

To B or not to B? Plan B and Post-Assault Comprehensive Care

by

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Dedication

This dissertation is dedicated to all of the survivors that participated in the study and bravely disclosed information about their assault. For my family – thank you for supporting me through all of my years of school. I know you thought it would never end. I love you all for your never-ending support.

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LIST OF ABBREVIATIONS

AAS – Abuse Assessment Screen

CATI – computer assisted telephone interview

DSM-IV – Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition

EC – emergency contraception

FDA – Federal Drug Administration

GBS – Group B Streptococcus

HIV – Human Immunodeficiency Virus

ICD – International Classification of Diseases

IRB – institutional review board

NWS-PTSD – National Women’s Study Posttraumatic Stress Disorder module

OTC – over-the-counter

PAR – participatory action research

PRAMS – Perinatal Risk Assessment Monitoring Survey

PTSD – posttraumatic stress disorder

PUQE – Pregnancy Unique Quantification of Emesis and Nausea

SANE – Sexual Assault Nurse Examiner

SES – socioeconomic status

SPSS – Statistical Package for the Social Sciences

STI – sexually transmitted infection

VIF – variance inflation factor

ABSTRACT

Purpose: Despite the high prevalence of rape in the United States and the long-term effects on a woman's health, too few women receive comprehensive post-assault care. The recent change in status of emergency contraception (EC), such as Plan B, to an over-the-counter (OTC) product may be changing care-seeking in the post-assault period, introducing the risk of missed opportunities for care. The purpose of this dissertation project is to: (a) examine an integrated conceptual framework for evaluating post-assault decision making; (b) evaluate the framework's utility at predicting unmet needs in pregnant rape survivors; and (c) quantify OTC EC use in the post-assault period and elicit survivors' desires for care.

Methods: The first set of data were collected from: (a) women purchasing OTC EC at four university pharmacies in the Midwest (n=55) and (b) women and men in an undergraduate Midwestern university class (n=165). This descriptive, participatory action research study employed an anonymous self-administered survey and mixed methods analysis to explore theory testing and prevalence. The second set of data included a secondary analysis of a prospective study with pregnant women. Logistic regression was used to explore the utility of the conceptual framework in evaluating unmet needs among pregnant survivors with a history of rape (n=99).

Results: Results indicate that an integrated conceptual framework provides a useful overview of factors related to post-assault decision-making. The framework was supported as a way to organize research and clinical practice related to rape survivors' long-term health status when there have been unmet post-assault needs. Quantitative results indicate annual prevalence rates of OTC EC use in the post-assault period as 7.3% for the pharmacy sample and 5.4% for the classroom sample. Qualitative analyses indicate survivors desire post-assault care information to be distributed with OTC EC.

Conclusions: Annual prevalence rates of OTC EC use by survivors of rape within the university setting closely resemble the annual incidence rate of rape of 5%. Participants describe OTC EC as an important but incomplete form of post-assault care. Future work should focus on intervention development to provide all OTC EC users with information about post-assault resources to prevent long-term sequelae.

CHAPTER 1

Introduction

A Nurse's Survival Story

It happened one night at a small gathering of friends. She had met him before and was happy to be able to talk to him alone on the rooftop overlooking the city. But, then he started moving too fast. She said no and tried to get away but quickly found she was trapped on the rooftop. He pushed her down and proceeded to physically force her into unwanted sexual intercourse. She was a responsible nurse at a busy OB/GYN practice in the city. How could this be happening to her? As a clinician she was well aware of the gold-standard Sexual Assault Nurse Examiner (SANE) care that could be obtained at the emergency room, yet she knew the perpetrator and was dreadfully ashamed at what had happened, plus her friends were the residents and nurses that staffed the local hospital. So, she returned home after the assault and folded into herself. She resisted sharing what had happened with her closest friends and roommates and instead sought to self-treat. The next day she made the long walk to the local pharmacy and apprehensively asked for Plan B. She was given the medication after showing her identification without so much as a sideways glance by the pharmacist and sent on her way. She was never asked if she had questions or needed any help. Sure her concerns about pregnancy prevention were allayed but she also realized that she did not know what to do next. Her health care training kicked in and she made an appointment for sexually transmitted infection (STI) testing but still continued to deny that she needed any additional resources. Eventually some supportive

friends helped her find the way to mental health care and she began to heal from the trauma, but not before she realized how unknowledgeable and lost she was. As a health care provider she should have known how to pursue post-assault care. Yet in the aftermath of a trauma such as rape her coping ability was hampered and she was truly lost in trying to determine what to do.

Introduction

My interest in sexual assault first became evident to me during my clinical practice as a nurse practitioner in a women's health practice in Chicago. While caring for my patients, I found that I had a few patients that were coming in for sexually transmitted infection testing (STI) and psychological care months after a sexual assault. When I queried these women about the assault and the actions that they took immediately after the assault, it became apparent that many of my patients were survivors of rape by a known perpetrator and had made the conscious choice to access over-the-counter (OTC) emergency contraception, Plan B, as their first and only line of post-assault care. They had mindfully chosen not to access care at the emergency room or through law enforcement. They presented to me within the clinic setting many months after the sexual assault concerned about the physical ramifications of the assault. I was able to provide them with STI testing and treatment, family planning counseling, and mental health referrals. However, I feared that my interventions, provided six to eighteen months post-assault, were too little too late. While I respect the survivor's decision to choose her path for post-assault care, I feared that these women were not aware of all the resources available to them in the immediate post-assault period. I began to talk about this phenomenon with friends and acquaintances and found that many of my dear friends and acquaintances are also survivors who had either pursued this pathway for care or who would have pursued this pathway had it been available when they were assaulted. As noted in the epigraph above, any survivor of sexual assault can feel lost and

unknowledgeable about post-assault care in the aftermath of a trauma. So, if this could happen to someone who has the knowledge and resources available to seek post-assault care, then what was happening to the women who were accessing OTC emergency contraception without the benefit of a health care background and supportive friends?

I returned to school with the intent of investigating this phenomenon. Specifically, I returned to graduate school to pursue my PhD in nursing focusing on the lack of comprehensive care OTC Plan B users were aware of and the role that nurses could have in influencing post-assault care. Plan B® is a registered trademark of Women's Capital Corporation, a subsidiary of Teva Women's Health Incorporated, all future references to Plan B will be referencing this product. As a health care provider, friend, and ally I truly believe that this research project has the potential to help improve post-assault care for the vulnerable population of sexual assault survivors.

Statement of the Problem

Sexual violence is a national epidemic. The last few decades, specifically the last few years have seen an increase in the awareness and media reporting of sexual violence (Adelman, Haldane, & Wies, 2012). Within the last year we have been inundated with news reports of multiple gang rapes in India (Mandhana & Trivedi, 2012; Singh, Udas, & Kassim, 2013), Brazil (Romero & Barnes, 2013), and Papua New Guinea (Shears, 2013) as well as sexual assaults among adolescent women in the United States and Canada that have resulted in public embarrassment and shaming via social media and in some cases the suicide of the survivor (Oppel, 2013; Walsh, 2013; Yan & Newton, 2013). The military has also seen an increase in rape prevalence and awareness with 3,374 reported rapes over the last year (Reeve, 2013). Overall in the United States, almost 22 million women are survivors of rape with approximately 1.3 million raped within a one year period (Black et al., 2011).

Regardless of the identity of the perpetrator or survivor, rape is about the perpetrator or perpetrators exerting power and control over the victim (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002). Unwanted sexual contact of any form is termed sexual assault. Rape can include vaginal, anal, or oral penetration that occurred without the survivor's consent (Tjaden & Thoennes, 2006; Wolitzky-Taylor et al., 2011); the perpetrator or perpetrators utilize tactics such as physical force, verbal manipulation, or incapacitation due to drugs, alcohol, or mental health status. The key element surrounding sexual assault and rape is that consent was not acquired (Butler & Welch, 2009). The mental health sequelae of sexual assault can occur whether penetration occurred or not, and regardless of the type of coercion utilized by the perpetrator. However, this study is focused on the use of OTC Plan B in the post-assault period and is therefore limited to survivors of vaginal rapes in which the survivor perceives a fear of pregnancy. Since many survivors do not view their victimization as a sexual assault or rape, the term unwanted intercourse was used during the actual data collection.

In regards to sexual assault, specifically rape, the college years are the most vulnerable for women. Rape disproportionately affects young, single women and being a college-student is seen as a risk factor for rape (Fisher, Cullen, & Turner, 2000; Karjane, Fisher, & Cullen, 2005). With a national annual incidence rate of 5%, rape is the most frequent violent crime that occurs on college campuses (Finn, 1995; Fisher et al., 2000). Nearly 80-90% of college students know the perpetrator and knowing the perpetrator actually increases the likelihood that the rape will be completed, rather than attempted (Fisher, Cullen, & Turner, 1999; Karjane et al., 2005). Furthermore, many college survivors do not perceive or acknowledge their experiences as a rape, often because of lack of evidence, the absence of a weapon, or because alcohol and/or drugs were involved (Fisher, Daigle, Cullen, & Turner, 2003; Karjane et al., 2005). These

characteristics of sexual assault in college therefore contribute to the underestimation, under reporting, under prosecution, and low rates of seeking post-assault services among college survivors (Bondurant, 2001; Karjane et al., 2005).

A substantial gap already existed between the total number of rape survivors and those who desired to pursue and were able to access comprehensive care, as documented by a major study published in 2000 (Resnick et al., 2000). They estimated that four million women in the United States have experienced a rape as an adult but have never pursued or received medical attention focused on the prevention or treatment of their rape-related adverse outcomes (Resnick et al., 2000). In the last seven years the situation may have changed substantially, and the gap may have widened further. There has been a plethora of news coverage on reproductive health options such as the emergency contraceptive, Plan B. Within the last seven years there have been four major policy changes that have increased access to emergency contraception such as Plan B. First, on August 24, 2006 Plan B was approved as a nonprescription product that can be obtained by individuals age 18 and older with an identification card for proof of age (Scolaro, 2007). Second, on April 22, 2009 access to OTC Plan B was expanded to individuals age 17 and older (Anonymous, 2009). Most recently, 2013 has seen debates about expanded access to individuals age 15 and older (Szabo, 2013) to completely removing the age restriction, based on a ruling by a federal judge in New York (Rabin, 2013) and finally approved by the Federal Drug Administration (FDA) in June 2013 (Neale, 2013). Different political views on reproductive health, including misunderstandings about the safety and mechanism of action behind emergency contraception, have fueled the political turmoil and availability of emergency contraception. But one aspect of OTC emergency contraception availability has gone quietly unnoticed. Rape survivors can now take this vital self-care step *alone*.

This timely research study examines the intersection of society's increased awareness about sexual assault and rape with the expanded OTC access of emergency contraception. The status of emergency contraception in an easily accessible form as an OTC medication that provides expedient access for women who have contraceptive mishaps, such as a contraceptive failure or spontaneous intercourse sans contraception, is extremely important for the self-care of women. The OTC status of Plan B was not achieved easily and this evaluation of emergency contraceptive use and potential missed opportunities for care is not intended to negate the powerful presence of easily accessible contraceptive options for women. However, the OTC status of Plan B for vaginal rape survivors has the potential consequence of allowing access to emergency contraception without the benefit of providing additional resources at the point of care. The current standard of care for sexual assault survivors, an exam by a Sexual Assault Nurse Examiner (SANE) along with its associated referrals, includes: (a) treatment of medical injuries; (b) testing and treatment of sexually transmitted infections (STIs); (c) pregnancy prevention including options if emergency contraception, such as Plan B, is not effective; (d) mental health care; (e) forensic data collection; (f) victim services; and (g) legal services (Ahrens et al., 2000; Campbell, Bybee, Ford, & Patterson, 2008; Campbell, Patterson, & Lichty, 2005; Department of Justice, 2013; Tjaden & Thoennes, 2006). This comprehensive exam has demonstrated improved outcomes by researchers within the context of the medical, forensic, and legal domains (Campbell et al., 2005). Therefore, the failure to provide the knowledge about a post-assault exam and the option to pursue such an exam to all sexual assault survivors has the possibility to create a missed opportunity for care from health care and legal perspectives. Furthermore, research using a participatory evaluation approach has demonstrated that SANE care has the ability to empower survivors which improves short-term psychological outcomes

(Campbell, Patterson, Adams, Diegel, & Coats, 2008). Despite these positive accolades regarding SANE care, the work by Campbell and colleagues (2008) has also established that survivors gave lower ratings to feeling in control during the SANE exam. It is therefore plausible that with the new availability of an OTC product for pregnancy prevention, some survivors may forego formal post-assault care and may instead seek care in an environment in which they have control, such as accessing OTC emergency contraception. This creates a potential missed opportunity for care in which the current system has left out or omitted the chance to provide all elements of comprehensive care to a vaginal rape survivor accessing post-assault care in the pharmacy environment.

Purpose

Broadly speaking, the purpose of this mixed method, participatory action research study is to examine the effects of OTC Plan B on survivors within the university setting who might otherwise receive comprehensive post-assault care. More specifically, the purpose of this dissertation project is to: (a) provide insight into the use of an integrated conceptual framework in evaluating missed opportunities for care among survivors accessing OTC Plan B; (b) evaluate the integrated conceptual framework's utility at predicting unmet needs in pregnant survivors (thus focusing on women of childbearing age) after the acute post-assault period; and (c) quantify potential missed opportunities for care and elicit survivors' desires for alternative access to comprehensive care. The results of this interdisciplinary research study have the potential to establish an integrated conceptual framework that can be utilized to develop new efficacious post-assault interventions that meet the needs and desires of survivors where they are accessing care. This project is therefore the initial step in a long-term research trajectory focused on rape survivors, Plan B, and efficacious interventions for comprehensive care.

I will utilize data from two studies to address this purpose: (a) a secondary analysis of a large prospective three-cohort study that was designed to determine the effects of posttraumatic stress disorder (PTSD) on pregnancy outcomes among diverse nulliparous women (NIH R01 NR008767, PI Seng) and (b) data collected from an anonymous descriptive design with a mixed methods analysis for theory-testing and exploration of post-assault OTC Plan B prevalence. Results will be presented in a three manuscript approach. Chapter 2 presents the first manuscript titled, *To B or not to B? A Conceptual Framework to Evaluate the Impact of Over-the-Counter Emergency Contraception on Post-Assault Care*, which presents the theory-testing analyses and results. Chapter 3 includes the second manuscript, *Comprehensive Care and Pregnancy: The Unmet Care Needs of Pregnant Women with a History of Rape*, which evaluates the utility of using the integrated conceptual framework to consider the impact of rape on the health of pregnant rape survivors. Chapter 4 estimates the prevalence of OTC Plan B use by university women in the post-assault period and explores the desires of survivors in the third manuscript, *Important but Incomplete: Plan B as an Avenue for Post-Assault Care*. Finally, chapter 5 will integrate the findings from all three studies and will discuss potential interventions.

Specific Aims

I. The specific aims for manuscript one, *To B or not to B? A Conceptual Framework to Evaluate the Impact of Over-the-Counter Emergency Contraception on Post-Assault Care*, are:

Aim 1: Using an anonymous survey, quantitatively study missed opportunities for comprehensive care:

- 1) What factors influence where a friend recommends that a survivor *should* seek care in the immediate post-assault period?

Aim 2: Using qualitative content analysis of open-ended questions, assess the use of the PI's conceptual framework in evaluating missed opportunities for care:

- 2) Do women using Plan B after a vaginal rape affirm the components and propositions of the PI's integrated conceptual framework when describing desired interventions for care?

II. Manuscript two, *Comprehensive Care and Pregnancy: The Unmet Care Needs of Pregnant Women with a History of Rape*, will address the following research question: Do rape survivors have unmet health care needs in pregnancy?

Hypothesis 1: Rape survivors have an increased risk of unmet needs in:

1. psychological care
2. sexually transmitted infection (STI) occurrence
3. pregnancy care
4. physical care
5. safety

Hypothesis 2: Childhood rape survivors have an increased number/risk of unmet needs in pregnancy when compared to adult-only rape survivors.

III. The third manuscript, *Important but Incomplete: Plan B as an Avenue for Post-Assault Care*, will address the following aims:

Aim 1: Using an anonymous survey, quantify missed opportunities for comprehensive care:

1. What percent of OTC Plan B seekers are survivors using Plan B in the aftermath of unwanted intercourse?

2. What proportion of women who are survivors in the post-assault period are aware of the need to seek additional care and have the desire and intention to seek additional care?

Aim 2: Using qualitative content analysis of open-ended survey questions, assess the desires of survivors:

3. What care needs, desires, ideas, and concerns do post-assault Plan B users have that can provide initial groundwork for future intervention development?

Significance for Nursing and Health Care

As noted by Archbishop Desmond Tutu, "Nursing lies at the very heart of humankind's commitment to caring for one another." Florence Nightingale, who is often considered the founder of modern nursing, described nursing as an art - one that incorporates scientific knowledge with compassion and caring. Nurses are astute observers who have the ability to collaborate with interdisciplinary groups in order to meet the physical and mental health needs of vulnerable populations of patients. Furthermore, nursing researchers must possess the skills necessary to conduct research in a systematic manner while incorporating cultural sensitivity and population-based research (Hinshaw, 2000). This study incorporates the skills of nursing clinicians and researchers and was accomplished with collaboration and support from pharmacists, university student health professionals, campus sexual assault program professionals, and survivors, while also looking to take a first step towards creating nursing interventions for a vulnerable population. It proposes a theoretical and research driven method of nursing practice consistent with Barrett's (2002) description of nursing science and nursing research. The conceptual framework framing this study blends a nursing theory as well as a psychological theory which enhances the applicability of the results for interdisciplinary recognition and adaptation. This study will explore vaginal rape among college-age women

within the context of the community using sexual assault characteristics, barriers to care, and ecological factors to exemplify the individual within their unique community setting. This framework therefore takes into consideration the community level by incorporating norms, customs, and the individual's personal experiences with these factors (American College Health Association, 2008).

The proposed study addresses a significant gap in the knowledge of post-assault health care delivery and is congruent with Healthy People 2010 injury and violence objective 15.35 (United States Department of Health and Human Services, 2000). This research is significant because it will evaluate the potential for decreased comprehensive care post-assault that has the possibility of leading to substantial costs related to untreated healthcare problems, unintended pregnancy, the toll on survivors of the physical comorbidities of PTSD (Seng, Graham-Bermann, Clark, McCarthy & Ronis, 2005), and higher costs of healthcare seen among women with a prior history of rape (Resnick et al., 2000).

This dissertation project therefore specifies a long-term goal of providing insights to build future interventions for vaginal rape survivors seeking Plan B as an initial treatment post-assault, thus aiming to develop interventions from a nursing perspective that will inform a new schema for post-assault care. It fosters interdisciplinary collaboration among pharmacists, social workers, victim advocates, allies, and nurses as a way to distribute pertinent information into the hands of the rape survivor to ensure educated decisions regarding comprehensive care. The strengths of this study include: (a) the innovation of conducting nursing intervention research in collaboration with pharmacy professionals; (b) the inclusion of multiple ecological factors that may reflect the complex phenomenon of sexual assault (Ruch & Chandler, 1983); and (c) the scientific advantages of using participatory action research, mixed methods, and extant theories

tailored for the phenomenon. In conclusion, this research project has the ability to provide interdisciplinary insight that will transform post-assault care to meet the needs of survivors at their point of entry into the health care system.

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CHAPTER 2

To B or not to B? A Conceptual Framework to Evaluate the Impact of Over-the-Counter Emergency Contraception on Post-Assault Care

Sexual assault is a worldwide problem known to have lasting physical, psychological, and emotional effects on the lives of women (DuMont & White, 2007). Misogynistic views, societal myths, misunderstandings about the definition of rape, and a lack of bystander intervention have contributed to the prevalence of violence against women (Banyard, Plante, & Moynihan, 2004). In the United States, someone is sexually assaulted every two minutes (Rape, Abuse, & Incest National Network, 2011; Truman, 2011). While sexual assault can happen to anyone irrespective of race, ethnicity, religion, age, or socioeconomic status, young women are more likely to be survivors of sexual assault (Black et al., 2011; Davis, 2011). Indeed, college-age women are alleged to be at greater risk for sexual assault than women in the general population and are known to suffer one of the highest rates of sexual assault in the United States, with a 20-25% incidence during their college careers (Fisher, Cullen, & Turner, 2000; Koss, Gidycz, & Wisniewski, 1987; Krebs, Lindquist, Warner, Fisher, & Martin, 2009). Although we have known that sexual assault is a significant problem among college-age women, research shows that adverse health and social outcomes for survivors persist for extended periods of time (Golding, 1999). Thus, we must keep considering secondary prevention and treatment strategies in the aftermath of sexual assault while we simultaneously work to end it. The purpose of this paper is to explicate a conceptual framework that incorporates the personal and contextual, or

ecological, factors that may influence a survivor's decision-making in the post-assault period with a particular focus on alternative pathways to post-assault care.

A sexual assault includes a broad range of non-consensual sexual contact in any form, this includes rape which is defined as oral, vaginal, or anal penetration that has occurred without the survivor's verbal consent (Tjaden & Thoennes, 2006; Wolitzky-Taylor et al., 2011). The terms rape and unwanted intercourse will be used interchangeably within this manuscript with the understanding that many survivors of unwanted intercourse do not always recognize or identify themselves as rape survivors. The term survivor will be utilized to describe an individual who has survived an occurrence of sexual violence.

For that reason, the term rape will be used to describe past research and components of care while unwanted intercourse will be used when describing how the participants self-identified within the research study. Rape can lead to survivor concerns about physical injuries, pregnancy, sexually transmitted infections (STIs), posttraumatic stress disorder (PTSD), personal safety, and potential legal system involvement (Tjaden & Thoennes, 2006). Post-assault, survivors have a need for comprehensive health services that can be accessed through referrals by rape crisis centers or via the emergency department. Women who report a rape to the authorities are more likely to receive timely medical care by an informed practitioner; in fact, survivors who reported an adult rape to authorities were up to nine times more likely to receive medical care (Resnick et al., 2000). Current emergency department protocols include as the standard of care a Sexual Assault Nurse Examiner (SANE) exam which offers treatment of medical injuries and STIs, emergency contraception for pregnancy prevention, psychiatric services or referral, and a forensic rape exam for post-assault survivors (Ahrens et al., 2000; Campbell, Patterson, & Lichty, 2005). Thus, standard post-assault comprehensive care includes

(a) treatment of physical injuries, (b) pregnancy prevention including options if Plan B is not effective, (c) STI screening and treatment, (d) psychological support, (e) forensic data collection, (f) victim services, and (g) legal care including steps to assure safety from the perpetrator and the ability to report the assault and press charges if the survivor desires (Ahrens et al., 2000; Campbell, Bybee, Ford, & Patterson, 2008; Campbell, Patterson, & Lichty, 2005; Department of Justice, 2013; Tjaden & Thoennes, 2006).

Despite the high prevalence of rape, long-term negative effects on health, and the availability of post-assault services via the health care system in the United States too few women receive comprehensive post-assault care. In an analysis of post-assault community health seeking, only one third of rape survivors sought post-assault community assistance from one or more of the five social systems of legal, medical, mental health, rape crisis centers, and religious communities (Campbell, Wasco, Ahrens, Sefl, & Barnes, 2001). Survivors are reluctant to seek legal assistance, with only 5% of college students reporting their rape to the police (Fisher et al., 2000). This hesitation to involve the legal system may be related to the following characteristics: (a) the survivor's relationship with the perpetrator, since 90% of college-age survivors know the perpetrator (Fisher et al., 2000); (b) the characteristics of the rape and tactics used, since survivors verbalize more hesitation about reporting a rape that does not meet the typical stereotypes of a stranger rape occurring by force (Cohn, Zinzow, Resnick, & Kilpatrick, 2013); or (c) it may be fueled by the low prosecution rates associated with sexual assault cases, which have declined from 18% to 12.5% over the past 35 years (Daly & Bonhours, 2010).

New models of care may also be having an impact on how survivors access care. Emergency contraception, such as Plan B® (which is a registered trademark of Women's Capital Corporation, a subsidiary of Teva Women's Health Incorporated, all future references to Plan B

will be referencing this product) is now available as an over-the-counter (OTC) product for all individuals. This change in circumstances has the potential to drastically affect post-assault services. Recent legislation changes associated with emergency contraception access include initial approval as an OTC product in 2006 for individuals age 18 and over, expansion as an OTC product to those age 17 and over in 2009, approval as an OTC option for individuals age 15 and over in 2013 (Szabo, 2013), and most recently all age restrictions were removed from OTC access to Plan B One-Step (Neale, 2013). The rate of women using emergency contraception doubled in the two years after Plan B was initially released OTC to women age 18 and older (Kavanaugh, Williams, & Schwarz, 2011). The most common demographic profile of an individual using emergency contraceptive during this time was a single, college-educated woman between the ages of 18 and 29 (American Congress of Obstetricians and Gynecologists, 2010; Kavanaugh et al., 2011). Thus, young women are aware of the availability of Plan B and may desire the easy accessibility and confidentiality that the OTC process affords for pregnancy prevention, especially in the post-assault period, when stigma is a particular concern.

With this in mind, it is important to identify what influences a college-age survivor's post-assault decision-making. Past research has identified numerous barriers to care that may prohibit or dispel a survivor from seeking care. An integrative review of the literature synthesized these factors into (a) personal factors such as emotional states, fear of external exposure, and a lack of knowledge and (b) environmental factors such as structural barriers and societal myths (Munro, in press). When combined with the survivors' individual contextual or ecological factors, these barriers may influence how and where a survivor seeks care. With the new availability of OTC Plan B, a sexual assault survivor can now choose to not pursue care, can access comprehensive services post-assault via the emergency room, access non-forensic

services via a health care provider, or meet pregnancy-prevention needs in isolation via the pharmacy.

Purpose

It is this intersection of these two phenomena - the existing under-utilization of comprehensive post-assault care and the potential unintended exacerbation of this problem by the new availability of emergency contraception OTC - which provides the impetus for this research study. The purpose of this study is to examine the impact of OTC Plan B on survivors who might otherwise receive comprehensive care. This study will aim to identify the missed opportunities for care that perpetuate the fact that four million women in the United States have experienced a rape as an adult but have never received health care focused on prevention or treatment of rape-related adverse outcomes (Resnick et al., 2000). Specifically, the study will use an anonymous survey to quantitatively and qualitatively assess an integrative conceptual framework of factors affecting post-assault care-seeking decisions (depicted in Figure 1). This study advances the understanding of missed opportunities for comprehensive care by testing the conceptual framework in two ways. The first way involves asking university students from a large lecture course to consider, *theoretically or hypothetically*, how they would recommend that a survivor *should* seek care in the immediate post-assault period. The second involves asking survivors of unwanted intercourse, themselves, *in reality*, what care they did seek in the immediate post-assault period and assessing whether the survivors decision-making affirms the components and propositions as configured in the integrated conceptual framework.

Methods

Theoretical Approach

Two middle range theories have been integrated to guide work on understanding the phenomenon of interest. The first model used to examine the efficacy of care approaches that subscribe to holistic, client-centered care is the Interaction Model of Client Health Behavior. This model describes a process of care in which self-care is seen as a paramount determinant of a patient's health and specifically addresses patient behavior in which professional contact is initiated by the patient (Cox, 1982). Cox (1982) often refers to the patient as the client, as a way of demonstrating the increased autonomy this individual has within the model. Thus, the model was developed as a way to (a) acknowledge the client's individuality in seeking health behaviors, (b) address the components that comprise the client-professional interaction and their role in health behavior, and (c) to assist in the development of nursing interventions tailored to the individual client and their unique health care needs (Cox, 1982). The underlying assumptions inherent in the model involve the client's control to make decisions regarding their health care, or in this study, to initiate post-assault care. The constructs within the model that support these underlying assumptions are the (a) elements of client singularity, (b) elements of client-professional interaction, and (c) elements of health outcomes (Cox, 1982). The elements that create the construct of client singularity include demographic characteristics and social factors and their influence on health outcomes, such as contextual factors outlined in Bronfenbrenner's Ecological Systems Theory (1977, 1979, 1989) and potential barriers to care. The factors that compose the construct of the client-professional interaction include provision of health information, affective support, decisional control, and professional-technical competencies (Cox, 1982). The construct of health outcomes encompasses the effects of utilization of health care services, clinical health-status indicators, severity of the health care problem, adherence to the recommended care regimen, and satisfaction with care (Cox, 1982). In the case of a vaginal rape

survivor, the health outcome could encapsulate the components of comprehensive care. The health outcomes of a vaginal rape survivor could therefore include the survivor's use of the components of comprehensive care, her desire to utilize these components, her post-assault physical and mental health consequences, and her satisfaction with the post-assault care she pursued and received.

By additionally incorporating the Ecological Systems Theory, the contextual or important exogenous factors such as community and demographics of the survivor can be considered within the foundations of microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Bronfenbrenner, 1989). The theory is visually displayed with concentric circles to demonstrate the five layers of the environment that may influence an individual's life. This framework was initially developed by Bronfenbrenner (1977, 1979, 1989) for use in researching child development under the principle that behavior results from the interaction between a person and their environment. The Ecological Systems Theory therefore evaluates a person within their individual environmental setting allowing greater generalizability to research results than those that fail to evaluate contextual factors (Bronfenbrenner, 1979). Previous sexual assault research has shown Bronfenbrenner's Ecological Systems Theory to be a relevant and effective theory with which to frame studies (Campbell, Dworkin, & Cabral, 2009). When applied to a sexual assault survivor, the concept of microsystem incorporates the sense of self into the theory while mesosystem includes the social context of work, school, partner, or family. The term exosystem refers to the survivor's experience within social systems such as the justice and health care system, macrosystem infers the attitudes and ideologies of the United States culture, while chronosystem implies the contemporary timeframe in which the trauma occurred and the life-course history of the survivor.

Figure 1 depicts the investigator's integration of these theories as they relate to the interplay between a woman and her post-assault decision-making within the context of environmental factors. The text highlighted in red will be assessed in this study. This process represents the possibility for a missed opportunity for care given the numerous barriers to care that are present after a trauma such as rape.

Design

There is currently a gap in the literature on how the OTC status of Plan B is affecting the post-assault care rape survivors pursue. Thus, this research trajectory needs a theory-base to undergird future work. This study will employ an anonymous descriptive design with a mixed methods analysis for theory-testing to explore the notion that sexual assault survivors are accessing Plan B for immediate post-assault care and are initially foregoing the other elements of comprehensive care. Approval was obtained from the University of Michigan, Health Sciences Behavioral Sciences Institutional Review Board (IRB) and from each institution involved in data collection.

This study was developed utilizing a participatory action research (PAR) approach in order to address a research problem *with* the population participating in the study (McTaggart, 1991). This research question arose from the principal investigator's (MM) clinical practice while discussing pathways for post-assault care with patients. Since the long-term goal of this research is to improve outcomes, potentially by changing service delivery, it is desirable to conduct this research by incorporating the viewpoints of survivors and clinicians in the planning, data collection, analysis/interpretation, and dissemination phases of the project. The goals of PAR are to produce knowledge directly useful to a group of people and to empower people through using their knowledge (Reason, 1998). It also was important to enhance participation in

a survey on such a sensitive topic by ensuring anonymity. Therefore, this study did not include the survey study participants in the PAR committee, but instead relied on individuals who worked with survivors, advocated for survivors, or were past survivors. For the purposes of this study, PAR consultants included clinicians such as pharmacists, psychologists, and social workers while also incorporating survivors, university students, and advocates. These individuals were recruited from university sexual assault centers, university health centers, and by word of mouth. They were consulted during the study development, administration of surveys, interpretation, and dissemination of results. This is consistent with a PAR framework that involves the community in every aspect of research by focusing on a community-based analysis of problems, community action, and a shared ownership of the research project (Kemmis & McTaggart, 2000).

Recruitment and Procedures

Two convenience samples were utilized for this study. Inclusion criteria for both samples included: (a) being age 17 or older (and so able to purchase Plan B at the time of the study) and (b) able to read and write English. Four university pharmacies in the Midwest were utilized to recruit the first convenience sample of diverse college-age women as participants. The university pharmacies are all located on their respective campuses and serve students and staff at both mid-size and large public universities. All pharmacies furnished surveys to each of the clients who accessed Plan B via their pharmacy windows during the data collection period of November, 2011 to December, 2012. All individuals receiving OTC Plan B from the university pharmacist during the data collection period received a free pen and a four page survey packet with a self-addressed stamped envelope (SASE) in the bag with their Plan B medication. The four page survey included: (a) a letter inviting participation and providing the elements of informed

consent, four brief demographic questions, and a multiple-choice question on why Plan B was used (the response to this item was used to “triage” the respondent to the next questionnaire); (b) the prevalence and desires questionnaire was completed by survivors of unwanted intercourse; (c) the theory-testing questionnaire was completed by all respondents including those utilizing Plan B for spontaneous intercourse, contraceptive failure, or mishap; and (d) the final page included a tear-off information sheet containing referrals for health care, STI testing and treatment, pregnancy testing and follow-up, mental health care, legal involvement, the PI’s contact information, and the IRB’s contact information. The surveys were color coded to assist participants with navigating the survey process. The prevalence and desires questionnaire was labeled the “Blue Questionnaire” and was completed by participants who were taking Plan B in the post-assault period after unwanted intercourse. The theory-testing questionnaire was labeled the “Yellow Questionnaire” and was completed by all study participants. Table 1 displays the study protocol in which survey participants who were taking Plan B after they had survived unwanted intercourse completed the prevalence and desires questionnaire on their *actual* post-assault decision-making. All participants, including those who had survived past unwanted intercourse, then completed the theory-testing questionnaire which used a vignette to assess the components of the conceptual framework, including the components of care a participant thought their friend *should* and *would* pursue. All participants were informed that the study was anonymous and was in no way linked to their health record or their care at the university pharmacy.

After obtaining low response rates from the pharmacy sample, a second sample was recruited. A second convenience sample of individuals (including men and women) enrolled in an undergraduate women’s studies class in a large public university in the Midwest were

recruited in October, 2012. These individuals received a copy of the four page survey upon entering their classroom and were given verbal instructions to complete the survey if they desired and informed that the survey was not linked to the participation in class. Completed, partially completed, and blank surveys were collected in boxes at the end of class. For these participants, a fifth demographic question about gender was added to the introduction letter. Table 1 also displays the protocol for these participants. In this sample, the prevalence and desires questionnaire, or “Blue Questionnaire”, focused on any *history* of unwanted intercourse. All participants then completed the theory-testing questionnaire, or “Yellow Questionnaire”, regarding a hypothetical vignette to assess the components of care a participant thought their friend *should* or *would* pursue in the post-assault period. All participants were informed that the study was anonymous and was in no way linked to their grade or participation in class.

Measures

All participants completed a brief form included with the introduction letter to the study that included questions about demographics and past use of Plan B emergency contraception. Demographic variables included age, race, ethnicity, income, and gender for classroom participants. One participant reported their gender as transgender, because separate analyses could not be computed for a group of one it was decided to include this participant in the male category for all analyses because they most likely were not concerned about pregnancy. The introduction letter also included a multiple choice item that asked the participant why they were using Plan B which was used to triage participants to the appropriate questionnaire. As noted in Table 1 the respondents who **were** taking Plan B due to unwanted intercourse, or a vaginal rape (because they were utilizing Plan B in the post-assault period), completed the prevalence and desires questionnaire (Blue Questionnaire) aimed at determining the prevalence of Plan B use in

the post-assault period and the survivors' desires for care in the post-assault period. All participants, including those who had previously taken Plan B for unwanted intercourse, were then asked to complete a theory-testing questionnaire (Yellow Questionnaire) to evaluate the components of the conceptual framework.

Survey development. The prevalence and desires questionnaire, or "Blue Questionnaire", was developed to determine the prevalence of Plan B use in the post-assault period and to discover the desires of survivors in the post-assault period. It included (a) four items from the Sexual Experiences Survey (Koss & Gidycz, 1985), (b) the care a survivor had actually pursued, (c) care they would have liked to receive, (d) their relationship with the perpetrator, and (e) the timeframe when the assault occurred. It also included five open-ended questions on the participant's use of Plan B, potential unmet needs, the survivor's desired care, barriers to care, and possible interventions for post-assault Plan B users. The components of this survey are described in more detail in a companion manuscript.

The theory-testing questionnaire, or "Yellow Questionnaire", is based on the Survey on Women's Health Issues. The Survey on Women's Health Issues is a vignette based (i.e., hypothetical or vicarious experience) questionnaire that includes questions to assess the fit of the integrated framework with women's opinions about the needs of survivors of unwanted intercourse. The Survey on Women's Health includes seven questions measured on a Likert-scale that assess influence of variables within Bronfenbrenner's Ecological Systems Theory on a survivor's decision-making including: (a) societal attitudes; (b) United States culture; (c) criminal justice system; (d) health care system; (e) work or school; (f) partner, family, or friends; and (f) sense of self. It also includes seven items that asked the participant to identify the potential barriers to care influencing a survivor's decision-making including: (a) emotions; (b)

fear of the attacker; (c) fear something is wrong; (d) fear of others knowing; (e) lack of knowledge; (f) difficulty accessing help; and (g) myths about sexual assault. The Survey on Women's Health Issues was piloted anonymously with 21 non-clinical women working in a rural hospital in northern Michigan (Munro, unpublished data). The majority of respondents identified each of the seven questions assessing the relationship of Bronfenbrenner's Ecological Systems Theory to the concept of unwanted intercourse as having "somewhat" or "very much" of an influence. In addition, 10 of the 21 women responded that they thought their friend *would* choose to obtain OTC Plan B and forego comprehensive care, which, in this very small pilot sample, suggests the need to fill the gap in care that would result from this choice.

Both questionnaires were finalized through a process of cognitive interviewing and expert review utilizing experts in the field of sexual violence, sexual assault survivors, and allies. In an analysis of studies comparing questionnaire evaluation methods, it was noted that cognitive interviewing and expert reviews tended to find more comprehension problems than the other methods reviewed (Groves et al., 2004). Furthermore, pilot testing or pre-testing identified more problems with the administration of the questionnaire than the other methods reviewed (Groves et al., 2004). Therefore, the finalized questionnaires were rigorously tested using the highest standard of survey methodology evaluations.

Reliability. Reliability of the various components of the theory-testing questionnaire was assessed for this study. The seven Likert-scale questions that included items related to Bronfenbrenner's Ecological Systems Theory demonstrated a Cronbach alpha of .759. An additional six dichotomous questions that assessed the potential barriers to care for a survivor of unwanted intercourse demonstrated a reliability of .644 using the Kuder Richardson 20. There were originally seven items assessing barriers to care, however one item that asked about

emotions and feelings was removed due to no variability. The Kuder Richardson 20 reliability is automatically computed within statistical packages such as the Statistical Package for the Social Sciences (SPSS) when dichotomous questions are included. The reliability for the barriers to care items was deemed adequate internal consistency due to the small number of questions and the dichotomous nature of the variables.

Data Analyses

Quantitative Analyses. All analyses were conducted in IBM SPSS 20.0 (SPSS, Inc., Chicago, IL). All *p*-values were two-tailed and the level of significance was set at $<.05$. All data was initially double-entered and cleaned for accuracy. Ambiguous data that had “maybe” next to it, had a question mark next to it, or had the word “depends” next to it was imputed using alternating yes/no responses. If a participant left an entire section blank, this was considered to be purposely omitted by the participant and imputation was not performed. Imputations made up only 1% of all data points. Response rates were 16.13% for the pharmacy sample and 61.80% for the classroom sample, and implications of these rates are addressed in the companion manuscript. Using Cohen’s (1992) guidelines for power analysis, it was determined that in order to reach 80% power with an alpha of $.05$, a minimum sample size of 112 participants was needed for the theory-testing analyses.

First, all preliminary analyses were completed. These included an exploratory factor analysis that was performed with all seven items from the theory-testing questionnaire assessing Bronfenbrenner’s Ecological Systems Theory to assess whether the data are a good fit to the integrated framework. Then all assumptions for logistic regression were verified including sample size, multicollinearity, and the presence of outliers.

Analyses then included descriptive statistics of demographic characteristics (age, race, ethnicity, and income) with bivariate analyses used to compare the descriptive statistics across the two samples (pharmacy and classroom). A regression model that combined both samples to represent university students as a whole is also presented. The model evaluates the predictors on the hypothetical vignette of where the participant thought their friend *should* access care. The predictors for the regression model include the: (a) personal characteristics that fit within the element of client singularity in the Interaction Model of Client Health Behavior; (b) potential barriers to care that demonstrated variability among respondents; and (c) environmental factors identified using Bronfenbrenner's Ecological Systems Theory.

Qualitative Analyses. Qualitative analyses with word clouds and content analysis were also employed to interpret quantitative findings and to expand on the survivors' perceived barriers to care. First of all, word clouds were used to depict the survivors' descriptions of potential barriers to care. A word cloud is a visual graphic that is created by counting the frequency or use of words within a text. Word clouds have traditionally been used in sorting and exhibiting data from internet sites (Viègas & Wattenberg, 2008), however more recent work has seen the introduction of word clouds for research purposes (Clement, Plaisant, & Vuillemot, 2008; McNaught & Lam, 2010). In this study, the text analyzed with the word cloud technique included the open-ended responses from survivors describing potential barriers to care; the word cloud displayed these terms with more frequently used words appearing in larger text. In programs that create word clouds, such as Tagxedo, grammatical words such as "a," "are," and "the" are automatically hidden from the displayed graphic (Leung, 2006). In addition, Tagxedo uses a technique called stemming to consolidate words with the same meaning that are used in different forms or tenses, such as "formula" and "formulae" (Leung, 2006). Word clouds provide

an additional mode of data analysis that can be useful before content analysis to give the researcher an idea of potential terms and themes (McNaught & Lam, 2010).

A subtype of qualitative content analysis that compares data to an existing theory (Morgan 1993; Seng, Kane Low, Sparbel & Killion, 2004) was also employed to evaluate the model fit and potential barriers to care. The content analysis was conducted using the steps described by Hickey and Kipping (1996) for analysis of open-ended survey responses including (a) preliminary category identification, (b) consensus on categories, (c) assigning category and detail codes, (d) coding check by an additional researcher, (e) resolving outliers, (f) merging details, and (g) rechecking by additional researchers for validation. This process was utilized to code all text related to the components and propositions of the PI's integrated framework, plus any additional components or propositions that assess the fit of women's experiences and explanations within the framework. The goal of this analysis was to compile extensive descriptions of the components in qualitative terms and to ground decisions about framework refinements in participants' experiences and opinions. Although this is a less common qualitative approach than grounded theory, it is appropriate when a useful existing theory has been identified but needs validation. This analysis was guided by the primary investigator (MM) and a co-author (KM) and was presented to the PAR consultants orally while still a work in progress to allow them to assist with interpretation and refining of findings. By allowing quantitative survey results, data from open-ended questions, and theory assessment activities to inform each other in this early phase of research, the qualitative component may serve as a critical "bridge between science and art" that may more powerfully influence practice than quantitative data alone can do (Sandelowski, 1993).

Results

Quantitative

Preliminary analyses. Factor analysis was completed for the purpose of data reduction, in order to ascertain the number of pertinent factors that may impact where a survivor pursues care and thus could be useful in theory testing (Floyd & Widaman, 1995). Exploratory factor analysis utilized the seven questions regarding Bronfenbrenner's Ecological Systems Theory that were completed by the total sample ($n= 220$). The literature reports a range of necessary cases per item required for adequate factor analysis ranging from 4 to 10 cases per measure, which support the use of factor analysis for this sample size (Cattell, 1952; Hair, Anderson, Tatham, & Grablowsky, 1979; Nunnally & Bernstein, 1994). Principle component analysis with varimax rotation was employed with adequate sample adequacy, Kaiser-Meyer-Olkin (KMO) = .661 (values $>.6$ are needed for an adequate factor analysis per Tabachnick & Fidell, 2007) and Bartlett's test of Sphericity was significant ($\chi^2=492.626$, $df=21$, $p<.001$). Results demonstrated that the seven items broke into two factors based on the following criteria: (a) item factor loading greater than .40; (b) an eigenvalue of greater than 1; and (c) the point of discontinuity of the scree plot (Nunnally & Bernstein, 1994). The two factors included the macrosystem (i.e., societal attitudes and United States culture) and interpersonal (i.e., criminal justice system, health care system, workplace, school, personal relationships with others, and sense of self). These two factors will be utilized in the modeling.

Tolerance for collinearity among the barriers to care and Bronfenbrenner Ecological Systems Theory factors was assessed by looking at the variance inflation factor (VIF) and tolerance diagnostics. Neither VIF values (range 1.029-1.048) nor tolerance values (range .954-.972) demonstrated any indication of collinearity (Pallant, 2007). Furthermore, correlations among variables demonstrated low correlations of .502 or less indicating that the barriers to care

and Bronfenbrenner Ecological Systems Theory were measuring different concepts within the conceptual framework.

Characteristics of the sample. The sample of 55 female pharmacy participants ranged in age from 18-35 years ($M=23.69$, $SD=4.25$), while the classroom sample of males and females ($n=165$) was significantly younger with a range of 18-32 ($M=20.14$, $SD=1.85$); $t(61.01)=6.01$, $p<.001$. Both samples were racially and ethnically diverse. The pharmacy sample approached significance in regards to self-reported racial demographics when compared with the classroom sample: White/European American (69.1% vs. 80.6%), Black/African American (12.7% vs. 5.5%), Asian (10.9% vs. 11.5%), Native Hawaiian/Pacific Islander (3.6% vs. 0.6%), and American Indian/Alaskan Native (1.8% vs. 0%); $\chi^2(4)=9.50$, $p=.050$. There were no significant differences between the two samples in ethnicity with the majority of respondents in both groups reporting a not Latina/Hispanic ethnicity; $\chi^2(2)=5.12$, $p=.077$. Finally, there was a significant difference in income between the two samples with the classroom sample reporting higher incomes; $\chi^2(4)=26.65$, $p<.001$.

There was also a significant difference in the percentage of survivors of unwanted intercourse in the classroom sample (26.0%) and the pharmacy sample (7.3%); $\chi^2(df=1)=8.67$, $p=.003$. One of the participants who reported a history of unwanted intercourse was a male and was not included in the “rape survivor status” category for the purpose of these analyses because he did not survive a vaginal rape and there was no concern for pregnancy. Additionally, 36.4% of the classroom sample reported that they had purchased Plan B in the past. Table 2 describes the pertinent characteristics of both samples in more detail and provides a comparison of the pharmacy and classroom sample.

The pharmacy sample differed from the classroom sample in regards to age and income. The classroom sample was an introductory level women's studies course that included mainly sophomore undergraduate students with a mean age of 20.14. These students self-reported a higher "family income," most likely because they were including their parent's income. Alternatively, the pharmacy sample included both undergraduate and graduate students with a higher mean age of 23.69. These individuals also self-reported a lower "family income," most likely because they were not including themselves as dependents of their parents and thus did not include their parent's income. These differences were to be expected when comparing undergraduate and graduate university students. Despite these differences the decision was made to perform modeling with both samples combined to ensure the sample was representative of university students as a whole and to allow for generalizability to all university students, not just undergraduate or graduate students.

Modeling of Where Care *Should* be Received. In order to assess the characteristics of client singularity that impacted where a survivor *should* receive care we utilized hierarchical logistic regression with the following variables: (a) the key characteristics of the respondent; (b) their responses on barriers to care; and (c) the influence of Bronfenbrenner's macrosystem and interpersonal variables. The characteristics of gender, unwanted intercourse survivor status, and having purchased Plan B in the past as the first step were modeled first. Next, we added the barriers to care that demonstrated variability among respondents including: (a) fear of others' knowing, (b) lack of knowledge, (c) difficulty accessing help, and (d) myths about sexual assault. Finally, we added the two levels of Bronfenbrenner's Ecological Systems Theory including the macrosystem and interpersonal factors.

This model, as depicted in Table 3 demonstrates that characteristics such as having a history of unwanted intercourse and having purchased Plan B in the past significantly predict a small amount of the variance in the outcomes of *should* go to the emergency room (6% of variance) and *should* use OTC Plan B (11% of variance). If the participant had used Plan B in the past then they were less likely to support the use of OTC Plan B in the post-assault period. Of the 115 participants who had purchased Plan B in the past, 18 (15.6%) of them had utilized Plan B in the post-assault period. Of the four barriers to care predictors only lack of knowledge significantly predicted the *should* outcome of seeking out a health care provider (contributed 13% of variance). Thus, those individuals who thought that lack of knowledge was a barrier to care for post-assault survivors were 17 times more likely to believe that a friend who was an unwanted intercourse survivor *should* pursue post-assault care with a health care provider. Finally, the Bronfenbrenner Ecological Systems Theory predictors of macrosystem and interpersonal factors significantly predicted the *should* outcomes of emergency room (contributed 4% of variance) and OTC Plan B (contributed 4% of variance). Specifically, participants who believed that the macrosystem (i.e., influence of society and culture) had a strong influence on post-assault decision-making were less likely to report that their friend *should* pursue care at an emergency department. Alternatively, participants who believed that interpersonal factors (i.e., influence of justice system, health care system, work and school, family and friends, and self) had a strong influence on post-assault decision-making were more likely to report that their friend *should* obtain OTC Plan B in the post-assault period.

To summarize, the most significant model in these analyses was the *should* use Plan B in the post-assault period model ($NR^2=.209, p=.006$). In this model, participants who believed that interpersonal factors had a strong impact on decision-making in the post-assault period were

significantly more likely to respond that their friend *should* use Plan B. Alternatively, if the participant had purchased Plan B in the past they were significantly less likely to endorse that a friend *should* use OTC Plan B in the post-assault period. The *should* use the emergency room model was also significant ($NR^2=.131, p=.025$). Participants who reported a history of unwanted intercourse were significantly more likely to support that a friend *should* utilize the emergency room for post-assault care. However, participants who believed that macrosystem factors had a large influence on post-assault decision-making were significantly less likely to respond that their friend *should* use the emergency room. The opinion that they *should* seek care with a health care provider was not independently significant ($NR^2=.185, p=.096$) but there was a strong relationship with the barrier, lack of knowledge.

Qualitative

Initial analysis began with a word cloud that depicted the barriers to care described by the 47 survivors in the sample. The word cloud presented in Figure 2 solidified the barriers to personal and environmental factors that may dispel or delay a post-assault survivor from seeking care (Munro, in press). This figure illuminates the personal barriers of emotional states such as “embarrassment,” “fear,” and a lack of knowledge about available services evident in terms such as “difficulty” that appeared within the word cloud. It also highlights the environmental factors of “access” to services and societal myths with terms such as “judgment” that also appear prominently within the word cloud.

The second step for the qualitative analysis employed content analysis for a deductive theory testing approach to confirm the components and propositions of the guiding conceptual framework (Elo & Kyngas, 2007). There were 9 respondents (19.2%), including the one male survivor that did not respond to any of the open-ended questions. The rest of the respondents’

answers were assessed in relation to the conceptual framework displayed in Figure 1 by looking for descriptions related to the following components: (a) elements of client singularity – specifically reasons for Plan B use, recognized barriers to care, and environmental factors as described by Bronfenbrenner’s Ecological Systems Theory; (b) elements of the client professional interaction; and (c) elements of health outcomes.

Elements of client singularity: Reasons for Plan B use. Survivors (n=27) who had previously used Plan B or who were obtaining Plan B in the post-assault period described three motives for using emergency contraception that were consistent with the reasons described in the conceptual framework. These motivations included (a) spontaneous intercourse, (b) contraceptive failure or mishap, and (c) unwanted intercourse. Many of the survivors described past experiences with spontaneous intercourse in which no contraception had been used at the time of intercourse using terms such as “had condomless sex & was concerned about pregnancy” and “unprotected/unplanned sex with significant other.” Survivors also described a past contraceptive failure (i.e., broken condom) or mishap (i.e., missed birth control pill) as another common reason for seeking out emergency contraceptive by using such descriptions as “the condom broke while not taking contraceptives” and “I did not want to get pregnant after I missed a birth control pill so I knew Plan B was an option.” Finally, some of the survivors that had sought out Plan B in the post-assault period expressed their motivators as “pregnancy prevention after assault” and “...not sure if condom was used because of alcohol effects.”

Elements of client singularity: Barriers to care. Survivors (n=32) who utilized Plan B in the past described a number of barriers that may be present for those in the post-assault period. The most common barriers described included the triad of embarrassment (n=20; 62.5% of respondents), fear (n=19; 59.4%), and a concern about judgment or what others would think

including family, friends, pharmacists, police, and doctors (n=14; 43.8%). For example, survivors used descriptions such as “fear, embarrassment, + concern about what others think” and “embarrassment, fear of being judged by pharmacy/doctor.” Survivors also described barriers such as access (n=5; 15.6%) and cost (n=6; 18.8%). One 23-year-old survivor who had used Plan B in the past but did not use it in the post-assault period noted that cost was a prohibiting factor and recommended the need for, “Free Plan B. It’s too expensive.” Another 23-year-old survivor who did use OTC Plan B in the post-assault period summed up the aspects of access that she considered to be barriers, “Access (finances, transportation, getting caught fear, education).”

Elements of client singularity: Bronfenbrenner’s Ecological Systems Theory.

Survivors described elements of Bronfenbrenner’s Ecological Systems Theory in their expressions of the factors that influenced their choice to use Plan B and in their depictions of barriers that might inhibit or interfere with a survivor’s ability to get care. These illustrations could be grouped into two broad categories which were consistent with the quantitative findings presented earlier - interpersonal factors and the macrosystem. The interpersonal factors were evident in the survivors’ portrayals of the influence of their personal thoughts, family, friends, workplace, school, health care, and legal system influences. For instance, one 20-year-old survivor that utilized OTC Plan B in the post-assault period noted that it was her “friend’s advice” that influenced her decision to access emergency contraception. Another 28-year-old survivor who had accessed OTC Plan B in the post-assault period noted the following interpersonal components that she described as both an encouraging factor, “the right friends help a lot” and a hindrance to seeking care in the post-assault period, “police – no evidence, not wanting to talk about what happened, want to be taken seriously (I ended up going 2 days after I

wrote this).” For this participant, it is difficult to determine if her decision to seek post-assault legal assistance was influenced by the study and list of available resources provided with the questionnaire or if she made the decision independently. Survivors descriptions of the macrosystem components centered on societal values that influenced perceptions about rape survivors, women utilizing emergency contraception, and access to resources. A 19-year-old survivor who did not utilize OTC Plan B in the post-assault period noted that “living in a conservative area” served as a barrier. While, a 20-year-old survivor who had utilized OTC Plan B when she was assaulted between one and three years ago described the stigma associated with obtaining Plan B as a macrosystem factor in her statement, “an easier way to obtain the pill where there could be less stigma.”

Elements of client professional interaction. Since the purpose of this study was focused on the use of OTC emergency contraception such as Plan B there was limited information obtained about the elements of the client professional interaction. Thus, the four options for post-assault care: (a) emergency room (SANE); (b) visits with a health care provider in a clinic setting; (c) obtaining OTC Plan B at the pharmacy; and (d) no care were not addressed in detail. However, within their rich descriptions of the type of care they would like to receive, survivors did use such terms as “easy/private access” and “options to talk to an unbiased specialist.” These descriptors support the idea that survivors are going to choose the pathway to care that they feel is the most supportive and unobtrusive. As noted in the companion manuscript, this preferred pathway to care may include OTC emergency contraception. It is therefore essential to examine how we can provide a more comprehensive framework for services within the setting where survivors are choosing to access care.

Elements of health outcomes. Nearly all of the survivors that responded to the open-ended questions (n=34) described components of care that should be available for post-assault survivors. Many of these responses included broad descriptions of “physical” care, “medical help,” and “psychological help.” However, some survivors also provided detailed narratives of what type of care should be available for post-assault survivors most commonly including: (a) STI testing (n=11; 32.4%); (b) mental health care, counseling, or a support group (n=16; 47.1%); and (c) pregnancy prevention services besides Plan B (n=7; 20.6%) including options for pregnancy testing, long-term contraception, and follow-up care. A few participants (n=3; 8.8%) described victim support or advocacy services such as information on “where to seek help for sexual assault” and “just somebody to talk to and help make them aware of any services that could be available to them depending on the circumstances.” Only two participants (n=2; 5.9%) who responded to the open-ended questions about components of care that should be available to post-assault survivors wrote that there was need for legal care and one of these participants expressed some ambivalence about this concept by placing two question marks after the word legal. None of the survivors mentioned a need or desire for forensic evidence collection.

Summary of All Results

In summary, this mixed methods analysis of a theory-testing study determined that the following changes were needed within the conceptual framework (as reflected in Figure 3). First, the personal demographics of the survivor encompassed within the elements of client singularity will be changed to personal *characteristics* to more broadly reflect the personal attributes that influence decision-making within the post-assault period. The personal *characteristics* that appeared to be most closely related to a survivor’s post-assault decision-making included: (a)

purchased Plan B in the past; (b) a past history of unwanted intercourse; and (c) knowing the perpetrator (as described in the companion manuscript).

Second, the environmental factors captured within Bronfenbrenner's Ecological Systems Theory will be condensed into *interpersonal* factors and *macrosystem* in order to capture the significant components described by the participants in this study that were revealed via qualitative and quantitative analyses. The *interpersonal* factors include the microsystem, mesosystem, and exosystem and capture the components of sense of self, relationships with others, work, school, criminal justice system, and the health care system. The *macrosystem* includes the macrosystem ring of Bronfenbrenner's theory and incorporates the societal attitudes and culture. Meanwhile, the chronosystem component of Bronfenbrenner's theory is contained within the personal *characteristics* as a past history of unwanted intercourse (or life-course history perspective) and is also encapsulated within the *macrosystem* as the current or time influenced societal and cultural attitudes.

Third, the health outcomes captured within the elements of the health outcome component of the framework were originally displayed as individual forms of care. However, after analysis it appeared that survivors referred to care as it occurred within three different domains, such as (a) *health services*, (b) *advocate services*, and (c) *legal services*. The participants described the *health services* as encircling the physical care of injuries, pregnancy prevention, STI testing and treatment, and mental health care. Meanwhile, they depicted *advocate services* as a separate type of care in which they would seek victim services or support. Finally, the participants in this study referred to *legal services* as another domain, or sphere of care, which included legal care and potentially forensic testing. It is interesting to note, that none of the survivors discussed forensic testing as a desired post-assault intervention qualitatively

however a few survivors did note that they would desire some additional information about forensic testing in the quantitative survey questions (see companion manuscript). These individuals seemed to associate forensic testing with a “rape kit” and legal prosecution. Thus, forensic testing was incorporated into the *legal outcomes* domain.

Discussion

Participants who had purchased Plan B in the past were significantly less likely to endorse that a friend *should* only use Plan B in the post-assault period. This phenomenon was not related to previous bad experiences with Plan B. Instead this finding appeared to be related to the fact that past Plan B users saw it as incomplete and knew that it did not contain information on the post-assault resources that survivors of unwanted intercourse may need or desire to pursue. These results suggest that both survivors and those who used Plan B for contraceptive mishaps do not support OTC Plan B as a **stand-alone** option for post-assault care. In fact, in its current form Plan B only includes information on the indications, dosage, contraindications, side effects, and drug interactions (Duramed Pharmaceuticals, 2009). At the very bottom of the prescribing information sheet is one bullet point that notes that Plan B does not protect against HIV or STIs. Thus, Plan B actually does not provide information or resources for any individual using it since all emergency contraceptive users are in need of STI counseling, testing, and potentially treatment (Shiely, 2013). Past users of Plan B in this study recognized the importance of easily accessible pregnancy prevention while also acknowledging that Plan B in its current form was incomplete.

Additionally, characteristics of the perpetrators seemed to weigh heavily on the minds of survivors and their friends. It is well established that the majority of rapes occurring in the college environment are perpetrated by someone known to the survivor. Among college students

who have survived a completed or attempted rape, about nine in ten offenders were known to the survivor and almost 60% of the assaults took place in the survivor's residence (Fisher et al., 2000). This relationship between the survivor and perpetrator may influence the survivor's disclosure, care-seeking behaviors, and desire to keep the rape confidential (Millar, Stermac, & Addison, 2002; Starzynski, Ullman, Filipas, & Townsend, 2005).

An additional characteristic that must be considered is the concept of revictimization. It is widely recognized that survivors of sexual assault are more likely to be revictimized (Classen, Palesh, & Aggarwal, 2005; Walsh, DiLillo, & Scalora, 2011). This life-course perspective must be considered when evaluating a survivor's post-assault decision-making. Revictimized survivors are known to have high levels of emotional dysregulation (Walsh, DiLillo, & Scalora, 2011), compromised self-development (Ford & Courtois, 2009), and may have already had negative interactions with the health care and legal systems that may impact the type of post-assault care they do or do not pursue.

Within this study, it also appeared that many of the participants considered the victim advocate as route to legal assistance. For example, the one survivor who did interact with a victim advocate in the post-assault period also pursued legal care. Additionally, 67% of survivors that expressed a desire for a victim advocate referral also desired legal care. It is unclear if this association was due to the participant's lack of knowledge about legal prosecution and valued the victim advocates ability to help them navigate the system or if they truly considered the advocate to be a part of the legal process. Thus, additional work in unpacking college-age survivor's perceptions of the association between victim advocates and the legal system may be warranted.

Limitations

The results of this study are limited by methodological issues regarding research on a sensitive topic, low response rates for the pharmacy sample, and student population constraints. Inherent to a study about a sensitive topic, there were some limitations faced in study design. This study was limited by its reliance on self-report survey data, which has the potential to introduce social desirability biases. There was an attempt to minimize this potential bias by using an anonymous survey methodology. Face-to-face interviews were initially planned to evaluate survivor's barriers to post-assault care and desires, but open-ended questions were all that could be feasibly included, and they elicited only brief responses. However, under different circumstances face-to-face interviews may be possible and would be warranted if they could evaluate the relationship of the following factors to a survivor's post-assault decision making: (a) decision-making based on the relationship with the perpetrator; (b) past experience with Plan B use; (c) circumstances surrounding assault (i.e., pressure/arguments, use of authority, use of alcohol/drugs, and/or physical force); and (d) reactions to assault disclosure.

The study was hampered by a low response rate from the pharmacy sample which necessitated the inclusion of a second sample from a classroom setting. However, this apparent limitation did improve study generalizability by expanding the theory-testing to a more diverse group of men and women. It is worth noting that the larger student sample, which included both participants who had survived unwanted intercourse and those who had not, had findings similar to those from the pharmacy sample which included recent survivors of unwanted intercourse. Both undergraduate and graduate students were included from various universities across the Midwest. This sample was therefore representative of university students as a whole, but cannot be generalized beyond university students in the Midwestern United States.

Additionally, we have opted to include males in this study because we do not know their influence on female Plan B users decision-making. Furthermore, there was also one participant that self-reported a transgender identity. It was deemed important to include this participant's views and opinions into the survey but unfortunately it was not possible to analyze these views separately. For this reason, this participant was included in the male category. We realize the limitations of forcing this person into a binary conceptualization of gender and hope that future studies will include large enough samples to be able to dissect the views of all individuals based on their self-reported identities. Despite our small sample size of males, including males in the regression models revealed that they appear to have slightly different opinions than females regarding post-assault care because the variance explained improved when gender was taken into account. Post-hoc analyses uncovered that men approached significance in their views about the barrier to care, concern about public exposure, and in their view that survivors of unwanted intercourse should not pursue post-assault care and that with larger sample sizes of males there may be significant differences in these opinions. When compared to their females counterparts (94.4%), males (78.6%) were less likely to think concern about public exposure was a barrier to care for survivors of unwanted intercourse; $\chi^2(1) = 5.253, p = .056$ (corrected with Fisher's exact test due to two cell sizes less than five). In regards to what type of post-assault care a survivor of unwanted sexual intercourse should pursue, male participants were more likely (7.1%) than female participants (0.5%) to report that a friend should pursue no care; $\chi^2(1) = 6.058, p = .130$ (corrected with Fisher's exact test due to two cell sizes less than five). These post-hoc evaluations indicate the importance of considering an individual's gender in regards to post-assault decision-making. The social conceptualization of gender and myths surrounding sexual assault undoubtedly influence the views and perceptions of both genders regarding their beliefs

about sexual assault and post-assault care. It is essential that future studies incorporate large, diverse samples in regards to gender in order to capture the different perceptions surrounding sexual assault and post-assault care.

Conclusions

In conclusion, the *Plan B and Missed Opportunities for Comprehensive Care* conceptual framework provides an accurate representation of post-assault decision-making among college women. Some minor adjustments improved the conceptual framework to incorporate the characteristics and environmental factors that are most germane in the post-assault period. In fact, those who had used Plan B in the past were less likely to support only the use of OTC Plan B for post-assault use. This finding appeared to be related to the fact that currently OTC Plan B does not provide complete information about comprehensive care. Thus, past Plan B users were not unsupportive of the use of Plan B by post-assault survivors because of bad experiences with the medication, but were instead focused on the ability of a survivor to have a confidential and easily accessible venue to access all of the care that she desires. Future work should continue to investigate the factors influencing post-assault decision-making among college survivors and how interventions can meet the needs and desires of these survivors.

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Figure 1.1. Plan B and Missed Opportunities for Comprehensive Care Conceptual Framework

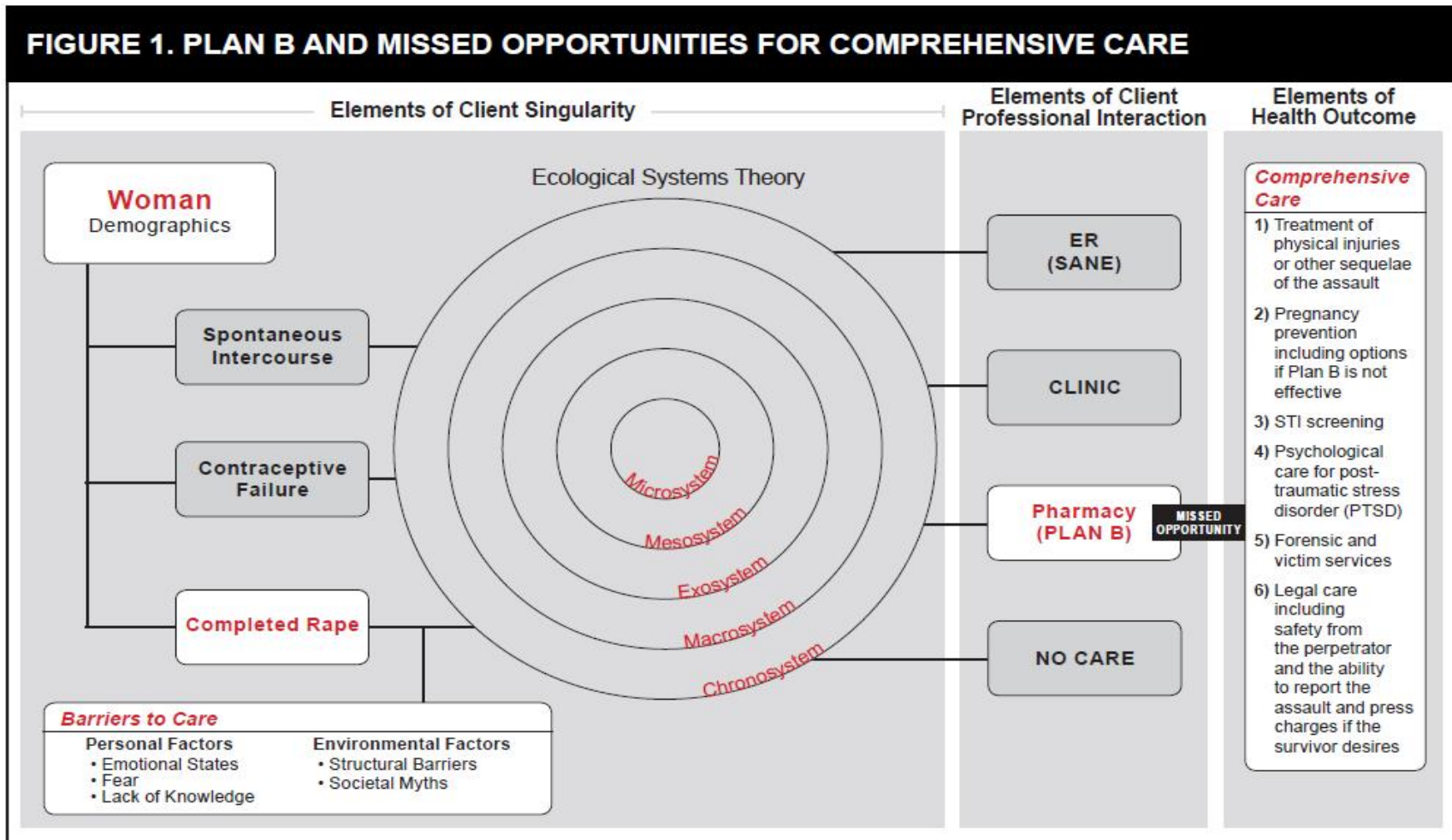


Table 1.1 Study Protocol

Survey Components	Pharmacy Participant (n=55)		Classroom Participants (n=165)	
Informed Consent/Demographics	<ol style="list-style-type: none"> 1) Outlined the elements of informed consent 2) Included demographic questions on age, race, ethnicity, & income 3) Included a question on the purpose of Plan B which was used to triage participants 		<ol style="list-style-type: none"> 1) Outlined the elements of informed consent 2) Included demographic questions on age, race, ethnicity, income, & gender 3) Included a question on the purpose of Plan B which was used to triage participants 	
Triage: Survivor of Unwanted Intercourse	Yes	No	Yes	No
Prevalence and Desires Survey (Survivors of unwanted intercourse)	<ol style="list-style-type: none"> 1) Four questions from the sexual experiences survey 2) Seven questions about post-assault care 3) Desired post-assault care options 4) Relationship with the perpetrator 5) Timeframe of the assault 6) Five open-ended questions on use of Plan B, barriers to care, desired care, and potential interventions for post-assault Plan B users 	N/A	<ol style="list-style-type: none"> 1) Four questions from the sexual experiences survey 2) Seven questions about post-assault care 3) Desired post-assault care options 4) Relationship with the perpetrator 5) Timeframe of the assault 6) Five open-ended questions on use of Plan B, barriers to care, desired care, and potential interventions for post-assault Plan B users 	N/A
Theory-testing Survey (Theory-testing for all participants)	<ol style="list-style-type: none"> 1) Seven questions on the contextual factors outlined by Bronfenbrenner’s theory that may impact post-assault decision-making 2) Seven questions on barriers to care 3) Multiple choice question on where the participant thought their friend <i>should</i> go for post-assault care 4) Multiple choice question on where the participant thought their friend <i>would</i> go for post-assault care 5) What elements of post-assault care the participant thought a friend who had survived a vaginal rape <i>should</i> pursue 			
Tear-off information sheet	<ol style="list-style-type: none"> 1) PI and IRB contact information 2) Referrals for: Health care, STI testing & treatment, Pregnancy testing & follow-up, Mental health care, Legal involvement 			

Table 1.2 Characteristics of the Sample %(n)

Characteristics	Classroom Participants (n=165)	Pharmacy Participants (n=55)	χ^2 or t value, p-value
Age Range	18-32	18-35	
Mean	20.14 (SD=1.85)	23.69 (SD=4.25)	t(df=61.01)=6.01, $p<.001$
Gender*			
Female	90.3% (149)	100.0% (55)	
Male	8.5% (14)	n/a	
Transgender	0.6% (1)	n/a	
Race*			χ^2 (df=4)=9.50, $p=.050$
White/European American	80.6% (133)	69.1% (38)	
Black/African American	5.5% (9)	12.7% (7)**	
Asian	11.5% (19)**	10.9% (6)	
Native Hawaiian/Pacific Islander	0.6% (1)	3.6% (2)	
American Indian/Alaskan Native	0% (0)	1.8% (1)	
Ethnicity*			χ^2 (df=2)=5.12, $p=.077$
Not Latina/Hispanic	89.7% (148)	89.1% (49)	
Latina/Hispanic	3.6% (6)	9.1% (5)	
Middle Eastern	4.8% (8)	0% (0)	
Income*			χ^2 (df=4)=26.65, $p<.001$
Less than \$15,000	3.6% (6)	10.9% (6)	
\$15,000 - \$30,000	8.5% (14)	32.7% (18)	
\$30,000 - \$50,000	11.5% (19)	9.1% (5)	
\$50,000 or more	61.2% (101)	36.4% (20)	
Don't Know	13.9% (23)	10.9% (6)	
Rape Survivor***	26.1% (43)	7.3% (4)	χ^2 (df=1)=8.67, $p=.003$
Have Purchased Plan B in the Past	36.4% (60)	100% (55)	

* Indicates missing data

** Two participants indicated a mixed race – they were counted in the minority group with which they identified

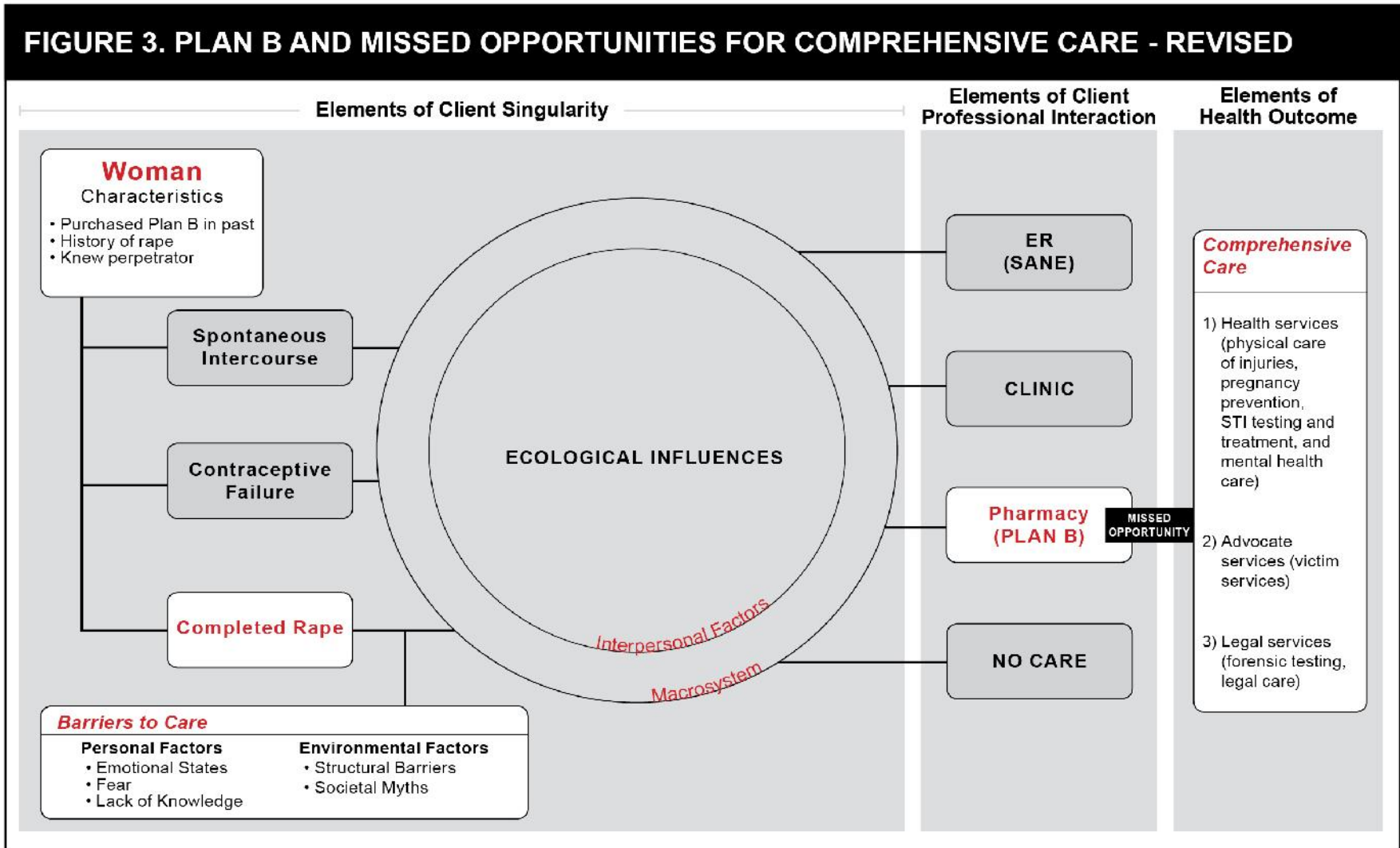
*** This category includes a male rape survivor

Table 1.3. Logistic Regression of Comprehensive Care Advised (Should) (n=205)

	Emergency Room	Health Care Provider	Plan B
Step 1: Characteristics	NR ² =.055, <i>p</i> =.053	NR ² =.051, <i>p</i> =.267	NR ² =.108, <i>p</i> =.009
Male Gender	2.518	3.387	1.616
Rape Survivor	2.293*	.575	.203
Have purchased Plan B in the past	.619	2.694	.344*
Step 2: Barriers to Care	Change in NR ² =.033, <i>p</i> =.298	Change in NR ² =.129, <i>p</i> =.034	Change in NR ² =.066, <i>p</i> =.120
Male Gender	2.002	3.098	1.891
Rape Survivor	2.268*	.658	.195
Have purchased Plan B in the past	.598	2.654	.283*
Potential Barrier: Fear of other's knowing	2.497	.000	.249
Potential Barrier: Lack of knowledge	.356	17.913*	.426
Potential Barrier: Difficulty accessing help	.951	.123	3.658
Potential Barrier: Myths about sexual assault	1.787	.164	2.660
Step 3: Bronfenbrenner	Change in NR ² =.043, <i>p</i> =.040	Change in NR ² =.005, <i>p</i> =.795	Change in NR ² =.035, <i>p</i> =.131
Male Gender	1.586	2.699	1.337
Rape Survivor	2.247*	.651	.178
Have purchased Plan B in the past	.601	2.686	.259*
Potential Barrier: Fear of other's knowing	2.907	.000	.364
Potential Barrier: Lack of knowledge	.308	16.825*	.405
Potential Barrier: Difficulty accessing help	.805	.128	3.166
Potential Barrier: Myths about sexual assault	2.266	.182	3.668
Macrosystem	.805*	.949	.879
Interpersonal	1.064	1.054	1.134*
Final Model	NR ² =.131, <i>p</i> =.025	NR ² =.185, <i>p</i> =.096	NR ² =.209, <i>p</i> =.006

* Indicates a significant *p*-value (*p*<.05) for the OR shown

Figure 1.3 Plan B and Missed Opportunities for Comprehensive Care – Revised Conceptual Framework



CHAPTER 3

Comprehensive Care and Pregnancy: The Unmet Care Needs of Pregnant Women with a History of Rape

Recent research is underscoring pregnancy as a time when past violent victimization and posttraumatic stress can affect both the woman's maternity care experience and outcomes (Seng, Kane Low, Sperlich, Ronis, & Liberzon, 2011; Söderquist, Wijma, Thorbert, & Wijma, 2009). In order to explore the effects of past sexual trauma in pregnancy, it is essential to understand the post-assault care that survivors receive. Sexual Assault Nurse Examiner (SANE) services represent a standard for comprehensive post-assault care and are designed to address the immediate needs of the survivor and prevention of negative sequelae (Department of Justice, 2013; Ledray, 1999). A SANE nurse is type of forensic nurse that has received specialized training and certification via the International Association of Forensic Nurses (IAFN) to deal with the physical, emotional, and forensic aspects of post-assault care (IAFN, 2006). However, not all survivors pursue or receive SANE services, which creates the possibility of these women having unmet health needs. Long-term mental and physical health status, as well as safety status, are more compromised among rape survivors generally (Resnick, Acierno, & Kilpatrick, 1997) and there is the potential for these decrements to continue into pregnancy. There has been limited research on the health status of adult and childhood rape survivors as they enter pregnancy. It seems likely that rape survivors could have unmet mental, physical, and safety needs that should be addressed by maternity care that considers and is tailored to their survivor status. Practice

level theory and an evidence base demonstrating unmet needs in relation to the theory would be useful to guide trauma-informed maternity care for sexual assault survivors. The SANE guidelines are evidence-based. They have become the basis for protocol development and are a de facto practice level theory. Walker and Avant (2005) define practice level theory as having a “desired goal and prescriptions for action to achieve the goal” (p. 14). SANEs use the components of this practice level theory to guide care to address the gamut of survivor needs in the acute post-assault period. However, we are lacking an organizing framework for survivor needs after the acute post-assault period. Using the same five components of the SANE guidelines has the potential to provide a comprehensive organizing framework for research and to serve as practice level theory to guide clinician thinking on long-term outcomes consistent with the notion that unmet needs in the acute period can become chronic concerns.

Thus, the purpose of this paper is to assess the proposed comprehensive care framework's utility at predicting areas of unmet needs in survivors after the acute period. Specifically, we conduct a secondary analysis of a perinatal database to test the hypothesis that rape survivors' have decrements in their health status in pregnancy consistent with a pattern of unmet needs in the five components outlined by the SANE guidelines. The hypothesis arises from the assumption that not all sexual assault survivors received comprehensive care in the acute post-assault period.

A Practice Level Theory Based on SANE Protocols

Research has established that survivors of rape have significant physical and mental health consequences post-assault. Advances in providing evidence-based care to rape survivors that have grown out of this research include SANE services to treat and prevent post-assault sequelae. According to Ledray (1994, 1999), the role of the SANE includes providing care using

a protocol that includes five components of comprehensive care (1) treatment of physical injuries and anticipatory guidance about somatic distress (e.g., headache, nausea, sleeplessness, and pain) as outlined by Burgess and Holmstrom (1974), (2) evaluation and treatment of sexually transmitted infections (STIs), (3) pregnancy evaluation and prevention, (4) crisis intervention and counseling for mental health, and (5) the collection of forensic evidence and establishing a connection with victim services. These SANE practice goals function as a proposed standard of comprehensive care services post-assault. This set of five evidence-based components is thus useful as a practice level theory, an organizing framework with which to look for potential unmet needs in prenatal health status among past survivors of sexual assault. Even though the services provided by SANEs are not available at all locations where sexual assault survivors may pursue care or even utilized by all survivors, these five components of comprehensive care still represent the standard of post-assault care that nurses should strive to provide (World Health Organization & United Nations High Commissioner for Refugees, 2004). Table 1 integrates the SANE goals with the five comprehensive care components and their conceptual definitions then links these to how they are operationalized in the database analyzed below.

Background

Because our focus is on the five components of care that include STI prevention and pregnancy prevention, our literature review focused on papers with the narrow definition of vaginal rape, as opposed to the broad spectrum of sexual assaults. We included only studies that focused on pregnancy by using the keywords “sexual abuse,” “rape,” “sexual assault,” or “intimate partner violence” and each of the five components of comprehensive care (i.e., “substance abuse,” “prenatal care,” “pregnancy wantedness,” “sexually transmitted diseases,” “mental health,” and “quality of relationships” and/or “interpersonal violence”). There were 11

articles that provide background information tightly related to our research question, “Do rape survivors have decrements in mental health, physical health, and safety status, or unmet needs in these domains in future pregnancies?” We summarize these papers in relation to the comprehensive care framework in Table 2. The samples from the studies were obtained from diverse settings, including an emergency department, midwifery practices, an alternative high school, and a mental health clinic. Three main findings emerged across these papers: (1) There is evidence of unmet needs for comprehensive care among survivors going into pregnancy; (2) There is evidence of adverse pregnancy outcomes that may warrant trauma-informed tailored prenatal care; and (3) There is variance between trauma severity and outcomes.

There were several studies that identified unmet needs for comprehensive care in the antenatal period as evidenced by impaired physical health status, substance use, increased rates of infection, higher rates of pregnancy unwantedness, adverse mental health outcomes, and the potential for revictimization in pregnancy. Few studies focused on physical health status going into pregnancy, but there were two that found a higher pre-pregnancy body mass index (BMI) (Lukasse, Schei, Vangen, & Oian, 2009; Nerum et al., 2010). This could indicate a decrement in health status since being overweight in youth is associated with obesity in older adulthood and since maternal obesity in pregnancy is associated with adverse pregnancy outcomes such as gestational hypertension, gestational diabetes, preeclampsia, macrosomia, congenital anomalies, and cesarean section (Davies et al., 2010; Yazdani, Yosofniyapasha, Nasab, Mojaveri, & Bouzari, 2012). Past research in the clinical and epidemiological literature (Eberhard-Gran, Schei, & Eskid, 2007; Golding, Stein, Siegel, Burnam, & Sorensen, 1988; Seng, Clark, McCarthy, & Ronis, 2006) also has identified higher rates of somatic complaints in survivors of sexual assault such as headache, sleep disturbances, and nausea. There were two studies that noted somatic

disturbances among sexual assault survivors such as pelvic pain (Van der Hulst et al., 2006) and an increase in common pregnancy complaints including such somatic problems as headache, nausea, and tiredness (Lukasse et al., 2009). There was a correlation between rape and cigarette use and alcohol consumption during pregnancy (Leonardson & Loudenburg, 2003; Lukasse et al., 2009; Nelson, Uscher-Pines, Staples, & Grisso, 2010; Van der Hulst et al., 2006). Additionally, three studies found increased rates of infection including bacterial vaginosis, Chlamydia, gonorrhea, and trichomoniasis in pregnant survivors of rape and sexual violence (Lukasse et al., 2009; McFarlane, 2007; Nelson et al., 2010). Three studies also demonstrated a higher incidence of unwantedness in pregnancies that were the direct result of a rape, leading to higher numbers of elective abortions, spontaneous abortions, and adoptions (Holmes, Resnick, Kilpatrick, & Best, 1996; McFarlane, 2007; Nerum et al., 2010). One study also used hazard analyses to demonstrate that women who experience sexual abuse in childhood and adolescence are at increased risk of early pregnancy or a pregnancy that occurs in adolescence (Young, Deardorff, Ozer, & Lahiff, 2011). However, the strongest and most consistent associations were found between rape history and increased rates of depression including post-partum depression, stress, anxiety, mental distress, and posttraumatic stress disorder (PTSD) (Eberhard-Gran, Slinning, & Eskild, 2008; Garabedian, Lain, Hansen, Garcia, Williams, & Crofford, 2011; Holmes et al., 1996; Lukasse et al., 2009; Nelson et al., 2010; Osborne & Rhodes, 2001; Van der Hulst et al., 2006). One study also considered the association of rape with intimate partner violence, taking into consideration the concept of revictimization (McFarlane, 2007). Low sociodemographic status is both a risk factor for and an outcome of sexual trauma. The majority of the 11 studies noted a higher prevalence of women who were young, poor, less educated, and minorities among participants in these pregnancy studies who were rape survivors (Leonardson

& Loudenburg, 2003; Lukasse et al., 2009; Nelson et al., 2010; Nerum et al., 2010; Osbourne & Rhodes, 2001; Van der Hulst et al., 2006; Young et al., 2011). These findings from the literature consistently show decrements in the health status of survivors or unmet needs in relation to the five components of comprehensive care.

Additional findings emerged that were unrelated to the current purpose of validating the comprehensive care model as a framework. However, these findings are important to consider in relation to maternity services for survivors more broadly and we summarize them here. These include emotional implications and birth outcomes. Women forced to have sex before the age of 16 were found to have fewer people to help them in times of need and to have decreased levels of optimism (Nelson et al., 2010). Women who had experienced a sexual assault reported more internal beliefs concerning their health locus of control, higher levels of conflicted feelings about sexuality, and increased levels of autonomy (Van der Hulst et al., 2006). Increased levels of fear about labor and delivery also were found among women with a previous history of sexual violence and abuse (Eberhard-Gran et al., 2008; Lukasse et al., 2009). Several of the studies found less well-being and increased labor complications in the rape survivor group (Eberhard-Gran et al., 2008; Nerum et al., 2010; Van der Hulst et al., 2006). There also was an increase in the rates of cesarean sections and operative vaginal deliveries, as well as a longer second stage of labor among rape survivors (Nerum et al., 2010; Van der Hulst et al., 2006).

One factor that emerges from the literature is that there is a range of risk and resilience for long-term problems among rape survivors. A certain proportion of survivors are resilient, meaning they had endured a traumatic event but had not developed PTSD or have had their needs fully met at the time of the trauma. Studies point out the need to individualize assessment and to offer interventions commensurate with severity of sequelae at the time of pregnancy

(Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). The studies reviewed here identified a number of sequelae related to the patient's personal history and their current socioeconomic status, suggesting that the assault itself, contextual factors, and sequelae all may contribute to adverse outcomes. Additionally, a number of the studies lacked a specific description of the duration, severity, or circumstances associated with the rape or past sexual abuse (Lukasse et al., 2009; Nelson et al., 2010; Osborne & Rhodes, 2001; Van der Hulst et al., 2006). Lack of severity measures or specific definitions of rape and health outcomes in past research may have led to an underestimation of the impact of past sexual victimization on current pregnancy outcomes. These authors discuss the need for prospectively designed studies that offer a comprehensive assessment of these factors.

A final factor that emerges from a few of the studies is consideration of a life course perspective, measuring outcomes based on the timing of sexual assault by comparing whether it occurred in childhood or adulthood (Garabedian et al., 2011; Young et al., 2011). These results indicate that women raped in childhood had unmet needs in pregnancy prevention as evidenced by early pregnancies and mental health outcomes related to the timing of the assault (Nelson et al., 2010; Young et al., 2011). These studies indicated that the timing of sexual assault in the survivor's life course may therefore impact the occurrence of future assault, or revictimization, as well as the physical and mental health status of the survivor.

To summarize, the literature reviewed here provides support for the notion that some rape survivors have unmet needs during all phases of pregnancy when compared to women without a history of rape. Specifically, vaginal rape survivors were more likely to have unmet needs in relation to the following components of comprehensive care due to their increased risk within each category: (1) physical care that could incorporate such aspects as higher BMI's, more

somatic disturbances, and increased substance abuse during pregnancy, (2) pregnancy prevention, including higher rates of elective and spontaneous abortions and unwanted or unplanned pregnancies from a rape-related pregnancy as well as a higher risk of early pregnancies, (3) STI screening that includes increased rates of gonorrhea, Chlamydia, trichomoniasis, and bacterial vaginosis, (4) psychological disturbances such as depression, anxiety, and/or PTSD, and (5) legal and safety concerns in connection with current experiences of interpersonal violence (Table 2).

Methods

We conducted a secondary analysis to provide an empirical basis for trauma-informed maternity care that tests the hypothesis that post-assault survivors entering prenatal care are more likely to have unmet needs in health status across the five comprehensive care components. Our analysis takes into account the two additional factors supported by the literature retrieved. We will attend to assault severity by focusing on cases of vaginal rape (i.e., involving penetration) and by modeling the subjective impact at the time of the trauma and over the last year. The analysis will also compare the effect of assault early in the life course (<16 years of age) versus in adulthood. Thus, the goal of this analysis is to consider within a single study all of these identified factors.

Design

This is a secondary analysis of a prospective three-cohort study that was designed to determine the effects of PTSD on pregnancy outcomes among diverse nulliparous women (NIH R01 NR008767, PI Seng). The data utilized for this analysis are from women enrolled for follow-up via diagnostic structured interviews in early pregnancy ($n = 1,049$) who had prenatal chart data ($n = 947$).

Recruitment and Procedures

Recruitment occurred at maternity clinics in three health systems in the Midwestern United States. Eligibility was determined by obstetric clinic nurses based on (1) being 18 or older, (2) expecting a first infant, (3) being able to speak English without an interpreter, and (4) initiating prenatal care at less than 28 weeks gestation. Eligible women were invited to participate in a telephone survey about “stressful things that happen to women, emotions, and pregnancy.” The surveys were conducted by a survey research organization (DataStat, Ann Arbor, Michigan) using a computer-assisted telephone interview (CATI) program to conduct a standardized psychiatric diagnostic interview designed for use with lay interviewers. The interviews took place from August 2005 through October 2007. All interviews began by confirming eligibility and obtaining a verbal informed consent including an explanation of the Confidentiality Certificate protections. Institutional Review Board approvals were obtained from all three health systems where recruitment took place.

Chart review was conducted on two sites’ paper charts using a standardized chart abstraction form. Reliability was established early in the project by training, creating decision tools, and revising the form until inter-rater agreement reached 92.7% (Seng, Mugisha, & Miller, 2008). A 5% audit over the life of the project resulted in 94.4% agreement, which is considered excellent reliability (Waltz, Strickland, & Lenz, 1991). The third site used an electronic medical record. Items were extracted, downloaded, and transformed to a flat spreadsheet for cleaning and recoding in SPSS. Manual reading of individual patient electronic medical records was done to redress errors in original data entries, such as data missing due to being entered in the wrong field by the clinician.

PTSD Diagnosis and Cohort Assignment

Posttraumatic stress disorder diagnosis was determined in accordance with the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV]; American Psychiatric Association, 1994). Women were assigned to one of three cohorts for follow-up: lifetime PTSD-diagnosed cases, trauma-exposed but resilient controls that did not develop PTSD, and non-exposed controls. Women not meeting any cohort definition, usually due to having partial PTSD, were not enrolled for follow-up and thus were not included in these analyses. For the purposes of this analysis, the PTSD-diagnosed cohort was divided to distinguish those who met diagnostic criteria for PTSD currently and those with a lifetime history of PTSD who no longer met diagnostic criteria, resulting in four groups for analysis: (1) current PTSD, (2) lifetime PTSD, (3) non-exposed, and (4) trauma-exposed, resilient.

Rape Survivor Classification

Participants were classified as rape survivors if they answered yes to either or both of the following items: “Before age 16, did you ever have oral, anal, or genital sex when you didn't want to because someone forced or manipulated you in some way or threatened to harm you if you didn't? And what about after age 16?” There are three mutually exclusive grouping possibilities: childhood-only rape, adult-only rape, and both childhood and adult rape. We expect the number in the last category to be small. Because the sequelae of childhood rape are so severe (Felitti et al., 1998 & Edwards, Holden, Felitti, & Anda, 2003), we expect women with a history of rape across both periods in the life course to have characteristics more closely resembling childhood rape survivors and so we will place them in that category.

Measures

The study used well-established measures, which have previously been described in detail (Seng, Low, Sperlich, Ronis, & Liberzon, 2009), so we only briefly review the instruments

used to collect the data pertinent to this secondary analysis. The Centers for Disease Control's Perinatal Risk Assessment Monitoring Survey (PRAMS) was used to assess the demographic characteristics of the sample, substance use, and pregnancy wantedness (Beck et al., 2002). In order to assess the negative outcomes in comprehensive care among rape survivors, pregnancy wantedness was reverse coded to capture pregnancy unwantedness. A dichotomous variable was created to designate any substance use in pregnancy including any tobacco use, illicit drugs, and/or one or more alcoholic drinks per week. The parent study used a five-factor risk index to model sociodemographic status in relation to PTSD (Seng et al., 2009). These risk factors include being African American, a teenager (18–20 years in this study), living in poverty (< \$15,000), having a secondary education or less, or living in a neighborhood with a higher crime rate than the United States average (Brewin, Andrews, & Valentine, 2000). The high crime neighborhood variable was computed by using zip codes and the Federal Bureau of Investigation 2000 average crime rates (simplymap.com) to code individuals as living in a zip code with a rate higher or lower than the United States average. These risk factors were summed to create an index of high socioeconomic (SES) risk (0–5), which we used in a nominal form where 0 or 1 is low risk and 2 or more is high SES risk (Sameroff & Rosenblum, 2006; Seng et al., 2009). The Life Stressor Checklist is a behaviorally specific questionnaire that uses non-legal language to assess for 29 potentially traumatic events using “yes or no” questions (Wolfe & Kimerling, 1997). The elicited traumatic events are then assessed for whether or not the exposure met the *DSM-IV* (American Psychiatric Association, 1994) criteria including whether the participant felt fear, helplessness, or horror. After the participant's list of exposures is generated, she is then asked to indicate her first- and second-worst trauma exposures, more in-depth questioning then determines the age at which these “index” trauma exposures occurred and the

impact on the woman's life at the time (rated as 1 = no impact, 2 = moderate impact, 3 = extreme impact), followed by the impact over the last year rated on the same scale. For every woman who reported index trauma exposures, we reduced data by creating a sum of the impact scores for both index exposures at the time of the trauma and over the last year. Because not all women report an index trauma in their lifetime, some impact scores are zero. The impact scores only refer to sexual assault if that was an index trauma. The Abuse Assessment Screen (AAS) was used to determine intimate partner violence occurring in the past year (McFarlane, Parker, Soeken, & Bullock, 1992). The National Women's Study PTSD Module (NWS-PTSD) is a version of the Diagnostic Interview Schedule that was previously used by the National Crime Victim Center to assess for PTSD in an epidemiological study of women. It is designed as a structured telephone diagnostic interview that can be administered by lay interviewers and has demonstrated adequate sensitivity (0.99) and specificity (0.79) in past studies when compared to the Structured Clinical Interview for DSM Disorders (Kilpatrick et al., 1994; Resnick et al., 1993). The Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) was used to measure nausea and vomiting in pregnancy (Koren et al., 2002). For the purposes of this analysis, we looked at moderate symptoms (PUQE score of 7–12) and severe symptoms (PUQE score of 13–15) (Koren et al., 2002). Additionally, due to the absence of a variable that specifically assessed for physical health status or physical distress, a dichotomous variable was created that identified the presence of either a pre-existing chronic condition per self-report in the prenatal medical history or the presence of moderate to severe symptoms on the PUQE survey. The presence of any infections in pregnancy was obtained from the chart and included any prenatal incidence of HIV, Chlamydia, gonorrhea, syphilis, herpes, condyloma, trichomoniasis, yeast, bacteria vaginosis, Group B Streptococcus (GBS), or urinary tract infections. These

dichotomized variables are used in the analysis as proxies for evidence of unmet needs in relation to the components of comprehensive care depicted in Table 1.

Data Analyses

Data analysis began with an evaluation of descriptive characteristics of the sample including demographics, rape history and classification into adult and child survivor groups, and characterization of the overall trauma history. Bivariate analyses were used to examine comprehensive care outcomes among groups. This analysis compares rape survivors with non-rape survivors and considers whether childhood rape survivors have an increased number or risk of unmet needs in pregnancy when compared to adult rape survivors. In addition to these comparisons, we present a series of regression models. The first set organizes the analysis with the practice level theory, defining the five components of comprehensive care as six dependent variables. Specifically, the dependent variables in this analysis are proxies for unmet care needs in physical care, sexually transmitted infection occurrence, pregnancy unwantedness, psychological care, and safety in subsequent pregnancies. The predictor variables are rape status, impact at the time of the trauma, and impact over the last year. Finally, the models adjust for cumulative sociodemographic stress. Taking into consideration the effect of the trauma's past year impact and past literature on the mediating effects of PTSD, it also seemed important to assess PTSD as a predictor of comprehensive care outcomes, instead of as an outcome itself. In a second set of models, we also assess the extent to which posttraumatic stress is a better predictor of decrements in health status or unmet needs than rape itself. All analyses were conducted in IBM Statistical Package for the Social Sciences 19.0 (SPSS, Inc., Chicago, IL.). All *p*-values were two-tailed and the level of significance was $<.05$.

Results

Classification of Vaginal rape

The sample of 947 women included 107 disclosures of childhood or adult rape by 99 (10.5%) of the study participants. Forty-two women were adult-only rape survivors (were raped at age 16 or older). Forty-nine women were childhood-only rape survivors (were raped while under the age of 16). Eight women were survivors of both childhood and adult rape. As explained above, those eight women who were raped in both periods of the life course are grouped with the childhood raped survivors ($n = 57$). This study demonstrated that childhood rape posed a 3.3 times increased odds for being raped again as an adult ($\chi^2 = 9.3$, $df = 1$, $p = .002$).

Demographics

The sample of 99 rape survivors ranged in age from 18–42 years (mean = 25.6) at the time of the study interview. The sample was racially and ethnically diverse with three women who reported their ethnicity to be Latina and three women who reported a Middle Eastern ethnicity. Racial demographics consisted of 55 African American/black women, 41 European American/white, one Asian, one Native Hawaiian/Pacific Islander, and one American Indian/Alaska Native. Finally, the majority of the sample (60%) reported being currently employed, while 26.3% reported being unemployed, 16% reported being a full- or part-time student, and 3% reported being a homemaker. Table 3 describes the total sample and provides a comparison of rape survivors ($n = 99$) and non-rape survivors ($n = 848$) as well as adult rape survivors ($n = 42$) and child rape survivors ($n = 57$) on the five key sociodemographic risk factors linked to PTSD and the trauma variables assessed in this study.

Attrition Analyses

This sample of women is the subset of the 1,049 women enrolled for follow-up who have prenatal chart data. The sample used for this analysis ($n = 947$) did not differ significantly ($\chi^2 = .100$, $df = 1$, $p = .751$) from the enrolled sample in terms of the proportion with high socioeconomic risk status (defined as two or more risk factors). The proportion of rape survivors in this analysis sample was not significantly different from the proportion originally enrolled ($\chi^2 = .326$, $df = 1$, $p = .568$).

Characterization of the Trauma

Of the 99 survivors, 45 reported that rape was their index trauma, or first- or second-worst life trauma. At the time of the trauma, among participants who rated rape as their index trauma, three reported no impact, 11 reported moderate impact, 30 reported an extreme impact, and one participant who rated a childhood and adult rape as her first- and second-worst traumas rated both as having an extreme impact. When recording the current impact of the trauma, six reported no impact, 11 reported moderate impact, 27 reported extreme impact, and the one participant who rated a childhood and adult rape as her first- and second-worst traumas rated both as having a moderate impact on her over the last year.

As noted in Table 3, rape survivors had significantly higher ratings of the impact at the time of the trauma with a mean rating of 5.41 ($SD = .88$) versus 3.81 ($SD = 2.32$) for those who were not rape survivors ($t(297.71) = 12.83$, $p < .001$). Rape survivors also demonstrated a statistically significant difference in their report of the last year trauma impact with a mean score of 3.96 ($SD = 1.25$) versus 2.43 ($SD = 1.67$) when compared to non-rape survivors ($t(142.40) = 11.03$, $p < .001$). No significant differences were noted between adult and childhood rape survivors on the variables of impact at the time of the trauma or last year trauma impact.

PTSD Rates

The outcomes of the 99 rape survivors in terms of PTSD were as follows: 2% disclosed that rape occurred but did not report the fear, helplessness, and horror criterion for trauma-exposure, 21% did meet the criteria but were resilient and had not developed PTSD, 38% had recovered from lifetime PTSD, and 38% were affected with current PTSD. Additional analyses revealed that there were no significant differences between adult and childhood rape survivors in lifetime PTSD (35.7% vs. 40.4%) or current PTSD (31.0% vs. 43.9%). However, PTSD rates varied based on rape status and number of lifetime traumas. When compared to non-rape survivors, rape survivors demonstrated higher rates for current PTSD (9.3% vs. 38.4%) and lifetime PTSD (16.2% vs. 38.4%). Additionally, about 15% more of the non-rape survivors were trauma resilient, meaning they had endured a traumatic event but had not developed PTSD.

Comprehensive Care Outcomes

Table 4 depicts the comprehensive care outcomes of childhood rape survivors, adult rape survivors, and non-rape survivors. Bivariate analyses revealed that rape survivors had significantly higher rates of unmet care needs in (1) physical health status as identified by pre-existing chronic conditions and/or moderate to severe PUQE scores and any substance use in pregnancy, (2) STI screening as measured by the presence of any infection in pregnancy, (3) psychological care or the presence of current PTSD, and (4) legal/safety as recognized by current physical or sexual abuse. There were no significant differences among groups in pregnancy unwantedness. In fact, all three groups reported similar rates (50%) of pregnancy unwantedness, which is consistent with the literature on planned pregnancies (Finer & Kost, 2011). If we corrected the level of significance by Bonferroni's method for the six hypothesis tests, or six outcomes of the practice level theory, then the significant outcomes are (1) physical care as evidenced by any substance use, (2) psychological care or the presence of current PTSD, and (3)

legal/safety as recognized by current physical or sexual abuse ($p < .008$ correcting for six tests). The results also indicate that the outcomes differ slightly by adult or childhood exposure. Adult-only rape survivors had higher percentages of chronic diseases and/or moderate to severe PUQE scores while childhood rape survivors demonstrated higher percentages of substance abuse in pregnancy.

Comprehensive Care Outcomes Modeling

In order to assess the trauma variables that predicted poor outcomes for comprehensive care, we modeled rape status as the first step, trauma impact at the time of the trauma and trauma impact over the last year as the second step, and then adjusted for sociodemographic risk factors as the final step in the models for all six comprehensive care outcomes. This model, as depicted in Table 5, revealed that of the six outcomes, rape status significantly predicts five outcomes including chronic conditions (1% of variance), substance use (1% of variance), infections (1% of variance), mental health (7% of variance), and current abuse (10% of variance). Impact at the time of the trauma exposure is significantly predictive for chronic conditions only. Last year impact is significantly predictive of all six outcomes, even when the rape itself was not independently predictive. However, the strongest association with last year impact was with the mental health outcome, explaining 29% additional variance. Taking socioeconomic risk into account showed different patterns across all six outcomes. Socioeconomic risk contributed a small amount of variance to substance use (1%), mental health (1%), and current abuse (9%). When socioeconomic risk was taken into account in relation to chronic conditions the impact variables were no longer independently predictive and socioeconomic risk explained an additional 9% of variance. Finally, socioeconomic status became the only significant predictor in relation to pregnancy unwantedness and infection.

Table 6 depicts the final model using rape status, PTSD status, and sociodemographic status to predict the comprehensive care outcomes of physical care, pregnancy prevention, infection prevention, and legal/safety. Rape status alone significantly predicts chronic conditions (1% of variance), any substance use (1% of variance), any infection (1% of variance), and current abuse (10% of variance). Posttraumatic stress disorder independently predicts all outcomes except chronic conditions, mediating the relationship of rape history with substance use and infection and moderating the association with current abuse. Posttraumatic stress disorder also significantly predicts pregnancy unwantedness (18% of variance). Taking socioeconomic risk into account again shows a different pattern across the five outcomes contributing little effect to chronic condition status, an additive effect with substance use (1%) and current abuse (9%), and it becomes the only significant predictor in relation to pregnancy unwantedness (adding 20% variance) and infection (adding 29% variance).

These analyses demonstrate that PTSD and subjective reports of severity as seen in the last year's impact are essentially proxies for each other. Both variables have significant impact on the overall models. Rape status itself remains independently predictive of somatic distress as measured by chronic conditions and/or a moderate to severe PUQE score, substance use, infections, mental health, and current abuse. However, substance use is better explained by the last year trauma impact or PTSD. Finally, pregnancy unwantedness and the presence of infection seem to be much more strongly related to the woman's socioeconomic status.

Discussion

Examination of the theory, literature, and this empirical analysis together provide evidence of the five components of comprehensive care as a useful practice level theory to guide assessment of unmet needs in pregnancy. This integrated study found that there may be unmet

needs in pregnancy related to all five components of comprehensive care including (1) physical care, (2) pregnancy prevention, (3) STI screening, (4) psychological care, and (5) legal care. Infection in pregnancy and pregnancy unwantedness appear mainly to be factors for disadvantaged women as characterized by sociodemographic status. Posttraumatic stress disorder was apparent not only as an outcome but also as a predictor of substance use, pregnancy unwantedness, infections, and current abuse. The analyses also suggested that women raped in childhood are at an increased risk for substance use in pregnancy. However, overall the unmet needs for comprehensive post-assault care among pregnant women did not differ dramatically based on the timeframe of the life course in which the trauma occurred.

These results are consistent with past work that has identified higher rates of tobacco use during pregnancy among women with PTSD and trauma history (Lopez, Konrath, & Seng, 2011), higher rates of infection among those who have survived sexual victimization (Lukasse et al., 2009; McFarlane, 2007; Nelson et al., 2010), increased depressive symptoms in pregnancy among those who have survived past sexual assault (Söderquist et al., 2009), and higher rates of future abuse, or revictimization, among those who have survived a sexual trauma (Messman-Moore & Long, 2000).

An additional finding was the higher rates of infection among rape survivors in pregnancy, especially in those with PTSD. This increased risk of infection may be related to more sexual contacts (as noted by Wingood & DiClemente, 1998) or potentially from PTSD's impact on the immune system. Past work by Altemus, Cloitre, and Dhabar (2003) has found that increased cell-mediated inflammatory reactions are greater in individuals with PTSD, which may influence the acquisition or persistence of infection among pregnant women with PTSD.

Adult rape survivors and those with a high impact rating at the time of the trauma and over the last year demonstrated higher rates of pre-existing chronic conditions and/or moderate to severe PUQE scores. This study also identified that rape survivors had higher rates of these somatic disturbances. Post-hoc analysis of greater detail showed generally higher rates across International Classification of Diseases (9th rev.; ICD-9; 2005) system categories (Figure 1). This clinical research finding is consistent with empirical findings of functional pain diagnoses among women with emergency room visits for rape and battering where the associations were generally mediated by mental health sequelae (Seng et al., 2006).

Comprehensive psychological assessment of pregnant women therefore has the potential to lend itself to improved pregnancy outcomes. Women with PTSD are at greater risk for adverse outcomes including preterm delivery (Rogal et al., 2007), low birth weight (Seng et al., 2011), and increased anxiety related to labor (Söderquist et al., 2009). This is consistent with the results of the integrative literature review that identified adverse pregnancy outcomes related to a history of rape. By improving comprehensive care during pregnancy in order to meet the unique needs of rape survivors, we may be able to improve the adverse outcomes occurring during pregnancy and the postpartum.

Limitations to keep in mind arise primarily from the nature of secondary analysis. First, the variables used in this analysis were proxies that may not have accurately captured all of the components of comprehensive care. Additionally, the unstructured clinical questionnaire that captured the variable of pre-existing chronic conditions may not have captured all occurrences of this variable due to underreporting. Original data collection could have provided more accurate variables with which to assess all components of comprehensive care.

There also are strengths to this study, which are adequate to support changes in practice. First, this secondary analysis utilized a large pregnancy database specifically designed to evaluate the effects of trauma in pregnancy. Second, the purpose of this research project was theory-driven and innovatively combined practice level theory, an integrative review of the literature, and empirical exploration. The theoretical framework and literature review guided data analysis and interpretation of results, thus contributing to the application of the results in practice and research.

Implications for future research include a need for studies of somatic distress among post-assault survivors and how those disorders may influence pregnancy outcomes. Additionally, this analysis did not explore pregnancy outcomes; therefore future analyses should focus on the relationship of past sexual trauma and pregnancy outcomes within the framework of comprehensive care.

The implications for clinical practice follow logically from these concerted pieces of evidence. First, it is essential that we consider new models of antenatal care that are trauma-informed and will therefore meet the distinct needs and desires of those who have survived a sexual trauma and may or may not be affected by PTSD. However, in order to provide trauma-informed prenatal care we also must be able to assess for a sexual trauma. This may involve using simple screening questions or a screening tool like the Prenatal Event History Calendar (Munro, Dahlem, Lori, & Martyn, 2012) that captures the contextual factors of a recent trauma or could capture life course events as well as a measure to diagnose and capture the symptoms of PTSD such as the PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993). Past work on comprehensive care models for the vulnerable population of substance abusing pregnant women have demonstrated positive outcomes (Jansson et al., 1996). It is therefore feasible to

consider a model for comprehensive prenatal care that would address the specific needs of the vulnerable population of pregnant sexual assault survivors.

Second, it is also important to consider the care women receive at the time of a sexual trauma. This may include evaluating whether or not rape survivors are aware of their options for comprehensive care. Additionally, it is crucial to investigate how survivors are accessing care and how they desire to access care. This may include considering whether rape survivors are accessing over-the-counter options for post-assault care such as emergency contraception. And if they are accessing these options, are they also investigating what other forms of care are available? There may be situations where sexual assault survivors have purposely not pursued all components of comprehensive care but might now be open to addressing resulting unmet needs.

The clinical evidence base would benefit from additional research. In the meantime, evidence based principles articulate a trajectory of providing care using available evidence even if it is limited to anecdotal reports and expert opinion (Rice, 2008). Clinicians are first encouraged to seek the highest level of evidence available to them (Rice, 2011). Then, individual clinicians can use an informed consent process with clients to explain what is known and to arrive at a tailored plan of care that is consistent with the client's personal beliefs and contextual factors (Rice, 2011). The concepts of “missed opportunities for care” and “catch-up care” may be very applicable in this situation (Munro, 2012). This comprehensive care framework can therefore serve as a guide for assessment and determining what type of catch-up care may be necessary for pregnant women with a history of rape, either because they never received this care or because they continue to have unmet needs. Thus, the framework explicated in this article indicates that there are potential missed opportunities for providing survivors comprehensive care in the antenatal period by neglecting to assess trauma history (Munro, 2012).

Conclusion

Results of this analysis suggest that this practice-level theory is useful for organizing research and, likely, clinical practice related to rape survivors' long-term health status when there have been unmet needs for comprehensive care post-assault. The empirical validation of the value of this theoretical framing had findings within a single study that were consistent with results of findings previously spread across multiple studies. Our findings affirmed that the five elements of comprehensive care described in the SANE model are germane to survivors' antepartum health status. We found evidence that some rape survivors' health and safety status in pregnancy is compromised in a pattern indicative of unmet post-assault needs across all five categories. Unmet needs were most pronounced in relation to PTSD and among survivors who reported a high impact of the assault on their lives in the year preceding pregnancy. The statistical models indicated that PTSD, a sequelae affecting up to 80% of rape survivors in their lifetime (Breslau, Davis, Andreski & Peterson, 1991; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993), is a very strong predictor of other decrements.

These findings also highlight that some survivors are resilient, whether from their own hardiness or thanks to appropriate post-assault care they may have received but which was not measured in the parent study. Clinicians who provide maternity care could use this framework to help distinguish those who are resilient from those experiencing ongoing distress or PTSD. It is well-established that both childhood and adult sexual assault survivors, especially those who do not recover in the immediate months post-assault, experience mental and physical morbidity across the lifespan. Pregnancy occurs early enough in the life course that interventions could have substantial influences over the course of a survivor's lifetime.

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Table 2.1. Operationalizing Practice Level Theory and Comprehensive Care

Practice Level Theory			Operationalization in Secondary Analysis	
SANE goals	Components of comprehensive care	Conceptual definitions of comprehensive care	Components of care being assessed from STACY data	Indicators being assessed from STACY data
1. To assess injuries and provide anticipatory guidance about somatic distress (e.g. headache, nausea, sleeplessness, pain) 2. Refer for follow-up medical care if necessary	Physical Care	Treatment of physical injuries or other sequelae of the assault	Physical health status	1a. Pre-existing chronic conditions or moderate or severe PUQE score 1b. Any substance abuse during pregnancy
3. Evaluate pregnancy risk and offer prevention accordingly	Pregnancy Prevention	Pregnancy prevention including options if emergency contraception is not effective	Pregnancy wantedness	2. Unwantedness of pregnancy
4. Evaluate & treat for STIs	STI Screening	STI screening and treatment	STIs in pregnancy	3. Any Infection
5. Refer for follow-up counseling	Psychological Care	Psychological care for PTSD and other mental health sequelae	Psychological care in pregnancy	4. Current PTSD
6. Forensic evidence collection and documentation 7. Crisis intervention 8. Protect the survivor from further harm 9. Enhance the ability of law enforcement to collect evidence and successfully prosecute	Legal Care	Legal care including safety from the perpetrator and the ability to report the assault and press charges if the survivor desires	Legal/safety in pregnancy	5. Current abuse

Table 2.2. Literature Review

Elements of Health Outcome: Components of Comprehensive Care					
Conceptual Framework	Physical care of injuries or ailments related to assault	STI screening	Pregnancy prevention, including options if Plan B is not effective	Psychological care	Legal involvement including safety from the perpetrator and ability to press charges if the victim desires
Empirical support for its importance in pregnancy	Strong	Present	Strong	Strong	Indirect
Applicable Manuscripts (By first author only)	Leonardson, 2003 Lukasse, 2009 Nelson, 2010 Nerum, 2009 Van der Hulst, 2006	Lukasse, 2009 McFarlane, 2007 Nelson, 2010	Holmes, 1996 McFarlane, 2007 Nerum, 2009 Young, 2011	Eberhard-Gran, 2008 Lukasse, 2009 Garabedian, 2011 Nelson, 2010 Osbourne, 2001 Van der Hulst, 2006	McFarlane, 2007
Summary	Several studies found less well-being and more pregnancy conditions and labor complications in rape survivor group. Also a strong correlation between cigarette use during pregnancy and alcohol consumption. Women in the rape group were also found to have a higher BMI.	Two studies found increased rates of bacterial vaginosis, Chlamydia, gonorrhea, and trichomoniasis among survivors of rape and sexual violence.	Studies demonstrated a much higher incidence of unwantedness in rape-related pregnancies leading to higher numbers of elective abortions, spontaneous abortions, and adoptions. One study also demonstrated early pregnancy among childhood sexual abuse survivors.	Consistent findings that rape is associated with depression, anxiety, and PTSD.	Only one study considered intimate partner violence in pregnancy as a predictor of rape (or the concept of revictimization). Thus, the rapist and batterer could be the same or the survivor could be vulnerable to future abuse.

Table 2.3. Comparison of Demographic and Trauma Risk Factors for Rape Survivors versus Non-Survivors (%/n)

	Rape Survivors n=99	Non-Survivors n= 848			Assault Took Place in Adulthood n=42	Assault Took Place in Childhood* n=57		
Demographic Factors			χ^{2**}	<i>p</i> value			χ^{2**}	<i>p</i> value
African American	55.6 (55)	41.3 (350)	7.39	.007	42.9 (18)	64.9 (37)	4.76	.029
Teen	25.3 (25)	21.7 (184)	.65	.420	21.4 (9)	28.1 (16)	.57	.452
Poverty	36.4 (36)	20.8 (176)	12.43	<.001	33.3 (14)	38.6 (22)	.29	.591
Low Education	57.6 (57)	43.8 (371)	6.84	.009	38.1 (16)	71.9 (41)	11.33	.001
High Crime	52.5 (52)	37.1 (315)	8.83	.003	(45.2) (19)	57.9 (33)	1.55	.213
High-risk SES	62.6 (62)	43.5 (369)	13.06	<.001	47.6 (20)	73.7 (42)	7.02	.008
Rape as Index Trauma	45.5 (45)	0	404.67	<.001	45.2 (19)	45.6 (26)	.001	.970
Trauma Factors M(SD)			t (df)	<i>p</i> value			t (df=97)	<i>p</i> value
Trauma Impact***	5.34 (.88)	3.81 (2.32)	12.83 (df=297.71)	<.001	5.40 (.73)	5.29 (.98)	-.59	.556
Last Year Impact****	3.96 (1.25)	2.43 (1.67)	11.03 (df=142.40)	<.001	3.71 (1.29)	4.14 (1.20)	1.69	.095
Sum of Traumas	10.2 (4.51)	3.9 (3.11)	-13.5 (df=109.2)	<.001	9.12 (3.99)	11.05 (4.72)	2.15	.034

* Eight women were survivors of an assault that took place in childhood and adulthood; they were included in the childhood subgroup

**df=1 for all χ^2 analyses

*** Impact of index trauma at the time at the time it occurred, note that rape was the index trauma for 45.5% of survivors, thus the majority of index traumas were non-rape and this “impact” rating would be in relation to other types of trauma exposure.

****Similarly, the last year impact of the index trauma exposure refers to rape for only 45.5% of survivors who named the rape as their index trauma exposure.

Table 2.4. Comparison of Comprehensive Care Outcomes among Groups (%/n)

	Rape-Survivors n=99	Non-Survivors n=848	χ^2 <i>p</i> value*	Adult Rape Survivors n=42	Childhood Rape Survivors n=57	χ^2 <i>p</i> value*
Physical Care						
Pre-existing Chronic Conditions/ Moderate to Severe PUQE Score	63.6 (63)	53.2 (451)	$\chi^2=3.90,$ <i>p</i> =.048	76.2 (32)	54.4 (31)	$\chi^2=4.97,$ <i>p</i> =.026
Any Substance Use in Pregnancy	28.3 (28)	14.5 (123)	$\chi^2=12.60,$ <i>p</i> <.001	16.7 (7)	36.8 (21)	$\chi^2=4.85,$ <i>p</i> =.028
Pregnancy Prevention						
Pregnancy Unwantedness	54.5 (54)	51.7 (438)	$\chi^2=.30,$ <i>p</i> =.585	52.4 (22)	56.1 (32)	$\chi^2=.14,$ <i>p</i> =.710
STI Screening						
Any Infection	55.6 (55)	44.3 (376)	$\chi^2=4.50,$ <i>p</i> =.034	57.1 (24)	54.4 (31)	$\chi^2=.07,$ <i>p</i> =.785
Psychological Care						
Current PTSD	38.4 (38)	9.3 (79)	$\chi^2=69.17,$ <i>p</i> <.001	31.0 (13)	43.9 (25)	$\chi^2=1.70,$ <i>p</i> =.192
Legal/Safety						
Current Abuse (physical or sexual)	15.2 (15)	2.5 (21)	$\chi^2=38.95,$ <i>p</i> <.001	21.4 (9)	10.5 (6)	$\chi^2=2.24,$ <i>p</i> =.135

* For all χ^2 analyses, df=1

Table 2.5. Logistic Regression of Full Model

	Physical Care		Pregnancy Prevention	Infection Prevention	Mental Health	Legal/Safety
	Pre-existing Major Chronic condition/ Moderate to Severe PUQE score	Any Substance Use in Pregnancy	Pregnancy Unwantedness	Any Infection	Current PTSD	Current Abuse
Rape Status Step 1:	1.47* NR ² =.010, p=.008	1.46* NR ² =.009, p=.024	1.06 NR ² =.000, p=.700	1.34* NR ² =.006, p=.037	2.71* NR ² =.073, p<.001	3.38* NR ² =.101, p<.001
Rape Status Impact at time of Trauma Last Year Impact Step 2:	1.54* 1.13* .84* NR ² =.020, p=.027	1.15 1.06 1.31* NR ² =.066, p<.001	.87 .95 1.32* NR ² =.044, p<.001	1.15 .93 1.29* NR ² =.036, p<.001	1.77* 1.14 2.72* NR ² =.363, p<.001	2.35* 1.32 2.01* NR ² =.237, p<.001
Rape Status Impact at time of Trauma Last Year Impact SES Step 4:	1.62* 1.07 .984 .310* NR ² =.111, p<.001	1.14 1.10 1.22* 1.72* NR ² =.080, p=.005	.83 1.04 1.06 5.82* NR ² =.229, p<.001	1.17 1.04 .95 9.96* NR ² =.325, p<.001	1.74* 1.28 2.39* 4.13* NR ² =.411, p<.001	2.42* 1.55 1.59* 14.37* NR ² =.322, p<.001

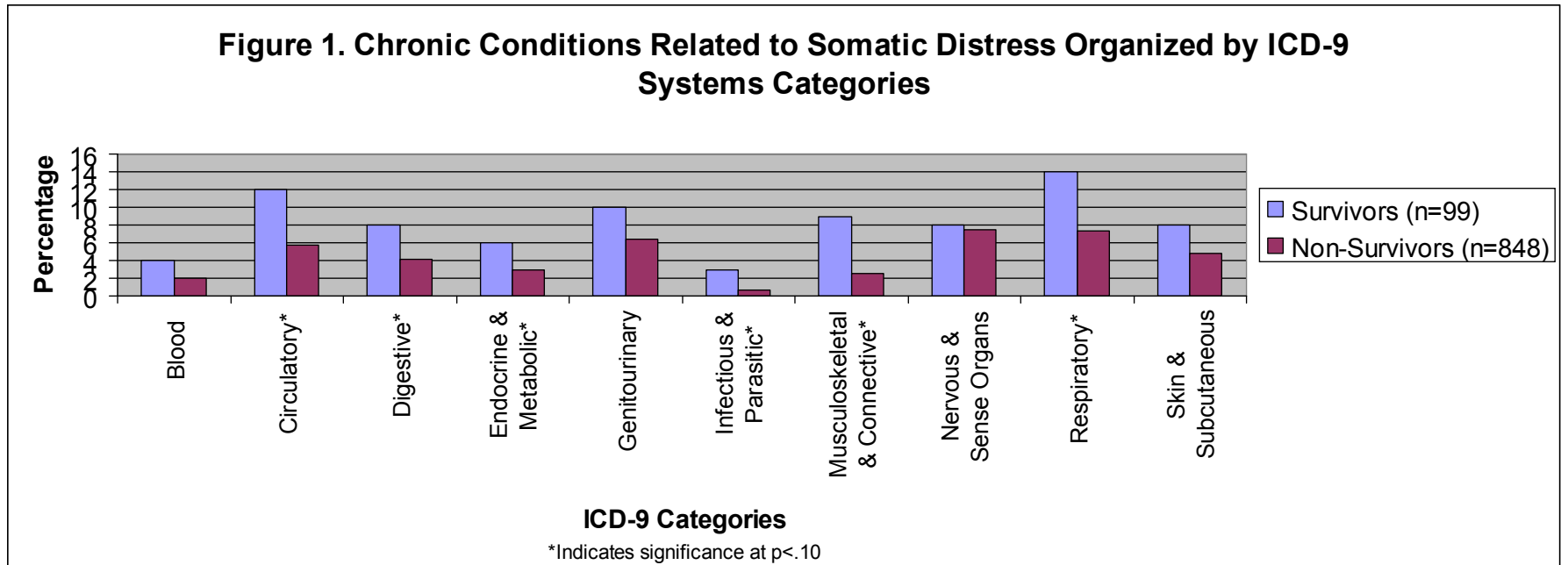
* Indicates a significant *p*-value (*p*<.05) for the OR shown

Table 2.6. Logistic Regression with PTSD as a Predictor

	Physical Care		Pregnancy Prevention	Infection Prevention	Legal/Safety
	Pre-existing Major Chronic Condition/Moderate to Severe PUQE score	Any Substance Use in Pregnancy	Pregnancy Unwantedness	Any Infection	Current Abuse
Rape Status	1.47*	1.47*	1.06	1.34*	3.38*
Step 1:	NR ² =.010, <i>p</i> =.008	NR ² =.009, <i>p</i> =.024	NR ² =.000, <i>p</i> =.700	NR ² =.006, <i>p</i> =.037	NR ² =.101, <i>p</i> <.001
Rape Status	1.50*	1.15	.93	1.14	2.35*
PTSD Status	.96	1.60*	1.27*	1.37*	2.63*
Step 2:	NR ² =.010, <i>p</i> =.582	NR ² =.059, <i>p</i> <.001	NR ² =.018, <i>p</i> <.001	NR ² =.036, <i>p</i> <.001	NR ² =.211, <i>p</i> <.001
Rape Status	1.60*	1.15	.88	1.12	2.66*
PTSD Status	1.12	1.49*	1.03	1.07	2.02*
SES	.30*	1.73*	6.12*	9.41*	14.82*
Step 3:	NR ² =.110, <i>p</i> <.001	NR ² =.074, <i>p</i> =.004	NR ² =.224, <i>p</i> <.001	NR ² =.325, <i>p</i> <.001	NR ² =.301, <i>p</i> <.001

* Indicates a significant *p*-value (*p*<.05) for the OR shown

Figure 2.1. Chronic Conditions Related to Somatic Distress Organized by ICD-9 Systems Categories



CHAPTER 4

Important but Incomplete: Plan B as an Avenue for Post-Assault Care

Lifetime prevalence rates of rape have been cited as one in six to seven American women (Kilpatrick, Edmunds, & Seymour, 1992; Tjaden & Thoennes, 2006). Rape disproportionately affects young women between the ages of 11-24, with 79.6% of females reporting their first completed rape occurred before age 25 (Black et al., 2011). In fact, one in six to eight female high school students report a history of rape (Bagley, Bolitho, & Bertrand, 1997; Child Trends Data Bank, 2012; Erickson & Rapkin, 1991; Krebs, Lindquist, Warner, Fisher, & Martin, 2009), while one in four to five American women will be raped during their college career (Fisher, Cullen, & Turner, 2000; Koss, Gidycz, & Wisniewski, 1987). Rape is known to be one of the most traumatic events that can occur to an individual due to the loss of power, control, and autonomy over one's body (Hilberman, 1976).

In the past decade, there have been numerous advances to improve the control women have over their reproductive health. One of these developments includes the approval of emergency contraception, such as Plan B, as an over-the-counter (OTC) product. Plan B® is a registered trademark of Women's Capital Corporation, a subsidiary of Teva Women's Health Inc., all future references to Plan B will be referencing this product. Plan B, otherwise known as the morning-after pill or emergency contraception, was originally approved for use in 1999 (Scolaro, 2007). On August 24, 2006 Plan B was approved as a nonprescription product that can be obtained by individuals age 18 and older with an identification card for proof of age (Scolaro,

2007). More recent legislation on April 22, 2009 expanded Plan B access as a nonprescription product for individuals age 17 and older (Anonymous, 2009) with expanded access to individuals age 15 and over approved in May 2013 (Szabo, 2013). Most recently, in June 2013 the Federal Drug Administration (FDA) removed all age restrictions from the purchase of OTC Plan B One-Step (Neale, 2013). Over-the-counter Plan B is an important contraceptive option for women because it empowers them to make their own decisions regarding their reproductive health, which in most instances is a positive change in health care. However, one possible unintended adverse consequence of this otherwise positive change may have occurred. Some proportion of users of Plan B may be accessing Plan B via OTC pharmacy processes in the aftermath of rape. Thus it is possible that, in an attempt to gain control of one's body, rape survivors may now be foregoing post-assault care services to obtain Plan B and comprehensive care as they might have when it was available only by prescription. This presents the possibility of missed opportunities for additional medical, legal, and psychological assistance that is considered the standard of care.

A sexual assault is defined as unwanted sexual contact in any form; rape is vaginal, anal, or oral penetration that occurred without the survivor's consent (Tjaden & Thoennes, 2006; Wolitzky-Taylor et al., 2011). Rape can include physical force, verbal manipulation, or incapacitation due to drugs, alcohol, or mental health status; the key element is that consent was not garnered (Butler & Welch, 2009). This women's health study is focused on vaginal rapes in which the survivor perceives a fear of pregnancy and will therefore not include those survivors who have survived solely an oral rape, anal rape, or vaginal rape in which pregnancy is not a concern (i.e. for survivors on birth control). The term unwanted intercourse will be used interchangeably with rape in order to recognize that not all survivors categorize or recognize

their experience as a rape. Any individual who has survived a rape will be referred to as a survivor.

Background

Plan B

Plan B is available in two forms: (a) a 0.75mg levonorgestrel (progesterone) tablet divided into two doses taken twelve hours apart or (b) under new marketing as a single 1.5mg dose (Scolaro, 2007). Plan B can be safely taken by almost every woman in need of emergency contraception including those with a history of ectopic pregnancy, migraines, liver disease, heart disease, or individuals who are breastfeeding (Dominguez et al., 2010). According to the package insert produced by Duramed Pharmaceuticals (2009), the only contraindication to Plan B is a known or suspected pregnancy. It is generally believed that Plan B is effective as a contraceptive method by preventing ovulation and tubal transport of sperm and ova; it is not an abortifacient (Sarkar, 2009; Scolaro, 2007). Studies demonstrate that Plan B can be effective for up to 120 hours after administration, but data indicate a higher risk of therapeutic failure after 72 hours (Scolaro, 2007). Plan B is generally tolerated quite well however side effects can include nausea, headache, fatigue, and abdominal pain (Scolaro, 2007).

Logically, Plan B would be used after three different scenarios: (a) contraceptive mishap or failure; (b) spontaneous intercourse; and (c) vaginal rape with a fear of pregnancy. Research on Plan B has focused on medication safety, mechanism of action, effects on promiscuity, and its availability. According to the American Congress of Obstetrics and Gynecology (ACOG, 2010), after emergency contraceptive use women should be informed about additional needs including resources for sexually transmitted infection (STI) testing and continuing contraception. Emergency contraception is used as a post-coital method around the globe. In fact, 40 other

countries legalized Plan B as an OTC medication prior to the United States; however none of these countries have addressed how OTC Plan B may be impacting post-assault care (Johnson, Williams, & Burrows, 2006). Research conducted before Plan B was available OTC found that fears about pregnancy were one of the top three concerns that influenced survivors' decisions to seek post-assault care in the emergency room (Ledray & Arndt, 1994). Since women now have the ability to address this concern without seeing a health care provider, they may be more likely to miss the opportunity for comprehensive care.

Consequences of Rape

The consequences of rape include physical harm, psychological damage, increased use of health services, and impairment of personal relationships. Specific to college rape survivors, about 20% report physical injuries (Fisher et al., 2000). Among all rape survivors, 5% become pregnant and 30% contract a STI in the post-assault period (Holmes, Resnick, Kilpatrick, & Best, 1996; Resnick et al., 2000). A survivor of sexual assault can experience a multitude of psychological reactions to the assault including a negative change in beliefs (Basile & Smith, 2011). These reactions can include anxiety, posttraumatic stress disorder (PTSD), depression, eating disorders, sleep disorders, substance abuse disorders, suicide attempts, and sexual problems in response to the assault (Chen et al., 2010; Foa & Rothbaum, 1998). Acute stress reactions include: derealization or an altered perception of reality; dissociative amnesia; depersonalization or unreality of one's sense of self; a sense of numbing or detachment; and a decreased awareness of one's surroundings (American Psychiatric Association, 2000). If these last longer than a month, the arousal symptoms such as hypervigilance, difficulty concentrating, an exaggerated startle response; re-experiencing symptoms, such as nightmares and flashbacks; and avoidance and emotional numbing symptoms become PTSD (American Psychiatric

Association, 2000; Foa & Rothbaum, 1998). Rape survivors have also been identified as having an increased risk of developing additional somatic disorders and adverse health outcomes such as pelvic pain, fibromyalgia, and irritable bowel syndrome (Paras et al., 2009; Seng, Clark, McCarthy, & Ronis, 2006). Psychological side effects that may contribute to these somatic disorders include a heightened sense of fear. Survivors report increased levels of fear for up to a year post-assault (Calhoun, Atkeson, & Resick, 1982). However, the two most frequently reported psychological responses post-assault include depression and PTSD (Koss, Bailey, Yuan, Herrera, & Lichter, 2003). A recent systematic review and meta-analysis found a two and half times increased risk of depression among rape survivors (Chen et al., 2010). Rates of PTSD among survivors of a completed rape are 32-80% as opposed to 9-15% in the general population (Breslau, Peterson, & Schultz, 2008; Foa & Rothbaum, 1998; Kilpatrick, et al., 1989; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Survivors are also nine times more likely to attempt suicide (Goodman, Koss, & Russo, 1993). Additionally, physical and sexual assault survivors visit their health care practitioner twice as often as nonvictimized women in the year subsequent to the assault (Koss, Koss, & Woodruff, 1991). This increased use of health care services post-assault leads to health care expenditures that are two and half times higher for physical and sexual assault survivors than those who have not survived a sexual assault (Koss, Heise, & Russo, 1994). The developmental impact of rape on young women has been most studied among college women. Many college students fear social consequences, so they alienate themselves from campus activities or drop out of school, and it appears that college women who experience PTSD from an assault may use substances and/or sexual behavior to reduce distress (Messman-Moore, Ward, & Brown, 2009).

Purpose

To date there have not been any studies undertaken to identify the relationship between OTC Plan B and the comprehensive care received or foregone by vaginal rape survivors. Preliminary data is needed to determine whether, in fact, a significant proportion of Plan B users are in the immediate post-assault time frame and desire or need additional services. Additionally, input from the target client population should be gathered to inform acceptable future interventions. If OTC Plan B is being utilized as the only form of care by a substantial number of women post-assault, then the health care system should consider what adaptations are warranted to respond to this unintended consequence of the Plan B OTC policy change. This research could therefore begin the transformation of the OTC Plan B pharmacy encounter from a missed opportunity for post-assault comprehensive care into a viable venue for at least informing women about their comprehensive care options. Broadly speaking, the purpose of this descriptive mixed methods study is to examine the influence of OTC Plan B on survivors who might otherwise receive comprehensive post-assault care. The study will address two specific aims.

Aim 1: Using an anonymous survey, quantify missed opportunities for comprehensive care:

1. What percent of OTC Plan B seekers are survivors using Plan B in the aftermath of unwanted intercourse?
2. What proportion of women who are survivors in the post-assault period are aware of the need to seek additional care and have the desire and intention to seek additional care?

Aim 2: Using qualitative content analysis of open-ended survey questions, assess the desires of survivors:

3. What care needs, desires, ideas, and concerns do post-assault Plan B users have that can provide initial groundwork for future intervention development?

Design

Rape is the most frequent violent crime that occurs on college campuses (Finn, 1995; Fisher et al., 2000). This higher incidence makes rape a health care issue on campuses, where rape crisis services are provided as a standard part of student affairs administration. Thus, this research project took place within university settings. This choice was a strategic decision to research a high-need population and also to begin a research trajectory where there are resources and structures to support future intervention trials. However, since the change in status of Plan B from a prescription product to an OTC product in 2006, there have not been any studies to evaluate the use of Plan B in the post-assault period as the sole type of care received. One reason could be the difficulties of conducting research on the topic of rape within the higher education context where the Clery law blurs the lines between what is within the survivor's control in terms of reporting, and what is mandated that members of the university do to assure a safe environment (i.e., Dear Colleague Letter distributed by the United States Department of Higher Education in 2011 and the Clery Act, 20 U.S.C. § 1092, most recently amended in 2008). Given this particularity of the college context, this project was conducted anonymously and on a fairly small sample and so should be considered preliminary in nature. The descriptive design and mixed method analysis explores the prevalence of Plan B use and the desires of survivors' in the immediate post-assault period. Institutional Review Board (IRB) approval was obtained from the University of Michigan, Health Sciences Behavioral Sciences IRB and from each institution involved in data collection.

A participatory action research (PAR) type of approach is well-suited both to early work on a phenomenon and to intervention design with the target client group. This can be well-accomplished with a combination of quantitative and qualitative methods since these methods

have complementary strengths and they each are suited for discovering knowledge where both quantification and explanations are needed to make a compelling case for additional research and the need for interventions. Thus, this study will use a mixed methods approach concurrently in which the qualitative data collection is embedded within the quantitative data collection for the purpose of expanding upon the development of a new phenomenon (Creswell; Klassen, Plano Clark, & Clegg Smith, 2011; Creswell, Plano Clark, Gutmann, & Hanson, 2003; Tashakkori & Teddlie, 1998). A PAR approach rests on a heritage of action research being applied to work with disadvantaged or disempowered populations and provides a conscious-raising, or conscientization, in the community by empowering members of the community in knowledge development and utilization (Freire, 1970). The PAR framework will allow a group of consultants comprised of survivors, pharmacists, psychologists, volunteers working with sexual assault survivors, and students to voice their opinion via face-to-face meetings and shape the final product and dissemination of this research. Since the overarching goal of this research is to develop an intervention for a population that is without a voice and is hidden within society, this framework will maximize the potential to improve care for this potentially disadvantaged population.

Recruitment and Procedures

This study is focused on the needs of college-age women since these women are at the highest risk of sexual assault and have the largest rate of emergency contraceptive use (Fisher et al., 2000; Kavanaugh, Williams, & Swchwarz, 2011; Koss et al., 1987). Participants were recruited from two settings if they met the inclusion criteria of (a) being age 17 or older (the age required to purchase Plan B at the time of the study) and (b) able to read and write English. The first setting included recruiting participants who were accessing Plan B at one of four

participating university pharmacies in the Midwest during the data collection period of November, 2011 to December, 2012. Low response rates from the first sample necessitated the recruitment of a second setting and sample of participants. The second setting included participants recruited in October, 2012 from an introductory level women's studies class held in a large public university in the Midwest. The recruitment and procedures are described in more detail in the companion manuscript.

Measures

Quantitative Data. The introduction letter to the study included demographic questions on age, race, ethnicity, income, and gender for those participants recruited from the classroom setting. The introduction letter also included a question about Plan B use that was used to direct participants to either (a) the prevalence and desires questionnaire and the theory-testing questionnaire or (b) just the theory-testing questionnaire.

The respondents who reported that they **were** taking Plan B due to unwanted intercourse completed the prevalence and desires questionnaire. The purpose of this questionnaire was to ascertain the prevalence of Plan B use in the post-assault period and to determine the type of care survivors' desire. The prevalence and desires questionnaire included questions from the Sexual Experiences Survey. The Sexual Experiences Survey has been described as a self-report instrument designed to reflect various degrees of sexual aggression and victimization and that has the capability of identifying hidden survivors of rape who do not acknowledge themselves as rape survivors (Koss & Gidycz, 1985). The behaviorally specific 10-item Sexual Experiences Survey was previously assessed for reliability and validity with an internal consistency Cronbach alpha of 0.74 for women and test-retest reliability over a one week interval demonstrating a mean item agreement of 93% (Koss & Gidycz, 1985). The veracity of self-reported sexual experiences

was evaluated by determining the correlation between a participant's responses on the Sexual Experiences Survey and their disclosures in an interview with a psychologist, which demonstrated a Pearson's correlation of 0.73 ($p < 0.001$) (Koss & Gidycz, 1985). The four dichotomous items from the Sexual Experiences Survey utilized in this study included questions about unwanted intercourse related to (a) continual arguments and pressure, (b) use of authority, (c) incapacitation, and (d) physical force. These items demonstrated a reliability of .50 in this study using the Kuder Richardson 20 for dichotomous variables. In the Statistical Package for Social Sciences (SPSS), the Kuder Richardson 20 is used to assess the reliabilities of dichotomous questions as a special case of Cronbach alpha in which items are binary. The reliability for the four Sexual Experiences Survey questions utilized in this study were recognized to be low but were considered to be an artifact of the small number of items and dichotomous nature of the questions.

In addition, the prevalence and desires questionnaire included items about: (a) the actual care the survivor had received (seven items); (b) the additional care they would like a referral for (seven items); (c) if they knew the perpetrator; and (d) how long ago this happened. The seven items of care the survivor did receive or desired to receive were evaluated using the elements of care called for in the standard national protocol for Sexual Assault Nurse Examiner (SANE) services (Ahrens et al., 2000; Campbell, Bybee, Ford, & Patterson, 2008; Campbell, Patterson, & Lichty, 2005; Tjaden & Thoennes, 2006). These include: (a) treatment of physical injuries; (b) pregnancy prevention; (c) STI screening and treatment; (d) psychological support; (e) forensic data collection; (f) victim services or advocacy; and (g) information about legal options (Ahrens et al., 2000; Campbell et al., 2008; Campbell et al., 2005; Tjaden & Thoennes, 2006). The seven dichotomous items in the prevalence and desires questionnaire that queried about the additional

care survivors would like a referral for demonstrated a reliability of .82 using the Kuder Richardson 20.

All respondents, including those who **were not** taking Plan B for unwanted intercourse then completed a theory-testing questionnaire. The theory-testing questionnaire included hypothetical vignettes or scenarios about: (a) environmental factors that may influence a survivors' decision-making in the post-assault period (seven items); (b) potential barriers to accessing post-assault care (seven items); (c) where the respondent thought a friend *should* receive care in the post-assault period; and (d) where that friend *would* pursue care in the post-assault period. The environmental questions were conceptualized in relation to Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1989), which was developed in regards to child development but is now often used in public health research to better understand a range of proximal and distal factors relevant to health behaviors and outcomes. The theory-testing questionnaire subscales for environmental factors and barriers demonstrated reliabilities of .759 and .644 respectively. The components of the theory-testing questionnaire and its associated reliability testing are described in more detail in the companion manuscript.

Qualitative Data. Participants who completed the prevalence and desires questionnaire because of a history of past unwanted intercourse also completed five open-ended questions pertaining to their decision-making regarding post-assault care, what the potential barriers to care are, and what interventions they believe would be most beneficial for post-assault survivors. This manuscript will specifically focus on the survey question, "If you could design a way to help other women using Plan B after unwanted sexual intercourse, what would you create for them?" in order to ascertain what desires post-assault survivors have for future intervention development. The qualitative data gathered from the open-ended questions was used to supplement the

interpretation of the quantitative data in order to provide a greater depth of understanding of survivor's decision-making and desires in the post-assault period.

Data Analyses

Quantitative Analyses. All statistical analyses were completed using the IBM Statistical Package for the Social Sciences 20.0 (SPSS, Inc., Chicago, IL) after all data had been double-entered and cleaned for accuracy. All p -values were two-tailed and the level of significance was set at $<.05$. Due to the exploratory nature of the study, small sample size ($n=47$), and the preference to risk a Type I error some trend level interpretations are presented. Alternating yes/no responses were imputed for only 1% of data points including for ambiguous data (i.e., maybe, question mark, or depends) and for non-response ambivalence where some responses were selected as either "yes" or "no". If entire sections were left blank by a participant, then this was considered to be done on purpose and no imputations were made.

Initial preliminary analyses included computing response rates for both samples including all data collection locations. An exploratory factor analysis was also completed to identify the number of factors present within the questions assessing the influence of environmental factors as outlined by Bronfenbrenner's Ecological Systems Theory. This procedure, described in detail in the companion manuscript, identified the two factors of (a) *macrosystem* - which encompasses the societal attitudes and United States culture and (b) *interpersonal factors* - which subsumes the criminal justice system, health care system, workplace, school, personal relationships with others, and sense of self.

Because this was a descriptive study that was not testing a hypothesis, the goal was to gather as large a sample size as possible rather than focus on achieving a desired power. A simple frequency was used to determine what proportion of individuals seeking Plan B were

survivors in the immediate post-assault period. Using this frequency a chi-square goodness of fit test was conducted to assess whether this observed frequency in the sample is likely statistically significantly different from the rate in the population (Pallant, 2007). Given the low response rate in the pharmacy-based survey, we also conducted a sensitivity analysis to estimate a dependable range if selection bias played a role in the pattern of response (Little & Rubin, 2002).

Analyses then included descriptive statistics based on demographics (age, race, ethnicity, and income), characteristics of the assault, characteristics of care seeking survivors *did* receive, and characteristics of desired care seeking. Finally, bivariate analyses were employed to assess the gap between the type of care participants thought a friend who had survived unwanted intercourse *should* and *would* receive.

Qualitative Analyses. Qualitative analyses were performed to analyze the data obtained from open-ended questions that describe the desires and needs of survivors who have utilized Plan B in the post-assault period. Content analysis is a useful technique when attempting to gain a broader understanding of a phenomenon that will provide new perceptions and guide future practical applications such as intervention development (Krippendorff, 2013). This analysis included two steps which were informed by the need to become immersed in the data (Polit & Beck, 2004). First, word clouds were used for initial exploration of the data to guide the conceptualization of the groupings and categories that would be created during content analysis. Then, content analysis was employed for further examination of the data. This analysis was guided by the primary investigator (MM) and a co-author (KM) and focused on the research question: “What care needs, desires, ideas, and concerns do post-assault Plan B users have that can provide the initial groundwork for future intervention development?”

Word clouds, or tag clouds, are visual depictions of text data related to a specific topic. Viègas and Wattenberg (2008) describe them as a vernacular technique that allows an individual to locate, analyze, and then communicate about patterns obtained from text data. They were originally developed for use in sorting internet data and were thus developed outside of the realm of research (Viègas & Wattenberg, 2008). However, their visual portrayal of data has been recognized as a useful supplement to more traditional qualitative analyses such as content analysis (McNaught & Lam, 2010). Word clouds are created by counting the frequency of words used by participants, where the number of utterances, or use of the word in an interview or open-ended question response, increases the size of the word. Grammatical words, such as “a,” “is,” “do,” and “the,” are not displayed, or are hidden, so that the visual depiction produced in a word cloud is focused solely on the most frequently occurring words of importance. In addition, some programs such as Tagxedo perform stemming where related words are combined into one word (e.g., fly and flies) to consolidate words with the same meaning (Leung, 2006). Initial exploration of the open-ended research questions in this study was completed using a word cloud created on the website Tagxedo (Leung, 2006). This depiction helped to guide additional qualitative analyses and interpretation with content analysis (McNaught & Lam, 2010).

The process of content analysis included three steps: (a) preparation which included a primary content analysis to select the unit of analysis and make sense of the data; (b) organizing the data with each reviewer independently reviewing for potential intervention ideas that included open coding, grouping, categorization, and abstraction; and (c) reporting the review of findings to the PAR consultants for finalization and validation of findings (Elo & Kyngas, 2007). The preparation phase was used to initially identify every utterance where a survivor refers to care needs, desires, ideas, and concerns and organize these into lists to consider during

intervention creation. At this point we determined that the level of analysis would be each idea for an intervention written at the phrase or sentence level. Next, we began the coding process where we made sure to independently mark every utterance that is salient to development of an intervention so that none is missed. The two reviewers then began to work together to organize these potential interventions into the levels of groups and categories. The final step of the organization phase involved organizing these statements into categories and lists that contributed exhaustively to elements of intervention design including format, content, style, setting, and staffing. The third and final step involved reporting these findings to the PAR consultants via an oral presentation of the findings and interpretation of the findings while yet a work in progress so that they could assist in refining the qualitative data into a tentative design.

Results

Quantitative

Preliminary analyses. Response Rates for the four university pharmacy locations ranged from 3.33% to 22.64% with a total of 341 surveys actually distributed and 55 returned for a total response rate of 16.13%. Rape survivors (n=4) composed 7.3% of the sample that returned surveys and were 1.17% of the total number of surveys distributed. The response rate for the classroom participants was 61.80%, with rape survivors (n=43) composing 26.06% of the sample that returned surveys and 16.10% of the total sample to whom surveys were distributed. Of note, one of the individuals who reported a history of a rape was a male participant. He will be removed from all quantitative analyses describing survivors because his victimization does not meet the definition of a vaginal rape being utilized for this study. The response rate achieved within the classroom setting is considered adequate within the pharmacy literature (Fincham, 2008). While the response rates within the pharmacy sample were admittedly low, they do fall

within the ranges of previously reported response rates for pharmacy clients who were handed out questionnaires at the time of purchase of a product and were asked to return them later (Smith, 1997; Whitaker, Wilson, Bargh, Chapman, & Dudley, 1995). Studies specifically undertaken within pharmacy settings to research emergency contraception have achieved response rates of lower than 10% related to the sensitive topic, time limitations, and attempts to minimize the burden of pharmacy staff (Killick & Irving, 2004; Gardner, Hutchings, Fuller, & Downing, 2001; Sommers, Chaiyakunapruk, Gardner, & Winkler, 2001)

The accuracy of rates of rape and OTC Plan B use in the post-assault period were confirmed in two ways including sensitivity analyses for determination of the potential range to address the issue of possible response bias inherent in a low-response rate and by the chi-square goodness of fit test in relation to national statistics. First, the range of OTC Plan B use in the post-assault period was confirmed by determining the actual rate of OTC Plan B use in the post-assault period among survivors in the larger sample from the classroom setting for the last year ($n=8/149$ women; 5.4%). Then, the lowest possible range for this sample was computed by assuming that all of the individuals who did not return surveys were not survivors using OTC Plan B in the last year post-assault period making the total number of OTC Plan B users in the post-assault period 8 out of 267 (full potential sample from classroom) or 3.0%. This gives a possible range of 3.0% to 5.4% for the classroom sample of survivors that did use OTC Plan B in the last year post-assault period which is fairly consistent with the pharmacy sample results of 7.3%.

A chi-square goodness of fit test indicates there was not a significant difference in the proportion of survivors of unwanted intercourse purchasing OTC Plan B identified in the pharmacy sample (7.3%) as compared with the national annual incidence of rape of 5% among

college populations (Fisher et al., 2000); $\chi^2=(1, n=55)=.598, p=.439$. The chi-square goodness of fit test also demonstrates that there is not a significant difference between the proportion of survivors of unwanted intercourse purchasing Plan B in the classroom sample in the last year (5.4%) and the national annual incidence of rape among college populations (5%; Fisher et al., 2000); $\chi^2= (1, n=149 \text{ women})=.043, p=.836$. These results indicate that the pharmacy sample and women's studies class are both representative of national rates of unwanted intercourse.

Demographics. The sub-sample of female survivors of unwanted intercourse (n=46) ranged in age from 18-29 (M=20.89, SD=3.07) years old. Survivors of unwanted intercourse were present at all data collection locations and represented a diverse range of individuals. Survivors self-reported their race as: Asian (n=2; 4.3%), Black or African American (n=2; 4.3%), White or European American (n=41; 89.1%), and one did not report a race (n=1; 2.2%). Ethnic identities included Not Hispanic/Latina (n=42; 91.3%), Latina/Hispanic (n=1; 2.2%), and Middle Eastern (n=3, 6.5%). Survivors also reported a wide range of annual incomes including: less than \$15,000 (n=3, 6.5%), \$15,000 - \$30,000 (n=10, 21.7%), \$30,000 - \$50,000 (n=4, 8.7%), \$50,000 or more (n=22, 47.8%), and unknown (n=7; 15.2%). Recent research has demonstrated that certain racial and ethnic groups have higher lifetime prevalence rates of rape (i.e., American Indian/Alaskan Native and multiracial); however national statistics also demonstrate that rape can happen to anyone irrespective of race, ethnicity, or income (Black et al., 2011; Tjaden & Thoennes, 2006).

Characteristics of the assault. Of the 55 pharmacy participants, 7.3% (n=4) reported that they were utilizing Plan B in the post-assault period. The classroom participants (n=165) were questioned about any history of unwanted intercourse and reported a rate of 25.4% (n=42 with the male survivor removed). As noted in Table 1 the tactics most commonly used to coerce

participants into unwanted sexual intercourse were continual arguments and pressure (66.7% in the classroom sample vs. 25.0% in the pharmacy sample) and incapacitation with alcohol or drugs (61.9% in the classroom sample vs. 75.0% in the pharmacy sample). In both samples the majority of survivors knew the perpetrator (83.3% in the classroom sample vs. 75.0% in the pharmacy sample). This demonstrates that rape occurring among young adults within the university environment often involves a perpetrator who is known to the survivor. Additionally, the perpetrator is most often utilizing continual pressure and/or alcohol and drugs to coerce the survivor into unwanted sexual intercourse.

Characteristics of care seeking among vaginal rape survivors. Post-assault survivors in this sample were most likely to receive STI testing (47.6% in classroom sample vs. 50.0% in pharmacy sample) and emergency contraceptive (33.3% in classroom sample). The survivors in the pharmacy sample were specifically recruited for their use of Plan B in the post-assault period and thus were not compared with the classroom sample. Alternatively rates of receiving the other components of comprehensive care among the classroom and pharmacy samples were very low: treatment for physical injuries (2.4% and 0%), referral for mental health care (11.9% and 25.0%), victim services (2.4% and 0%), and legal options (9.5% and 0%). Table 2 displays the characteristics of care seeking among survivors of unwanted intercourse in this sample and demonstrates that there were no significant differences between the types of care seeking among the two groups of survivors.

Additional analyses taking into consideration whether or not the survivor knew the perpetrator, when the assault occurred, and how unwanted intercourse occurred revealed some trend differences in the elements of care survivors *did* seek out. Participants who knew the perpetrator demonstrated a trend that they were less likely to get STI testing (42.1%) than those

who did not know the perpetrator (75.0%); $\chi^2(1)= 2.866, p=.096$ (corrected with Fisher's exact test due to two cell sizes less than five). Additionally, those survivors who had been assaulted within the last year demonstrated a trend that they were more likely to use emergency contraception, such as OTC Plan B, at a rate of 52.2% compared to 26.1% of those who were assaulted over a year ago; $\chi^2(1)= 3.286, p=.070$. Finally, in assaults where the perpetrator coerced the survivor into unwanted intercourse using continual arguments/pressure or incapacitation with drugs and/or alcohol, survivors were less likely to get mental health care; $\chi^2(1)= 18.756, p<.001$. These results demonstrate that the type of assault occurring within the college or university environment may be impacting the type of care a survivor pursues.

Characteristics of desired referral care among vaginal rape survivors. Table 3 displays the characteristics of desired referral care among both groups of survivors. Survivors in the classroom and pharmacy samples respectively most frequently reported that they would like referrals for pregnancy testing (45.2% and 50.0%), STI testing (52.4% and 25.0%), mental health care (35.7% and 25.0%), a sexual assault victim advocate (23.8% and 50.0%), and legal services (16.7% and 75.0%). Survivors within the pharmacy sample were more likely to report that they desired a referral for legal services; $\chi^2(df=1)=7.305, p=.028$. This indicates that survivors' desires for additional post-assault care are primarily focused on additional health care services but that they did wish to learn more about other post-assault services as well.

The gap between *should* and *would*. The majority of participants completing the theory-testing questionnaire (n=206) in this study noted a discrepancy between what they thought a friend who had survived unwanted intercourse *should* and *would* do. This gap can be noted in Table 4 where large percentages of respondents noted that their friend *should* pursue care at an emergency room (74.8%) or with their health care provider (93.2%) but then noted that much

smaller percentages *would* actually pursue this care in the emergency room (32.5%) and with a health care provider (53.9%). Alternatively, only two participants (1.0%) thought their friend who had survived a rape *should* do nothing, or not pursue any type of post-assault care. However 25.7% noted that most likely their friend *would* choose to do nothing. The only outcome that did not demonstrate a discrepancy between what participants thought their friend *should* and *would* do was OTC Plan B. Initially, 88.3% of respondents thought their friend *should* seek out OTC Plan B in the post-assault period while 87.4% also believed this was an option that their friend *would* actually choose. These reported discrepancies in the type of care participants thought their friend *should* and *would* pursue were consistent across our samples and did not differ based on personal characteristics. The only difference noted was that male respondents were more likely to think their friend *would* do nothing in comparison to female respondents (50.0% versus 24.1% for females); $\chi^2(1) = 4.570, p = .033$.

Qualitative

Initial exploration of the open-ended responses of the survivors (n=47) began with the use of the word cloud displayed in Figure 1. This graphic demonstrates that despite the focus of this study on the use of emergency contraception to prevent pregnancy, survivors described potential interventions that focused on “information,” “counseling,” and “resources” as they were displayed as more recurrent themes within the word cloud. Furthermore, survivors used terms such as “pamphlet” and “packaging” to describe future interventions for survivors of unwanted intercourse using OTC Plan B in the immediate post-assault period. These preliminary results within the word cloud indicate that survivors were focused on additional interventions to supplement pregnancy prevention in the post-assault period.

After initial review of the word cloud, content analysis was conducted to inductively create a compilation of possible interventions for vaginal rape survivors using Plan B in the post-assault period from open-ended responses of past survivors (Elo & Kyngas, 2007). Content analysis identified four themes present within the survivor's desires for post-assault care that included: (a) additional information about Plan B and post-assault care (n=5; 10.6%); (b) easier access to Plan B (n=9; 19.1%); (c) comprehensive programs that addressed a wide range of post-assault needs including counseling (n=7; 14.9%); and (d) innovative interventions for distribution with Plan B with information regarding post-assault services (n=6; 12.8%). Additionally, there were a number of survivors who did not respond to the question regarding desires for post-assault interventions (n=20; 42.6%), which included the male rape survivor in the sample.

Additional information. As noted in the word cloud in Figure 1, rape survivors placed a large emphasis on the need for “information.” A 20-year-old female participant who had survived unwanted intercourse and accessed OTC Plan B post-assault within the last year thought it would be helpful for post-assault users of Plan B to have “information on how to avoid unwanted sex.” Another 20-year-old female participant who had accessed OTC Plan B at the university pharmacy within two days of her assault reported that post-assault survivors accessing emergency contraception needed “more information about Plan B.” These survivors demonstrate that despite their knowledge about where to access Plan B in the post-assault period, they were not aware of some of the supplemental information that could be helpful to post-assault survivors such as additional resources for help and more information about the medication they were taking.

Easier access. As supported in the word cloud, post-assault survivors demonstrated support for easier “access” and a free “cost” to emergency contraceptive. For instance, one 22-year-old female participant who had been sexually assaulted by a stranger between one and three years ago and did not use emergency contraception in the post-assault period noted that she “would eliminate age restrictions” to Plan B access. While another 18-year-old female participant who had also been sexually assaulted by a stranger between one and three years ago and did not use emergency contraception in the post-assault period responded that it was necessary to “make getting Plan B easier and let people know that Plan B is NOT an abortion pill.” These survivors demonstrated support for the recent FDA approval that removed age restrictions on purchasing OTC Plan B One-Step (Neale, 2013) to improve access on the basis that emergency contraceptive is a safer alternative than adolescent pregnancy. The current cost of Plan B at the university pharmacies enrolled in this study ranged from \$30.00 to \$40.00. This amount is less than the cost within a community pharmacy that ranges from \$35.00 - \$60.00; however, cost was still seen as a barrier by many survivors (Office of Population Research and Association of Reproductive Health Professionals, 2012).

Comprehensive programs for post-assault care. Survivors of unwanted intercourse in this study also described a need for more comprehensive post-assault programs that may or may not include legal implications. In the word cloud, this theme can be visualized with words such as “counseling,” “mental,” “resources,” “testing,” and “psychological.” Post-assault survivors, such as one 28-year-old female who obtained OTC Plan B from a university pharmacy three days after being sexually assaulted by a known assailant, described the need for more comprehensive information with Plan B:

All types of resources into one program – legal, medical, psychological, etc. If not a program, maybe getting a comprehensive referral sheet to all these different services (low cost) or ideally having a place you can walk into and talk to someone about all these different things and help bring them to your attention or set you up with them. Sometimes you can't even identify what all your needs are when [you] are so overwhelmed with what happened. By the time you realize, it may be too late.

A 19-year-old survivor who had been sexually assaulted within the last month and had used OTC Plan B as her only form of post-assault care wrote that survivors need “a plan to deal with all the issues that come with unwanted sex: 1. Mental, 2. Physical, 3. Spiritual.” Despite the availability of comprehensive health services through SANE programs, these survivors demonstrated a desire for more information about post-assault care from the locations where they are accessing help, such as the pharmacy where they are purchasing OTC emergency contraception.

Innovative interventions. Finally, survivors in this study described some innovative interventions that could be utilized with OTC emergency contraception to increase awareness of services and address the unmet needs of survivors. Within the word cloud some of these interventions are described as “pamphlet,” “packaging,” “sheet,” and “program.” For instance, one 19-year-old female who had used emergency contraception in the post-assault period after being sexually assaulted by a known assailant within the last year wrote that it would be helpful for survivors to get “a pamphlet handed out upon receiving Plan B that details options concerning sexual assault/ pregnancy/ contraceptive choices.” A 20-year-old survivor who had been sexually assaulted by a known assailant within the last month described an intervention that would include “a hotline (that is included in the Plan B packaging) to talk to a mental health counselor or social worker.” Both of these innovative ideas were supported by a 20-year-old

survivor who had used emergency contraception in the post-assault period after being sexually assaulted by an unknown assailant one to three years ago when she wrote, “attach a flyer with resources inside the Plan B package.” This same survivor also made evident that she would not want a pharmacy-based intervention by recording the following statement “I personally would NOT want the pharmacy (a public environment) to give me a run down of support/services just b/c I am purchasing Plan B. It’s embarrassing enough.”

Summary of All Results

The prevalence of Plan B use by survivors of unwanted intercourse within university campuses closely mirrors annual incidence rates of rape on college campuses. These statistics demonstrate that the rate of college women seeking OTC Plan B post-assault in this (admittedly small) college health service pharmacy sample is consistent with the rate of college women being sexually assaulted, so college-age women are accessing OTC Plan B in the post-assault period and this use of Plan B has not been considered. Common characteristics of unwanted intercourse within the college setting in this sample included a known perpetrator and use of continuous pressure and/or incapacitation with alcohol and drugs to coerce the survivor. Furthermore, the type of assault seemed to impact the participants’ post-assault care with participants who knew the perpetrator demonstrating a trend that they were less likely to pursue STI testing and those who experienced coercion via continual arguments/pressure or incapacitation with alcohol and/or drugs were less likely to pursue mental health care. Additionally, both college-age students and survivors recognized the importance of having an easily accessible and confidential form of care for individuals in the post-assault period. They demonstrated a value for the availability of OTC Plan B and recognized that their friends who had survived unwanted intercourse would most likely pursue this form of care; but they also relayed that in its current form OTC Plan B is

incomplete. Survivors conveyed a desire for even easier access to Plan B and for information about more comprehensive services that could include additional information about Plan B and post-assault care, comprehensive programs that address mental health needs, and private ways of distributing information about additional, available services.

Discussion

The impetus for this study arose from the principal investigator's (MM) clinical practice where she discovered that some of her patients were accessing OTC Plan B as their first and often only form of post-assault care after its release as an OTC product in 2006. However at the time of this discovery, there was no literature available on whether or not this phenomenon was occurring and what survivors in the college setting desired for post-assault services. This study was undertaken to address this phenomenon and has four implications in response to the clinical scenario described above: (a) survivors of unwanted intercourse are indeed accessing OTC Plan B in the post-assault period; (b) survivors' post-assault decision-making is impacted by the characteristics of the assault; (c) post-assault survivors accessing OTC Plan B desire more information about comprehensive services; and (d) OTC Plan B may be the vehicle to provide an additional model for post-assault care.

The first implication is that survivors of unwanted intercourse are indeed accessing Plan B as their first and sometimes only form of post-assault care. Initially, a pharmacy sample was employed to explore whether the proportion of OTC Plan B users who are in the post-assault period supports the need for pharmacy-based interventions. The pharmacy sample demonstrated that 7.3% of those accessing OTC Plan B in a college health service pharmacy setting were doing so in the aftermath of unwanted intercourse. However, due to the low response rate a second sample was also enrolled from a classroom setting. Possible ranges of last year OTC Plan

B use in the post-assault period were 3.0% to 5.4% for the classroom sample. These rates were consistent with national annual incidence rates of rape of 5% within the college and university setting (Fisher et al., 2000). The comparison of the pharmacy sample, classroom sample, and national statistics allowed for triangulation of national annual incidence rates of unwanted intercourse among college women with the rates of post-assault OTC Plan B use in the college health service pharmacy setting.

Secondly, survivors' post-assault decision-making was influenced by the characteristics of the assault. As noted by the results of this study, survivors who knew the perpetrator demonstrated a trend that they were less likely to pursue STI testing. Survivors coerced into unwanted sexual intercourse via arguments/pressure or incapacitation with alcohol and/or drugs, which are more common tactics utilized in the college setting (Abbey, 2002), were less likely to get mental health care. It is also known, that college-age survivors are not likely to pursue legal action with past statistics demonstrating that less than 5% of college-age women reported an attempted or completed rape to police (Fisher et al., 2000). Thus, within the college or university environment where 82.6% of survivors in this study knew the perpetrator and where many survivors do not pursue legal action, what we think is needed or is the gold standard for post-assault care may not be in line with the needs and desires of many survivors. In fact, many survivors associate a SANE exam with the components of a forensic exam and legal counsel and therefore consider this course of post-assault care to be for individuals who are seeking legal assistance in the prosecution of a forceful stranger rape. This association of a SANE exam with the "rape kit" or forensic exam may therefore be reinforcing some rape myths (i.e., stranger, by force) and is not what is needed or desired in the majority of college women's situations where college survivors often know the perpetrator and do not wish to pursue legal or forensic action

(Fisher, Daigle, Cullen, & Turner, 2003). This is consistent with past work that has demonstrated that women who are sexually assaulted in a more stereotypical fashion (i.e., stranger or by force) are more likely to acknowledge the events as rape and seek formal medical and legal services (Zinzow et al., 2012). So the impetus for this study (Plan B going OTC and impacting clinical care) was really an observation that as soon as survivors could, they declined the available model of gold standard post-assault care and opted to give up the option for comprehensive care services in order to be able to avoid contact with the criminal justice system.

Third, survivors accessing OTC Plan B post-assault have expressed that they do desire more information about comprehensive care services. The qualitative data in particular indicate that survivors would like additional information about unwanted intercourse, Plan B as a medication, the types of post-assault services available, and how to access these services. Despite the availability of information regarding comprehensive post-assault services from the emergency room, SANE, or rape crisis center participants described interventions that could be incorporated into the distribution of emergency contraception, such as OTC Plan B. Participants specifically described the package or handouts provided with the medication as a desirable place to include information for users who may be in the post-assault period in order to allow for easy and confidential access to information about post-assault services..

Finally, another closely related point that emerged from these data was the indication that survivors do have desires for additional post-assault care that may not fit within the current framework of a “rape kit” or forensic evidence collection that has become synonymous with post-assault care in the emergency room setting. The OTC availability of Plan B may be the best organically available structure to build upon to put in place a second model for post-assault care. Pharmacy research has demonstrated that brief counseling sessions increase both short and

long-term knowledge retention concerning the properties of emergency contraception (mechanism of action, adverse effects, efficacy, administration) (Ragland et al., 2011). Despite the improvement in knowledge scores regarding emergency contraception, there are limitations to providing education and counseling within the pharmacy environment including the public pharmacy environment and pharmacists' comfort with providing education and counseling (Bajos, Goulard, Job-Spira, & COCON Group, 2003). A qualitative response indicated that privacy was a concern given both the public venue and the stigma the survivor feels. But, survivors have also expressed that they value the easy accessibility that OTC Plan B affords. The confidentiality of the OTC process also seems to provide an element of control that the SANE exam does not. Future work on developing interventions to supplement the knowledge of emergency contraceptive users, particularly those that are seeking care post-assault, should therefore focus on innovative disbursement methods that retain the features most valued by its users including ease of access and discretion. For instance, survivors in this study described the potential use of pamphlets, better emergency contraceptive packaging, and a hotline as ways to provide additional information to post-assault survivors accessing OTC Plan B.

These results were also confirmed by the PAR consultants. Presentation of the study results to the PAR consultants resulted in discussions about past scenarios the consultants had been a part of that supported the results of this study. For example, one PAR consultant described a scenario in which she helped a student purchase Plan B because she didn't have enough money and looked like she had been through a tough time and needed it. The PAR consultants also emphasized that they are aware that college-age survivors often know the perpetrator and do not wish to pursue emergency room care or a forensic exam so they are indeed looking for an option that is easily accessible and private. Based on presentation of the

research results, one PAR consultant said that survivors appear to “want an option that is private but there is a lack of information to seek other kinds of care that they would need.” This same PAR consultant concluded that Plan B “is important but incomplete.” Overall the PAR consultants viewed the study results as demonstrating that survivors’ value OTC Plan B as an independent choice to seek care that doesn’t involve others but that survivors also realize it is incomplete and we need to determine how to augment it.

Limitations

The limitations of this study include a low response rate for the pharmacy sample, student sample limitations, and self-report measures. The low response rate for the pharmacy sample resulted in the need to recruit participants from a classroom setting as well. In the end, this adaptation to the study design resulted in an opportunity to validate the findings from the pharmacy sample. This study utilized a unique methodology in order to minimize disruption to the pharmacy and to maintain anonymity. Past work attempting to research sexual health in a pharmacy setting was met with numerous methodological challenges including pharmacy staff members being uneasy with recruitment, concerns about breach of confidentiality, and lack of familiarity with research procedures (Black, Anderson, Kubba, & Wellings, 2009). Thus, recommendations for survey research in the pharmacy setting that were incorporated into this study included: (a) minimizing pharmacy disruption; (b) providing all necessary supplies and equipment; and (c) briefing all pharmacy personnel (Black et al., 2009).

Another limitation of this study includes its focus on vaginal rape survivors and Plan B users accessing care at the campus pharmacy within universities in the Midwest. This geographical restraint limits the generalizability of the results to other populations beyond university campuses. However, the campus environment will capture many women who are

among those at the highest risk of rape with a rate of one in four to five college women experiencing a rape (Fisher et al., 2000). All participating universities are state universities and are home to a diverse group of students, allowing for increased generalizability of the research results across race and class boundaries.

In addition, there are limitations to obtaining all of the data via surveys due to self-report bias. To minimize this effect, this study did adhere to many of the methodological recommendations of measuring sensitive topics, specifically rape, by (a) maintaining anonymity and (b) including behaviorally specific questions (Fisher, 2009; Koss, 1992).

Conclusions

This study used the survivor's lens to evaluate their desire and ability to receive comprehensive care post-assault after OTC Plan B use. As Patricia Weaver Francisco (1999) notes, "accepting help begins with being visible" (p. 206). This study therefore aimed to improve the voice and visibility of survivors of unwanted intercourse accessing Plan B OTC in the post-assault period. In capturing the voices of survivors, advocates, allies, and practitioners it became apparent that college women are seeking OTC Plan B in the post-assault period and that Plan B is an important but partial mode of post-assault care. Future frameworks and interventions could therefore build off this pre-existing access to care. Future work should therefore be focused on intervention development to supplement the minimal amount of information that is currently available with OTC Plan B in order to provide survivors (and all others using Plan B) with information about additional services and resources such as: STI testing, mental health care, birth control options, victim advocacy services, and legal care. Thus, future interventions must work to meet the needs of all individuals pursuing post-assault care and must take into consideration

the characteristics of the survivor and the assault that may impact post-assault decision-making and desired models of care.

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Table 3.1. Characteristics of the Assault

Characteristics	Classroom Participants (n=42)	Pharmacy Participants (n=4)	χ^2 or t value, p-value
History of Rape*			
Due to continual arguments and pressure	69.1% (29)	25.0% (1)	$\chi^2(df=1)=2.72, p=.135^{\wedge}$
Due to use of authority	4.8% (2)	0.0% (0)	$\chi^2(df=1)=.306, p=1.0^{\wedge}$
Due to incapacitation with alcohol or drugs	59.5% (25)	75.0% (3)	$\chi^2(df=1)=.269, p=1.0^{\wedge}$
Due to use of force	9.5% (4)	0.0% (0)	$\chi^2(df=1)=.534, p=1.0^{\wedge}$
The survivor knew the perpetrator	83.3% (35)	75.0% (3)	$\chi^2(df=1)=.177, p=.548^{\wedge}$
How long ago did this happen*			
Less than one month ago	14.3% (6)		
One – six months ago	9.5% (4)		
Seven months – one year ago	21.4% (9)		
One – three years ago	38.1% (16)		
More than three years ago	16.6% (7)		
Less than 12 hours ago		25.0% (1)	
13-24 hours ago		25.0% (1)	
2 days ago		25.0% (1)	
3 days ago		25.0% (1)	

* Percents may total greater than 100 due to multiple responses

[^]Corrected with Fisher's exact test due to small sample sizes

Table 3.2. Characteristics of Care Seeking Among Vaginal Rape Survivors

Characteristics	Classroom Participants (n=42)	Pharmacy Participants (n=4)	χ^2 or t value, p-value
Treatment of Physical Injuries	2.4% (1)	0.0% (0)	$\chi^2(df=1)=.097, p=1.0^{\wedge}$
Plan B Use	33.3 % (14)	100.0% (4)	
STI Testing	47.6% (20)	50.0% (2)	$\chi^2(df=1)=.008, p=1.0^{\wedge}$
Referral for Mental Health Care	11.9% (5)	25.0% (1)	$\chi^2(df=1)=.552, p=.440^{\wedge}$
Examined for Forensic Evidence Collection	0.0% (0)	0.0% (0)	
Met with Sexual Assault Victim Advocate	2.4% (1)	0.0% (0)	$\chi^2(df=1)=.097, p=1.0^{\wedge}$
Received Information about Legal Options	9.5% (4)	0.0% (0)	$\chi^2(df=1)=.417, p=1.0^{\wedge}$
Received Information about Options for Care	14.3% (6)	25.0% (1)	$\chi^2(df=1)=.325, p=.496^{\wedge}$

* We did not query the pharmacy participants about a past history of rape; therefore these rates were only based on the individuals who used Plan B specifically after a vaginal rape. For this reason, these proportions were not compared between the two samples.

[^]Corrected with Fisher's exact test due to small sample sizes

Table 3.3. Characteristics of Desired Referral Care among Vaginal Rape Survivors

Characteristics	Classroom Participants (n=42)	Pharmacy Participants (n=4)	χ^2 or t value, p-value
Referral for Treatment of Physical Injuries	19.0% (8)	25.0% (1)	$\chi^2(df=1)=.082, p=1.0^{\wedge}$
Referral for Pregnancy Testing	45.2% (19)	50.0% (2)	$\chi^2(df=1)=.033, p=1.0^{\wedge}$
Referral for STI Testing	52.4% (22)	25.0% (1)	$\chi^2(df=1)=1.095, p=.608^{\wedge}$
Referral for Mental Health Care	35.7% (15)	25.0% (1)	$\chi^2(df=1)=.185, p=1.0^{\wedge}$
Referral for Forensic Evidence Collection	16.7% (7)	25.0% (1)	$\chi^2(df=1)=.177, p=.548^{\wedge}$
Referral for a Sexual Assault Victim Advocate	23.8% (10)	50.0% (2)	$\chi^2(df=1)=1.299, p=.276^{\wedge}$
Referral for Legal Services	16.7% (7)	75.0% (3)	$\chi^2(df=1)=7.305, p=.028^{\wedge}$
Referral for None of the Above	14.3% (6)	0.0% (0)	$\chi^2(df=1)=.657, p=1.0^{\wedge}$

[^]Corrected with Fisher's exact test due to small sample sizes

Table 3.4. The Discrepancy between Should and Would (n=206)

% (n)	Should	Would	Congruence*
Emergency Room	74.8% (154)	32.5% (67)	43.5%
Healthcare Provider	93.2% (192)	53.9% (111)	57.8%
OTC Plan B	88.3% (182)	87.4% (180)	98.9%
Nothing	1.0% (2)	25.7% (53)	260.5%

* Congruence is defined as the circumstance where the friend would do what the respondent recommended they should do.

Figure 3.1. Word Cloud Depicting Interventions that Sexual Assault Survivors Desire



CHAPTER 5

Summary of the Three Papers

Sexual assault is a life-altering trauma that impacts a survivor both physically and mentally. It can result in immediate needs such as treatment of physical injuries, pregnancy prevention, testing and treatment of sexually transmitted infections (STIs), mental health care for acute stress reaction, rape victim services to navigate the pathway to post-assault care, a potential forensic examination, and possible involvement with the legal system for immediate safety and future prosecution of the perpetrator (Ahrens et al., 2000; Campbell, Bybee, Ford, & Patterson, 2008; Campbell, Patterson, & Lichty, 2005; Tjaden & Thoennes, 2006). Long-term sequelae of sexual assault can include: (a) mental health consequences such as anxiety, depression, posttraumatic stress disorder (PTSD), and substance abuse (Chen et al., 2010; Foa & Rothbaum, 1998; Koss, Bailey, Yuan, Herrera, & Lichter, 2003); (b) somatic disorders such as chronic pelvic-visceral pain conditions (Golding, 1999; Paras et al., 2009; Seng, Clark, McCarthy, & Ronis, 2006); (c) strained emotional relationships with friends, family, and partners (Burgess & Holmstrom, 1974; Golding, Wilsnack, & Cooper, 2002); and (d) higher risk for revictimization (Walsh, DiLillo, & Scalora, 2011). This dissertation project broadly sought to investigate whether there were missed opportunities for comprehensive care among vaginal rape survivors, specifically those who are accessing over-the-counter (OTC) Plan B as their first and only line of post-assault care. This was accomplished by: (a) evaluating the use of an integrated conceptual framework as a model for a survivor's post-assault decision-making; (b) testing the integrated

conceptual framework in a sample of pregnant women with a history of rape; and (c) exploring the prevalence of OTC Plan B use in the post-assault period and the desires of survivors within the college setting.

The first manuscript, *To B or not to B? A Conceptual Framework to Evaluate the Impact of Over-the-Counter Emergency Contraception on Post-Assault Care*, has as its main finding that the integrated conceptual framework titled, *Plan B and Missed Opportunities for Comprehensive Care*, was, with small revisions, a suitable framework for studying post-assault decision-making. The framework incorporated the elements of client singularity, the elements of client-professional interaction, and the elements of health outcome as outlined by Cox's (1982) Interaction Model of Client Health Behavior while additionally incorporating Bronfenbrenner's Ecological Systems Theory (1989). The conceptual framework was tested twice, in relation to an "ideal" response, or stating an opinion about what a survivor-friend *should* do, and in relation to a "likely" response, or stating an opinion about what a survivor-friend *would* do. First, the model was evaluated as a predictor of what kind of care participants thought a friend who had survived unwanted intercourse *should* pursue. The most significant model in these analyses was the "*should* use Plan B" in the post-assault period model. This model predicted 20.9% of variance ($p=.006$) and the most significantly predictive variables were the *interpersonal* factors of the Ecological Systems Theory (explained 4% of variance) and past use of Plan B (explained 11% of variance). In this sample, participants who believed that interpersonal factors (i.e., influence of justice system, health care system, work and school, family and friends, and self) had a strong influence on post-assault decision-making were more likely to report that their friend *should* obtain OTC Plan B in the post-assault period. Alternatively, if the participant *had* used Plan B in the past then they were less likely to support the use of OTC Plan B in the post-

assault period. The “*should* use the emergency room” model was also significant and explained 13.1% of the variance ($p=.025$). Its most significantly predictive variables were the *macrosystem* factors (explained 4% of variance) and a past history of unwanted intercourse (explained 6% of variance). Participants in this sample who believed that the macrosystem (i.e., influence of society and culture) had a strong influence on post-assault decision-making were *less* likely to report that their friend *should* pursue care at an emergency department. Participants who were survivors of unwanted intercourse were *more* likely to report that a friend who has been assaulted *should* go to the emergency room. Finally, the model of “*should* see a health care provider” was not a significant model overall, but factors influencing the opinion that this would be a good option included the barriers to care variable, lack of knowledge (contributed 13% of variance).

Results of quantitative theory-testing with a sample of 220 college students and qualitative analysis of open-ended responses from 46 survivors of unwanted intercourse resulted in the following changes to the original conceptual framework: (a) expansion of the personal *characteristics* to include those most significant to post-assault decision-making; (b) reduction of Bronfenbrenner’s Ecological Systems Theory to the two pertinent components; and (c) changing the terminology associated with the health outcomes to capture the elements as students and survivors viewed them. First, theory-testing analyses revealed that the personal *characteristics* most salient to a survivor’s post-assault decision-making included: (a) having purchased Plan B (or emergency contraception) in the past; (b) a personal history of unwanted intercourse; and (c) knowing the perpetrator. The ecological components of Bronfenbrenner’s theory could be collapsed into *interpersonal* factors and the *macrosystem* for the purposes of evaluating sexual

assault. Furthermore, the health outcomes were described by participants as capturing three domains including (a) *health services*, (b) *advocate services*, and (c) *legal services*.

In conclusion, the *Plan B and Missed Opportunities for Comprehensive Care* theory proved to be a satisfactory representation of post-assault decision-making among college students. Some minor adjustments to the conceptual framework were incorporated in response to study results to improve the future applicability of the framework to college-age survivors. One of the most interesting and perhaps most important aspect of these findings was that those who had used Plan B in the past were less likely to support **only** OTC Plan B for post-assault use. Based on open-ended qualitative responses, this discrepancy appeared to be less about bad experiences with the medication, and more about the need for complete information about comprehensive care. For instance, past work has established that all Plan B users are in need of STI testing (Shiely, 2013) and a more regular form of birth control (Salcedo, Rodriguez, Curtis, & Kapp, 2012). As noted by Salcedo and colleagues (2012), after taking an emergency contraceptive for pregnancy prevention, all individuals should resume or initiate a regular contraceptive measure combined with a barrier method until their next menses. Thus, the survivor-participants - women who were responding out of personal experience - seemed particularly aware of the dearth of information provided with OTC Plan B and favored a pathway to care that increases the ability of a post-assault survivor to access care that she needs and desires.

The second manuscript, *Comprehensive Care and Pregnancy: The Unmet Care Needs of Pregnant Women with a History of Rape*, was a secondary analysis of a large, prospective three-cohort study that was originally focused on evaluating the effects of PTSD on pregnancy outcomes. The aim was to assess the utility of the integrated conceptual framework in

predicting areas of unmet needs in survivors after the acute period. Six logistic regression models were utilized to predict unmet needs within the five areas of post-assault care: (a) physical care was measured by somatic conditions (i.e., pre-existing major chronic conditions and/or a moderate to severe Pregnancy Unique Quantification of Emesis and Nausea [PUQE] score) and any substance use in pregnancy; (b) pregnancy prevention was assessed by the variable pregnancy unwantedness; (c) infections were represented by any infection in pregnancy; (d) psychological care was evaluated in regards to current PTSD; and (e) the legal services domain was assessed using current (physical, sexual, and/or emotional) abuse. The analyses demonstrated that current PTSD and subjective reports of past trauma severity over the last year were essentially proxies for each other. Both variables had significant impacts on the overall models for each health outcome. An individual's rape status itself remained independently predictive of physical health outcomes (i.e., somatic distress as measured by chronic conditions and/or a moderate to severe PUQE score and substance use), infections, mental health, and current abuse. However, substance abuse was explained better by the last year trauma impact or the presence of current PTSD. Finally, pregnancy unwantedness and the presence of infection seemed to be much more strongly related to the woman's socioeconomic status. This secondary analysis demonstrated that triangulation of theory, literature, and empirical analysis together provided evidence of the five components of comprehensive care as a useful practice-level theory to guide assessment of unmet needs in pregnancy. Thus, this integrated study found that there may be unmet needs in pregnancy related to all five components of comprehensive care including (a) physical care, (b) pregnancy prevention, (c) STI screening, (d) psychological care, and (e) legal care.

The third and final manuscript, *Important but Incomplete: Plan B as an Avenue for Post-Assault Care*, evaluated the prevalence of post-assault OTC Plan B use as well as the desires of college-age survivors. Two samples were utilized for this analysis including a sample of participants who had accessed OTC Plan B from a university pharmacy setting (n=55) and participants enrolled in an introductory-level women's studies course at a large university (n=165). Results revealed that 7.3% of pharmacy participants were seeking Plan B OTC after unwanted intercourse. Within the classroom sample, 26.06% of participants were survivors of unwanted intercourse (including a male survivor) with a last year incidence of 11.5%. Based on low response rates, a conservative range of last year post-assault Plan B use was calculated among the classroom sample, which revealed that a range of 3.0% - 5.4% of the classroom sample survivors used OTC Plan B in the post-assault period over the last year. These rates demonstrated that the prevalence of OTC Plan B use by survivors of unwanted intercourse within the university setting closely resembles the annual incidence rate of rape of 5% in college-age women (Fisher, Cullen, & Turner, 2000). Within this sample of college students, common characteristics of unwanted intercourse included a known perpetrator (75.0% in pharmacy participants and 83.3% in classroom participants, respectively) and use of continuous pressure and/or incapacitation with alcohol and drugs to coerce the survivor. Characteristics of the assault seemed to impact the participants' post-assault care: (a) survivors who knew the perpetrator demonstrated a trend that they were less likely to pursue STI testing; (b) survivors who experienced coercion via continual arguments/pressure or incapacitation with alcohol and/or drugs were less likely to pursue mental health care; and (c) survivors assaulted within the last year demonstrated a trend that they were more likely to use OTC emergency contraception.

Results also revealed that survivors accessing OTC Plan B post-assault have expressed that they do desire more information about comprehensive care services. The qualitative data in particular indicate that survivors have the following desires for post-assault care: (a) more information about Plan B, unwanted intercourse, and post-assault care; (b) easier access to Plan B; (c) information about or access to comprehensive programs that address a wide range of post-assault needs via the emergency contraceptive route; and (d) innovative interventions for distribution of information regarding post-assault services. Despite the availability of information regarding comprehensive post-assault services from the emergency room, Sexual Assault Nurse Examiner (SANE), or rape crisis center, participants described interventions that could be incorporated into the distribution of emergency contraception, such as OTC Plan B, to allow for easy and confidential accessibility. It is possible that some of the survivors and participants in this study were unaware of the availability of the comprehensive services offered by a SANE. However, their responses within the quantitative and qualitative portions of this study indicated that they preferred to have the opportunity to be able to “pick and choose” the type of services they would like to receive which is not always an obvious choice in a SANE exam. This was evident by the variety of responses received regarding which types of post-assault care survivors desired and was also exemplified in the open-ended responses when survivors described wanting “information about their options.” I see this as being synonymous with the lifestyles we currently lead. The ways in which we access services and goods in our lives are centered on empowering the consumer and thus allow us to pick and choose what we want in a variety of venues (i.e., food buffets or lunch counters, the multitude of options when ordering a coffee, “beauty bars,” and the list could go on and on). Participants in this study also illustrated that they would prefer a more empowering format for post-assault care interventions

that allows them to have the options to “pick and choose” what type of post-assault care they can pursue and ultimately receive. Thus, participants described potential interventions for distribution with Plan B as including: (a) more informative packaging; (b) handouts, flyers, or pamphlets provided with the medication that detail options for care post-assault, pregnancy prevention, and contraceptive choices; (c) a hotline to call to speak with a mental health professional; or (d) information about comprehensive programs for post-assault care that could be available with OTC Plan B. These survivors therefore demonstrated that they do have desires for additional post-assault care that may not fit within the current framework of a “rape kit” or forensic evidence collection that has become synonymous with post-assault care in the emergency room setting.

Strengths

Overall, this dissertation project boasts many strengths including: (a) the focus on a timely and critical health care issue; (b) inclusion of PAR consultants that represent viewpoints from student, ally, and health care perspectives; (c) a mixed methods approach for quantification and explanation of a new phenomenon; (d) a theoretically grounded analysis that has the potential to contribute to future interventions, and (e) testing the theory on more than one sample. First of all, this dissertation project comes at a time when there is increasing public recognition of sexual violence and reproductive health. This increased visibility of reproductive health issues serves well to catapult a potential intervention that has the potential to increase the availability of post-assault services to college-age survivors, a group that suffers one of the highest rates of sexual violence. Second, this project utilized a PAR framework that allowed survivors, pharmacists, volunteers working with sexual assault survivors, and students to voice their opinion and shape the final product and dissemination of this research. Incorporation of those

individuals that are involved in the fight against sexual violence and that are interacting with survivors provided a voice for many survivors who are often hidden within society. This framework therefore provided the opportunity to maximize the potential to improve care for this potentially disadvantaged population. Third, this project utilized a mixed methods approach that allowed for quantification of a new phenomenon, the prevalence of OTC Plan B use in the post-assault period, as well as an explanation of post-assault care from the perspectives of college-age survivors. Fourth, this project took the steps to establish a conceptual framework that can provide the structure from which to frame the planning, analysis, and development of future interventions. Finally, use of the pregnant sample extended the theoretical modeling to show that the elements of comprehensive care do indeed matter - including the mental health components that are not being addressed at all when Plan B use is the survivor's only approach to meeting her needs post-assault.

Limitations

However, this study was also hindered by some limitations including low response rates among the pharmacy sample, issues surrounding research on a sensitive topic, and restrictions based on the student population. First of all, the first and third manuscript presenting on the independent data collection conducted for this study were limited by low response rates from the pharmacy sample (16.13%) which necessitated the need to recruit a second classroom sample. The low response rates obtained from the pharmacy setting were consistent with past reports of researching a sensitive topic within the pharmacy setting and resulted in the opportunity to validate the findings within the classroom sample. Second, there were restrictions on the study design based on studying the sensitive topic of sexual assault within a campus environment. Due to concerns about confidentiality and mandatory reporting, it was necessary to make this study

anonymous. This resulted in the loss of the ability to do face-to-face interviews with survivors as originally planned and instead required reliance on open-ended survey questions. There is also a concern about self-report bias in data obtained via surveys. In order to minimize this effect, study questions adhered to the methodological recommendations of measuring sensitive topics by using behaviorally specific questions and maintaining anonymity (Fisher, 2009; Koss, 1992). Finally, all of the data analyzed for this study focused on individuals from the geographical region of the Midwestern United States, without the ability to study subgroups that differ by culture, race, or age. These results likely are broadly generalizable because across the four universities there are diverse groups of students, including both graduate and undergraduate students to give a full perception of the university student population. Within the secondary analysis, this limitation was acknowledged and was minimized by the diverse sample originally enrolled within the parent study. Due to these limitations, future studies may be warranted with larger samples so that more diverse voices can be heard before intervention development begins.

Future Directions

This study provides important information about providing post-assault services for college-age rape survivors. These three papers in combination indicate that there *are* missed opportunities for care that are evident later in the lifespan (i.e., during pregnancy) despite the availability of SANE programs and advocacy programs. They demonstrated that college-age survivors of unwanted intercourse are indeed accessing OTC emergency contraception, such as Plan B, in the post-assault period *in lieu of the gold-standard SANE program comprehensive services*. And the findings indicate that they feel that accessing Plan B is a somewhat incomplete approach and they do desire additional information about post-assault services delivered in an easily accessible and confidential manner. Interpretation of their responses indicates, however,

that what they desire is not always or only referral to a SANE program. They want to “pick and choose” what services they access, and they are currently “choosing” Plan B instead of the gold-standard comprehensive program offered via a SANE.

There are still some gaps to fill in regards to the use of OTC Plan B by post-assault survivors. First, there is a need for additional intervention development with survivors. Second, there is a gap in the literature about what types of interventions pharmacists believe would be appropriate for pharmacy customers accessing OTC Plan B. Third, a potential intervention for individuals accessing OTC Plan B would need to be developed and pilot tested before widespread dissemination. Fourth, it would be pertinent to explore the additional health care needs of post-assault survivors and innovative ways in which to address these needs. Fifth, social marketing campaigns regarding the options for post-assault care could be developed to help increase awareness about: (a) gender-based violence and (b) the potential options for post-assault care.

Thus, these findings and remaining gaps point to several more research questions and projects. Initially, a better understanding of the types of interventions supported by survivors and pharmacists could be explored through the use of focus groups or individual interviews. For survivors, qualitative interviews could be conducted with survivors who have utilized the following services in the post-assault time-period: (a) SANE care; (b) a rape crisis center (or campus sexual assault center); (c) a health care clinician; (d) OTC emergency contraception; or (e) no care. These interviews could explore: (a) Why the survivor chose that particular pathway for post-assault care? (b) What additional care needs or desires the survivor has? and (c) What they believe is an optimal way to provide post-assault care? Alternatively, for pharmacists a

qualitative study could explore (a) What types of interventions pharmacists believe would be the most beneficial for Plan B users? and (b) How those interventions could be administered?

After gathering more information on potential interventions for post-assault survivors from pharmacist and survivor perspectives, a pilot intervention could be created. One feasible project would be to study the outcomes of providing a website with comprehensive care options for all individuals purchasing OTC emergency contraception. This website could be made accessible via a link on emergency contraceptive packaging, the Center's for Disease Control website, Planned Parenthood, or through social media. This website, or WISH – Website Intervention for sexual assault Survivors and Health care providers, has the potential to provide information for OTC emergency contraceptive users that are survivors and those that are using OTC emergency contraception for contraceptive mishaps or failures while also providing information for health care providers (i.e., pharmacists, nurse practitioners, physician assistants, nurses, and physicians). For any emergency contraceptive user this website could incorporate information about STI testing and future contraception options. For post-assault survivors it could incorporate information about emergency contraception, post-assault service options and resources on where to seek care, and the ability to chat or call a hotline for personalized advice and services. Information on sexual assault and post-assault care could also be available for health care providers. This website therefore has the potential to extend post-assault services to a broader range of women in need of care.

Pilot testing could establish the feasibility of the website and include evaluation of the following components (a) *outputs*, (b) *processes*, (c) *outcomes*, (d) *impact*, and (e) *reach*. First, the project would be monitored for creation of the desired *output*, or the interactive web-page. The *process* could be monitored and evaluated based on the following criteria: (a) lack of error

messages from all users and (b) the ability of the application to connect a survivor with a professional via the chat feature. The *outcomes* for survivors could include evaluating for (a) increased knowledge about post-assault care options and (b) feeling empowered to make choices within the post-assault period. The *impact* could initially be evaluated based on the participants' feedback on the website but future *impact* could also be assessed using long-term health outcomes such as pregnancy rates, implementation of long-term contraception, STI rates, depression scores, PTSD scores, and anxiety scores. Finally, the *reach* could be evaluated based on the number of individuals who access the website which can be tracked using a web counter.

It is also important to evaluate other potential health needs of post-assault survivors and innovative ways to offer these services. For instance, the rapid HIV test is now available for expedient testing for HIV. This test could easily be offered at the same time that an individual is accessing OTC emergency contraceptive (where we know they are at risk because of a lack of contraception or a contraceptive failure). Or, another potential intervention could establish a protocol to offer more comprehensive services to those individuals that are accessing emergency contraception within a pharmacy environment that would immediately connect them with a health care provider like a nurse within the campus health center or a retail based practitioner within the community pharmacy setting. This health provider could then offer point-of-care STI testing while also providing the emergency contraceptive user with options about care based on their reason for accessing OTC emergency contraception and their personal desires. These potential interventions would also need to be pilot tested for feasibility and improvement of short-term (i.e., knowledge, empowerment, decreased rates of STIs, initiation of long-term contraception) and long-term (i.e., depression scores, PTSD scores, anxiety scores, and evaluation of personal relationships) outcomes.

Finally, social marketing campaigns could also be developed, piloted, and evaluated regarding the potential options for post-assault care. These social marketing campaigns could take the form of public service announcements, news or magazine ads, commercials, emails, blogs, or tweets. These social marketing campaigns could also be initially developed and piloted within a campus environment where partnerships within the campus community including sexual assault prevention centers, health centers, and health promotion colleagues could lead to fruitful collaborations and products. Piloting and evaluation could also initially commence within the university population allowing for easier evaluation of uptake and outcomes. After initial pilot testing within a university environment, more widespread dissemination of these social marketing campaigns could follow.

As a new researcher in this field, I am particularly interested in going in the direction of intervention development. Therefore my next steps will be to continue the descriptive and exploratory work regarding OTC Plan B use and post-assault care. This will be accomplished by using my post-doctoral training to complete the two qualitative studies outlined above with survivors and pharmacists in order to gain a more complete understanding of what type of intervention is needed. I would then be able to move forward into the pilot phase of intervention development where I could potentially establish the feasibility of a website, such as WISH, or potentially establish the feasibility of a pharmacy-based protocol for all emergency contraceptive users. Regardless of the intervention pathway I follow, it will also be essential for me to establish a relationship with the manufacturer of Plan B emergency contraception, Teva Pharmaceuticals. This relationship would provide a potential pathway to ensure success and uptake of any potential intervention.

Conclusions

In conclusion, an integrated conceptual framework, *Plan B and Missed Opportunities for Care*, that incorporates components of a nursing model, the Interaction Model of Client Health Behavior, and a child-development psychology theory, Bronfenbrenner's Ecological Systems Theory, has proven to be representative of the factors involved in post-assault care. This framework has demonstrated its utility in evaluating the immediate post-assault decision-making of college-age survivors as well as in investigating long-term outcomes among pregnant women with a history of rape. Additionally, this study has established an initial prevalence rate of OTC Plan B use in the post-assault period (7.3%) that is consistent with the current annual incidence of rape within the college setting (5%; Fisher et al., 2000). Survivors within this study have demonstrated a desire for information about post-assault care that is easily available and can be accessed in a confidential setting in which they have control. Taken together, the results of this study support the notion that contact with post-assault survivors accessing Plan B OTC is an optimal venue to disperse information on comprehensive care to prevent potential missed opportunities for providing comprehensive care. In summary, it is imperative that survivors are able to make decisions and take control of their recovery process (Orchowski, Untied, & Gidycz, 2013); OTC emergency contraception provides an avenue for the survivor to have control over their choices for post-assault care, but in its current form is incomplete.

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Appendix A. Coding of Open-Ended Response for Theory-Testing

No Response (n=9/47; 19.2%)	Reasons for Use (n=27/38; 71.0%)	Barriers to Care (n=32/38; 84.2%)	Bronfen- brenner (n=23/38; 60.5%)	Components of Client- Professional Interaction (n=3/38; 7.9%)	Components of Comprehensive Care (n=34/38; 89.5%)	Other thoughts	Used Plan B in post- assault period
	529 – condom broke	529 – embarrassed, what others will think	529 – interpersonal		529 – support group		No
	514 – pregnancy prevention after assault	514 – embarrassment, shame			514 – possibly STI testing, mental health counseling, and info on contraceptives - a pamphlet handed out upon receiving Plan B that details options concerning sexual assault/pregnancy/contraceptive options		Yes
	518 – “flush out” reproductive system				518 – mental health and coping resources - Plan B should be given in a bag that hides its content. Its nobody’s business	518- gives you a sense of control over your own body	Yes

		525 – fear, concern about what others will think, worried Plan B might make them sick	525 - interpersonal		525 – Plan could be given w/ a pamphlet of info on where to seek help for sexual assault, other BC options, etc.		No
	542 – no contraception	542 – fear, embarrassment			542 – Attach a flyer with resources inside the Plan B package.	542 – I personally would NOT want the pharmacy (a public environment) to give me a run down of support/services just b/c I am purchasing Plan B. It's embarrassing enough.	Yes
	511 – pregnancy prevention	511 – embarrassment; cost of services (Plan B itself is already expensive)	511 – macro (access)		511 – someone to talk to regarding sexual assault (if that's their reason for using it) - mental health counseling - maybe a hotline (that is included in the Plan B packaging) to talk to a mental health counselor		No (but used Plan B in past)

					or social worker.		
		524 – fear, embarrassment, difficulty getting to place to receive care	524 - macro		524 – a form of counseling - counseling or more advice		No
		516 – lack of information/awareness			516 – just somebody to talk to and help make them aware of any services that could be available to them depending on the circumstances - Have a pamphlet that comes with Plan B that addresses some of the possible issues the woman might be facing and offering resources.		No
	527 – I did not want to get pregnant after I missed a birth control pill so I knew Plan B was an option	527 – embarrassment, fear			527 – probably STD testing		No (but used Plan B in past)
	249 – I didn't want Mexican/ginger babies	249 – money			249 – knowing its okay Plan B is here to help		Yes
	116 – Doctor	116 – Police – no	116 – the		116 – STI testing,	116 – I	Yes

	recommendation, lack of memory of event (unsure if condom used)	evidence, not wanting to talk about what happened, want to be taken seriously [I ended up going 2 days after I wrote this]	right friends help a lot (interpersonal)		emotional issues, legal (??) - Put all types of resources into one program – legal, medical, psychological, etc. If not a program, maybe getting a comprehensive referral sheet to all these different services (low cost) or ideally having a place you can walk into and talk to someone about all these different things and help bring them to your attention or set you up with them. Sometimes you can't even identify what all your needs are when are so overwhelmed with what happened. By the time you realize, it may be too late.	think I'm already doing what I can do. Maybe advice on making a report to the police.	
	261 – unprotected sex			261 – easy/private access – like I got at UHS			Yes
	504 – The condom broke while not taking	504 – Financial instability, concern about what others would	504 – interpersonal		504 – information on how to get oral or other types of contraceptives - information about birth		No (but used Plan B in past)

	contraceptives	think			control or discounted Plan B in case of emergency - Make getting Plan B easier and let people know that Plan B is NOT an abortion pill		
					506 – I would eliminate age restrictions		No
	512 – I didn't want pregnancy	512 – fear, embarrassment, concern about what others would think	512 – interpersonal		512 – free access to it at clinics		Yes
	517 – I did not want to have to worry about pregnancy	517 – an easier way to obtain the pill where there could be less stigma	517 - macro		517 – birth control info – info about options if they were to become pregnant		Yes
	521 – No babies allowed	521 – Embarrassment - Free Plan B. It's too expensive.	521 - macro		521 – Free Plan B		No (but used Plan B in past)
		531 – fear, cost, ability to access it	531 – macro		531 – Medical help, psychological help - Easily, cheaply get it from pharmacy		No
	536 – Desire to not get pregnant	536 – Access (finances, transportation, getting caught fear, education)			536 – Counseling, medication info, failure info and guidance. There IS a failure rate even before 72 hours! - lots. Easier access		Yes

					to Plan B, better public sex ed, interventions w/ MEN to NOT hurt women. - resources, mental health, soc support		
	540 – Scared to get pregnant – not ready and not with that partner	540 – Fear, embarrassment, denial		540 – Making it even more accessible/ or free if you see an actual physician	540 – STI testing/counseling		Yes
		508 – Fear, Embarrassment			508 – A service that provided treatment for physical injuries and mental counseling as well as testing for pregnancy and STIs		No
	520 – I didn't want to get pregnant	520 – Fear, embarrassment, worried what others will think	520 – interpersonal		520 – A plan to deal with all the issues that come with unwanted sex: 1. Mental, 2. Physical, 3. Spiritual		Yes
	513 – Convenience of treatment, covered by insurance (inexpensive) , easily obtainable	513 – Fear, difficulty in getting care, familial judgment	513 – interpersonal		513 – 1) Provide Plan B 2) Offer confidential STI testing 3) Provide option of psych/legal/counseling services 4) Follow-up care		Yes

	515 – It seemed like a good option and was relatively easy to get.	515 – Fear and embarrassment. Feeling of awkwardness at pharmacy.	515 – interpersonal				No (but used Plan B in past)
	528 – My mom made me buy it after I lost my virginity☺	528 – Fear, embarrassment, judgment of pharmacists	528 – interpersonal	528 – options to talk to an unbiased specialist	528 – STI prevention		No (but used Plan B in past)
	192 – Friend’s advice	192 – Fear	192 – interpersonal		192 – Tell them more information about Plan B		Yes
	534 – Had condomless sex & was concerned about pregnancy.	534 – access to care	534 - macro		534 – STI info/care		No (but used Plan B in past)
		535 – embarrassment, not thinking it matters, thinking its too late, not available	535 – macro & interpersonal		535 – Support from friends, family, etc. Counseling support. Support from doctors.		
		537 – Living in a conservative area, so fear of what others will think. Doing it without parents knowing.	537 – macro & interpersonal		537 – An anonymous way to get Plan B and counseling regarding unwanted sex.		No

		530 – fear, embarrassment, concern about opinions	530 – interpersonal		530 – counseling		No
	539 – Reason I used it was because no condom was used. Unprotected/unplanned sex with significant other.				539 – Nothing else. Most people think/know Plan B is only for preventing any unwanted pregnancy.		No (but used Plan B in past)
	581 – sex without condom						No (but used Plan B in past)
	519 – Didn't want an unplanned pregnancy	519 – Fear, embarrassment, + concern about what others think	519 – interpersonal		519 – STD prevention		No (but used Plan B in past)
	505 – Broken condom and not sure if condom was used because of alcohol effects	505 – Fear, embarrassment, don't want parents to find out about further testing	505 – interpersonal		505 – STD testing		Yes
	602 – To prevent unplanned pregnancy	602 – Fear, embarrassment, ignorance, religion	602 – interpersonal (religion)		602 – Abuse resources, therapist, pregnancy resources		Yes

	526 – Fear of unwanted pregnancy	526 – Embarrassment, fear of being judged by pharmacy/doctor	526 – interpersonal		526 – Information on how to avoid unwanted sex - STI testing, pregnancy testing, counseling		Yes
		538 Embarrassment			538 – More confidentiality and helpful information		No
		Total respondents= 32 Embarrassment- 20/32=62.5% Fear- 19/32= 59.4% Concern about what others are thinking/judgement- 14/32= 43.8% Access – 5/32=15.6% Cost – 6/32=18.8%			Total respondents = 34 STI testing – 11/34=32.4% Pregnancy – 7/34=20.6% Mental health care – 16/34= 47.1% Advocacy/support services – 3/34= 8.8% Legal – 2/34=5.9%		
533							
592							
533							
541							
507							
503 (male)							
522							
532							
509							
523							

Appendix B. Coding of Open-Ended Responses of Desires for Post-Assault Care among Unwanted Intercourse Survivors

No Response (n=20; 42.6%)	More Information (n=4; 8.5 %)	Easier Access (n=9; 19.1%)	Comprehensive Program (n=7; 14.9%)	Innovative Interventions (n=7; 14.9%)
503 (male)	192 – Tell them more information about Plan B	261 – Easy/Private access – like I got at UHS	115 – Put all types of resources into one program – legal, medical, psychological, etc. If not a program, maybe getting a comprehensive referral sheet to all these different services (low cost) or ideally having a place you can walk into and talk to someone about all these different things and help bring them to your attention or set you up with them. Sometimes you can’t even identify what all your needs are when are so overwhelmed with what happened. By the time you realize, it may be too late.	511 – Maybe a hotline (that is included in the Plan B packaging) to talk to a mental health counselor or social worker
532	249 – Knowing its okay Plan B is here to help.	504 – Make getting Plan B easier and let people know that Plan B is NOT an abortion pill	508 – A service that provided treatment for physical injuries and mental counseling as well as testing for pregnancy and STIs	514 – A pamphlet handed out upon receiving Plan B that details options concerning sexual assault/pregnancy/contraceptive choices.

509	526 – information on how to avoid unwanted sex	506 – I would eliminate age restrictions	513 – 1) Provide Plan B 2) Offer confidential STI testing 3) Provide option of psych/legal/counseling services 4) Follow-up care	516 - Have a pamphlet that comes with Plan B that addresses some of the possible issues the women might be facing and offering resources.
522	538 – more confidentiality and more information	512 – Free access to it at clinics	520 – A plan to deal with all the issues that come with unwanted sex 1. Mental 2. Physical 3. Spiritual	518 - I would have the women fill out a questionnaire via email about their reasons for needing Plan B. This way specific information/resources about their situation.
541		517 – An easier way to obtain the pill where there could be less stigma	524 – A form of counseling	525 – Plan B could be given w/ a pamphlet of info on where to seek help for sexual assault, other BC options, etc.
507		517 – Free Plan B. It's too expensive.	527 – I would get them counseling and testing.	542 – Attach a flyer w/ resources inside the Plan B package.
510		531 – Easily, cheaply get it from pharmacy	529 – A support group with others that are going thru the same thing	602 - Ads
533		536 - ...lots. easier access to Plan B, better public sex ed, interventions w/ MEN to NOT hurt women.		
523		540 – Making it even more accessible/ or free if you see an actual physician		
592				