucky currently ranks first in the nation as having the largest percentage of children (7%) being raised by grandparents or other relatives [45]. Kentucky has high rates of preterm births, low birth weight infants, obese and diabetic pregnant mothers, and mothers who smoke and use opioids during pregnancy [46]. Many adverse birth outcomes and social conditions in Kentucky are associated with modifiable issues that could be mitigated if they were identified and addressed prior to conception.

## Methods

*Study Design*

This investigation is a cross-sectional design using secondary data obtained from a prospective multicenter intervention study entitled Efforts to Maximize Perinatal Outcomes in Women at Risk (EMPOWR) to reduce preterm birth. EMPOWR was funded by the Center for Medicaid and Medicare Innovations (CMMI) program titled Strong Start. Human subjects research protection was provided for the parent study by University of Kentucky's Institutional Review Board (IRB).

*Sample/Setting*

The sample consisted of Medicaid eligible pregnant women (N=427) from three regions of Kentucky, who were seen for their first prenatal between 2012 to 2016 [47]. The inclusion criteria were as follows: answered the reproductive health item and at least 90% of the psychosocial measures, pregnant women ≥ 14 years of age, Medicaid eligible, less than 30 weeks gestation, and demonstration of at least one risk factor for preterm birth [48]. Women were excluded if they had a current diagnoses or history of severe mental illness. Per the recommendations of Andersen et al. mean imputation was used to replace missing scores on the psychosocial scales, as long as at least 75% of the questions were answered within a scale with 4 or more items [49]. Participants were recruited from both rural and urban prenatal health care settings in 45 Kentucky counties. Recruitment and enrollment occurred via three mechanisms: self-referral, referred through the local health department, or providers. Further information about the procedures are reported in the parent study [47].

**Measures**

*Individual and Interpersonal Variables*

*Demographic factors.* Demographic variables included self-reported age, race, ethnicity, marital status, income, employment, and education.

*Anxiety.* The Generalized Anxiety Disorder measure (GAD) is a 7-item survey using a Likert scale to identify uncontrollable worry about multiple topics, and the anxiety is considered excessive and chronic [50]. The GAD-7 is a reliable and valid measure for assessing symptom severity and generalized anxiety (Cronbach's $\alpha$=0.89 in a pregnant population, convergent validity with Beck Anxiety Inventory, r = 0.72) [51, 52]. Reliability in the current study was also quite high, Cronbach's $\alpha$=0.88, and convergent validity was demonstrated with a depression measure (Center for Epidemiologic Studies Depression), r = 0.77. Increasing scores on the scale are strongly associated with multiple domains of functional impairment, summed scores range from 0 - 21 [52]. Acute anxiety one may feel with an unintended pregnancy would likely not be captured with this tool, but rather a chronic underlying anxiety disorder.

*Social Support.* Perceived or functional social support was measured by the Interpersonal Support Evaluation List (ISEL). The ISEL has three subscale scores representing appraisal, belonging, and tangible social support [53]. The ISEL measures the perceived availability of social support on a 4-point scale ranging from 'definitely false' (0) to 'definitely true.'(4) A summed total score ranges from 0-36[54]. ISEL is a reliable measure in the current study, Cronbach's $\alpha$=0.79. In addition, there is convergent validity with depression (CESD, $p<0.001$, and $r2=0.45$) and social support was inversely related to intimate partner violence (WEB) ($p<0.001$, and $r2=0.35$).

*Intimate Partner Violence.* The Women's Experience with Battering (WEB) was used to measure the psychological components or impact of intimate partner violence (IPV). The WEB is used to capture the unique experience of powerlessness and control by victims of IPV, not the act of physical abuse but the implications of disempowerment on the women's life [55]. CMMI shortened this measure from 10 to 6 items, the shortened version did demonstrate reliability and validity (in Chapter 4 of this dissertation) [56]. The WEB items are asked in reference to the participant's current partner and is a 6 item Likert scale from 0 = 'disagree strongly' to 5 = 'agree strongly'. As scores increase the psychological vulnerabilities associated with IPV increase, the range in the short version are from 0 - 30. In the current study the WEB was extremely reliable, Cronbach's $\alpha$=0.94, and demonstrated convergent validity. Participants in this dataset answered yes/no to a history of domestic violence question and a history of physical interpersonal violence tool, Slapped Thrown or Threatened (STaT). Both were positively correlated with WEB scores, ($r2$ =.35 for DV, $p<0.001$ and $r2$ =.27 for the STaT, $p<0.001$).

*Pregnancy Intention.* Unintended pregnancies are those that are not planned and can be further described as mistimed (not at the right time) or unwanted (wanted no children or no more children) [8]. The measure of unintended pregnancy takes many forms in global, federal and state data, as there is no consistent tool used to determine intention [57]. When low health literacy is a consideration, such is the case with the current study, the Center for Medicaid and Medicare Innovations (CMMI) simply asks a yes/no question if the woman was 'trying to become pregnant' as a proxy for intention [58]. Those who answered no were considered unintended for this analysis and is the CMMI designation.

*Community-level Variables*

*Urban/rural Status.* Each county was assigned a Rural-Urban Classification code (RUCC) in 2013. RUCC codes are designated by the federal government using population size and the degree of urbanization to categorize three metropolitan and six non-metropolitan areas [59]. The rural/urban range is 1 to 9; wherein 1 denotes large urban areas and 9 indicates the most rural.

*Poverty and Income Inequality.* Economic data was obtained using the 2016 American Community Survey [44]. Poverty data was the percent of persons in the county living below the federal poverty line (100% FPL). Income inequality was included as measured by the GINI index. The income inequality range is 0 to 1; wherein 0 indicates complete equality and 1 indicates complete inequality [60]. Income inequality is a broader measure of injustice related to differences in earnings than poverty itself, it is associated with population health and unequal access to maternal child health services [61].

*Health Indicators.* As a proxy for access to preconception care and contraception, the rate of primary care physicians was obtained from the 2015 County Health Rankings [62]. The indicator of overall poor health of the community was 'less than good health', which is the percent of people reporting poor or fair health from the Behavioral Risk Factor Surveillance System [63].

*Social Associations, Gender Equality/Status of Women.* The rate of social associations per 10,000 people in 2016 was obtained from the County Health Rankings and Road Maps was included as an indicator of potential opportunities for social capacity in the county [62]. The availability of social associations and social networking opportunities in the county has been associated with health behavior [64]. The global literature supports that social networks and increased social capacity are associated with increased autonomy

and reproductive decision-making of women of reproductive age [65-67]. Gender equality/women's status indicators were obtained from the American Community Survey [44]. These include the ratio of women's median income to men, the percent of females employed (full time, year-round, 16 years and older), and the percent of women owned firms. The percent of women in political office was obtained from the Kentucky Legislature Research Commission and the Kentucky Association of Counties [68, 69].

Violence. Violence and crime were measured in several ways; three measures were included in the model to identify whether one was more strongly linked to unintended pregnancy. First overall violent crime rate per 100,000 people was obtained from the 2015 County Health Rankings [62]. Arrest (or clearance) rates are related to whether the perpetrator was known or associated with the victim. Clearance rates in sexual offenses(forcible and non-forcible) are between 43% and 50% in Kentucky, so 'reported' forcible and non-forcible sexual offenses from 2014-2015 were combined in the bivariate analysis to capture events regardless of arrest rates [70].

*Data Analysis*

Descriptive statistics were used to characterize the sample and to systematically identify the variables retained in the final model. Women who reported unintended pregnancy were compared to those with an intended pregnancy using independent t tests for continuous variables and Chi square tests of association for categorical variables. The rate of unintended pregnancy per county among study participants was used to test for correlations. Lastly, a Generalized Estimating Equations (GEE) model was used to identify which personal, interpersonal and county-level factors were most strongly linked to the binary outcome (unintended/intended), with individual/interpersonal data nested in or clustered by county. This is a multilevel regression which takes the correlation within the

cluster into account, since women within the same county are likely to be more similar to each other than women from different counties would be. Only the individual and interpersonal and county level variables that were significant at the bivariate level were included in the GEE model. SPSS version 24.0 (Amonk, NY) was used and an a priori significance level of 0.05 was used to determine level of significance for the final model.

**Results**

The sample consisted of 427 pregnant women, of which 282 (66%) experienced an unintended pregnancy (Table 1). The mean age of the sample was 27 years, with the majority being Caucasian/white (76%), unemployed at the time of the interview (67%), and unmarried (69%). Almost 19% of participants chose to answer the questions in Spanish, and the ethnicity and Hispanic data were incomplete so language was a proxy for ethnicity. The majority (75%) had a high school diploma or greater and 74% reported earning less than $20,000 annually. The participants had overall low to moderate scores in the psychosocial measures.

Table 5.1 Individual and Interpersonal level; self-reported data from pregnant women in the sample (n=427)

| **Characteristic** | **Total** ***n* (%) *or M* ± *SD*** ***n=427*** | **Unintended Pregnancy** ***n* (%) *or M* ± *SD*** **n=282 (66)** | **Intended Pregnancy** ***n* (%) or *M* ± *SD*** **n=145 (34)** | ***P value*** |
|---|---|---|---|---|
| Age in years | 27±5.5 | 26 ± 5.7 | 28 ± 5.2 | 0.003* |
| Race | | | | 0.130 |
| White(Caucasian) | 326(76) | 209 (74) | 117 (81) | |
| Non-White | 101 (24) | 73 (26) | 28 (19) | |
| Language of survey | | | | <0.001* |
| English | 348 (82) | 253 (73) | 95 (27) | |
| Spanish | 79 (19) | 29 (37) | 50 (63) | |
| Employed | | | | 0.630 |
| No | 285 (67) | 186 (66) | 99 (68) | |
| Yes | 142 (33) | 96 (34) | 46 (32) | |
| Education | | | | 0.812 |
| High School or > | 321 (75) | 213 (76) | 108 (75) | |
| < High School | 106 (25) | 69 (25) | 37 (26) | |
| Marital status | | | | <0.001* |
| Married | 133 (31) | 61 (22) | 72 (50) | |
| Unmarried | 294 (69) | 221 (78) | 73 (50) | |
| Household Income | | | | |
| <$20,000 | 314 (74) | 213 (76) | 101 (70) | 0.192 |
| ≥$20,000 | 113 (27) | 69 (25) | 44 (30) | |
| Anxiety *(range 0-21)* | 5.14 ± 4.9 | 5.94 ± 5.2 | 3.61 ± 3.8 | <0.001* |
| Perceived Stress *(range 0-16)* | 5.38 ± 3.22 | 5.89 ± 3.3 | 4.37 ± 2.8 | <0.001* |
| Lack of Social Support *(range 0-36)* | 8.31 ± 7.10 | 9.05 ± 7.4 | 6.87 ± 6.3 | 0.002* |
| Interpersonal Violence *(range 0-30)* | 1.10 ± 3.76 | 1.43 ± 4.4 | 0.46 ± 2.1 | 0.002* |

* $p < .05$

In the bivariate measures, women who experienced an unintended pregnancy were significantly younger ($p = 0.003$), unmarried ($p < 0.001$), preferred to participate in English rather than Spanish ($p < 0.001$). The participant's race, employment status, level of education or income were not significantly based on pregnancy status. Participants who had an unintended pregnancy reported significantly more anxiety ($p < 0.001$), stress ($p < 0.001$), intimate partner violence ($p = 0.002$), and experienced less social support ($p = 0.002$) when compared to those who reported an intended pregnancy.

Table 5.2 Correlations of Rate of Unintended Pregnancy with Social Characteristics, Gender and Violence (N=45 Kentucky Counties)

| Community Level Variables | **Mean ± SD** | **correlation coefficient (*r*)** | ***P* value** |
|---|---|---|---|
| 1. Rural-Urban Continuum (1 to 9) | 6.1 ± 2.6 | 0.33 | 0.03* |
| 2. Persons in Poverty (%) | 23.0 ± 8.9 | 0.28 | 0.07 |
| 3. Ratio of Primary Care Physicians per person | 2867.0 ± 2213.9 | -0.23 | 0.13 |
| 4. Less than Good Health (%) | 27.0 ± 7.5 | 0.01 | 0.93 |
| 5. Social Associations per 10,000 people | 10.6 ± 5.2 | -0.37 | 0.01* |
| 6. Income inequality (GINI Index) | 0.5 ± 0.03 | 0.06 | 0.68 |
| 7. Women owned firms (%) | 31.0 ± 6.5 | 0.28 | 0.07 |
| 8. Women in political office (%) | 19.5 ± 8.6 | -0.001 | 1.0 |
| 9. Females employed full time (%) | 77.7 ± 10.1 | 0.13 | 0.41 |
| 10. Ratio female to male median income | 79.0 ± 23.1 | 0.06 | 0.69 |
| 11. Violent Crime Rate per 100,000 | 91.7 ± 71.2 | -0.11 | 0.46 |
| 12. Assaults (2015+2016) per 1,000 | 12.5 ± 8.1 | -0.12 | 0.43 |
| 13. Sexual Offenses (2015+2016) per 1,000 | 2.4 ± 1.9 | 0.05 | 0.74 |
| * $p < .05$ | | | |

The women in the study resided in 45 counties in Kentucky, the unintended pregnancy rate per county was calculated and Pearson's correlation was used to identify variables to be included in the multi-level GEE model. In the bivariate correlations, women who lived in more rural counties ($r = 0.33$, $p = 0.03$) and have proportionally fewer social associations in their county ($r = 0.37$, $p = 0.01$) were correlated with unintended pregnancy. The GEE model included variables that were correlated with unintended pregnancy in the bivariate analysis, as well as demographic factors included as controls. In this model, being marital status and choosing the English version of the survey were the only significant predictors of unintended pregnancy. Married women were 70% less likely to have an unintended pregnancy than those who were unmarried (OR = .30, $p < 0.001$). Women were given the option to participate in the study in English or Spanish, and those who selected English were almost 400% more likely to have an unintended pregnancy than those selected Spanish (OR =4.72, $p < 0.001$). Although it did not meet the stated alpha level as

far as significance, the relationship between social associations and unintended pregnancy rate was marginally significant (OR = .95, p = .052). For each additional social association in the county, the likelihood of unintended pregnancy decreased by 5%.

Table 5.3 Generalized Estimating Equation to Determine Factors Associated with Unintended Pregnancy (n=427)

| *Intercept* | Wald $\chi^2$ = .974 | | | |
|---|---|---|---|---|
| *Individual and Interpersonal Level (n=427)* | β | *P* value | Confidence Interval | Exp(β) Odds Ratio |
| Age | -0.027 | 0.192 | (0.935, 1.013) | 0.97 |
| Married | -1.189 | < 0.001* | (0.186, 0.499) | 0.30 |
| English version | 1.551 | < 0.001* | (2.360, 9.422) | 4.72 |
| Anxiety | 0.053 | 0.064 | (0.997, 1.115) | 1.05 |
| Interpersonal Violence | 0.083 | 0.119 | (0.981, 1.204) | 1.09 |
| Lack of Social Support | 0.021 | 0.317 | (0.980, 1.063) | 1.02 |
| *County level (n=45)* | | | | |
| Social Associations | -0.052 | 0.052 | (0.900, 1.001) | 0.95 |
| Rural Urban continuum | -0.015 | 0.754 | (0.899, 1.081) | 0.99 |

**p < 0.05*

**Strengths and Limitations**

This study was the first to measure the social context by nesting data from a CMMI intervention study within the county level data, to identify predictors of pregnancy intention of currently pregnant and impoverished women living in the US. Accounting for ethnicity with the language preference rather than Hispanic origin also proved to be a novel approach alluding to the need for future research in acculturation and the immigrant experience in reproductive health planning. Other strengths include the rigorous holistic model, which included available data describing the social context of the counties where the women reside, and clustered by county to account for geographic similarity.

The measurement of pregnancy intention has challenged demographers and researchers for decades. In this study a limitation was that pregnancy intention question was limited to a dichotomous answer, namely trying vs. not trying. There were 78 women who did not answer this question and were not included in the study, this may have accounted for those who were ambivalent or felt there was not an answer that suited them. Santelli, et al. found that a multi-dimensional measure which includes whether the pregnancy was desired, mistimed, or unwanted is a better indicator of women who later seek an abortion than those who had only the choice of a dichotomous measure [71]. Future studies may benefit from including a more robust measure of pregnancy intention.

Midway through data collection of the parent study, the Affordable Care Act was enacted (January 1st, 2014) and Kentucky expanded Medicaid. This may have influenced the social environment as more people had access to both preconception care and contraception. We attempted to include this as a time interval indicator in the analysis. However choosing one point in time proved to be problematic, as the culture shift from being uninsured (emergency and episodic care) to insured (with a focus on prevention and early intervention) took several years [18]. Another method to improve future studies would be to include a measure that takes into account the life course perspective, such as a history of childhood exposure to violence and dysfunction as these have been found to be associated with sexual risk behaviors and poor reproductive autonomy [72-74].

**Discussion**

The predictors of unintended pregnancy were being unmarried, and English as the preferred language (as opposed to Spanish) and the rate of social associations was marginally protective of unintended pregnancy. It may be that other variables included in

the model, while significant in the bivariate analysis, were not significant in the GEE model because of correlations among the independent variables. There were no differences by other demographic factors previously associated with unintended pregnancy, such as race, income and education. Non-white race was 26% of the sample, and if this group had significantly more unintended pregnancies it would require further investigation by race, but for this study race did not appear to be an issue. Income may have been difficult to discern because all of the women were living below 100% of the Federal Poverty Level (FPL) in order to qualify for Medicaid/this study.

At the individual level, unmarried women have greater risk of unintended pregnancy for various reasons according to previous research: unplanned, inconsistent and infrequent sex, poor communication about contraception with new partners, unmarried adolescents and young women may be at increased risk due to risk-taking behaviors, and difficulty accessing contraception due to varying levels of sexual health education and social stigma [9, 36, 75-78]. The global literature regarding autonomy and contraceptive use largely only includes married women as the reproductive health DHS questions are not asked of unmarried women, in many countries this would be taboo [79].

Kentucky has a relatively recent growth of Hispanics, 65% of whom are immigrants to the US who do not report speaking English in the home [44]. The social contexts of recent immigrants regarding acculturation, migration, isolation, family life and planning are often very different from non-immigrant women [80]. The majority of women in the study who participated in Spanish also reported to be Hispanic. Women of Hispanic origin in the US historically have had the highest rates of unintended pregnancy, but have demonstrated a steady decline in recent years, almost equal to that of white, non-Hispanic

women [9]. The unique finding in this study is that of significantly higher pregnancy intention for Spanish-speaking women. English speaking women were 400% more likely to report an unintended pregnancy. We can only speculate as to the rationale for this. More research is needed to about acculturation and assimilation to understand the context of reproductive autonomy of women who speak Spanish.

There was a lower rate of unintended pregnancy in our sample from counties where there were more social associations. This indicator includes organizations that directly enable community interaction and engagement, such as civic, political, business, sports and religious organizations [62]. Researchers have found that social trust is enhanced when they belong to voluntary groups, which can serve as a buffer from the ill effects associated with social isolation [64]. Interestingly, just the presence of the social associations in the county was marginally significant with a reduction in unintended pregnancy. The opportunity for social interaction, social networking and trust may increase reproductive autonomy for women in the US. Global investigators identified social connectedness and woman-to-woman communication as facilitators to contraceptive use and improving reproductive autonomy [81, 82]. While the number of social associations and the social support tool in this study did not strongly support this as a predictor of unintended pregnancy in Kentucky, more research is needed to explore the relationship between the interpersonal social facilitators and community social facilitators to reproductive autonomy.

Social support has been found to be a buffering agent to the disempowerment of IPV, particularly improving the resilience of those who have been abused [40]. However, in this study there was no difference in social support based on pregnancy planning status

in the final model. The participants reported poor social support across counties, the mean score for lack of social support was 8.3 out of 36. Pregnant women in the study also had moderate levels of anxiety across counties, particularly in rural counties, so pregnancy intention did not appear to significantly contribute to anxiety.

Intimate partner violence and community level violence were not related to pregnancy planning status in the larger model. However, previous researchers have suggested that pregnant women may under-report the incidence of IPV, particularly women in poverty, who are underemployed or unemployed [83]. The growing family may be dependent on the partner for financial support so women may minimize the IPV or deny it outright for self-preservation. The disclosure of IPV in the WEB scores were quite low (mean=1.43 out of 30), considering women living in poverty are at increased risk of IPV and one in four women in Kentucky are victims of intimate partner or gender-based violence [84, 85].

Gender status variables did not demonstrate a relationship to reproductive autonomy. Kentucky is ranked 42nd in representation of women in politics, having one or two in a county did not yield enough variability in pregnancy intention [86]. Factors related to empowerment, the status of women's employment, women owned firms and income also did not demonstrate a relationship to pregnancy intention. A recent finding from the literature in Latin America indicated that increased female representation in politics, dubbed the Pink Tide, did not lead to improvements in gender equality when compared to male lead regions, which contradicts earlier global findings [87]. Perhaps another rationale for why gender status was not related to pregnancy intention, is that the majority of women

in this study were unmarried and thus gender-based issues may be different than household issues of married couples from the global literature.

**Conclusion**

Numerous studies have focused on individual level contraceptive behaviors, such as intention, barriers, knowledge and attitudes surrounding the use of contraception with mixed outcomes [88-94]. When interventions to improve contraceptive use were found to be ineffective in many of individually focused intervention studies, the conclusion consistently points to the need for a greater understanding of social context. While using a nested approach following the theoretical underpinnings of the Socio-Ecological Model seemed promising, we were unable to demonstrate a strong community association related to pregnancy intention.

While the findings of this study are largely not clinically significant, some of the results were promising. The bi-variate correlations between unintended pregnancy and anxiety, lack of social support, and exposure to IPV were promising and more research is needed to determine whether there are interactions between these variables that moderated pregnancy intention. The revelation that Spanish speaking women are significantly more likely to plan their pregnancies in Kentucky is also an important and unique finding. We can only speculate as why this is, but it was the strongest predictor so warrants further research as to the context of Spanish speaking women in the US and their reproductive autonomy. Additionally, if more research supports the association between the availability of social groups in the community and pregnancy intention this would have implications for improvements in maternal and child health outcomes, as well as guide policy and community organizing. As the US moves to more population health approaches, this model

could be used a guide to future research designs with a focus on determinants of health in the community and identifying predictors related to the social context. Public Health nurses could also replicate this model in assessing how non-health sector factors influence disease, health promotion and wellness.

Having an unintended pregnancy and subsequent birth contributes to the cycle of poverty by decreasing the likelihood of healthy families and significantly limiting future educational and economic opportunities for both the mother and child [95]. More research is needed to identify upstream determinants of pregnancy intention in order to reduce cyclical poverty and adverse maternal child health outcomes. Future research should be aimed at identifying characteristics unique to unmarried women and their vulnerability to poor reproductive autonomy. Also more information is needed related to the protective factors in the social environment that promote reproductive health such as a greater understanding about social engagement. Finally, we need to learn from Spanish speaking women, what individual, interpersonal and community level factors enabled their reproductive autonomy.

## Chapter 6: Discussion and Conclusion

Maternal and child health promotion efforts need to be innovative, leverage multiple levels of the socio-ecological model, and take into account non-health sectors across the life course. As healthcare providers we often wait until women are pregnant to begin to focus on the health of the mother and fetus, but having the time to support the mother to achieve optimal health prior to conception requires planning pregnancies. More women are planning pregnancies than ever before in our history, globally unintended pregnancy rates are improving, but in order to meet the ambitious Sustainable Development and Healthy People 2020 goals more innovative approaches are needed [1-3]. Evidence from the global literature broadens our focus from examining reproductive autonomy at the individual level, to that of the power women have in their social environments (both interpersonal and community contexts) over the complex issues surrounding childbearing.

### Synthesis of Findings and Implications

*Chapter 2: First manuscript*

The purpose of the first manuscript was to describe the structural, social, economic and cultural context of women's reproductive health, and how these factors influence pregnancy intention in a low-resource, peri-urban community in Ecuador. The Ecuadorian women (n=19) provided a human face and story to explore the issues related to autonomy and pregnancy intention in this dissertation. Women in this study were aged 18-35, eighteen of whom reported at least one unplanned pregnancy, 47 of the 70 total pregnancies were described as unplanned. Most of the women reported living in poverty, had less than a high school education, and experienced gender-based violence in their relationships or witnessed it in their communities. Many of the women reflected upon living in a society

where their gender is associated with taking responsibility for the family without the systems or resources to fully support this role. The participants with larger families (4 or more) reported regret in that they wished they had fewer children, many women regretted having sex with abusive partners, or wished that they delayed pregnancy for a few years. Living in a region with stressed social and health care systems, violence and the chaos of poverty compounds the difficulty in just day-to-day living and constrains life choices and options.

The four themes that emerged were; 1) Women's autonomy is limited by men, 2) Women 'Keep Quiet' due to shame, 3) Systems failed women and 4) in spite of these immense challenges many women were able to Build Resilience which facilitated planning pregnancies. In general, women in this community did not report consciously making a life plan and decisions about their family size, or spacing of pregnancies and partners. Many of the decisions were made in the heat of the moment (more about love, obligation, or coercion) or not in the framework of a childbearing decision. The women in our study who expressed the desire for more children wanted to wait until their financial situation improved, to adequately provide for their current children, and wait for when they had 'good men' in their lives. They reported this is not a common scenario in their own communities. Previous researchers have found that the binary pregnancy intention paradigm (planning or not planning) is not a salient concept in communities where this is not a social norm, that conditions to be met for planning pregnancy are not seen as realistic in their social environment [4, 5]. There is a general perception in global research that measuring pregnancy intention is a challenge, as once women have the desire to plan or avoid pregnancy, their power to act on this desire may be limited by the social, economic,

and systemic limitations of their environments [5]. So even if women in our study had clear future pregnancy intentions, they are trapped by their circumstances and may not be able to act on them.

*Chapter 3: Second manuscript*

The purpose of the second manuscript was to describe a new conceptual framework to demonstrate how power across the individual, interpersonal and community/societal domains can either erode or foster reproductive autonomy. This model, called the Power and Reproductive Autonomy (PARA) model was based on concepts in the literature related to autonomy and reproductive planning from global qualitative work and research from the Demographic Health Surveys. The PARA model provides a visual representation of nesting women in their social environment and is unique because it takes a gendered approach to power, specifically factors that erode power and those that empower. The new paradigm represented in the PARA model can guide researchers and program planners to create multilevel models to address issues that predict reproductive autonomy in their social environment. This has the potential to improve maternal and child health outcomes and interrupt the cycle of poverty for women globally.

*Chapter 4: Third Manuscript*

The purpose of the third manuscript was to evaluate the psychometric properties of a shortened version of the WEB instrument as a measure of psychological vulnerability associated with IPV in a population of low-income pregnant women. A secondary analysis was performed on a 6 item Women's Experiences with Battering (WEB) instrument in a sample of 415 women who completed the scale in English. The original Women's Experience with Battering (WEB) tool was 10 items but CMMI included the tool for the parent study as a shortened measure of 6 items. The 6 item WEB was found to be both

reliable and valid. Cronbach's alpha = 0.93. Convergent validity with a physical partner violence tool was correlated with the WEB, ($r > 0.80$).

Additionally, hypothesis testing was done with a depression scale, as depression is strongly associated with IPV, it is the most common mental health consequence of IPV [6-10]. The imbalance of societal and interpersonal power, where men hold more power, results in more decision-making roles for men within romantic relationships, which can be preserved partly through violence. Depression is seen as a consequence of IPV due to loss of power in the relationship, as perceived control decreases depression increases [11, 12]. Hypothesis testing confirmed that the WEB independently predicted depressive symptoms and IPV explained 10% of the variance, ($p < 0.001$). Therefore, there is enough evidence to state the 6 item WEB is a reliable and valid tool in low-income English-speaking pregnant women.

*Chapter 5: Fourth Manuscript*

The purpose of the final paper was to identify associations between pregnancy intention and individual, interpersonal and community factors of impoverished women living in Kentucky. This study was the first to measure the social context by nesting data from a CMMI intervention study within the county level data, to identify predictors of pregnancy intention of pregnant impoverished women living in the US. While using a nested approach following the theoretical underpinnings of the Socio-Ecological Model seemed promising, I was unable to demonstrate a strong community association related to pregnancy intention. The individual demographic predictors of unintended pregnancy were being unmarried, and English speaking. And the community level marginally significant predictor was that a higher rate of social associations in the county served as a protective effect against unintended pregnancy.

**Clinical Implications**

Strategies that improve reproductive autonomy and reduce unintended pregnancies have great potential to have a long-term impact on maternal/child health and interrupt the cycle of poverty. Clinical implications from the qualitative work, while not generalizable, contribute to our understanding of what women need in this context to promote reproductive autonomy; providing safe environments, economic opportunities for women, and adding value to their gender and role in the community. This will guide future research and interventions, as well as inform our community partners about family planning in this Ecuadorian community. The conceptual framework can be utilized in research, program planning, and education, as well as to inform policy-makers about the importance of considering power at each level to lead to more effective interventions aimed at improving maternal and child health.

The short version of the Women's Experiences with Battering (WEB) was used in 182 funded intervention programs from the Center for Medicaid and Medicare Innovations Center; Strong Start for Mothers and Newborns. Now that it has been psychometrically validated as an instrument it can be a valuable tool for research by the CMMI funded studies in measuring the relationship between intimate partner violence and maternal and child health.

While the Generalized Estimating Equation in the final multilevel model did not yield community level associations, the approach was novel in maternal and child health. This contributes to our understanding of how to examine health issues more holistically and across non-health sector domains, which could be useful clinically to researchers and practitioners who are using their data to identify associated risks in their community.

Additionally, the promising new finding of the rate of social associations in the county had a protective effect against unintended pregnancy, alluding to a relationship between opportunity structures in the community and reproductive autonomy.

**Limitations**

The Ecuadorian study had the potential for bias, I was the PI of the study and am tied to funding source in the community. While I had an Ecuadorian research assistant performed the interviews, during the consent process the women were made aware that the PI was a nurse, associated with a U.S. university and it was clear that we funded the community clinic. This had the potential to both minimize (social desirability bias) and maximize (could potentially lead to increased funding) health related complaints. In addition, the results were not generalizable, and the qualitative work alone did not drive the global conceptual framework.

The psychometric evaluation was only performed in English, and in the final paper I included women who answered in Spanish although the short form was only validated in English. And in the final paper, limitations of cross-sectional data made it a challenge to capture cumulative life stressors which could also contribute to poor reproductive autonomy. Additionally, the study design was not ideal as there was not a lot of variability between some of the counties in the Kentucky data.

**Future Implications**

Future studies may yield a greater understanding of the social context of pregnancy intention if more interpersonal data related to specifically to reproductive autonomy are in the model, such as measure of reproductive coercion, relationship power, partner

communication, and contraceptive decision making. For future studies I would use tools related to women's status, equality and value in the community. These could have yielded a stronger relationship to reproductive autonomy than the county level census data related to economic status and representation in government.

The social environment of reproductive autonomy is difficult to measure because heterosexual, sexually active women can spend over three decades of their lives preventing pregnancy. Unintended pregnancy is not like a chronic illness where the health behavior generally develops over time reaching a point of disease. It is the result of a one time in the moment sexual act, arising from very different circumstances; pleasure, intimacy, obligation/expectation, by force or coercion, or for opportunistic reasons. Each of these conditions arise from different social environments, narrowing down the circumstance of the sexual act that led to the unintended pregnancy can guide future research in this area. In addition to grouping people by circumstance, a more in-depth measure of pregnancy intention needs to be used. Ideally, the PARA model operationalized with these conditions will yield community level predictors associated with reproductive autonomy. Finally, the marginally significant finding related to social associations as a protective effect against unintended pregnancy was a new promising finding. This is an exciting new area of research as social associations would be considered an opportunity structure, which may be a key community-level driver of reproductive autonomy with the potential to improve maternal child health.

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**Chapter 4**


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**Chapter 5**


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## Chapter 6


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# Vita

## Hartley Carmichael Feld

**Education**

| Dates | Institution/Location | Degree/Field of Study |
|---|---|---|
| Aug. 1999 – May 2006 | University of Kentucky College of Nursing<br>Lexington, KY | MSN, Nursing |
| Aug. 1997 – Dec 1999 | Loyola University Chicago<br>Chicago, IL | BSN, Nursing |
| Aug. 1988- May 1993 | Loyola University Chicago<br>Chicago, IL | BA, Art History |

**Professional Experience**

**Academic**

| Dates | Institution | Title |
|---|---|---|
| 2007-present | University of Kentucky<br>College of Nursing | Lecturer and clinical instructor<br>Community and Public Health Nursing |
| 2009- present | University of Kentucky<br>College of Nursing | Facilitator/Faculty: Inter-professional<br>Global Health Course, Ecuador focus |
| 2014-present | University of Kentucky<br>College of Nursing | Facilitator/Faculty<br>Inter-professional courses (iCats and hCats) |
| 2014-2015 | University of Kentucky<br>College of Nursing | Lecturer/co-coordinator: Global Health<br>Nursing course, Chile focus |
| 2004–2007 | University of Kentucky<br>College of Nursing | Clinical instructor<br>Maternal/Child Health |
| 2003-2004 | Lexington Community College,<br>Nursing Department | Medical/Surgical and Maternal/Child<br>Clinical Instructor |
| 2001-2002 | University of Kentucky<br>College of Nursing | Research Assistant<br>Tobacco use/exposure team |

**Clinical/Other**

| Dates | Institution and Location | Title |
|---|---|---|
| 1999-2008 | UK Health Care<br>Lexington, KY | Registered Nurse:<br>Medical/Surgical, Women's Care, Birthing Center |
| 1998-1999 | Bluegrass Farmworker Health Program | Translator Spanish/English |

Lexington, KY

1996-1997 Center for Biotechnology Outreach Coordinator
Northwestern University, Evanston, IL

1993-1994 Department of Health and Human Services Mentor Program Director
Federal VISTA program, Portland, Oregon

**Honors and Awards**

2017 American Public Health Association, Public Health Nursing, 2nd place in poster presentation
2017 Excellence in Teaching; Part time Faculty award, University of Kentucky, College of Nursing
2016 UK Venture Studio Entrepreneur's Bootcamp finalist: Local Language App
2016 Associate of the UK Center for Inter-professional Health Education
2016 Teacher Who Made a Difference Award, University of Kentucky
2015 Robert Wood Johnson Foundation, Future Nurse Scholar, fellowship
2014 High Merit for teaching; University of Kentucky, College of Nursing
1998 Wrigley Scholarship recipient
1998 Graduated Cum Laude; Loyola Nursing
1994 Volunteer of the year Oregon Department of Human Services

**Publications**

2018 Miller, J., Barnhart, S., Niu, C., Donohue-Dioh, J., & Feld, H. (in review American Journal of Nursing). *Self-care practices among nurses: An exploratory examination*.