

HEALTH CARE SEEKING FOR INTIMATE PARTNER VIOLENCE
IN THE TOKYO METROPOLITAN AREA

by

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Chapter 1

Introduction

This dissertation examines health care seeking for intimate partner violence (IPV) in the Tokyo Metropolitan area, in particular, the following three specific topics: 1) factors affecting the odds of the first IPV specific health care seeking experience; 2) factors influencing IPV specific health care seeking over the life course; and 3) the trajectory of IPV specific health care seeking over the life course. In this study, health care involves both physical and mental health services. The data used for this dissertation were collected from Japanese women living in the Tokyo Metropolitan Area in 2005 and 2006.

IPV includes physical, sexual or psychological violence used by a current or former intimate partner to abuse his or her partner (Breiding, Black & Ryan, 2008a). Previous studies show a high prevalence of IPV worldwide. For example, the lifetime prevalence of IPV victimization among women is approximately 20 to 50 % varying based on demographics and location within the United States (Bonomi, Anderson, Reid, Carrell, Fishman, Rivara & Thompson, 2007; Moracco, Runyan, Bowling & Earp, 2007; Bonomi, Thompson, Bonomi, Anderson, Reid, Dimer, Carrell & Rivara, 2006; Coker, Davis, Arias, Desai, Sanderson, Brandt & Smith, 2002; Coker, Smith, Bethea, King & McKeown, 2000). Although victims of IPV are women and men, most previous studies

stated that the prevalence of IPV victimization is higher for women (Coker, Davis, Arias, Desai, Sanderson, Brandt & Smith, 2008). Due to the higher prevalence rate, this study focuses exclusively on female victims of IPV and their IPV related health care seeking behaviors.

IPV against women is a significant health threat (Campbell, 2002; Brown, 1992). Physical, psychological, and sexual IPV often harm the victims' psychological, emotional, mental, physical and reproductive well-being (Campbell, 2002; Brown, 1992; Plichta, 2004; Golding, 1999; Martin, Rentz, Chan, Givens, Sanford, Kupper, Garrettson & Macy, 2008; Carbone-Lopez, Kruttschnitt & Macmillan, 2006). Each type of IPV does not necessarily correspond to the same type of health problem; for example, psychological IPV is often associated with physical health problems (Coker, Smith, Bethea, King & McKeown, 2000).

The effects of IPV victimization on health are often long-term as well as immediate (Gerber, Wittenberg, Ganz, Williams & McCloskey, 2008; Campbell, Jones, Dienemann, Kub, Schollenberger, O'Campo, Gielen, Wynne, 2002). Health problems caused by IPV may continue even after the violence has ended (Campbell, 2002). In extreme cases, physical IPV ends in homicide (Campbell, Glass, Sharp, Laughon & Bloom, 2007; Weinsheimer, Schermer, Malcoe, Balduf, Bloomfield, 2005).

Victims of IPV suffer from a variety of physical health problems. Injuries are common consequences of IPV (Mechanic, Weaver & Resick, 2008). Chronic health problems such as fibromyalgia, gastrointestinal problems, headaches, back pain, urinary tract infections, appetite loss, abdominal pain, and digestive problems are also commonly

associated with IPV victimization (Plazaola-Castano & Perez, 2004; Campbell, Jones, Dienemann, Kub, Schollenberger, O'Camp, Gielen & Wynne, 2002).

In some cases, IPV causes various mental health problems such as depression, Post Traumatic Stress Disorder, anxiety, sleep problems, and suicidal ideation (Nicolaidis, Gregg, Galian, McFarland, Curry & Gerrity, 2008; Rodriguez, Heilemann, Fielder, Ang, Nevarez & Mangione, 2008; Plazaola-Castano & Perez, 2004; Hathaway, Mucci, Silverman, Brooks, Mathews & Pavlos, 2000). In addition, IPV is often related to alcohol abuse by the perpetrators and victims of IPV (Weinsheimer, Schermer, Malcoe, Balduf, Bloomfield, 2005).

Furthermore, sexual abuse is often associated with physical and reproductive health concerns such as unwanted pregnancy, sexually transmitted disease, vaginal bleeding, vaginal infections, and pelvic pain, (Plazaola-Castano & Perez, 2004; Campbell, 2002; Campbell, Jones, Dienemann, Kub, Schollenberger, O'Campo, Gielen & Wynne, 2002; Hathaway, Mucci, Silverman, Brooks, Mathews & Pavlos, 2000). Sexual IPV is also often related with mental health problems (Zolotor, Denham, & Weil, 2009)

In addition to individual health problems, IPV increases the cost of medical care. Women who have experienced or are experiencing IPV have higher medical cost than women who have not experienced IPV (Rivara, Anderson, Reid, Carrell & Thompson, 2007; Fugate, Landis, Riordan, Naureckas & Engel, 2005; Plichta, 2004; Coker, Reeder, Fadden & Smith, 2004). If victims of IPV have health problems but do not seek health care services properly and timely, IPV may increase the total long term medical costs though existing studies are more likely to focus on the short term financial effects of IPV (e.g. Brown, Finkelstein, & Mercy, 2008).

Despite knowledge of the prevalence and harmful effects of IPV, gaps still remain in information around health care seeking for female IPV victims. The most significant limitation of the previous studies of IPV in health care services literature is that most of the existing studies utilized cross-sectional data and examined only IPV victims who sought health care services. These studies do not include recurrent health care seeking over the life course. Moreover, IPV victims who did not seek health care at the time of data collection were often not included. Because most of the previous studies on IPV and health care seeking are cross sectional, it is not clear when and why the victims of IPV sought health care services over the life course. These previous studies do not provide enough information to explore the actual lifetime pattern of health care seeking for women who have experienced IPV. Lastly, most previous studies do not capture the fact that victims of IPV may receive health care services not only immediately after an incidence of IPV but also later in life.

This dissertation offers the advantage of a life course examination of IPV related health care seeking. The data were collected using the Life History Calendar method in Japan. Details about the Life History Calendar method are addressed in Chapter 4. These life course data include not only the times that the victims of IPV actually sought health care but also the times that they did not seek health care. In addition, the study collected socio demographic factors and life events over the life course. This dissertation makes seeks to capture the recurrent nature of IPV and health care seeking.

This study intends to contribute to improving policies and services for women who have a history of IPV victimization not only in Japan but also in other countries. In Japan, policies and services for the victims of IPV have not been well developed

(Yoshihama, 2002b). Using this Japanese data set has some distinct advantages. For example, because Japan has a universal health insurance system, factors other than health insurance can be explored as influences on health care seeking. This data allows for an exploration of factors that may be more directly related and unique to the issues of IPV. Furthermore, Japan has been facing potentially dramatic changes and improvements, such as the passage of the Act on the Prevention of Spousal Violence and the Protection of Victims, to protect victims of IPV. Studying the issue of IPV using the data from a country in such a dynamic transition provides an exciting opportunity to further develop policy and theory to reduce public health problems caused by IPV.

The Act on the Prevention of Spousal Violence and the Protection of Victims in Japan outlines the importance of improving victims' physical and psychological health. However, there are few standards for how to provide health care services to victims of IPV. To help in developing these standards for, it is important to know the existing patterns of IPV specific health care seeking. For example, if women with financial difficulties are less likely to seek health care, the governments should develop programs to provide financial assistance (e.g. waiver of co-pay) to the victims of IPV. If informal help from family and friends increases the likelihood of health care seeking, community awareness program may be effective in improving access to health care services. Developing networks among various formal help organizations would be helpful for the victims of IPV to increase access to health care and their safety.

This dissertation has the following three research questions:

- 1) What types of IPV victimization increase the odds of the first IPV specific health care seeking experience?

- 2) What factors increase or decrease the likelihood of health care seeking for women who have experienced IPV over the life course?
- 3) How does woman's IPV specific health care seeking change over the life course?

In order to explore these research questions and develop the hypotheses, Anderson's Behavioral Model of Health Care Utilization and cumulative risk theory were used to guide this process. According to Anderson's model, predisposing, enabling and need factors affect health care seeking. Anderson's model helps in identifying which factors influence IPV specific health care seeking. However, there are limitations applying this model to IPV related health care seeking. Anderson's model does not consider the recurrent nature of IPV and IPV related health care seeking. Cumulative risk theory was used to supplement in explaining the cumulative influences that affect IPV specific health care seeking over the life course.

This dissertation is comprised of seven chapters. Chapter 2 reviews previous studies of health care seeking among victims of IPV, as well as information about IPV and the health care system in Japan. In addition, the limitations of the previous studies are discussed.

Chapter 3 contains the guiding theoretical perspectives of Anderson's model and cumulative risk theory. Also, the hypotheses development is outlined. The research questions and hypotheses are summarized at the end of the chapter.

In Chapter 4, the method section includes the data source, measurements and statistical analysis. Two statistical methods were used to test hypotheses: the discrete-

time method and multilevel analysis. The variables for each analytic method are presented. Finally, the potential selection bias of the samples is addressed.

Chapter 5 addresses the descriptive statistics and the results of testing Hypothesis 1 using discrete-time method. Chapter 6 provides the descriptive statistics and the results of testing of Hypotheses 2-6 using multilevel analysis. Finally, Chapter 7 discusses the main findings and discussion, literature on Japan and IPV, policy implications, study limitations, future research suggestions, and the conclusion.

Chapter 2

Background of Health Care Seeking and Intimate Partner Violence

Introduction

This chapter addresses the background of health care seeking and intimate partner violence (IPV). There are two main parts of this chapter. The first part reviews previous studies of factors influencing health care seeking. While previous studies of health care seeking exist, most are not necessarily applicable to IPV specific health care seeking. This study develops the model of health care seeking specifically for the experiences of IPV victims in order to provide more effective policy and services for victims of IPV.

The second part of this chapter reviews health care seeking and IPV in Japan because this study uses data collected in Japan. There are still few studies on health care seeking for IPV in Japan, partly due to the perspective of IPV as a private matter not a social matter that was held until the early 1990's. This study is a stepping stone for understanding the issues of health care seeking for IPV in Japan.

Factors Influencing Health Care Seeking

People seek health care services to reduce the impact of symptoms on their perceived-health status or daily life (Irwin, Milsom, Kopp & Abrams, 2008). Symptoms, however, do not always lead to health care seeking. For example, Shaw (2001) reviewed

previous studies on help seeking and urinary incontinence and found that the perseverance of help seeking among people with urinary incontinence was not high although the symptoms can ruin their quality of life. In some cases, symptoms are not factors to determine the behavior of health care seeking.

Furthermore, health care seeking is not always associated with whether the person actually has an illness. In a study of help seeking for psychiatric disorders, Bland, Newman and Orn (1997) found that a high proportion of people who had psychiatric disorders did not seek help while more than one-third of patients who sought help did not have an actual disorder.

There are factors other than symptoms or actual illnesses which affect health care seeking. In addition to physical and mental illnesses, traumatic or stressful experiences in military service are predictors for help seeking among veterans (Marshall, Jorm, Grayson, Dobson and OToole, 1997). For health and mental health care utilization, psychiatric disorder diagnosis was not strongly related to care utilization. Instead, sex, age, severity of the illness, and co-morbidity were associated with help seeking (Newman & Orn, 1997). In a study of tuberculosis (TB) diagnosis, a delay was found between the onset of symptoms and when patients sought health care. This delay was caused by economic and social factors as well as the missed opportunity for diagnosis (Sarmiento, Hirsch-Moverman, Colson & El-Sadr, 2006). In another study, self-rated mental health status was a significant predictor of help seeking for depressive and anxiety disorders, while health beliefs and social support were not (Ng, Jin, Ho, Chua, Fones & Lim, 2008). The results of these studies show that stressful or traumatic experiences, demographic factors,

economic and social factors or self-rated health can influence health care seeking other than symptoms or actual illnesses.

In addition to the factors related to patient characteristics, how people perceive health care services is also an important factor in health care seeking. If people do not think that receiving health care services is worthwhile, they do not seek health care services. For example, when people who have urinary incontinence believe that medical treatment does not provide benefits to them or medical treatment looks troublesome, people do not seek medical care (Harris, Link, Tennstedt, Kusek, & McKinla, 2007). It is important for patients to understand the benefits of health care services for their health and daily life.

Self-awareness of the seriousness of symptoms is also an important factor for people to decide whether or not to seek health care services. When symptoms are not considered to be related to serious illness in general, people tend to postpone health care seeking. For example, because oral symptoms are rarely believed to be related to cancer, people who have oral symptoms often do not seek health care promptly (Scott, Grunfeld, Main, Gurk, 2006).

While influences on health care services utilization have been examined for specific health conditions, there are few studies that have identified factors influencing health care seeking specifically for the victims of IPV. Liang, Goodman, Tummala-Narra and Weintraub (2005) developed a theoretical framework from a cognitive perspective to understand help seeking processes among survivors of IPV. In their framework, individual, interpersonal and sociocultural factors directly or indirectly affect decisions to seek help. Problem recognition and definition and support selection directly influence

decision making and mediate the impact of individual, interpersonal and sociocultural factors on decisions to seek help. Because this framework is for help seeking in general, but not for health care seeking in particular, important specific health care seeking factors, such as motivation due to illness, are missing.

Regarding IPV and health care seeking, for example, Duterte, Bonomi, Kernic, Schiff, Thompson and Rivara (2008) examined how different types of IPV affected health care seeking. Women who had experienced psychological IPV only were less likely to seek health care than those who had experienced sexual IPV. Severity of physical IPV was associated with health care seeking. Although the results of this study show that specific types of IPV affect health care seeking differently, it is not clear how other factors influence health care seeking for women who have a history of IPV.

Cattaneo, Stuewig, Goodman, Kaltman and Dutton (2007) analyzed longitudinal patterns of legal and extra legal service seeking for victims of IPV. Extra legal services include health care services, crisis hotlines, counseling and religious counseling. They found that legal and extra legal services decreased together over time and time varying factors were important in predicting help seeking patterns. In this study, all study participants were already engaged in legal services. The main focus was the interaction between legal services and extra legal services without an analysis specifically for health care services.

While previous studies show that there are various factors influencing health care seeking, there are few studies which have examined factors affecting health care seeking for IPV. Because each health problem has different factors influencing health care seeking, it is important to identify the factors applied for the cases of IPV in particular.

Intimate Partner Violence and Health Care Seeking in Japan

Overview of intimate partner violence in Japan

Violence against women is a universal phenomenon (Nayak, Byrne, Martin & Abraham, 2003). While some risk factors for violence against women are similar across nations, other factors are nation specific (Gelles & Straus, 1979; Wolfgang & Ferracuti, 1967; Yllo, 1984).

In Japan, specific factors as well as universal factors affect women's experiences of IPV and IPV related health care seeking. For example, the lower divorce rate in Japan does not necessarily mean that Japanese couples have a better marital relationship. Often, it is legally more difficult to divorce in Japan than in the United States. Most states in the United States have a no fault based divorce law in which divorce is entered regardless of the cause if at least one of the parties files for divorce. In Japan, however, both parties need to agree to divorce and must have a reason for divorce, or else the couple must go through complicated court procedures to be granted divorce (Domestic Violence Action and Research Group, 2002). This means that Japanese women who have experienced violence from their spouses may encounter barriers to divorce and as a result, stay married to an abusive partner even when they want to end the relationship.

One of the other prominent factors salient in Japan which may be related to IPV is the traditional thought of *Ie* (Yoshihama & Yunomae, 2000). The concept of *Ie* refers to the idea of a husband as head of his family with power over family members. A wife is sometimes forced to be in a lower status in her family. *Ie* may cause unequal power dynamics between a husband and wife. Under these circumstances, a husband as well as his parents may justify his violence against his wife. This traditional factor, however,

cannot be simply applied to all cases of IPV because there are male victims of IPV, although the prevalence of IPV victimization among men is about one third of that among women in Japan (Gender Equity Bureau, 2009b). Individual factors such as experiencing childhood abuse, witnessing family violence or living in unsafe community may have stronger influence on IPV than traditions.

According to the multi-national study of the prevalence of IPV, the lifetime prevalence of physical and/or sexual violence is much lower in Japan than in other countries such as Bangladesh, Brazil, Ethiopia, Namibia, Peru, Samoa, Serbia, Montenegro, Thailand and Tanzania (Garcia-Moreno, Jansen, Heise & Watts, 2006). While the prevalence of IPV in Japan was 12.9 % for physical violence, 6.2% for sexual violence and 15.4 % for physical and/or sexual violence, in other countries the range was from 22.8 % to 48.7 % for physical violence, 6.3 to 49.7% for sexual violence and 23.7% to 70.9% for physical and/or sexual violence. The results of this study indicate that the prevalence of IPV tends to be lower in an industrialized context such as an urban area in Japan such as Tokyo.

A World Health Organization (WHO) population-based household study on IPV in Japan described characteristics of victims of IPV in Japan (Yoshihama & Kamano, 2007b; Yoshihama, Horrocks & Kamano, 2008; Garcia-Moreno, Jansen, Ellsberg, Heise & Watts, 2006). The data were collected in the city of Yokohama, which is near Tokyo, from 1,371 women. Eighty four of the respondents were excluded because they had never had an intimate relationship by the time of the data collection. About 15 % of them had experienced physical or sexual abuse. Approximately 60 % of the respondents had a job

at the time of survey. About 60% of the women had an education beyond high school (Garcia-Moreno, Jansen, Ellsberg, Heise & Watts, 2006).

According to this study, women who had experienced emotional abuse only or emotional abuse with physical/sexual abuse were more likely to have used health services in the past month or to have been hospitalized in the past year than women who did not have a history of IPV. The results indicated that IPV victimization can be threatening to victims' health. About 27 % of women with emotional abuse only, 33 % of women with emotional abuse plus physical or sexual abuse, and 19 % of women without a history of IPV rated their health as fair to very poor.

The study showed the effects of IPV on substance usage. About one third of respondents in the WHO study reported having smoked. Approximately 18 % of women who experienced emotional violence only, 23 % of women who experienced emotional abuse plus physical or sexual abuse, and 17 % of women who did not have a history of IPV drank more than three times a week.

The most recent survey on IPV in Japan was conducted by the Government of Japan Cabinet Office (Gender Equity Bureau, 2009b), and found that 24.9 % of 1,358 randomly sampled women had experienced physical IPV while 10.8 % of them had experienced physical, sexual and/or emotional IPV multiple times. About 30% of them talked about their experiences of IPV victimization with their relatives or friends. Only 3 % of victims sought help from health care professionals for an IPV experience although about 35 % of the women who had a history of IPV had been physically injured or had psychological problems. About 53% of them did not seek any help.

Historically, IPV in Japan had been considered not a social problem or crime but a private matter (Yoshihama, 2002a). The general public and policy makers did not pay attention to IPV as a social issue until 1992 (Kozu, 1999; Yoshihama, 1999). In fact, Kozu (1999) did not find any reliable sources on the prevalence of spousal violence in Japan prior to 1992.

In the 1990's, IPV developed into a social problem (Yoshihama, 2005). The changes occurred because of social transitions (Kozu, 1999) and efforts by nongovernmental organizations (Yoshihama, 2005). The societal transitions included a more unpredictable society, a greater interest in mental health or psychological services, and changes in the value of women.

These transitions led to further policy and legal changes to prevent IPV. The governmental report entitled the Gender Equity Plan for 2000 was issued in 1996 (Yoshihama, 2005). One of the primary purposes of the report was to end violence against women. In 1997, the first population-based study on IPV in Japan was conducted by the Tokyo Metropolitan Government. In 2001, the Act on the Prevention of Spousal Violence and the Protection of Victims was enacted with the intention to prevent IPV. However, the act is still very limited (Yoshihama, 2005). For example, it does not address violence between unmarried couples.

Although there has been some progress in policy and law to prevent IPV, service provision to victims of IPV has not been sufficient (Yoshihama, 2002c). The private sector has taken a central role in providing assistance to victims of IPV. The most common services provided by the private sector have been emergency shelters. Other

services are still very limited. Under these circumstances, it is unclear as to the current influences on health care seeking for IPV victims.

Other than health care facilities and shelters, the following organizations are expected to help the victims of IPV under the Act on the Prevention of Spousal Violence and the Protection of Victims: police, Spousal Violence Counseling and Support Center, district court and welfare office (Gender Equity Bureau, 2009a). The police are expected to prevent violence, to protect victims of IPV and to provide necessary assistance to increase the safety of the victims of IPV. Spousal Violence Counseling and Support Centers, which are authorized by municipalities, provide consultation and counseling services, temporary protection, information, and assistance for obtaining protection orders and shelter. The main role of district courts under the Act is issuing protection orders. Protection orders include prohibiting an abuser to approach the victim, the victim's child or the victim's relatives, prohibiting an abuser to call the victim for six months, or asking an abuser to vacate from victim's home for two months.

Although these organizations are expected to help victims of IPV, they usually provide services when the victims actively seek help. In other words, victims who do not have enough information about the Act or these organizations, or have psychological or other barriers to seeking formal help may not be able to utilize these available services. Nevertheless, the number of women and men who used these services has been increasing since the Act was enacted (Gender Equity Bureau, 2009b). For example, the number of counseling cases handled by Spousal Violence Counseling and Support Centers was 35,943 in 2002 but increased to 62,078 in 2007. Likewise, the number of IPV cases handled by police increased from 14,140 in 2002 to 20,992 in 2007. The

policies, despite several limitations, have had some positive influences for the victims of IPV.

Japanese health care system and health care seeking

Medical service facilities in Japan can be classified into academic hospitals, public hospitals, private hospitals and clinics (Ikegami & Campbell, 1996). Although academic hospitals cover only 6.5 % of the total hospital beds, they usually have cutting edge medical technology. Academic hospitals are commonly believed to provide high quality of care. Public hospitals are run by the national government, prefectural (state) government, municipal government, or other public organizations. The sizes of public hospitals vary from small hospitals with about 50 beds in rural areas to large hospitals with more than 500 beds in urban areas. Medical services vary within the public hospitals. Private hospitals are run by nonprofit corporations. In general, private hospitals have a strong pressure to maintain costs because they have less tax privileges than academic or public hospitals. The number of clinics is the highest among the medical facilities. Most clinics have only one physician with supporting staff and locate in walking distance from patients' homes or places of employment. One third of clinics provide in-patient services as well as out-patient services.

Tokyo's medical facilities' characteristics are an example of the distribution of medical care. In 2001, there were 681 hospitals and 11,848 clinics for the total population over 12,000,000 (Tokyo Metropolitan Government, 2004). The total number of beds was 130,932. Fifty seven hospitals (8.3%) had more than 500 beds. The total number of health

care professionals was about 150,000. About 14 % of health care professionals were physicians. About 42 % were registered nurses.

Japan established a universal health insurance system in 1961. All Japanese who live in Japan, as well as all legal immigrants who have permission to live in Japan for more than a year, are required have health insurance. Patients can choose their providers and visit most of the medical facilities (except for select highly specialized hospitals such as cancer centers) without an appointment. As a result, most hospitals are very crowded. In fact, it is common that after waiting for three hours, the patient often has only three minutes with a physician (Ikegami & Campbell, 1996). Patients are more likely to be dissatisfied with health care in Japan than in the United States mainly because patients spend a very short time with a physician after long wait periods (Kurata, Watanabe, McBride, Kawai & Anderson, 1994). At the same time, the waiting time at an emergency department is shorter in Japan than in the United States because some of the emergency patients visit other departments in Japan (Kurata, Watanabe, McBride, Kawai & Anderson, 1994).

In Japan, self-referral is a common medical care practice. Self-referral is positively associated with dissatisfaction with a patient's most recent health care experience (Guo, Kuroki, Yamashiro & Koizumi 2002). According to the study, patient dissatisfaction is often related to specific dissatisfaction with medical staff, especially physicians.

In the last decade, the Japanese government changed some of its health policies to improve health care services and to maintain costs. A new health care policy was introduced to improve the quality of physician training in 2004. Before the policy, the

majority of medical graduates started their career at an academic hospital (Koike, Yasunaga, Matsumoto, Ide, Kodama & Imamura, 2008). They commonly received training at a single specialty. There was no special training for primary care or family medicine until 2004 (Inoue & Matsumoto, 2004). Due to concerns that medical graduates might not develop enough proficiency in their clinical skills (Nomura, Yano, Mizushima, Endo, Aoki, Shinozaki & Fukui, 2008), the new policy was expected to improve medical services by changing physician education.

The Japanese government also amended the medical care payment system in 2003. The Japanese medical system replaced the fee-for-service payment system with a case-mix payment system in 2003 (Okamura, Kobayashi & Sakamaki, 2005). While the case-mix payment has not achieved the original purpose of reducing medical expenditure, a significant change was found in a decreased length of stay for hospital visits. The Japan Medical Association and the Japan Hospital Association were concerned that a case-mix payment system might worsen quality of care. But some recent studies have found positive outcomes of a case-mix payment for controlling costs and maintaining quality of care (e.g. Kuwabara & Fushimi, 2009).

With respect to health care for IPV, Japanese women who have experienced IPV have been found to have health problems and to seek health care. They are more likely to have distress symptoms, suicidal ideation, poorer self-rated health status, difficulty walking and difficulty performing usual activities (Yoshihama, Horrocks & Kamano, 2007a). In addition, they are more likely to utilize health services compared with women who have no IPV experience.

Nemoto, Rodriguez and Mkandawire-Valhmu (2008) interviewed fifteen Japanese women who had a history of IPV to analyze their perspectives of the benefits of health care utilization for IPV related health problems. The women indicated that empathy and understanding from health care professionals, professional intervention, and flexible arrangement of appointment and assistance were helpful to deal with their partner's violence.

Six medical social workers were interviewed near the Tokyo Metropolitan Area in Japan in 1998 (Kanou & Noumai, 2000). They expressed difficulties in implementing a program to screen patients who had a history of IPV because of a lack of training and consensus about how to deal with IPV among health care professionals. They found it difficult to work with other organizations that address non-health care needs for victims of IPV. They also believed that many victims of IPV were reluctant to seek help from formal resources.

Although Japan has a universal health insurance system, some treatments for IPV related injuries are not covered by insurance. If a victim of IPV is a dependent on an abusive spouse for health insurance, the medical fee for her injury from spousal IPV may not be covered because the Health Insurance Law states that health insurance does not cover accidents by beneficiaries' intentional criminal behavior (Domestic Action and Research Group, 2002). This kind of law is a significant barrier for victims of IPV accessing health care services.

Horiuchi, Yaju, Kataoka, Eto, Matsumoto (2009) recently developed domestic violence clinical guidelines for health care professionals in Japan. Their guidelines include screening, risk assessment, safety assessment and planning, providing

information or education and follow-up. While developing such guidelines could help health care professionals in providing appropriate services to victims of IPV, the implementation of such clinical guidelines is still uncertain.

There are few previous studies on health care seeking for victims of IPV in Japan. While there are not significant barriers to access to health care services in Japan due to the universal health insurance system, there are still potential barriers for victims of IPV. The patterns of health care seeking among the victims of IPV are also not clear. It is possible that medical professionals do not know that some of their patients seek health care because of IPV victimization. To develop further policy and services for victims of IPV, it is important to examine how victims have sought health care services as well as other services over the life course. This study would expect to be a milestone for the research on health care seeking for women who have experienced IPV in Japan.

Chapter 3

Theory and Hypotheses

Introduction

The purpose of this chapter is to develop hypotheses based upon Anderson's Behavioral Model of Health Care Utilization and cumulative risk theory. These hypotheses examine the factors influencing the odds of the first intimate partner violence (IPV) specific health care seeking, the factors affecting IPV specific health care seeking over the life course, and the trajectory of IPV specific health care seeking over the life course in Japan.

Some victims of IPV seek health care while others do not even if they experience the same kind of IPV incidents. The timing and frequency of health care seeking also varies among victims. While most previous studies on health care seeking for victims of IPV are cross-sectional, this study examines health care seeking among victims using life course data. Without a life course perspective, it is difficult to fully understand health care seeking and IPV, both of which are recurrent.

In this chapter, first, Anderson's model and cumulative risk theory are reviewed. Then, based on these theories, hypotheses are outlined. Finally, the research questions and hypotheses are summarized.

Anderson's Behavioral Model of Health Service Utilization

Anderson's Behavioral Model of Health Service Utilization (Anderson, 1995) covers a wide range of factors influencing health care seeking and is helpful in discovering potential factors influencing health care seeking for victims of IPV. Anderson's model explains which factors affect the utilization of medical care and has been widely used to examine why people seek health care. The model was originally developed to understand why families utilize health services but shifted to focus on individual health care seeking. According to Anderson's model, there are two primary predictors of health behavior: population characteristics and the environment. The three types of population characteristics in the model are predisposing characteristics, enabling resources and perceived or evaluated need. Predisposing characteristics refer to demographics and social identities such as age, sex, marital status, education, occupation, and ethnicity. Enabling resources include income level and community resources. Perceived or evaluated need for health care services is related to symptoms or illness. The environment in this model includes health care systems and the external environmental context. Although Anderson's model was developed in the United States, the model has been used to examine health care utilization in other countries (e.g. Kim, Cho & June, 2006 (South Korea); Chou, Lee, Lin, Chang & Huang, 2008 (Taiwan); Couture, Nguyen, Alvarado, Velasquez & Zunzunegui, 2008 (Mexico).

The model has also been used to examine health care utilization for a variety of specific populations of patients, as well as for particular patient needs. For example, by examining the 2001 National Survey of Veterans, Elhai, Grubaugh, Richardson, Egede and Creamer (2008) found need factors such as illness were the most important triggers

to cause the use of medical care. Even though predisposing and enabling factors affected access to health care services, these factors did not have a strong impact on whether the veterans would seek health care or not.

Gavrilovic, Schutzwahl, Fazel and Priebe (2005) reviewed studies on seeking treatment for mental health services after a traumatic event and analyzed these studies using Anderson's model. The impact of predisposing factors was inconsistent. While socio-economic characteristics were significantly associated with seeking treatment for mental health services in many studies, education, age, gender, employment status, race, marital status and geographic location did not have a significant influence in other studies. Among enabling factors, income and medical insurance were significant predictors for treatment seeking. Social network factors were not included in their review on enabling factors. Need factors were most consistently related to treatment seeking. Current PTSD, depression, anxiety and substance misuse were found to be significant predictors for treatment seeking.

Vingilisa, Wade and Seeley (2007) examined the predictors of adolescent health care utilization. Predisposing, enabling and need factors independently affected adolescent health care utilization. Age, gender and family structure were the predisposing factors which affected health care utilization. Among enabling factors, adolescents from families with lower incomes were more likely to seek health care due to their poorer health status and higher need for health care. Need factors such as poor health status were found to be the strongest predictors of health care utilization.

The factors affecting health care seeking vary across these studies. Some studies found predisposing and enabling factors to be strong predictors of health care seeking,

while others suggested that need factors were most important in determining health care seeking. These factors differ based on patient population and the types of health problems and health care services that patients are seeking. Anderson's model has contributed to research on health care seeking by guiding the process of identifying the specific influencing factors for different settings or situations. Few studies, however, have used Anderson's model or other models of health care seeking to examine health care utilization by victims of IPV.

Based on Anderson's model, it is predicted that multiple factors including predisposing, enabling and need factors affect health care seeking for women who have experienced IPV. IPV is not a health problem or symptom but potentially causes health problems. Although not all IPV incidents lead to health problems, need factors are replaced by the incidents of IPV in this study because the main focus of this study is IPV specific health care seeking.

One of the limitations of applying Anderson's model to IPV health care seeking is that it does not address the recurrent nature of health care seeking and IPV. Cumulative risk theory is used to expand Anderson's model with a life course perspective. In the next two sections, the impact of cumulative IPV on health care seeking and cumulative risk theory are reviewed. At the end of the sections, hypotheses are outlined using both Anderson's model and the cumulative risk theory.

Cumulative IPV Experience and Health Care Seeking

Victims of IPV usually do not seek health care services immediately after every incident of IPV. Randomly sampled women who participated in a large health plan and sought medical and legal services for IPV tended to have experienced severe long-lasting physical, sexual and psychological IPV (Duterte, Bonomi, Kernic, Schiff, Melissa, Thompson and Rivara, 2008). Nevertheless, based on a review of police reports, only 20.5% of women who had IPV-related injury sought medical care (Duncan, Stayton & Hall, 1999). Another study found that substantial numbers of women in domestic violence programs who needed mental health services did not seek such care (Moracco, Brown, Martin, Chang, Dulli, Loucks-Sorrell, Turner, Bou-Saada & Starsonneck, 2004).

Victims of IPV often do not utilize health care services immediately after an IPV incident but later in their life (Rivara, Anderson, Reid, Carrell & Thompson, 2007). Women with a history of IPV were found to incur higher medical cost than women who did not experience IPV (Rivara, Anderson, Reid, Carrell & Thompson, 2007; Fugate, Landis, Riordan, Naureckas & Engel, 2005; Plichta, 2004; Coker, Reeder, Fadden & Smith, 2004). The results of these studies suggest the possibility that victims of IPV seek health care services over the life course. Few studies, however, have examined the impact of IPV on health care seeking over the life course. The existing cross sectional studies do not address recurrent incidents of IPV and health care seeking.

Cumulative Risk Theory

Cumulative risk theory is helpful in understanding how the cumulative experience of IPV and other life events predict health care seeking. Cumulative risk theory suggests

that cumulative risk factors increase the probability of future problems (Rutter, 1978). Cumulative risk theory predicts outcomes as the consequence of the accumulated risks (Kalil & Kunz, 1998); a cumulative history of exposure to risks predicts how a person reacts to potential future risks (Lewis, Cavanagh, Ahn & Yoshioka, 2008). Also, the theory asserts that risks are considered stressors which accumulate over time (Flouri, 2008). Cumulative risk theory also provides a method to examine how risk factors work toward certain outcomes over time (Appleyard, Egeland, van Dulmen & Sroufe, 2005).

Cumulative risk theory was originally developed to identify risk factors for serious mental disorders among children (Barocas, Seifer & Sameroff, 1985) and found that family risk factors impact children's future behavioral adjustment. Cumulative risk theory has been used for studies not only looking at child development (e.g. Flouri, 2008) but also on other areas such as unmarried adolescent girls and childbirth (Kalil & Kunz, 1999), predictors of adolescents' running away from foster care (Nesmith, 2006), parental alcohol drinking and youth drinking (Coffelt, Forehand, Olson, Jones, Gaffney & Zens, 2006), and the impact of the September 11, 2001 terrorism on pregnant women who had a cumulative history of IPV (Lewis, Cavanagh, Ahn & Yoshioka, 2008).

Cumulative risk theory is applicable to examining IPV and health care seeking. There are multiple risk factors that lead to health care seeking as the consequence of IPV victimization. These multiple factors are accumulated over time. It would be rare that a victim of IPV seeks health care after every single episode of IPV; when she visits a health care facility, she may have a history of cumulative experiences of IPV.

The hypotheses which are presented in the following sections are based on Anderson's model and cumulative risk theory. There are three main focuses in these

hypotheses. The first focus is factors influencing the odds of the first IPV specific health care seeking. The second focus is on how the current and cumulative risks of IPV and poverty and the cumulative benefits of employment status, and informal or formal help affect health care seeking over life course. The third focus is on how IPV specific health care seeking changes over the life course.

Hypotheses

First IPV specific health care seeking

As discussed in the previous section, victims of IPV usually do not seek health care services immediately after every incident of IPV. Analyzing the first IPV specific health care seeking experience is important because it is the first entry into health care services. If victims of IPV have a significant delay in seeking health care for the first time, their health problems could become very serious later in life. For health care professionals, the first IPV specific health care seeking experience can be the prominent chance to help victims of IPV and to reduce future risks of health problems and IPV.

Different types of IPV often do not start at the same time. Victims of IPV have various levels of cumulative experiences of different types of IPV at the first entry to health care services as cumulative risk theory suggests. While emotional violence has a significant negative impact on health, emotional violence worsens health when physical and sexual violence are also experienced simultaneously (Yoshihama, Horrocks & Kamano, 2009). The primary violence which increases the odds of the first IPV specific health care seeking may be physical and sexual violence.

Hypothesis 1: Physical or sexual violence is more likely to increase the odds of the first IPV specific health care seeking occurring than emotional or psychological violence.

Financial status

According to Anderson's model, financial status is one of the important enabling factors which affect health care seeking. When a person is in poor financial status, the person is less likely to seek health care. Women who have lower income (Breiding, Black & Ryan, 2008a; Thompson, Bonomi, Anderson, Reid, Dimer, Carrell, Rivara, 2006) or lower household income (Vest, Catlin, Chen & Brownson, 2002) tend to have higher rates of IPV victimization. Higher risks of IPV victimization can be also positively associated with poorer health status (Plichta, 2004). The risk of poverty can be cumulative as well as current based upon the cumulative risk theory. It is hypothesized that cumulative or current welfare status, which refers to receiving public assistance, decreases the likelihood of IPV specific health care seeking over the life course.

Hypothesis 2: Cumulative or current welfare status decreases the likelihood of health care seeking over the life course.

Employment status

Employment status is also one of the enabling factors which influence health care seeking on Anderson's model. Victims of IPV who have a job gain financially, socially and psychologically positive influence (Rothman, Hathaway, Stidsen & de Vries, 2007). Unemployed victims of IPV have significant barriers to health care services (Wilson,

Silberberg, Brown & Yaggy, 2007). Although everyone has health insurance under the universal health insurance system in Japan, co-pays for the national health insurance are approximately three times higher than those for health insurance through an employer. The current experience of being employed may increase the likelihood of health care seeking over the life course because victims of IPV who have a full-time job may have fewer barriers to accessing health care services.

Unlike current employment experiences, cumulative employment experience may have a reverse effect. The employment status can be influenced by the experience of IPV victimization. For example, while women cannot control their perpetrator's behavior regardless of their employment status, abusive partners may interfere with women's employment. The other possibility is that women who have health problems from IPV victimization may have difficulties meeting work demands. In this study, the focus is on how employment status affects health care seeking. Cumulative employment experience is not included in the hypothesis regarding employment status.

Hypothesis 3: Current employment increases the likelihood of health care seeking over the life course.

Informal and formal help seeking

Informal and formal help refers to the social networks which affects health status and health care seeking in Anderson's model. Higher levels of emotional support may reduce the negative impact of IPV on health (Coker, Watkins, Smith & Brandt, 2003). While social support may improve health status, it may also increase the probability of

health care seeking because informal and formal social support improves mental health and physical safety and increases willingness to seek help from formal sources (Liang, Goodman, Tummala-Narra, Weintraub, 2005). The benefits of cumulative social support as well as current social support could affect IPV specific health care seeking as the cumulative risk theory implies. The cumulative or current experience of help seeking from family and friends or formal sources other than health care services may increase the likelihood of IPV specific health care seeking over the life course.

Hypothesis 4: Cumulative or current help seeking from family or friends increases the likelihood of health care seeking over the life course.

Hypothesis 5: Cumulative or current help seeking from non-health care formal services increases the likelihood of health care seeking over the life course.

Changes of health care seeking over the life course

IPV specific health care seeking often occurs after an IPV incident. However, it would be unlikely for victims of IPV to seek health care after every single incident of IPV. The experience of IPV may cumulatively affect health care seeking over the life course based on cumulative risk theory. Thus, the probability of health care seeking over the life course has the similar trajectory of the probabilities of IPV incidents but occurs slightly later than the IPV incidents.

Hypothesis 6: The trajectory of probability of health care seeking is similar to that of IPV occurrence but shows some delay over the life course.

Summary of Research Questions and Hypotheses

Research question 1:

Which types of IPV victimization increase the odds of health care seeking?

Hypothesis 1: Physical or sexual violence is more likely to increase the odds of the first IPV specific health care seeking occurring than psychological or emotional violence.

Research question 2:

What factors increase or decrease the likelihood of health care seeking for women who have experienced IPV over the life course?

Hypothesis 2: Cumulative or current welfare status decreases the likelihood of health care seeking over the life course.

Hypothesis 3: Current employment increases the likelihood of health care seeking over the life course.

Hypothesis 4: Cumulative or current help seeking from family or friends increases the likelihood of health care seeking over the life course.

Hypothesis 5: Cumulative or current help seeking from non-health care formal services increases the likelihood of health care seeking over the life course.

Research question 3:

How does IPV specific health care seeking change over the life course?

Hypothesis 6: The trajectory of probability of health care seeking is similar to that of IPV occurrence but shows some delay over the life course.

Chapter 4

Methods

Introduction

This chapter presents an outline of the research methods. First, an explanation of the data collection method, the Life History Calendar, is provided. The explanation also includes the respondent characteristics and an overview of the Life History Calendars. Second, measurement, statistical approaches, and analytic models are described. Two statistical methods were used to analyze the life course data: the discrete-time method and hierarchical linear modeling (HLM). Third, variables of the discrete time method and HLM are presented. Finally, the potential selection bias of the samples and the comparison between the samples and the population are discussed.

Data Source

The data were collected based on the Life History Calendar (LHC) method also known as the Event History Calendar method. Study participants were recruited by flyer, newspaper advertisement and referrals from community-based social service organizations. One hundred and one women who had experienced intimate partner violence (IPV) in their lifetime participated in a semi-structured, face-to-face interview in Japan from 2005 to 2006. The average length of the interviews was 114 minutes

(minimum: 46; maximum: 240; SD = 39.026). All participants lived in the Tokyo metropolitan area. During the face-to-face interview, an interviewer collected information about the respondents' life experiences and filled out a Life History Calendar. The Life History Calendar shows whether a respondent experienced life events such as IPV, employment, an intimate relationship, help seeking, and childbirth in each year from age fifteen to the age at the time of the interview. The data were originally entered into Excel, and then were exported from the Excel file to a SPSS file.

The LHC method was developed for collecting reliable longitudinal retrospective data on life events and activities (Freedman, 1988). Collecting reliable retrospective data is challenging because there is a threat of recall bias. LHC reflects the structure of autobiographical memory and as a result increases the accuracy of retrospective data (Belli, 1998).

Identifying IPV heavily relies on the victims' self-report. The LHC method is a reliable method to collect data on incidents of IPV and other life experiences or activities over the life course. Using the LHC method for the cases of IPV helps in increasing the accuracy of the victims' recall of IPV incidents and other life events over the life course (Yoshihama, Gillespie, Hammock, Belli & Tolman, 2005; Yoshihama, Clum, Crampton & Gillespie, 2002). For example, Yoshihama, Gillespie, Hammock, et. al. (2005) tested the effectiveness of the LHC methods by comparing the data from the LHC method with those from the epidemiological study and found the LHC method was reliable to collect retrospective self-report data.

This data source is suitable for the primary research questions of this dissertation because the LHC method is designed for identifying IPV incidents, help seeking and

other life events, both specifically within a given year and generally over the life course. Although the sample size is relatively small, each respondent provided information about IPV, help seeking and other activities in every year since age 15. An example of LHC with some of the selected variables for this study is presented on Figure 4.1. On this table, for example, Respondent X experienced residential move, was in school and was in an intimate relationship. She experienced physical IPV at ages 19, 22 and 23.

Figure 4.1: Example of Life History Calendar Data Sheet for One Respondent*

Respondent X

Age	15	16	17	18	19	20	21	22	23
Residential move	0	0	0	1	0	0	0	1	0
School	1	1	1	1	1	1	1	1	0
Work full-time	0	0	0	0	0	0	0	0	1
Partner	0	0	0	1	1	0	0	1	1
Physical IPV	0	0	0	0	1	0	0	1	1
Sexual IPV	0	0	0	0	0	0	0	0	1
Health care seeking	0	0	0	0	0	0	0	0	1

*1=yes; 0=no

Respondent characteristics

There were 101 respondents. The average age of the respondents at the time of the interview was 48 years old (range = 24-80; SD = 12.45). Out of the 101 respondents, 90 respondents (89%) had a high school diploma and 30 (29.7%) had graduated from college. The number of intimate partners throughout the life course ranged from one to nine. Eighteen of the respondents had more than one abusive intimate partner over the life course, of which only one respondent had four abusive partners while the other participants had one to three abusive partners. IPV by an ex-partner was found only in 11 person years (0.4%). This implies that most of the abusers were current partners.

Life History Calendar overview

During the interview for the life history calendar, the respondents were initially asked about memorable life events to anchor their memory. The respondents were then asked whether they experienced various forms of IPV. On the LHCs, the various forms of IPV were specified with the years that each incident began, continued or ended. Likewise, other life events such as having a full-time job or welfare status were recorded in the same way on the LHCs. For other aspects of respondents' life, such as the degree of satisfaction, a five-point scale or numerical values were used.

The total number of years described through the LHCs from all respondents was 3,403 years. Out of the total years, 522 years (15.3%) were the years before the respondents had their first intimate relationships. The relationship status for 26 years out of 3,403 years was unknown because two respondents refused disclosing their intimate relationships for these years. The total number of years after the respondents had the first intimate relationship was 2,855 years.

Measurement

This section explains measurements of IPV, life events and demographic characteristics. Not all of the measurements were used for both the discrete time hazard models and HLM. Variables for each statistical analysis are addressed after the analytic methods are explained.

Health care seeking

The measure of health care seeking is whether a respondent sought IPV related health care services or not in a given year (1 = sought health care; 0 = did not seek health care). Health care seeking unrelated to IPV was not included. The respondents were asked only about IPV specific health care seeking.

IPV

There are five types of IPV: physical, sexual, emotional, financial and threats. Previous research suggest that physical and/or sexual IPV is more likely related to adverse health than non physical IPV (Bonomi, Anderson, Rivara & Thompson, 2007; Bonomi, Thompson, Anderson, Reid, Carrell, Dimer & Rivara, 2006).

Some of the incidents of IPV such as threats cannot consistently be classified into only one type of IPV. Threats can be physical, sexual and psychological. For example, threats are often included as psychological violence even if it is a physical threat (e.g. Zink, Fisher, Regan & Pabst, 2005) or is part of physical or sexual violence (e.g. Burge, 1997). Threats are also analyzed separately from physical, sexual or psychological violence in other studies (e.g. Ahmad, Hogg-Johnson, Stewart & Levinson, 2007). In this study, threats are analyzed separately from other forms IPV.

- **Physical IPV**

There are two measurements for physical IPV. Both of them are dichotomous (1 = yes; 0 = no). The incidents of physical IPV for the first variable include pushing, grabbing,

twisting arms, pulling, hitting, punching, kicking, dragging around, beating up and other physical abuse. The two measurements are:

- Whether a respondent experienced any type of physical IPV in a given year and
- Whether a respondent was injured in a given year.
- Sexual IPV

The following is a measurement of sexual IPV (1 = yes; 0 = no). The incidents of sexual IPV include forced sex, unwanted sex, the abusive partner's refusal to use contraception or other sexual abuse. The measurement used was

- Whether a respondent experienced sexual IPV in a given year.
- Emotional IPV

Emotional IPV is measured with whether a respondent experienced emotional IPV in a given year (1 = yes; 0 = no).

- Whether a respondent experienced emotional IPV in a given year
- Financial IPV

Financial IPV, which is often included in emotional violence, refers to financial abuse against a partner such as controlling a partner by restricting the access to financial resources. Financial IPV is analyzed separately from emotional IPV because financial IPV can be directly related to controlling access to health care (Fawole, 2008). Financial IPV is measured with whether a respondent experienced financial IPV in a given year (1 = yes; 0 = no).

- Whether a respondent experienced financial IPV in a given year
- Threats by partner

Threats are measured based upon whether a respondent experienced a threat in a given year (1 = yes; 0 = no).

- Whether a respondent experienced a threat in a given year

Predisposing factors

- Marital/relationship status

For marital and relationship status, whether or not the respondent lived with her abusive partner is used because living with an abusive partner can change the nature or frequency of IPV. Living away from an abusive partner does not necessarily improve mental or physical health of women who have experienced IPV (Alsaker, Moen & Kristoffersen, 2008; Sawada, Maruyama, Yoshino, Konno & Katakura, 2007).

Separation, however, can create physical distance between a woman and her abusive partner. While women who are experiencing IPV have weaker confidence of their self-control (Umberson, Anderson, Glick & Shapiro, 1998), the physical distance from their abusive partner may help in regaining self-control and as a result increase the probability of health care seeking.

Although separation does not always reduce health problems, some of the incidents of IPV can be reduced by separation. Physical and most sexual IPV requires direct contact, while psychological IPV does not always need direct contact. In fact, one study found that during separation, 95 % of psychological IPV continues, while only 35 % of physical violence continues (Hotton, 2001).

Living with an abusive partner is measured dichotomous, whether it happened in a given year (1 = yes; 0 = no).

- A respondent was currently living with an abusive partner
- Education

Women who have less education are more likely to experience IPV (Breiding, Black & Ryan, 2008b;Thompson, Bonomi, Anderson, Reid, Dimer, Carrell, Rivara, 2006). Although a lower educational level is associated with higher risks of IPV, the victims of IPV who are more educated are more likely to seek help. For example, among women who experienced IPV and forced sex, women with higher education were more likely to seek help (Coker, Derrick, Lumpkin, Aldrich and Oldendick R, 2000). Education is represented by whether the respondent was in a school such as high school, community college, college or graduate school in a given year (1= yes; 0=no).

Enabling factors

- Financial status

Whether a respondent was on welfare in a given year is a measurement of financial status (1 = yes; 0 = no). In Japan, people are qualified to receive welfare when their total assets are under that of people who can maintain at least a minimum level of daily life. Because costs of living vary across different areas, each municipality has different standards for welfare status. However, the standards are consistent throughout the Tokyo Metropolitan area where the respondents of this study lived.

- A respondent was on welfare
- Employment status

The measure of employment status is whether a respondent had a full-time job in a given year (1 = yes; 0 = no).

- A respondent had a full-time job
- Help seeking

The measurements of help-seeking resources include utilizing a formal network (help seeking with non-health care professionals) and informal network (friends or family). All of the following variables are dichotomous in regards to whether or not the experience happened in a given year (1 = yes; 0 = no).

- A respondent sought help from non-health care professionals (e.g. family court, police, restraining order, welfare department, shelter, counselor)
- A respondent sought help from family or friends

Age

Younger women are more susceptible to IPV (Breiding, Black & Ryan, 2008b; Romans, Forte, Cohen, Du & Hyman, 2007; Thompson, Bonomi, Anderson, Reid, Dimer, Carrell, Rivara, 2006; Vest, Catlin, Chen & Brownson, 2002). Older women, however, are more likely to have more health problems than younger women. Self-rated health status and actual health status also decline among older women (Zack, Moriarty, Stroup, Ford & Mokdad, 2004). In addition, older women are more likely to seek health care than younger women for the same symptoms. For example, older people are more likely to seek medical care than younger people for chest pain (Adamson, Donovan, Ben-Shlomo, Chaturvedi, Bowling, 2008). In the Life History Calendar method, each respondent is asked about life events for each year from fifteen to the age at the time of the interview.

Other variables

- Alcohol consumption

Alcohol consumption has been shown to be positively related to IPV (Fife, Ebersole, Bigatti, Lane & Huber, 2008; Breiding, Black & Ryan, 2008). Alcohol related problems in relation to IPV are found not only among perpetrators but also the victims (Weinsheimer, Schermer, Malcoe, Balduf, Bloomfield, 2005). Excess alcohol consumption has adverse effects on health.

Respondents were asked how many alcoholic drinks they had at one time on average in a given year (e.g. three glasses of wine) which was converted into the amount of alcohol in milliliters.

- Tobacco use

IPV is sometimes associated with current smoking patterns (Breiding, Black & Ryan, 2008). Psychological IPV is especially positively related to smoking (Jun, Rich-Edwards, Boynton-Jarrett & Wright 2008). Like alcohol drinking, smoking has a negative impact on health and therefore may affect health care seeking. Tobacco use is measured by whether a respondent smoked in a given year (1 = yes; 0 = no).

- Self-rated health

Self-rated health status plays an important role in deciding whether or not to seek health care in some cases. Self-rated health is measured by a five point Likert scale (1 = very poor; 5 = excellent) in a given year.

- Childbirth

The annual prevalence of IPV is higher among women with children than those without children (Bair-Merritt, Holmes, Holmes, Feinstein & Feudtner, 2008). Children

whose female care giver has experienced IPV are more likely to seek emergency health care, despite having a lower rate of hospitalization (Bair-Merritt, Feudtner, Localio, Feinstein, Rubin & Holmes, 2008). Although it is not clear how having children or not having children affects health care seeking for women who have experienced IPV, children may influence IPV specific health care seeking. Childbirth can be a significant life event which can change the nature of the relationship and IPV. Childbirth was measured by whether the respondent had childbirth is a given year (1 = yes; 0 = no).

Statistical Analysis

All descriptive statistical analyses were performed using SPSS Version 16. Because the data were collected through face-to-face interviews, missing values were very rare. The discrete-time method was used to test Hypothesis 1: Physical or sexual IPV is more likely than psychological or emotional violence to increase the odds of the first IPV specific health care seeking experience. The discrete-time method predicted the odds that a respondent would experience the first IPV specific health care seeking with the condition that she did not seek it in any earlier years. All statistical analyses of the discrete-time method were performed using SAS version 9.1.3.

Hierarchical Linear Modeling (HLM) was used to test Hypotheses 2-6. During data collection, individuals were repeatedly asked the presence or absence of life events in a given year and over multiple years. HLM is a suitable method to examine individual change over time (Raudenbush & Bryk, 2002). Before testing the hypotheses, unconditional analysis was conducted to fit models for change. The statistical analyses were performed using HLM version 6.0.6

Using the two analytic methods allows for a dynamic examination of the life course data. While HLM provides an advantage to examining individual changes in multi-time-point life activities over the life course, the discrete time hazard model allows for estimating the odds to the first IPV specific health care seeking.

The Discrete-time Method

The discrete-time method which is also known as conditional logistic regression was used to analyze the types of IPV that increase the odds of the first IPV specific health care seeking. The discrete-time model examines the experience of events at each discrete-time interval for continuous-time data (Singer & Willet, 2003). Although the discrete-time method is under the framework of Cox regression which is for continuous-time data, the model has an assumption that time is discrete (Allison, 1995). Conditional probability $p(t_{ij})$ of the discrete-time method is described as follows (Singer & Willet, 2003).

$$p(t_{ij}) = \Pr[T_i=j | T_i \geq j]$$

In this equation, an individual respondent i will experience the first IPV specific health care seeking at a discrete time j given that the respondent did not experience it at any time before time j . T_i refers to event times for a respondent i .

Conditional probability is also called a discrete-time hazard (Allison, 1995). A discrete-time hazard is log odds (logits) (Singer & Willett, 2003). In general, odds are computed by probability/(1-probability). While odds ratio for two individuals i and j at time t (O_{it}/O_{jt}) is not time dependent, log(odds) can vary depending on time (Allison, 1995).

In the life history calendar data, IPV incidents and life events were measured at a yearly scale. The beginning time point of the data set is the age at the first IPV victimization because it is at this time point that respondents had the possibility to seek the first IPV specific health care services. Using the time when the risk of the target event starts is a very common way to identify the beginning of the time for discrete-time data (Singer & Willett, 1991). Years after the respondent experienced the first IPV specific health care seeking were deleted from the data set for the analysis.

Model development and fitting models

The survivor function $S(t_{ij})$ refers to the probability that an individual i will survive without experiencing the first IPV specific health care seeking in the time period j (Singer & Willet, 2003). The survivor function is written as follows where T_i denotes that an individual i has not experienced the first IPV specific health care seeking at the end of year j :

$$S(t_{ij}) = \Pr[T_i > j]$$

In this equation, survival probability for individual i at time t is probability that T_i (time i experiences an event) exceeds time t_j . Survivor function at time t_0 is 1. Figure 4.2 presents estimated survivor function for the first IPV specific health care seeking. Figure 4.3 shows the estimated one minus survivor function of the first IPV specific health care seeking and show how cumulative experience of IPV specific health care seeking increased.

Figure 4. 2: Survivor Function at Mean Covariant for the First IPV Specific Health Care Seeking

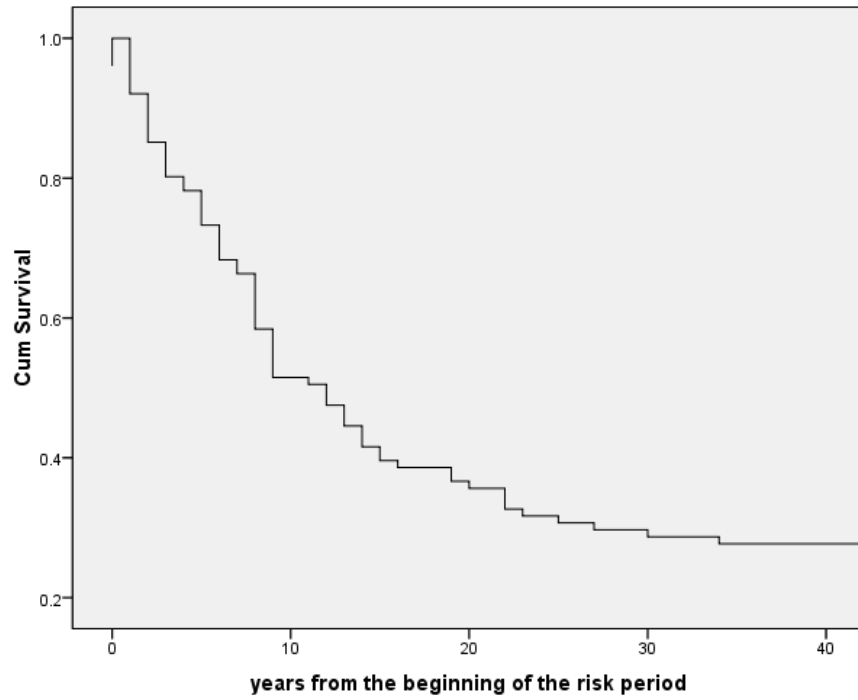
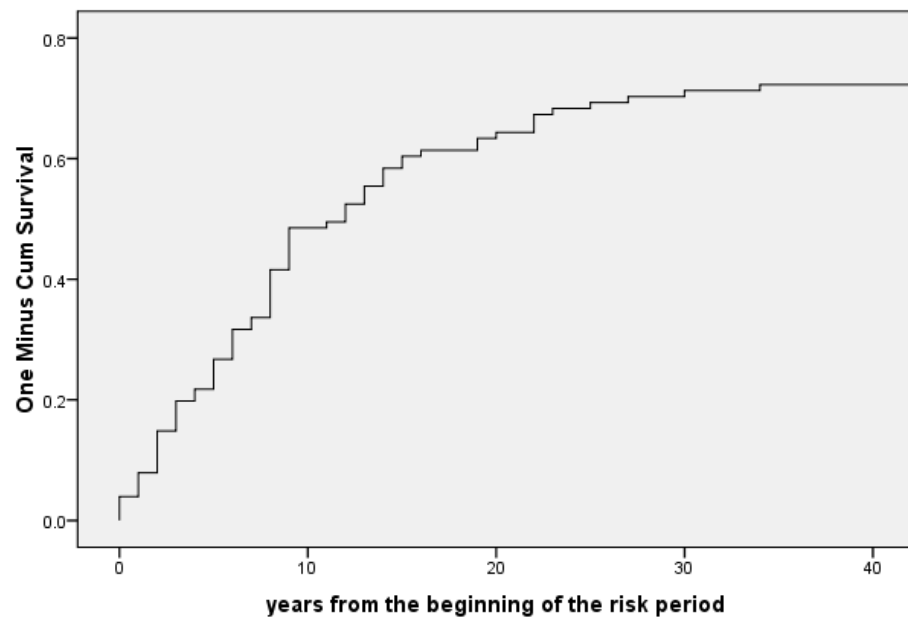


Figure 4.3: One Minus Survivor Function at Mean of Covariates of the First IPV Specific Health Care Seeking



The continuous-time hazard rate equals to conditional probability divided by the width of time interval (Singer & Willet, 2003). Because the width of time interval of this data set is 1, hazard is the same as conditional probability. The cumulative hazard $H(t_j)$ corresponds with survivor function $S(t_j)$ as follows and is drawn in Figure 4.4.

$$H(t_j) = -\ln S(t_j)$$

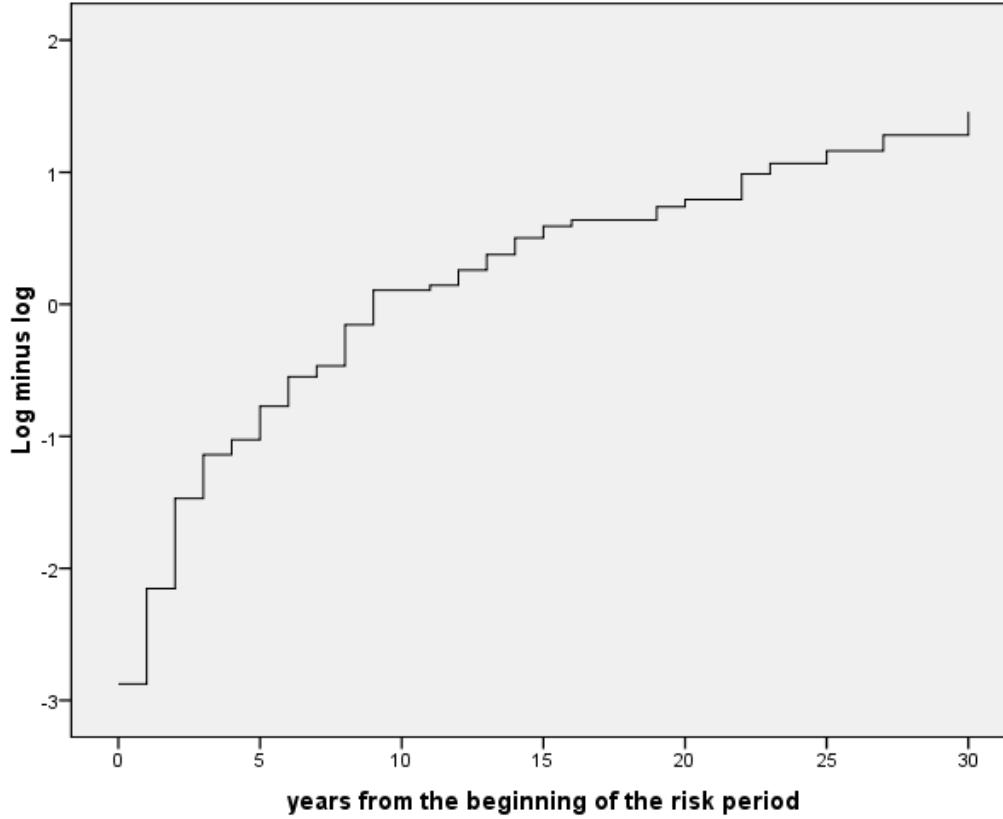
At time t_j individual i has the total amount of accumulated risk $H(t_j)$ from the beginning of the time to time t_j .

The equation of a discrete-time analysis for these models is written as follows based on Allison (1995).

$$\text{Log} (P_{it}/1-P_{it}) = \alpha_t + \beta_1 X_{1ij} + \beta_2 X_{2ij} + \dots + \beta_k X_{kij}$$

In the equation, P_{it} represents conditional probability. Predictors are written as X_1, X_2, \dots, X_k . α_1, α_t is a set of constants which can vary from one time point to another. Slope parameters, $\beta_1, \beta_2, \dots, \beta_k$, refer to how much the baseline logit function changes for the predictors of event occurrence.

Figure 4.4: Cumulative Hazard Function



The main predictors of the models analyzed by the discrete-time method are IPV and injury. Table 4.1 presents the descriptive of the time from each type of IPV or injury to the first IPV specific health care seeking. Injury from physical IPV has the shortest time to the first IPV specific health care seeking (mean 3.38; range 0-22; SD 4.88) while emotional IPV has the longest time (mean 8.64; range 0-34; SD 7.81).

Table 4.1: Time from Each Type of IPV or Injury to the First IPV Specific Health Care Seeking (years)*

	N	Minimum	Maximum	Mean	Std. Deviation
Physical IPV	68	.00	33.00	7.31	7.77
Sexual IPV	55	.00	34.00	8.05	7.49
Emotional IPV	66	.00	34.00	8.64	7.81
Financial IPV	50	.00	30.00	6.62	7.45
Threats	46	.00	21.00	4.93	5.78
Injury	47	.00	22.00	3.38	4.88

*Only if that IPV occurred before or in the same year of the first IPV specific health care seeking

The predictors are classified into the four categories: 1) whether the respondents experienced a certain type of IPV in a given year: physical IPV, sexual IPV, emotional IPV, financial IPV, threats, or injury; 2) whether the respondent experienced the following life events in the given year: welfare status, full-time employment, formal help seeking, informal help seeking, or living with an abusive partner; 3) other time-varying predictors in a given year including childbirth, 4) time-invariant predictors including education (whether a respondent graduated from college or not) and cohort effect (age at the time of the interview). The following four models are developed (Table 4.2).

Table 4.2: Analytic Models for Discrete-Time Method

	Model 1	Model 2	Model 3	Model 4
IPV variables	X	X	X	X
Life events		X	X	X
Other time-varying predictor			X	X
Time-invariant predictors				X

The models are compared using -2 log likelihood (-2 Log L) because the models are nested within each other (Singer & Willett, 2003). A given model is compared to other models which have fewer predictors. Models which have a smaller -2 Log L value have a better fit than other models.

Variables for discrete-time models

Table 4.3 describes the variables which were used for discrete-time models. Two variables, education and age at the time of interview, are time-invariant while other variables are time-varying. The first incident of IPV (physical IPV, sexual IPV, emotional IPV, financial IPV or threats) is the start of measurement. The first incident of IPV specific health care seeking is an event. The end of measurement is the first IPV specific health care seeking or the end of the interview if the respondent had never experienced the IPV specific health care seeking by the end of the interview. Predictors include IPV as well as welfare status, full-time employment, seeking informal help, seeking formal help and living with an abusive partner.

The respondents did not necessarily experience all types of IPV or IPV specific health care seeking. The different types of IPV and life events may have occurred at different times. Some of the respondents had experienced some of the types of IPV after the first health care seeking or had never experienced some of the IPV types by the end of the data collection. For example, Respondent A experienced physical IPV, sexual IPV, and emotional IPV before the first health care seeking while she became a victim of financial IPV after the first health care seeking and throughout her life span, never experienced threats.

Table 4.3: Description of Variables for the Discrete-Time Method

Variable	Description	Codes/values
Age	Age in a given year	
Physical IPV	Whether the person experienced physical IPV in the given year	1 = yes 0 = no
Sexual IPV	Whether the person experienced sexual IPV in the given year	1 = yes 0 = no
Emotional IPV	Whether the person experienced emotional IPV in the given year	1 = yes 0 = no
Financial IPV	Whether the person experienced financial IPV in the given year	1 = yes 0 = no
Threats	Whether the person experienced threats in the given year	1 = yes 0 = no
Injury	Whether the person injured in the given year	1 = yes 0 = no
Welfare	Whether the person was on welfare in the given year	1 = yes 0 = no
Full-time employment	Whether the person had a full-time job in the given year	1 = yes 0 = no
Formal help seeking	Whether the person had formal help in the given year	1 = yes 0 = no
Informal help seeking	Whether the person had informal help in the given year	1 = yes 0 = no
Living with an abusive partner	Whether the person lived with an abusive partner in the given year	1 = yes 0 = no
Childbirth	Whether the person had childbirth in the given year	1 = yes 0 = no
Education (time-invariant)	Whether the respondent graduated from college or not	1 = yes 0 = no
Age at interview (time-invariant)	Age at the time of interview	

Hierarchical Linear Model

There are two levels of HLM analysis for this study. Level-1 represents individual change while level-2 shows inter-individual differences in change (Singer & Willet, 2003). The time-indicator of the data is the respondent's age. The age variable is adjusted by centering to improve parameter interpretation. Without centering, the outcome variable, health care seeking, is predicted from age zero. Predicting the outcome from age zero is not suitable for the data set because no IPV is experienced from age zero. By centering, the interpretation of the predictors is simplified because the trajectory of the predictors does not go back to the age zero. In other words, each individual's intercept and slope show her true trajectory of each predictor. To center the age variable, 24 is subtracted from the age variable. Age 24 was chosen for centering because the youngest respondent at the time of interview was 24 years old.

Due to the wide range of ages (24-80) at the time of the interview, a threat of cohort effect exists. The experience at age 20 may be very different for a woman living in the 2000s and a woman living in the 1950s. A variable to control cohort effect (age at interview) is added to the level 2 analysis of the multilevel models. The variable is the subtraction of median age 45 from the age at the time of the interview. By centering using the median age, the level-2 fitted intercepts describe average rate of change for that cohort.

Data set for HLM

The years before respondents had the first intimate relationship are included in the HLM analysis although there is no risk of experiencing IPV if they had never had an

intimate partner. This inclusion is used because some life events such as education, employment, alcohol drinking or smoking occur before the first intimate relationship. These life events can affect decisions of health care seeking over the life course. Health care seeking is influenced by not only illness or injury but also other factors. Although there is no risk of IPV during the pre-relationship period, life events in the pre-relationship period can be considered important factors in influencing health care seeking for victims of IPV.

There is also a methodological advantage to including all of the years from age 15 to the age at the time of the interview. This study is a retrospective study which has age-heterogeneous samples. If the years that the respondents did not yet have the first intimate partner had been dropped, then individuals are censored by the onset of intimate partnership. If everyone starts at the same age with the data, the effect of age on outcome can be decreased (Singer & Willet, 2003).

HLM regression model

The HLM regression model for this study can be described as follows based upon Hedeker & Gibbons (2006). Since the outcome variable is binary, which is whether a respondent sought IPV specific health care seeking (yes=1) or not (no=0), the level 1 regression is logistic regression.

Level-1 Model (within-subjects)

$$\text{Prob}(Y=1|B) = P$$

$$\log\left[\frac{P}{1-P}\right] = B_0 + B_1 * X_1$$

Level-2 Model (between-subjects)

$$B0 = G00 + U0$$

$$B1 = G10 + G11 * Z1$$

B: slope parameters/ intercepts for level-1

G: slope parameters / intercepts for level-2

G10: mean level of B1

G11: the difference in the logit due to X1 for Z1

U: random subject effect

U0: each individual's difference from overall population trend

X: Level-1 predictor

Z: Level-2 predictor

Unconditional mean analysis

Unconditional analysis was conducted to provide baselines for model building. There are two kinds of unconditional models; the unconditional means model and the unconditional growth model. The unconditional means model examines whether the outcome variables have systematic variation which determines if they will be further explored (Singer & Willett, 2003). The unconditional means model provides important information about individual change (Raudenbush & Bryk, 2002). The null hypothesis of the unconditional means analysis is that the between-person variance (level 2 variance) equals zero ($H_0: \sigma_0^2 = 0$). The level 2 variance is “the pooled scatter of the person-specific means around the grand mean” (Singer & Willett, 2003, p93). When there is significant variation among the distances between a person specific mean and the estimated grand mean from everyone in the population, the null hypothesis is rejected.

The variance component of estimation for health care seeking was 1.77 (standard deviation = 1.33). The p-value of the final estimation was < 0.001 (chi-square = 698.29). As p-values from the unconditional analysis were statistically significant, the null

hypothesis was rejected. The results of the unconditional analysis show that the outcome variable across people variations is worth exploring. In other words, the change of the outcome variable has systematic variations which are between people.

Unconditional growth analysis

The other unconditional model, the unconditional growth model, examines the quantity of outcome variations both within- and between persons across time (Singer & Willet, 2003). The only level-1 predictor of the unconditional growth model is a predictor which indicates time. The level-2 of the unconditional growth model does not have any substantial predictors.

To fit the unconditional growth model, the following models were used: a random intercepts model, a linear only model, and a linear and quadratic model. Random effects, not fixed effects, were used for model fit because the models with random effects were more likely to capture individual variability of the trajectory of the outcome variable than those with fixed effects. Also, level-1 slopes vary randomly in the random slopes model (Raudenbush & Bryk, 2002). The equations of these models are listed below. In the equations, AGE24 refers to age centered at 24 and AGE24SQ refers to the quadratic term of age centered at 24. A fixed effect was used for the quadratic term in the linear and quadratic term to avoid causing too many interactions which can result in being unable to complete analysis.

Random intercept model

Level-1 Model

$$\text{Prob}(Y=1|B) = P$$

$$\log[P/(1-P)] = B_0$$

Level-2 Model

$$B_0 = G_{00} + U_0$$

Linear only model (random intercept and random linear)

Level-1 Model

$$\text{Prob}(Y=1|B) = P$$

$$\log[P/(1-P)] = B_0 + B_1*(AGEC24)$$

Level-2 Model

$$B_0 = G_{00} + U_0$$

$$B_1 = G_{10} + U_1$$

Linear and quadratic model (random intercept, random linear and fixed quadratic)

$$\text{Prob}(Y=1|B) = P$$

$$\log[P/(1-P)] = B_0 + B_1*(AGEC24) + B_2*(AGEC24SQ)$$

Level-2 Model

$$B_0 = G_{00} + U_0$$

$$B_1 = G_{10} + U_1$$

$$B_2 = G_{20}$$

The trajectory of IPV specific health care seeking by age from the linear only model) is described in Figure 4.5 while the analysis from the linear and quadratic model is presented in Figure 4.6.

Figure 4.5: Trajectory of IPV Specific Health Care Seeking by Age from HLM (Linear Only Model)

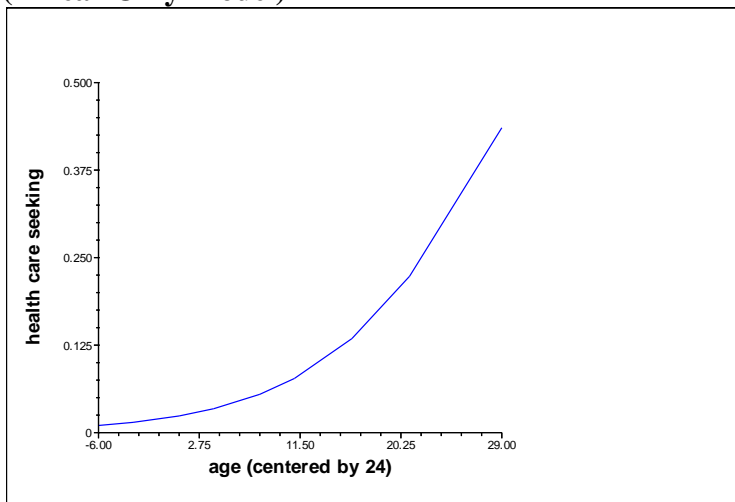
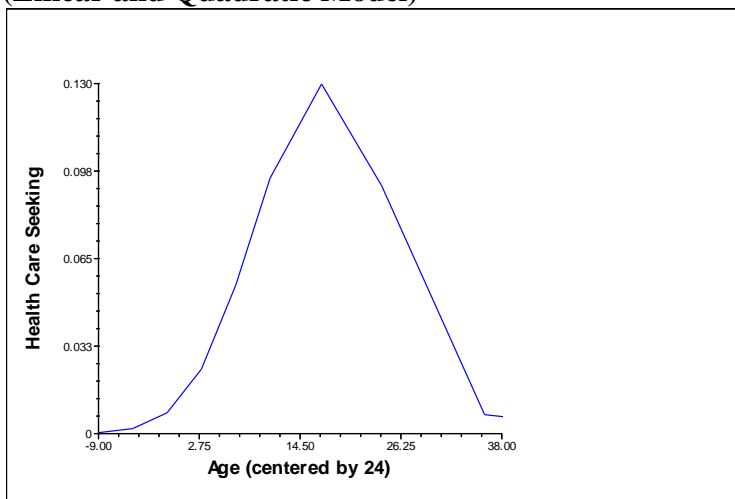


Figure 4.6: Trajectory of IPV Specific Health Care Seeking by Age by HLM (Linear and Quadratic Model)



The purpose of the level-1 Model is to examine within-individual variations. In the Level-1 Model, P is the probability of health care seeking in a given year. B0 is the intercept which is a respondent's fitted value of health care seeking when both AGE24 and AGE24SQ equal 0. B1 is a slope which indicates a respondent's health care seeking changes per age. B2 is a slope which gives information about the relationship between AGE24SQ and the trajectory of health care seeking.

The Level-2 Model aims to analyze across individuals variations. In the Level-2 Model, G00, G10 or G20 represents the mean level of B0, B1 or B2. For example, G00 corresponds to the mean level of B0. U0 or U1 shows random effects for level 2. Table 4.4 shows the model comparison for health care seeking.

Table 4. 4: Model Comparison for Health Care Seeking*

R: Random; F: Fixed

	Deviance	# est. parameters	LR chi square	p-value	Coefficient	Variance component
R intercept	8037.64	2			-2.65	1.76150
R linear	7621.63	5	416.00	< 0.00	Intercept: -3.83 Age24: 0.12	Intercept: 2.42 Age24: 0.01
R linear F quadratic	7598.14	6	23.50	< 0.00	Intercept: -4.26 Age24: 0.20 Age24SQ: -0.003	Intercept: 3.84 Age24: 0.01

* Full Maximum Likelihood LaPlace Estimation

The deviance of the random intercepts model was 8037.64 and the number of estimated parameters was 2. Next, the linear only model was run to compare with the first model. The Chi-square statistic from the model comparison test was 416.00 with p-value smaller than 0.001. The deviance of the linear only model was 7621.63 with the number

of estimated parameter as 5. The results imply that the linear only model has a better fit than the random intercepts model. Finally, the linear and quadratic model was compared with the linear only model. The chi-square statistic from the model comparison test was 23.50 with p-value smaller than 0.001. The deviance of the linear and quadratic model was 7598.14 with the number of estimated parameters as 6. The result of the model comparison test shows that the linear and quadratic model has better fit than the linear only model. Thus, the linear and quadratic model is used for the analysis of health care seeking. The linear and quadratic model implies that IPV specific health care seeking does not change constantly over the life course. For example, if the coefficient of the linear is positive while that of the quadratic is negative, IPV specific health care seeking increases initially but does not increase persistently. The trajectory of health care seeking can be concave.

Analytic models for HLM

Cumulative variables were created to examine cumulative effects of IPV or other life events on IPV specific health care seeking. Because the change of a cumulative variable is corresponding to that of a current variable, there is the possibility of multicollinearity issues between current and cumulative variables. Spearman correlation analysis was conducted to test correlations between current and cumulative IPV variables and between current and cumulative proportion variables. The current variables are dichotomous and represent whether the respondent experienced that life event in a given year. The values of the cumulative variables at each age are the cumulative values up to

the previous year. The values of the cumulative proportion variables represent the proportion of the cumulative years since age 15.

Tables 4.5 and 4.6 present the results of Spearman correlation between the current variables and the cumulative variables or the cumulative proportion variables.

Table 4.5: Spearman Correlation Coefficient between Current variables and Cumulative Variables*

	Cumulative Physical IPV	Cumulative Sexual IPV	Cumulative Emotional IPV	Cumulative Financial IPV	Cumulative Threats
current Physical IPV	.576**				
Current Sexual IPV		.592**			
Current Emotional IPV			.664**		
Current Financial IPV				.709**	
Current Threats					.648**

*N = 3,403 person years; 101 respondents

** Correlation is significant at the 0.01 level (2-tailed)

Table 4.6: Spearman Correlation Coefficient between Current Variables and Cumulative Proportion Variables*

	Cumulative proportion Physical IPV	Cumulative proportion Sexual IPV	Cumulative proportion Emotional IPV	Cumulative proportion Financial IPV	Cumulative proportion Threats
current Physical IPV	.544**				
Current Sexual IPV		.572**			
Current Emotional IPV			.628**		
Current Financial IPV				.646**	
Current Threats					.581**

* N = 3,403 person years; 101 respondents

** Correlation is significant at the 0.01 level (2-tailed)

Each current IPV variable is somewhat correlated with a cumulative variable or a cumulative proportion variable of the same type, but none of the variables are strongly associated with each other because all of the coefficients are less than .80 (Agresti & Finaly, 1997). For this study, cumulative proportion variables were used to examine the cumulative influence of IPV and life events. This is because the proportion of the years experienced can be often more accurate to measure the cumulative experience than the actual number of years experienced.

First, current variables only were analyzed. Second, current and cumulative proportional variables were examined together. Finally, the models with cumulative variables but without current variables were analyzed. There are 12 analytic models (Tables 4.7, 4.8 and 4.9). Models 1-5 are for current variables. Models 6-10 are for cumulative variables. Model 1 and 6 include only the current and/or cumulative incidents

of IPV. Model 2 and 7 add the current and cumulative predisposing factors to Model 1 or 6. Model 3 and 8 add the current and/or cumulative enabling factors to Model 1 or 6. Model 4 and 9 examine the current and/or cumulative incidents of IPV, the current and cumulative predisposing factors and the current and cumulative enabling factors together. Other variables in addition to the variables in Model 4 and 9 are included in Model 5 or 10.

Table 4.7: Analytic Models for HLM (Current Variables)

	Model 1	Model 2	Model 3	Model 4	Model 5
Current IPV	X	X	X	X	X
Current disposing factors		X		X	X
Current enabling factors			X	X	X
Other variables					X

Table 4.8: Analytic Models for HLM (Current and Cumulative Proportion Variables)

	Model 6	Model 7	Model 8	Model 9	Model 10
Current & cumulative proportion IPV	X	X	X	X	X
Current & cumulative proportion disposing factors		X		X	X
Current & cumulative proportion enabling factors			X	X	X
Other variables					X

Table 4.9: Analytic Models for HLM (with Cumulative Variables, without Current variables)

	Model 11	Model 12
Cumulative proportion IPV	X	X
Cumulative proportion disposing factors		X
Cumulative proportion enabling factors		X
Other variables		X

Variables for HLM

The variables are presented in Table 4.10. The dichotomous variables indicate current experiences in a given year. Some of the dichotomous predictors were converted into cumulative proportion variables for testing their cumulative impact on health care seeking. The cumulative proportion variables denote the proportion of cumulative years of experience until the previous years of incidents from age 15.

Table 4.10: List of Variables for HLM

Concept	Measures	Type of Measure		
		Dichotomous (yes=1, no=0)	Ordinal	Cumulative
Health Care Seeking	Health Facility Visit for IPV	X		
Physical IPV	Incident of Physical IPV	X		X
	Injury	X		X
Sexual IPV	Incident of Sexual IPV	X		X
Psychological IPV	Incident of emotional IPV	X		X
	Incident of financial IPV	X		X
Threat	Incident of threat by partner	X		X
Injury	Incident of injury from IPV	X		X
Marital/Relationship Status	Living with an abusive partner	X		X
Education	College graduate (1=yes; 0=no)	X		
Employment Status	Full-time employment	X		
Financial Status	Welfare status	X		X
Social Network	Non-health Care help	X		X
	Help from Friends or Family	X		X
Alcohol drinking	Amount of Alcohol Drinking in milliliters (current only)			
Tobacco use	Smoking	X		X
Self-Rated Health	Self-Rated Health (current only)		X (1=poor; 5=excellent)	
Children	Childbirth	X		

Selection Bias

This section presents the comparison between the demographic characteristics of the respondents of this study and that of the general population in the Tokyo Metropolitan area. Because the respondents were not selected by random sampling, there is threat of sample selection bias (Heckman, 1979). The respondents of this study actively responded to fliers or newspaper advertisements and may have been very motivated to talk about their experience of IPV. Given that the victims of IPV tend to conceal their experience in IPV in general, the samples are not necessarily representatives of Japanese women who have a history of IPV.

Although Japan traditionally had an extended family structure, the nuclear family is common nowadays (McCargo, 2004). Changes have also occurred in the average age of the first marriage: 28.8 for men and 27 for women in 2000, and 26.6 for men and 23.8 for women in 1955 (McCargo, 2004). The divorce rate is relatively low: 2.27 per thousand people, which was about half of the United States rate (McCargo, 2004). The literacy rate has remained consistently at 99% since the 1970s (McCargo, 2004). About 50 % of Japanese people had a college education, and about 10 % had a junior college education (McCargo, 2004). The percentage of Japanese who had a high school education was 97 % in 2002 (McCargo, 2004). In the United States, 84 % of the population had a high school diploma or higher while 27 % had a college degree in 2005-2007 (United States Census Bureau, 2009).

In Tokyo, 33.3 % of women between age 25 and 49 had never been married (Tokyo Metropolitan Government, 2002). About 4.5 % of women between age 25 and 49 were divorced in 2002. Among women age 50 to 69, while 8.1% had never been married,

and 7.1% were divorced in 2002. The results of census in 2005 show that about 50 % of women over 15 years old were employed (Tokyo Metropolitan Government, 2005). Women between the ages of 25 and 29 had the highest employment rate of about 80%. Nearly 70 % of women in their 40s and 50s were working full-time or part-time. About 98 % of middle school graduates entered high school in 2007 (Tokyo Metropolitan Government, 2007). While the percentage of people who studied at college was 35 % in 1984 in Tokyo, it increased to about 60 % in 2007. This percentage is higher than the national average of 50%.

Differences between the study respondents and the general population exist in the categories of education, marital status, and employment status. About 90 % of the respondents of this study had a high school diploma while 30 % had a college degree. The educational level of the respondents is slightly lower than the general population. All of the respondents had married at least once in their life. About 43 % of the respondents had divorced at least once. Not surprisingly, both marriage and divorce rates among the respondents of this study are much higher than those among the general population. Being married to an abusive partner can be an influencing factor for divorce. About 60 % of the respondents of this study were working full-time or part-time at the time of the interview. Because some of the respondents were older than 60, which is common retirement age in Japan, the lower percentage does not necessarily mean that the respondents were less likely to be employed than general population.

Chapter 5

Results: the Discrete-Time Method

Introduction

This chapter presents the results of the statistical analyses that tested Hypothesis 1 by the discrete-time method. First, the descriptive statistics of the variables are provided. Second, the results of the discrete-time method are shown to test Hypothesis 1 which is about the first intimate partner violence (IPV) specific health care seeking.

Descriptive Results

Out of the 101 respondents, 73 respondents (72.3 %) had sought IPV specific health care. There were 1427 years in the data set after no risk years and post first health care seeking years that were dropped.

Table 5.1 presents descriptive statistics of the variables whose values are years.

Table 5.1: Descriptive Statistics per Respondent*

	N	Minimum	Maximum	Mean	Std. Deviation
Age at interview	101	24	80	47.67	12.434
Age at 1 st Physical IPV	97	17	52	28.60	7.208
Age at 1 st Sexual IPV	78	15	54	27.12	6.951
Age at 1 st Emotional IPV	97	16	66	28.15	8.136
Age at 1 st Financial IPV	81	16	66	31.01	9.292
Age at 1 st Threats	76	17	71	32.97	10.437
Age at 1 st IPV specific health care seeking	73	17	69	34.81	8.965
Welfare receipt	101	0	9	.48	1.487
Full-time employment	101	0	43	9.79	9.330
Informal help seeking	101	0	40	4.00	7.158
Formal help seeking	101	0	7	.85	1.493

*N=101

The youngest respondent at the time of the interview was 24 years old while the oldest was 80 years old (average 48 years old; SD = 12.43). The minimum age when the respondents experienced each type of IPV for the first time was similar: 15-17 years old. The maximum age when the respondents experienced each type of IPV, however, varied from 52-71 years old. While the maximum ages for physical IPV and sexual IPV were in the 50s, those for emotional IPV, financial IPV and threats were in the 60s or 70s. The age when the respondents had the first IPV specific health care seeking had a wide range from 17 to 69 years old (SD = 8.97).

The average years that the respondents were on welfare or sought formal help were fairly short: .48 years for welfare (range = 0-9; SD = 1.49) and .85 years for formal help (range = 0-7; SD = 1.49). The average number of years that the respondents had a full-time job were 9.79 (range 0-43; SD = 9.33). The average number of years that the respondents sought informal help were 4 years (range 0-40; SD = 7.16).

Table 5.2 presents the frequency and percentage of the variables, and whether the respondent experienced that life event in the given year

Table 5.2: Frequency and Percentage of Variables: Whether that Activity Occurred in the Given Year during the Risk Years for the First IPV Specific Health Care Seeking*

Variable	Frequency	Percentage
1 st IPV specific health care seeking	73	5.1
Physical IPV	612	42.9
Sexual IPV	445	31.2
Emotional IPV	1035	72.5
Financial IPV	616	43.2
Threats	392	27.5
Injury	163	11.4
Welfare status	50	3.5
Full-time employment	519	36.4
Informal help seeking	471	33.0
Formal help seeking	151	10.6
Living with an abusive partner	1092	76.5
Education (being in school)	60	4.2
Childbirth	129	9.0

*N= 1427 person years; 101 respondents

The frequency of the first IPV specific health care seeking was 73. This means that 73 respondents experienced the first IPV specific health care seeking between the first incident of IPV and the time of the interview. Emotional IPV had the highest percentage of person years (73%) while threats had the lowest percentage (28%). The number of years for respondents injured because of IPV was 163 person years (11%). The person years that the respondents received welfare were small: 50 years (3.5 %). The respondents worked on a full-time basis for 519 person years (36%) and sought informal help for 471 person years (33 %). The person years that the respondents sought formal help were relatively small: 151 person years (11%). The person years of living with an abusive partner were large (1,092 person years, 76.5 %) because only risk person years

were included in the data set for the discrete time hazard model. The respondents were in school, either high school, community college, college or graduate school, for 60 person years (4.2 %) and gave birth for 129 person years (9%).

Multiple type of IPV can occur simultaneously. Spearman correlations were performed to check correlations between IPV and injury (Table 5.3).

Table 5.3: Spearman Correlations among IPV and Injury^a

		2	3	4	5	6 Injury
1 Physical IPV	Correlation Coefficient	.060*	.424**	.205**	.358**	.384**
	Sig. (2-tailed)	.023	.000	.000	.000	.000
1459						
2 Sexual IPV	Correlation Coefficient		.093**	.034	.166**	.142**
	Sig. (2-tailed)	.	.000	.195	.000	.000
3 Emotional IPV	Correlation Coefficient	*		.256**	.348**	.193**
	Sig. (2-tailed)		.	.000	.000	.000
4 Financial IPV	Correlation Coefficient				.207**	.113**
	Sig. (2-tailed)				.000	.000
5 Threats	Correlation Coefficient					.248**
	Sig. (2-tailed)					.000

^a1. Physical IPV, 2. Sexual IPV, 3. Emotional IPV, 4. Financial IPV, 5. Threats, 6. Injury

N = 1427 person years; 101 respondents

*p<.05

**p<.01

The correlation coefficients of Spearman correlations are not large overall. There is no strong correlation among IPV and injury because none of the coefficients are more than .08 (Agresti & Finlay, 1997).

Test of Hypothesis 1

Hypothesis 1: Physical or sexual IPV is more likely to increase the odds of the first IPV specific health care seeking experience than psychological or emotional IPV.

Hypothesis 1 proposed that physical or sexual IPV would be positively related to the first IPV specific health care seeking. To test Hypothesis 1, the discrete-time method was performed. The results of the discrete-time models are presented in Table 5.4. Because the models are nested within each other, - 2 Log L was used to determine the best fit model. Smaller value of -2 Log L indicates better fit. Overall, Model 4 (- 2 Log L= 632.833) has better fit than Model 1 (- 2 Log L = 681.483), Model 2 (- 2 Log L = 635.838) and Model 3 (- 2 Log L= 635.178).

The results show that the proposition of Hypothesis 1 was partially supported. Sexual IPV increased the odds of the first IPV specific health care seeking in Model 2 (coefficient = 0.545; odds = 1.724; $p < .05$). The significant influence of sexual IPV on the first IPV specific health care seeking disappeared after controlling for childbirth. Physical IPV did not have significant impact on the first IPV specific health care seeking.

Table 5.4: Results of the Discrete-Time Method^a

Variables ^b	Model 1		Model 2		Model 3		Model 4	
	Parameter Estimate (standard error)	Odds	Parameter Estimate (standard error)	Odds	Parameter Estimate (standard error)	Odds	Parameter estimate (standard error)	Odds
Age	-0.108** (0.021)	(0.898)	-0.121** (0.022)	0.886	-0.119** (0.022)	0.888	-0.105** (0.026)	0.900
Physical IPV	0.629 (0.361)	1.876	0.574 (0.369)	1.776	0.567 (0.368)	1.762	0.644 (0.378)	1.905
Sexual IPV	0.484 (0.266)	1.622	0.545* (0.272)	1.724	0.530 (0.273)	1.699	0.496 (0.275)	1.642
Emotional IPV	-0.301 (0.417)	0.740	-0.343 (0.459)	0.710	-0.314 (0.458)	0.730	-0.348 (0.465)	0.706
Financial IPV	0.229 (0.257)	1.258	-0.037 (0.267)	0.963	-0.058 (0.269)	0.944	-0.078 (0.270)	0.925
Threats	0.573* (0.278)	1.773	0.515 (0.281)	1.674	0.502 (0.282)	1.653	0.474 (0.283)	1.607
Injury	1.343** (0.284)	3.830	1.122** (0.294)	3.070	1.112** (0.295)	3.041	1.047** (0.300)	2.848
Welfare			0.500 (0.492)	1.648	0.483 (0.492)	1.62	0.607 (0.495)	1.836
Employment			0.033 (0.279)	1.034	0.043 (0.280)	1.045	0.030 (0.282)	1.031
Formal help seeking			1.608** (0.272)	4.995	1.645** (0.276)	5.180	1.509** (0.290)	4.521
Informal help seeking			0.418 (0.292)	1.519	0.400 (0.293)	1.492	0.479 (0.298)	1.614
Living with abusive partner			-0.170 (0.366)	0.844	-0.188 (0.396)	0.8297	-0.132 (0.368)	0.877
Childbirth					0.311 (0.373)	1.365	0.324 (0.373)	1.382
Education							0.337 (0.280)	1.400
Age at interview							-0.015 (0.015)	0.985
Model fit statistics								
-2 Log L	681.483		635.838		635.178		632.833	
AIC	695.483		659.838		661.178		662.883	
SBC	711.516		687.323		690.954		697.240	
Hypothesis test (chi-square)								
Likelihood ratio	137.656**		183.301**		183.961**		186.255**	
Score	182.150**		240.880**		243.435**		247.618**	
Wald	123.556**		156.251**		156.686**		156.832**	

^a Parameter estimates, standard errors are in the parentheses. Total person years = 1427. Total number of respondents = 101. * p <.05. ** p <.01.

Injury (coefficient = 1.047; odds = 2.848) and formal help seeking (coefficient = 1.509; odds = 4.521) significantly increased the odds of the first IPV specific health care

seeking ($p < .01$). Age (coefficient = -0.105; odds = 0.9) significantly decreased the odds of the first IPV specific health care seeking ($p < .01$). Threats increased odds of the first IPV specific health care seeking in Model 1 (coefficient = 0.573; odds = 1.773; $p < .05$). The impact of threats on the first IPV specific health care seeking was no longer significant after controlling for welfare status, employment, formal and informal help-seeking and living with an abusive partner. The following factors did not have a significant impact on the odds of the first IPV specific health care seeking: physical IPV, emotional IPV, financial IPV, welfare status, full-time employment, informal help-seeking, living with an abusive partner, childbirth, education and age at the time of the interview.

Chapter 6

Results: Hierarchical Linear Models

Introduction

This chapter presents the results of the statistical analyses that tested the hypotheses by hierarchical linear models (HLM). First, descriptive statistics are provided. Second, the results of hierarchical linear modeling are provided to test Hypotheses 2-6 which are related to the factors influencing intimate partner violence (IPV) specific health care seeking.

Descriptive Results

Health care seeking

Table 6.1 presents descriptive statistics of the variables for multilevel analysis. Out of 3,403 person years, health care seeking was done for 320 person years. This is about 9.4 % of the total person years. Among the respondents who have sought IPV specific health care, they sought it 4.4 times on average (range 1-26, std=4.96).

Table 6.1: Descriptive Statistics of the Variables for HLM

Measures	Person years ^a	Percentage ^b	Mean of cumulative proportions ^c
Health Care Seeking	320	9.4	
Physical IPV	1,129	33.2	.15 (.224)
Injury	323	9.5	.03 (.101)
Sexual IPV	909	26.7	.13 (.217)
Emotional IPV	1,608	47.3	.24 (.267)
Financial IPV	965	28.4	.14 (.221)
Threat	708	20.8	.10 (.193)
Living with an abusive partner	1,726	50.7	.27 (.270)
Full-time employment	1,326	39.0	^d
Welfare status	154	4.5	.01 (.054)
Formal help seeking	415	12.2	.02 (.071)
Informal help seeking	820	24.1	.11 (.203)
Tobacco use	475	14	.10 (.233)
Children	176	5.2	^e

^aN = 3,403 person years, 101 respondents

^b = a person year/3,403

^c Standard deviations are in the parentheses.

^d As explained in the section of hypotheses, cumulative experience of full-time employment is not included in the.

^e For childbirth, only current experience (dichotomous variable) was included in the analysis because there is no data about death of child and therefore it is impossible to count the cumulative numbers of children.

Table 6.2 shows frequency of IPV specific health care seeking over the life course per respondent among those who had sought IPV specific health care seeking. About 90 % of the respondents sought IPV specific health care less than nine times.

**Table 6.2: Frequency of IPV Specific Health Care Seeking over the Life Course per Respondent
(Among the respondents who had sought IPV specific health care.)**

# of health care seeking	Frequency	Percent	Valid Percent	Cumulative Percent
1	19	26.0	26.0	26.0
2	14	19.2	19.2	45.2
3	14	19.2	19.2	64.4
4	6	8.2	8.2	72.6
5	5	6.8	6.8	79.5
6	1	1.4	1.4	80.8
7	2	2.7	2.7	83.6
8	4	5.5	5.5	89.0
9	1	1.4	1.4	90.4
12	1	1.4	1.4	91.8
13	1	1.4	1.4	93.2
14	1	1.4	1.4	94.5
15	1	1.4	1.4	95.9
21	2	2.7	2.7	98.6
26	1	1.4	1.4	100.0
Total	73	100.0	100.0	

Because the years of the Life History Calendar vary among the respondents, the respondents who were older could have higher frequency of IPV specific health care seeking over the life course. The mean of the proportion of IPV specific health care seeking calculated by number of health care seeking divided by age at the interview minus 15 was .16 (range = .02-.92; SD = .17). The mean implies that not many respondents sought IPV specific health care very often.

Independent variables

IPV incidents

The most commonly experienced IPV was emotional IPV (1,608 person years; 47.3%). The next common forms of IPV were physical IPV (1,129 person years; 33.2%)

and financial IPV (965 person years, 28.4%). The least common IPV was sexual IPV (909 person years; 26.7%). The number of person years in which the respondents experienced injury was 323 (9.5%). The respondents experienced threats in 708 person years (20.8%). There was no respondent who experienced only emotional IPV or financial IPV in the life course. In other words, all respondents had a history of physical and/or sexual IPV.

Table 6.3 presents percentages of years in which a particular type of IPV occurred in which IPV specific health care was also sought. Injury has the highest percentage of years (30.3%) while all other types of IPV have around 15 % of years.

Table 6.3: Percentage of Years in Which a Particular Type of IPV Occurred and IPV Specific Health Care was Also Sought

Physical IPV	16%
Sexual IPV	14.7%
Emotional IPV	16.04%
Financial IPV	15.13%
Threats	15.54%
Injury	30.3%

Figure 6.1 shows that the changes of mean experiences of IPV specific health care seeking, physical IPV, and sexual IPV by age among the respondents. The mean indicates the proportion of respondents who experienced health care seeking or each type of IPV at a given age. While the mean of health care seeking by age increased until the mid to late 30's and became relatively stable thereafter, the probabilities of physical and sexual IPV peaked around age 35.

Figure 6.1: Change of Mean of Health Care Seeking, Physical IPV, and Sexual IPV by Age

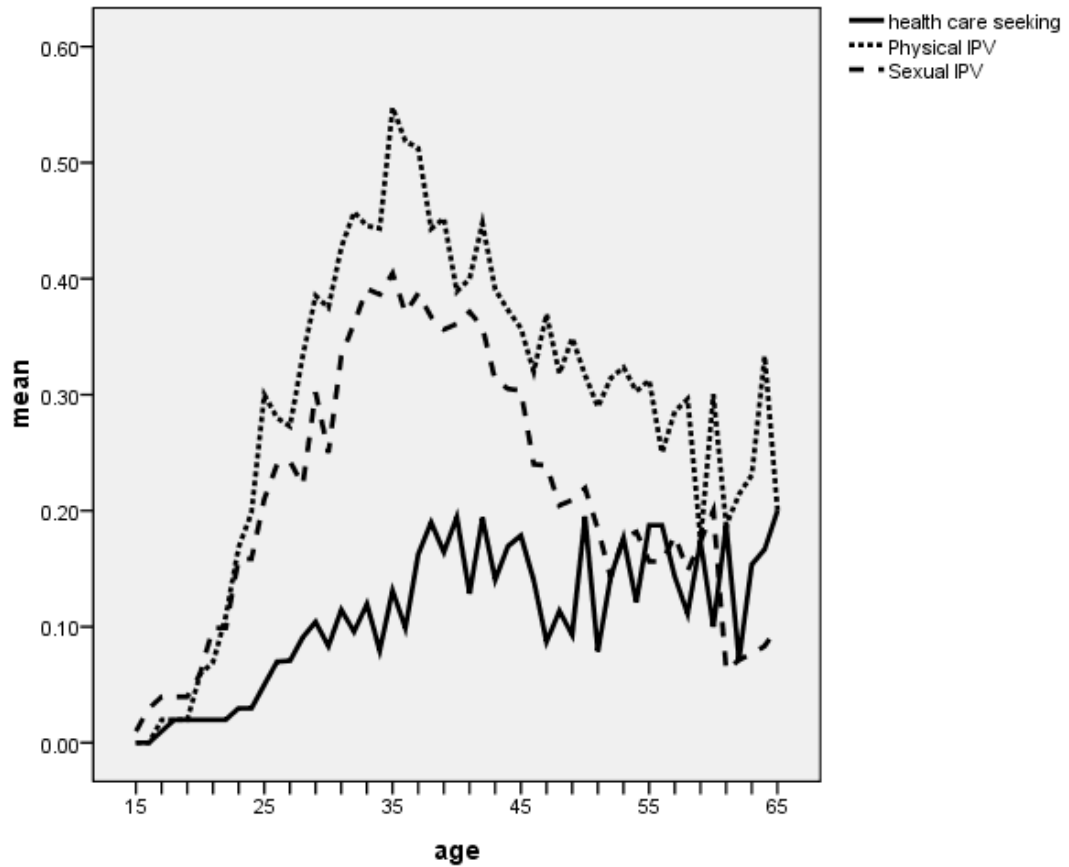


Figure 6.2 presents the changes of mean of health care seeking, emotional IPV, financial IPV and threats by age. The probabilities of emotional and financial IPV increased toward the late 20s and remained relatively stable after the peak. While the probability of threats also has its peak in late 20s, the mean gradually declined as the respondents became older.

Figure 6.2: Change of Mean of Health Care Seeking, Emotional IPV, Financial IPV and Threats by Age

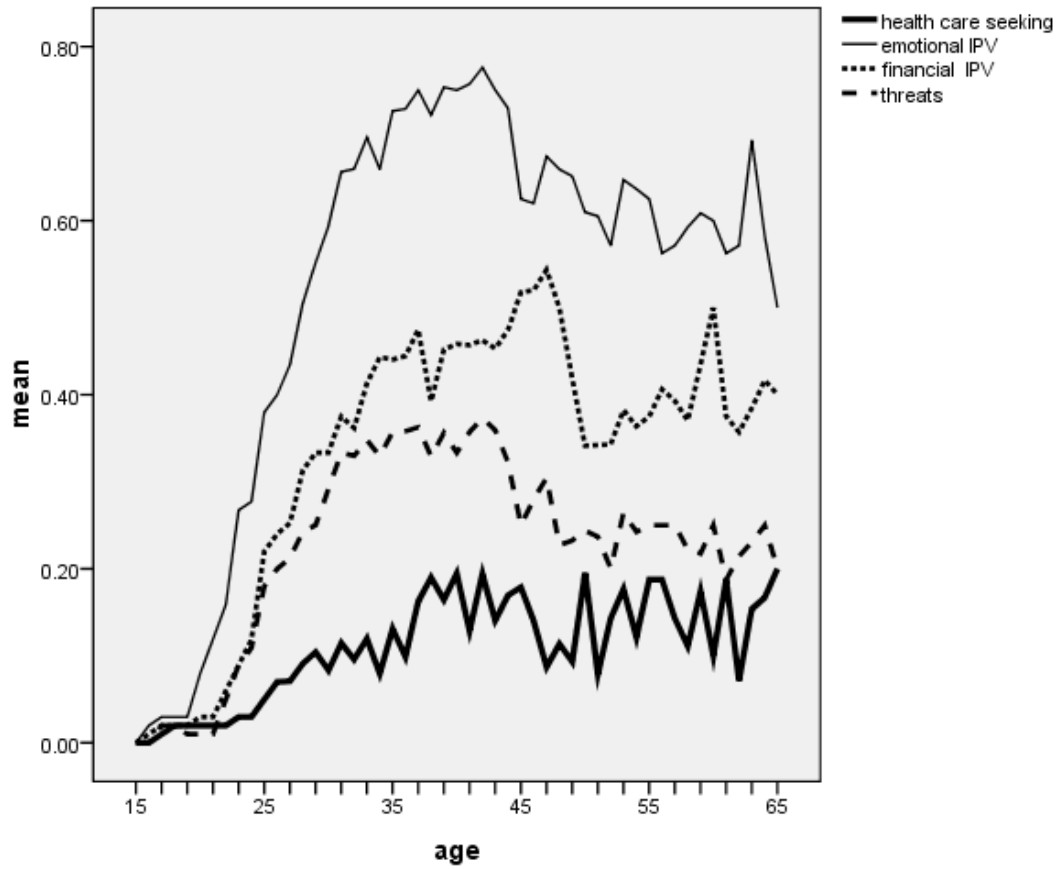
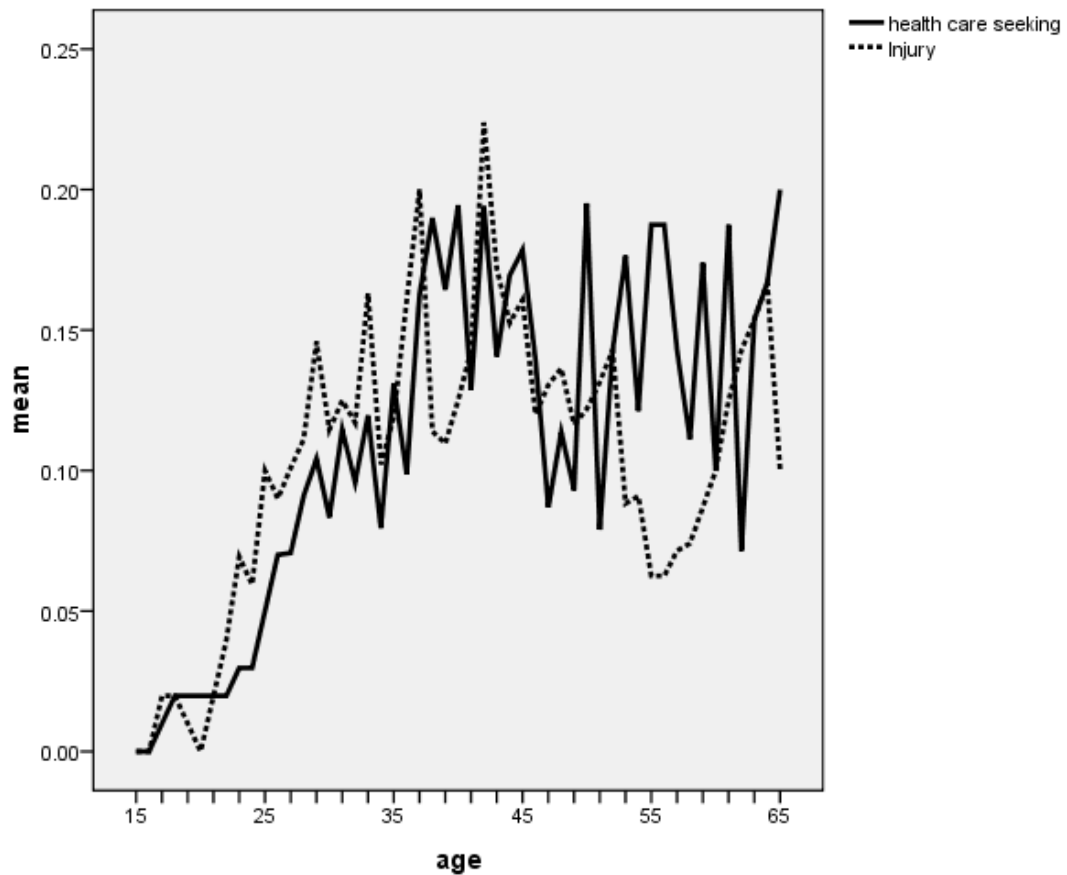


Figure 6.3 presents the changes of mean of health care seeking and injury by age. The trajectory of health care seeking is similar to that of injury except for in the mid to late 50's.

Figure 6.3: Change of Mean of Health Care Seeking and Injury by Age



Based on the descriptions from the figures, while the trajectory of injury over time is similar to that of health care seeking, the trajectories of other IPV incidents are different from that of health care seeking.

The descriptive statistics of the cumulative proportions of person years of IPV experience are as follows (Table 6.4): physical IPV (mean = .17., SD = .24); sexual IPV (mean = .15, SD = .24); emotional IPV (mean = .26, SD = .28); financial IPV (mean = .15, SD = .23); threats (mean = .11, SD = .20); and injury (mean = .05, SD = .11). While emotional IPV has the highest mean of cumulative proportion, injury has the lowest mean of cumulative proportion.

Table 6.4: Descriptive Statistics of Cumulative Proportion IPV or Injury Variables*

	Minimum	Maximum	Mean	Std. Deviation
Physical IPV	.00	.89	.17	.24
Sexual IPV	.00	2.00	.15	.24
Emotional IPV	.00	1.00	.26	.28
Financial IPV	.00	1.00	.15	.23
Threats	.00	.81	.11	.20
Injury	.00	.77	.05	.11

*N = 3,403 person years; 101 respondents

As mentioned in the previous section, there may be a threat of multicollinearity because different types of IPV can be simultaneously experienced. Table 6.5 presents Spearman correlations to check correlations between IPV and injury.

Table: 6.5: Spearman Correlations among IPV and Injury

		2	3	4	5	6
1	Correlation Coefficient	.253**	.586**	.365**	.468**	.486**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
2	Correlation Coefficient		.393**	.290**	.347**	.262**
	Sig. (2-tailed)		.000	.000	.000	.000
3	Correlation Coefficient			.500**	.495**	.302**
	Sig. (2-tailed)			.000	.000	.000
4	Correlation Coefficient				.349**	.201**
	Sig. (2-tailed)				.000	.000
5	Correlation Coefficient					.372**
	Sig. (2-tailed)					.000
	N					3403

^a1. Physical IPV, 2. Sexual IPV, 3. Emotional IPV, 4. Financial IPV, 5. Threats, 6. Injury

N = 3,403 person years; 101 respondents

*p<.05, **<.01

Although the p-values indicate statistical significance, the correlation coefficients of Spearman correlations are not large over all. There is no strong correlation between IPV because all of the coefficients were less than 0.8 (Agresti & Finlay, 1997) and therefore no significant potential threat of multicollineality.

Predisposing factors

- Marital/relationship status

The respondents lived with an abusive partner for 1,726 years (50.7%). The mean of the cumulative years of living with an abusive partner was .27 (std deviation = .270).

- Education

Thirty of the respondents (29.7 %) graduated from college. For the HLM models, a measurement of education is whether a respondent graduated from college or not (1 = college graduate; 0 = not graduated from college). Most respondents completed their education by age 22. However, they mostly experienced IPV and help seeking for IPV after age 22. Whether a respondent graduated from college or not is more meaningful than whether a respondent was in school in a given year to examine IPV specific health care seeking over the life course.

Because a respondent has only one value for whether she graduated from college or not for her entire person years, education was added to the models as a level-2 variable. In the models, education is an interaction term with level 1 variables, age or age squared. Age and age squared were chosen as level-1 variables for education because educational level may interact with age.

Enabling factors

- Help seeking

The respondents sought formal help from non –health care professionals in 415 person years (12.2 %). The person years for non-health care professionals are more than those for health care seeking. The person years for each formal source are as follows: police (100 years, 2.9%), lawyer (135 years, 4.0 %), family court (82, 2.4 %), restraining order (12 years, 0.4 %), welfare system (123 years, 3.6 %), shelter (39 years, 1.1 %), and other counseling program (257 years, 7.6%). The person years for help from family or friends were more than those years for professional help (820 person years; 24.1%). The description of the cumulative proportion help seeking years is as follows: formal help seeking (mean = .02, SD = .071), and informal help seeking (mean = .11, SD = .203).

- Employment status

The respondents had a full-time job for 1,326 person years (39%).

- Financial status

The respondents were on welfare for 154 person years in total (4.5 %). The mean of the cumulative proportion of welfare years was .01 (SD = .054).

Other variables

The average amount of alcohol drinking per one sitting in a given year was 15.6 milliliters (minimum = 0; maximum = 540; SD = 40.08). The number of person years for smoking was 475 (14 %). The mean of the cumulative proportion years of smoking was .10 (SD = .233). The person years for childbirth were 174 (5.1%).

Test of Hypotheses 2-5

Hypothesis 2: Cumulative or current welfare status decreases the likelihood of health care seeking over the life course.

Hypothesis 3: Current employment increases the likelihood of health care seeking over the life course.

Hypothesis 4: Cumulative or current help seeking from family or friends increases the likelihood of health care seeking over the life course.

Hypothesis 5: Cumulative or current help seeking from non-health care formal services increases the likelihood of health care seeking over the life course.

Hypotheses 2-5 proposed that cumulative or current experience of welfare status, employment, informal help or formal help seeking would increase the likelihood of IPV specific health care seeking over the life course. Table 6.6 reports the results of HLM for the variables of current experiences. Table 6.7 presents the results of HLM for the variables of current and cumulative experience. Table 6.8 shows the results of HLM for the variables of cumulative experience.

Table 6.6: Results of HLM for Current Variables^a

	Model1	Model2	Model3	Model4	Model5
Intercept	-6.433185** (0.446045) (0.001607)	-6.304883** (0.497447) (0.001827)	-6.999020** (0.596469) (0.000913)	-7.251332** (0.662757) (0.000709)	-6.015184 ** (0.807784) (0.002441)
Age at interview (level-2 interaction with intercept)	--0.184158** (0.028646) (0.831804)	-0.182973** (0.028902) (0.832790)	-0.170647** (0.031413) (0.843120)	-0.173717** (0.032185) (0.840535)	-0.175297** (0.037472) (0.839207)
Education (level-2 interaction with intercept)		-0.085521 (0.889362) (0.918034)		0.539837 (0.979078) (1.715727)	0.801841 (0.924559) (2.229641)
Physical IPV	0.635703* (0.272544) (1.888348)	0.714997* (0.274777) (2.044180)	0.658316* (0.290345) (1.931537)	0.649490 * (0.294236) (1.914564)	0.506584 (0.345944) (1.659612)
Sexual IPV	0.031648 (0.214161) (1.032154)	0.076394 (0.224455) (1.079388)	0.137430 (0.238807) (1.147321)	0.134136 (0.257747) (1.143549)	0.087491 (0.289110) (1.091433)
Emotional IPV	0.361043 (0.270652) (1.434825)	0.493175 (0.300080) (1.637506)	0.428576 (0.285094) (1.535071)	0.399542 (0.356274) (1.491142)	0.299931 (0.379470) (1.349766)
Financial IPV	0.175133 (0.244092) (1.191405)	0.278665 (0.255716) (1.637506)	0.049161 (0.287048) (1.050390)	0.065459 (0.288988) (1.067649)	-0.075642 (0.282511) (0.927148)
Threat	0.085769 (0.209188) (1.089554)	0.070280 (0.218922) (1.072809)	-0.117041 (0.244705) (0.889549)	-0.111147 (0.267557) (0.894807)	-0.107712 (0.286526) (0.897886)
Injury	2.131918** (0.204125) (8.431021)	2.184705** (0.221931) (8.888026)	2.058508** (0.221055) (7.834276)	2.139014 ** (0.228241) (8.491059)	2.247862 ** (0.244746) (9.467475)
Live with abusive partner		-0.524192* (0.217961) (0.592033)		0.008187 (0.333930) (1.008220)	-0.032008 (0.313666) (0.968499)
Formal help			1.165899** (0.232271) (3.208805)	1.116071 ** (0.248335) (3.052837)	1.082188 ** (0.265263) (2.951129)
Informal help			1.331062** (0.215228) (3.785061)	1.374035 ** (0.238035) (3.951263)	1.298391 ** (0.256757) (3.663397)
Welfare			1.125520** (0.310481) (3.081820)	1.159937 ** (0.435693) (3.189732)	1.076204 * (0.476573) (2.933524)
Full-time job			-0.189763 (0.278906) (0.827155)	-0.206653 (0.315906) (0.813302)	-0.027099 (0.363769) (0.973264)
Childbirth					0.435161 (0.380442) (1.545211)
Drinking					-0.003336 (0.004280) (0.996670)
Smoking					0.872283* (0.434475) (2.392365)
Self-rated health					-0.593567 ** (0.108239) (0.552354)
Age	0.348006** (0.040084) (1.416240)	0.375094** (0.043921) (1.455128)	0.273085** (0.045884) (1.314012)	0.311353 ** (0.051981) (1.365272)	0.326394 ** (0.061955) (1.385961)
Age at interview (level-2	-0.001921	-0.002065	0.001716	0.001455	0.002010

interaction with age)	(0.001481)	(0.001528)	(0.001592)	(0.001763)	(0.001898)
	(0.998081)	(0.997938)	(1.001717)	(1.001456)	(1.002012)
Education (level-2 interaction with age)		-0.035355 (0.053740) (0.965263)		-0.077822 (0.079781) (0.925129)	-0.084912 (0.069806) (0.918593)
Age squared	-0.007618** (0.001890) (0.992411)	-0.009284** (0.002023) (0.990759)	-0.006664** (0.002097) (0.993358)	-0.008201** (0.002263) (0.991833)	-0.008764** (0.002611) (0.991274)
Age at interview (level-2 interaction with age squared)	0.000190** (0.000053) (1.000190)	0.000217** (0.000063) (1.000217)	0.000131* (0.000063) (1.000131)	0.000153* (0.000074) (1.000153)	0.000157** (0.000086) (1.000157)
Education (level-2 interaction with age squared)		0.002232 (0.001345) (1.002234)		0.002808 (0.002107) (1.002812)	0.002873 (0.001964) (1.002877)
Deviance	7445.294870	7432.442067	7357.044966	7350.106293	7317.087405
Number of estimated parameters	13	17	17	21	25
Hypothesis test					
Chi-square		12.85280	75.39710	82.33577	33.01889
P-value		0.012**	>.500	0.000**	0.000**
Model Compared with		Model1	Model2	Model 2	Model 4

^a Coefficients. Standard errors are in the parentheses in the second row. Odds ratios are in the parentheses in the third row. Total number of person years=3403. Total number of respondents = 101. * p < .05. ** p < .01.

Table 6.7: Results of HLM for Current and Cumulative Proportion Variables^a

	Model6	Model7	Model8	Model9	Model10
Intercept	-6.595914** (0.500878) (0.001366)	-6.521943** (0.576825) (0.001471)	-6.930999** (0.613344) (0.000977)	-7.214616** (0.690015) (0.000736)	-5.779716** (0.862317) (0.003090)
Age at interview (level-2 interaction with intercept)	-0.142406** (0.032058) (0.867269)	-0.137329** (0.033518) (0.871683)	-0.133703** (0.036899) (0.874850)	-0.135664** (0.038272) (0.873136)	-0.137733** (0.045536) (0.871332)
Education (level-2 interaction with intercept)		0.103375 (0.908411) (1.108907)		0.526904 (0.993980) (1.693680)	0.724230 (0.982487) (2.063142)
Current physical IPV	0.688407* (0.291713) (1.990542)	0.762620* (0.323879) (2.143886)	0.798225* (0.306070) (2.221593)	0.770471* (0.329738) (2.160784)	0.655498 (0.382059) (1.926102)
Current sexual IPV	-0.095474 (0.225325) (0.908942)	-0.075062 (0.253300) (0.927686)	0.005831 (0.256615) (1.005848)	-0.014186 (0.280698) (0.985914)	-0.073371 (0.316356) (0.929256)
Current emotional IPV	0.389113 (0.295637) (1.475671)	0.519335 (0.320407) (1.680910)	0.468242 (0.340301) (1.597183)	0.412015 (0.395191) (1.509857)	0.260627 (0.422370) (1.297743)
Current financial IPV	0.156641 (0.254319) (1.169576)	0.272683 (0.268116) (1.313483)	0.111745 (0.308677) (1.118228)	0.126005 (0.326905) (1.134288)	-0.039639 (0.331913) (0.961136)
Current threats	-0.076211 (0.224819) (0.926621)	-0.042711 (0.243735) (0.958188)	-0.250576 (0.274857) (0.778353)	-0.203886 (0.296549) (0.815555)	-0.217806 (0.356512) (0.804282)
Current injury	2.148112** (0.216901) (8.568667)	2.211220** (0.266708) (9.126845)	2.020287** (0.263750) (7.540489)	2.106754** (0.273314) (8.221513)	2.228146** (0.299365) (9.282640)
Cumulative physical IPV	-0.935979 (0.960553) (0.392202)	-0.806740 (1.096057) (0.446311)	-1.604121 (1.146164) (0.201066)	-1.526543 (1.236693) (0.217285)	-1.961088 (1.246545) (0.140705)
Cumulative sexual IPV	1.578345* (0.749708) (4.846929)	1.819337* (0.854674) (6.167769)	1.288691 (0.863629) (3.628034)	1.505548 (0.901119) (4.506621)	1.440599 (0.926041) (4.223223)
Cumulative emotional IPV	1.013034 (0.906816) (2.753944)	1.811684 (1.177633) (6.120747)	0.988622 (1.216500) (2.687529)	1.450639 (1.366795) (4.265840)	1.453509 (1.335721) (4.278101)
Cumulative financial IPV	0.424514 (0.639668) (1.169576)	0.420122 (0.859063) (1.522148)	-0.370569 (0.901218) (0.690341)	-0.297634 (1.020493) (0.742573)	-1.002136 (1.026891) (0.367094)
Cumulative threats	1.160120 (0.749798) (3.190317)	1.140179 (0.885354) (3.127329)	1.564402 (0.893212) (4.779816)	1.395736 (1.005967) (4.037946)	1.971932 (1.066643) (7.184543)
Cumulative injury	1.784523 (1.393698) (5.956737)	1.213995 (1.468991) (3.366907)	1.840063 (1.515695) (6.296934)	2.106754 (0.273314) (3.669865)	0.857485 (1.788780) (2.357225)
Current living with an abusive partner		-0.351282 (0.230532) (0.703785)		0.132603 (0.366649) (1.141797)	0.067887 (0.355900) (1.070245)
Current formal help			1.159676** (0.268212) (3.188899)	1.129166** (0.295395) (3.093077)	1.087189** (0.312111) (2.965927)
Current informal help			1.360641** (0.256366) (3.898690)	1.376745** (0.268416) (3.961983)	1.330623** (0.296831) (3.783399)
Current welfare			0.737453* (0.375157) (2.090604)	0.814810 (0.531320) (2.258746)	0.713784 (0.528741) (2.041703)
Current full-time job			-0.189867 (0.315426)	-0.225510 (0.365679)	0.007488 (0.436684)

		(0.827069)	(0.798109)	(1.007516)	
Childbirth				0.341559	
				(0.448502)	
				(1.407140)	
Cumulative live with an abusive partner	-1.945089		-0.675522	0.478682	
	(1.056042)		(1.484563)	(1.732727)	
	(0.142975)		(0.508891)	(1.613947)	
Cumulative formal help		2.642321	2.555825	2.930598	
		(1.653835)	(1.850525)	(2.042784)	
		(14.045770)	(12.881925)	(18.738837)	
Cumulative informal help		-1.073499	-1.144375	-1.202328	
		(0.894156)	(0.962461)	(1.017338)	
		(0.341811)	(0.318423)	(0.300494)	
Cumulative welfare		3.234844	3.204575	3.176923	
		(2.120998)	(2.450819)	(2.935597)	
		(25.402405)	(24.645014)	(23.972882)	
Drinking				-0.003890	
				(0.004764)	
				(0.996117)	
Self-rated health				-0.663598**	
				(0.132509)	
				(0.514995)	
Current smoking				0.536993	
				(0.482889)	
				(1.710855)	
Cumulative smoking				0.503724	
				(0.900462)	
				(1.654872)	
Age	0.274002**	0.333671**	0.193459**	0.239755**	0.227457**
	(0.046009)	(0.058413)	(0.054539)	(0.069838)	(0.071502)
	(1.315217)	(1.396084)	(1.213440)	(1.270937)	(1.255404)
Age at interview (level-2 interaction with age)	-0.003569*	-0.004120*	0.001511**	0.001036	0.001842
	(0.001568)	(0.001691)	(0.001859)	(0.002116)	(0.002607)
	(0.996437)	(0.995889)	(1.000109)	(1.001037)	(1.001843)
Education (level-2 interaction with age)		-0.042544		-0.073995	-0.080139
		(0.067519)		(0.094935)	(0.086990)
		(0.958348)		(0.928677)	(0.922988)
Age squared	-0.006184**	-0.008233**	-0.005056*	-0.006668**	-0.006818**
	(0.001971)	(0.002452)	(0.002105)	(0.002471)	(0.002552)
	(0.993835)	(0.991800)	(0.994957)	(0.993354)	(0.993205)
Age at interview (level-2 interaction with age squared)	0.000193**	0.000228**	0.000109	0.000135	0.000129
	(0.000056)	(0.000074)	(0.000066)	(0.000084)	(0.000092)
	(1.000193)	(1.000228)	(1.000109)	(1.000135)	(1.000129)
Education (level-2 interaction with age squared)		0.002362		0.002727	0.002916
		(0.001888)		(0.002607)	(0.002498)
		(1.002365)		(1.002731)	(1.002921)
Deviance	7424.229331	7410.090581	7333.481690	7326.445581	7290.004383
Number of estimated parameters	19	24	26	31	36
Hypothesis test					
Chi-square		14.13875	76.60889	7.03611	43.47731
P-value		0.015*	0.000**	0.217	0.000**
Model compared with		Model 6	Model 7	Model 8	Model 8

^a Coefficients. Standard errors are in the parentheses in the second row. Odds ratios are in the parentheses in the third row. Total number of person years=3403. Total number of respondents = 101. * p < .05. ** p < .01.

Table 6.8: Results of HLM for Cumulative Proportion Variables^a

	Model 11	Model 12
Intercept	-5.772141** (0.347965) (0.003113)	-5.999739** (0.431149) (0.002479)
Age at interview (level-2 interaction with intercept)	-0.166014** (0.028150) (0.847034)	-0.151331** (0.031272) (0.859564)
Education (level-2 interaction with intercept)		0.150489 (0.810709) (1.162403)
Cumulative physical IPV	0.125928 (0.768405) (5.491537)	0.049613 (0.809292) (1.050865)
Cumulative sexual IPV	1.703208** (0.630019) (1.134201)	1.535530* (0.679819) (4.643784)
Cumulative emotional IPV	1.085489 (0.792846) (2.960886)	1.488263 (0.865196) (4.429395)
Cumulative financial IPV	0.572307 (0.541234) (1.772352)	0.410424 (0.659739) (1.507457)
Cumulative threats	0.160345 (0.653300) (1.173916)	-0.187868 (0.737508) (0.828724)
Cumulative injury	2.552398* (1.026672) (12.837852)	2.174286 (1.124360) (8.795899)
Cumulative live with an abusive partner		0.581520 (1.043426) (1.788755)
Cumulative formal help		0.693434 (1.380868) (2.000575)
Cumulative informal help		-0.703498 (0.602963) (0.494851)
Cumulative welfare		3.999275 (2.125708) (54.558576)
Cumulative smoking		1.062427 (0.605074) (2.893385)
Age	0.307571** (0.035265) (1.360117)	0.290635** (0.050368) (1.337276)
Age at interview (level-2 interaction with age)	-0.001104 (0.001383) (0.998897)	-0.000838 (0.001647) (0.999163)
Education (level-2 interaction with age)		-0.031050 (0.064198) (0.969427)
Age squared	-0.008454** (0.001389) (0.991581)	-0.008633** (0.001651) (0.991404)
Age at interview (level-2 interaction with age squared)	0.000199** (0.000043) (1.000199)	0.000194** (0.000051) (1.000194)
Education (level-2 interaction		0.001683

with age squared)		(0.001607)
		(1.001684)
Deviance	7551.872306	7537.529272
Number of estimated parameters	13	21
Hypothesis test		
Chi-square		14.34303
P-value		0.073
Model compared with		Model 11

^a Coefficients. Standard errors are in the parentheses in the second row. Odds ratios are in the parentheses in the third row. Total number of person years=3403. Total number of respondents = 101. * p < .05. ** p < .01.

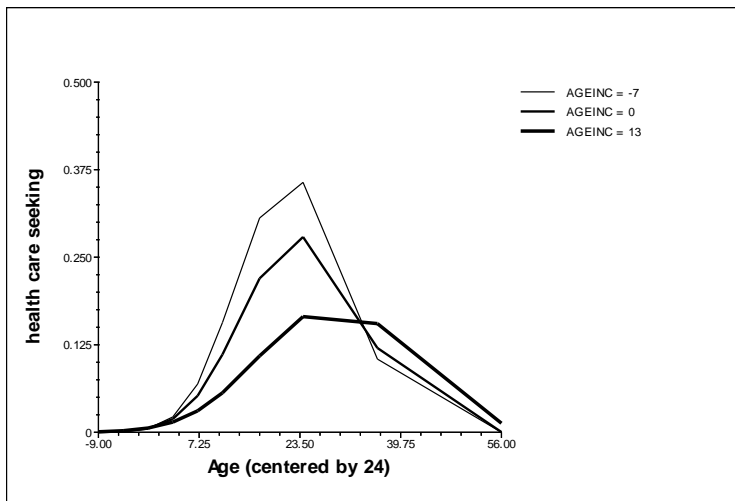
The results of the hypothesis tests show that Model 5, Model 10 and Model 11 had a better fit than the other models in the same classification (current, current and cumulative or cumulative). The chi-square of the hypothesis test in comparing Model 5 with Model 4 was 33.02, with a significantly small p-value. The chi-square of the hypothesis test in comparing Model 10 with Model 8 was 43.48, with a significantly small p-value. The chi-square of the hypothesis test in comparing Model 12 with Model 11 was 14.34 with p-value .073. Model 12 is not better fit than Model 11.

The results of Model 5 with current variables and time-invariant variables show that the current experience of injury (coefficient 2.25, p < .01), formal help seeking (coefficient 1.08, p < .01), informal help seeking (coefficient 1.30, p < .01), welfare status (coefficient 1.08, p < .05), worse self-rated health status (coefficient - .59 a smaller scale of self-rated health implies worse health, p < .01) and smoking (coefficient .07, p < .05) significantly increased the likelihood of IPV specific health care seeking over the life course. The results of Model 10 which adds cumulative proportion variables to Model 5 present similar results as Model 5, except for the variable of smoking. Smoking did not have significant impact at Model 10. The results of Model 11 which do not include

current variables indicate that cumulative experience of sexual IPV and injury increased the likelihood of IPV specific health care seeking over the life course.

Older age was significantly associated with more IPV specific health care seeking at the .01 level (Model 5 coefficient .33; Model 10 coefficient .23; and Model 11 coefficient .31). The interaction of age at interview at the level-2 with intercept was statistically significant (Model 5 coefficient -.18, $p < .01$; Model 10 coefficient -.14, $p < .01$). Model 11 coefficient -.17, $p < .01$). These results indicate that there was some cohort effect on the results. The trajectory of IPV specific health care seeking by cohort is plotted in Figure 6.4. The figure shows that the respondents in the younger cohort were more likely to seek IPV specific health care.

Figure 6.4: Cohort Effect on IPV Specific Health Care Seeking



AGEINC=-7 (age 38): 25th percentile
AGEINC=0 (age 45): 50th percentile
AGEINC=13 (age 58): 75th percentile

Based on the results, Hypotheses 2 (welfare status) was not supported.

Contradictory to Hypothesis 2, current and cumulative welfare status increased the

likelihood of IPV specific health care seeking. Hypothesis 3 (full-time employment) was not supported; current full-time work experience did not have significant impact on IPV specific health care seeking. Hypotheses 4 (informal help) and 5 (formal help) were partially supported. While current informal or formal help seeking increased the likelihood of IPV specific health care seeking, the cumulative informal or formal help seeking did not have significant impact.

Injury was found to have the greatest connection to victims of IPV seeking health care services. The current experience of any other types of IPV was not significantly associated with IPV specific health care seeking over the life course. However, the current experience of physical IPV was significant without controlling for childbirth, alcohol usage, smoking and self-rated health status. This result suggests that victims of IPV may not seek health care unless they are physically injured. The cumulative experience of sexual IPV increased the likelihood of IPV specific health care seeking over the life course while its significance was hindered when both current and cumulative variables were examined together. Emotional IPV, financial IPV and threats did not have significant impact on IPV specific health care seeking.

Full-time employment, education (whether a respondent graduated from college or not), childbirth and alcohol usage did not have any significant influence on IPV specific health care seeking. Living with an abusive partner significantly increased the likelihood of IPV specific health care seeking only when cumulative variables and social and other factors were not included.

Test of Hypothesis 6

Hypothesis 6: The trajectory of probability of health care seeking is similar to that of IPV occurrence but shows some delay over the life course.

The results of Model 5 indicate that injury significantly affected the trajectory of IPV specific health care seeking over the life course while other types of IPV did not. The plots from the HLM analysis (Figures 6.5-6.10) support the results. The plots present how experiencing (group 1) or not experiencing (group 0) each IPV or injury increased (or did not increase) the likelihood of IPV specific health care seeking. Hypothesis 6 was not supported. The trajectory of IPV was not similar to that of IPV specific health care seeking over the life course.

Figure 6.5: Impact of Injury on IPV Specific Health Care Seeking

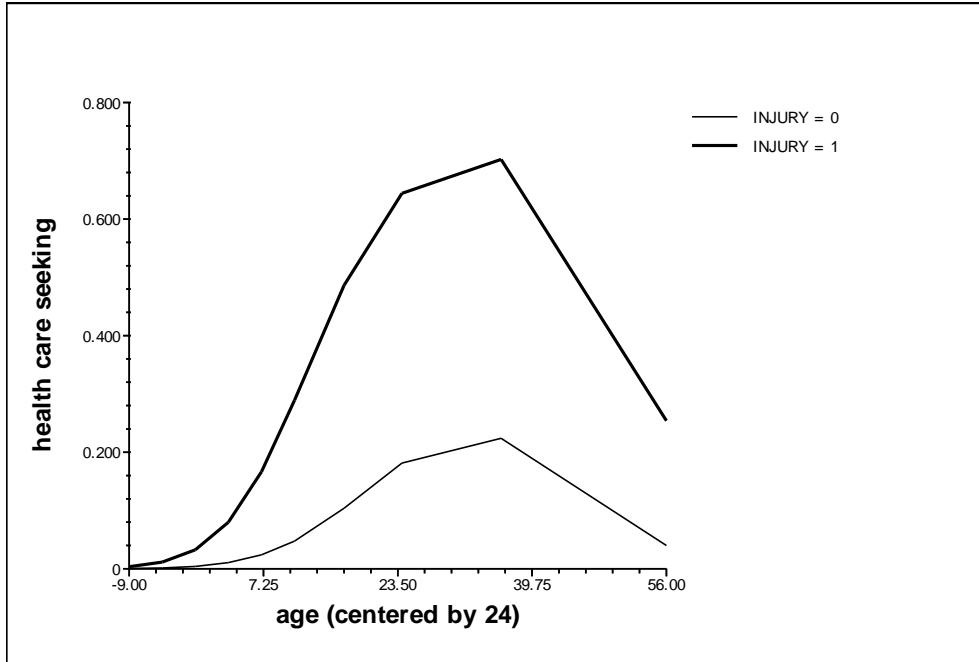


Figure 6.6: Impact of Physical IPV on IPV Specific Health Care Seeking

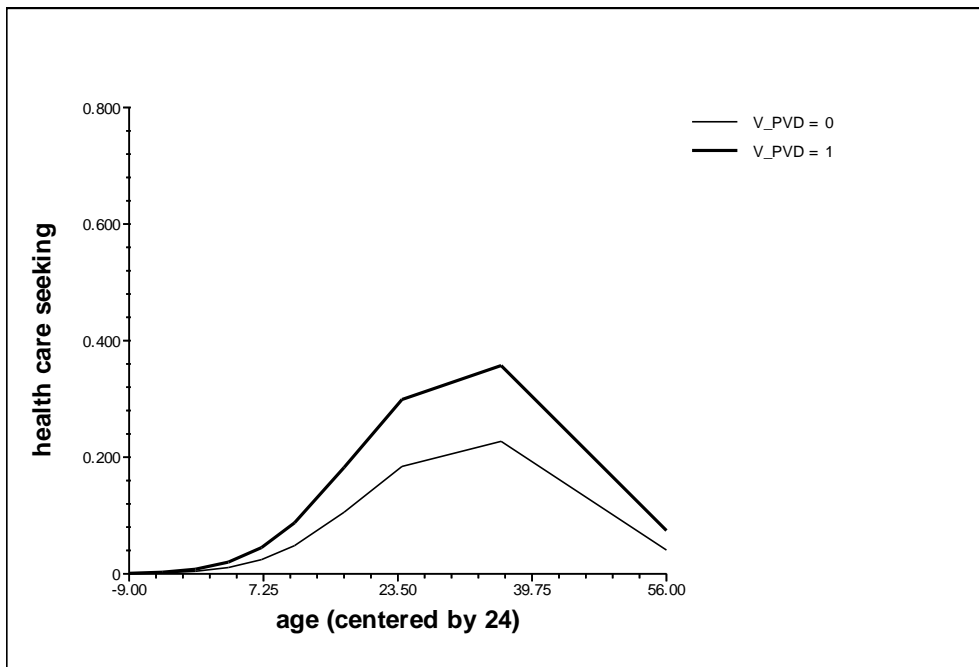


Figure 6.7: Impact of Sexual IPV on IPV Specific Health Care Seeking

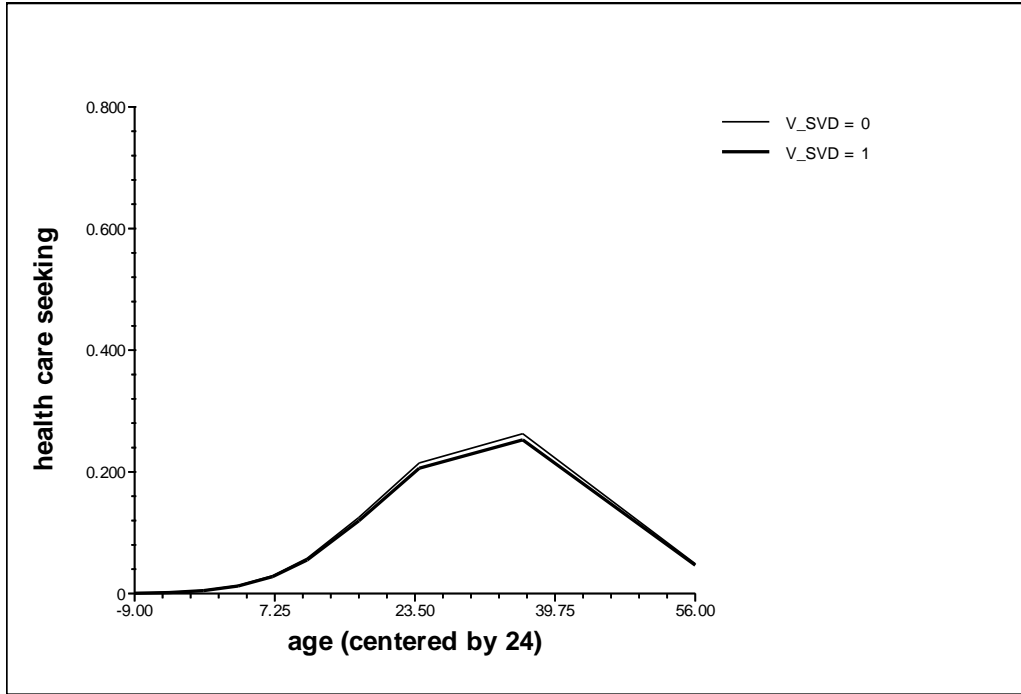


Figure 6.8 Impact of Emotional IPV on IPV Specific Health Care Seeking

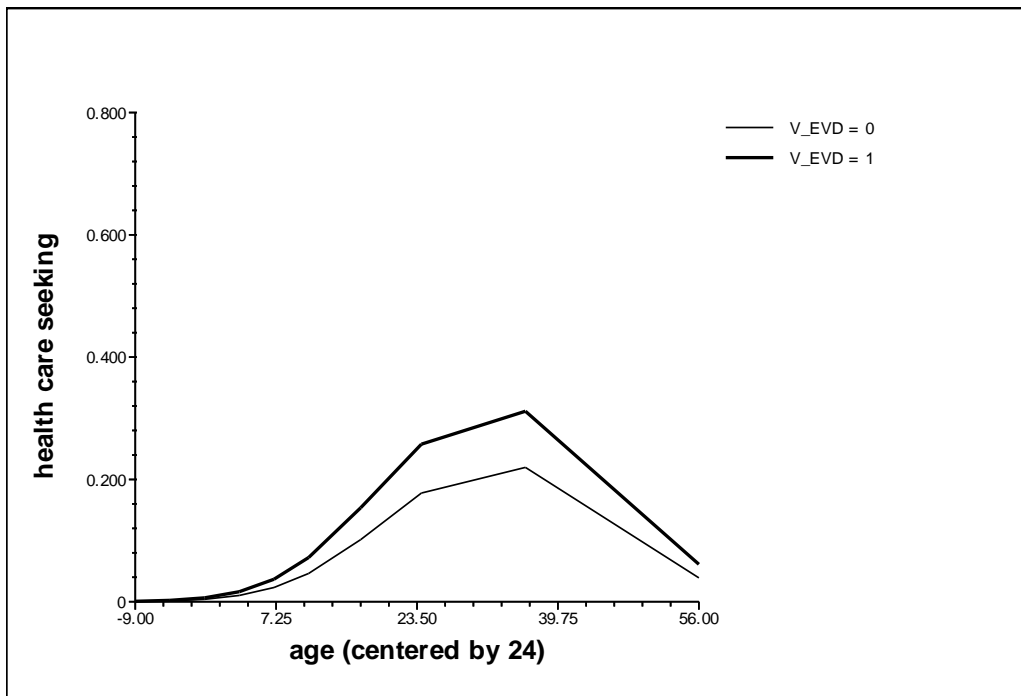


Figure 6.9: Impact of Financial IPV on IPV Specific Health Care Seeking

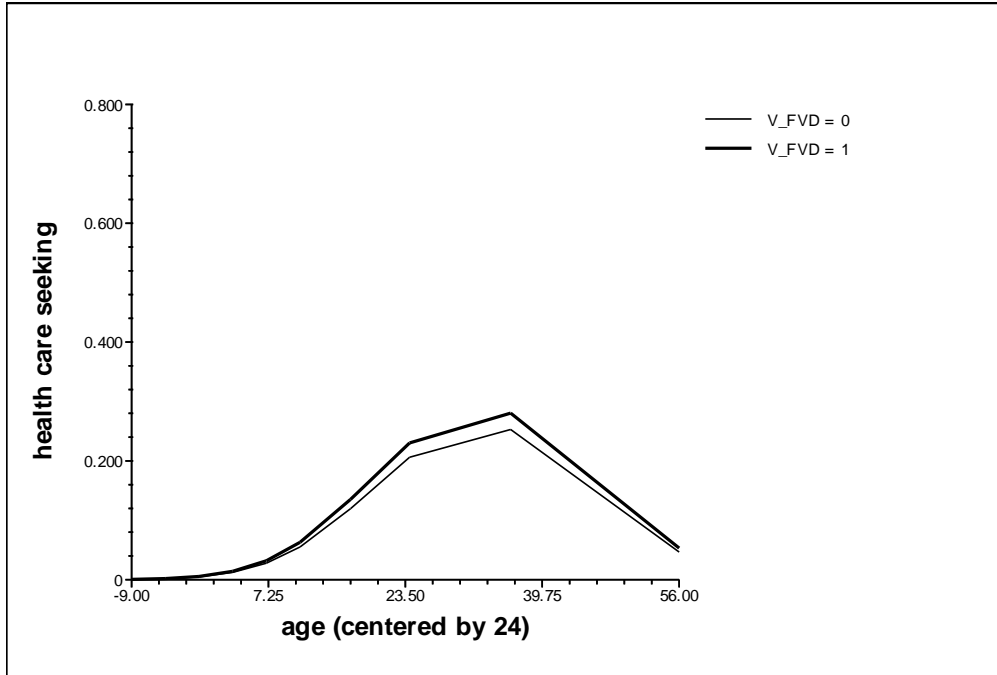
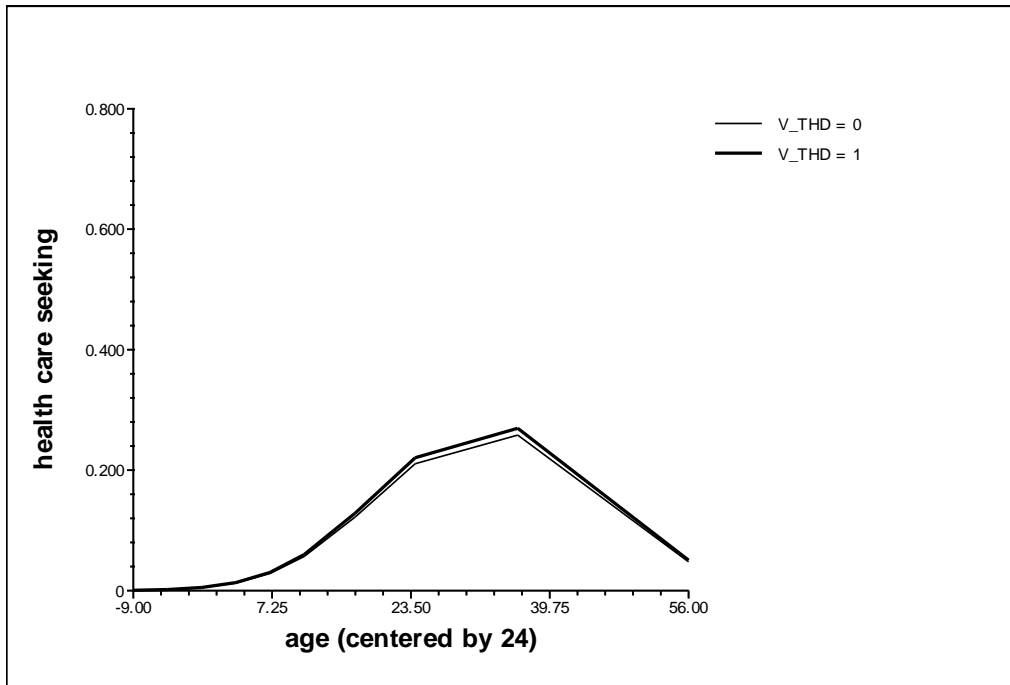


Figure 6.10: Impact of Threats on IPV Specific Health Care Seeking



Chapter 7

Conclusion

This chapter includes the main findings, the discussion of the theoretical implications and policy implications, study limitations, and future research suggestions and concluding comments. In the section of main findings and discussion, the results from the hypothesis tests as well as the literature review on IPV in Japan are presented. A model of health care seeking for IPV was developed based upon the results of this study, Anderson's Behavioral Model of Health Care Utilizations and cumulative risk theory. While this study has important policy implications, there are some limitations to the study's findings. The key findings, policy implementations and limitations present future research ideas.

Main Findings

This study examined the factors influencing the first intimate partner violence (IPV) specific health care seeking experience and IPV specific health care seeking over the life course, and the trajectory of IPV specific health care seeking over the life course. This study is unique because it is based upon the life course data which have not been commonly used by existing studies. The theoretical foundations of this study were Anderson's Behavioral Model of Health Care Utilizations and cumulative risk theory.

According to Anderson’s model, predisposing, enabling and need factors affect health care seeking. Cumulative risk theory emphasizes the importance of cumulative experience on the outcome.

This study proposed the following three research questions:

- 1) What types of IPV victimization increase the odds of the first IPV specific health care seeking?
- 2) What factors increase or decrease the likelihood of health care seeking for women who have experienced IPV over the life course?
- 3) How does IPV specific health care seeking change over the life course?

Table 7.1 summarizes the results from the discrete-time method and the hierarchical linear model (HLM).

Table 7.1: Summary of the Results of the Discrete-Time Method and HLM (Predictors Increased IPV Specific Health Care Seeking)

	Discrete time model	HLM model with current variables only	HLM with current and cumulative proportion variables	HLM with cumulative proportion variables
Outcome	First IPV specific health care seeking	IPV specific health care seeking over the life course	IPV specific health care seeking over the life course	IPV specific health care seeking over the life course
Predictors	Injury Formal help seeking (Sexual IPV)* (Threats)*	Current predictors Injury Formal help seeking Informal help seeking Welfare status Smoking Worse self-rated health status Older age	Current predictors Injury Formal help seeking Informal help seeking Worse self-rated health Older age	Cumulative predictors Sexual IPV Injury

*Significant only at one of the models.

Main results to Research Questions 1: The impact of IPV on the first IPV specific health care seeking

Injury and formal help seeking increased the odds of the first IPV specific health care seeking. Sexual IPV and threats also increased odds of the first IPV specific health care seeking depending upon what other variables were controlled.

Main results to Research Question 2: Factors affecting the likelihood of health care seeking over the life course

The current experience of injury, formal and informal help seeking, welfare status, smoking, and worse self-rated health status increased the likelihood of IPV specific health care seeking over the life course. The results show that education, which was a predisposing factor, did not have an impact on health care seeking. Among enabling factors, the social network and welfare status affected health care seeking, while full-time employment did not. Physical IPV did not have significant impact on IPV specific health care seeking after controlling for alcohol consumption, smoking and self-rated health. The current experience of sexual IPV, emotional IPV, financial IPV and threats did not have significant impact on IPV specific health care seeking. The cumulative experience of sexual IPV and injury significantly increased the likelihood of IPV specific health care seeking over the life course.

Main results to research question 3: Trajectory of IPV specific health care seeking

While the trajectory of injury was similar to that of IPV specific health care seeking, the trajectory of any type of IPV was different from that of IPV specific health

care seeking. The occurrence of IPV was more frequent than that of IPV specific health care seeking over the life course.

Factors Affecting IPV Specific Health Care Seeking

Abused women have more physical, sexual and psychological health problems than women who do not experience IPV (Campbell, Jones, Dienemann, Kub, Schollenberger, O'Campo, Gielen & Wynne, 2002; Coker, Smith, Bethea, King & McKeown, 2000). Women who are currently experiencing IPV have higher medical expenditures (Rivara, Anderson, Fishman, Bonomi, Reid, Carrell & Thompson, 2007; Coker, Reeder, Fadden & Smith, 2004). Based on these previous studies that show that IPV increases health problems and health care costs, IPV may increase the probability of IPV specific health care seeking. The trajectory of IPV should be also similar to that of IPV specific health care seeking. The results of this study, however, show that the relationship between IPV and health care seeking is not that simple.

Injury was the most influential factor increasing IPV specific health care seeking. Injury increased the odds of the first IPV specific health care seeking experience. Current and cumulative experience of injury increased IPV specific health care seeking over the life course. The finding that injuries increased the likelihood of health care seeking is consistent with previous studies (e.g. Duterte, Bonomi, Kernic, Schiff, Thompson & Rivara, 2008). Based on the descriptive statistics, while the percentage of person-years that the respondents experienced injury was lower than any types of IPV, the percentage of person-years that the respondents sought IPV specific health care for injury was much higher than that of any types of IPV. Moreover, the cumulative experience of injury

increased IPV specific health care seeking over the life course. Injuries were more likely to be directly associated with immediate and long-term need for health care services than other factors.

Sexual IPV may be related to the delayed utilization of health care services. While current experience of sexual IPV did not significantly increased IPV specific health care seeking, the cumulative experience of sexual IPV increased IPV specific health care seeking. These results imply that a respondent might have already had cumulative health problems from sexual IPV when she sought health care. Previous studies show that sexual IPV increases the risks of female reproductive disorders and sexually transmitted diseases (e.g. Bonomi, Anderson, Reid, Rivara, Carrell & Thompson, 2009). It is important that victims of sexual IPV can avoid delaying health care seeking to prevent the worsening of their health problems from sexual IPV.

The current and cumulative experience of emotional IPV did not increased IPV specific health care seeking. However, emotional IPV had the highest prevalence among types of IPV. Although emotional IPV may not cause immediate need for health care services, it may affect health negatively in long-term.

Threats were shown to increase the likelihood of the first IPV specific health care seeking depending upon the controlled variables. However, the current and cumulative experience of threats did not have impact on IPV specific health care seeking over the life course. Although threats might be related to health care seeking in some occasions, a causal relationship between threats and IPV specific health care seeking was not found. Cronholm and Browman (2009) found that women who had safety concerns, primarily from IPV, sought fewer gender-specific preventive healthcare services. Further

examination may be necessary to clarify how threats may affect health care seeking for IPV.

Financial IPV did not have a significant impact on IPV specific health care seeking while welfare status increased IPV specific health care seeking over the life course. Previous studies suggest women who are impoverished have worse health statuses and also are more likely to be victims of IPV (e.g. Breiding, Black & Ryan, 2008b). Welfare recipients can receive a waiver of co-pay in Japan in order to receive needed health care services. Theoretically, all Japanese people living in Japan have equal access to health care services under the universal health insurance system. Nevertheless, past research shows that people with varying income levels differ in health care seeking patterns. For example, people with low income are less likely to seek medical and dental care services (Babazono, Kuwabara, Hagihara, Yamamoto, Hillman, 2008). The waiver of co-pay for welfare recipients may be improving the access to health care services. However, the number of the respondents who received welfare assistance was very small, which limits the results of this study from concluding that welfare status increases the likelihood of IPV specific health care seeking.

To examine the impact of poverty on health care seeking for IPV, it may have been more meaningful to collect information about respondents' actual income and type of health insurance. Japanese women who are not poor enough to receive welfare assistance but are enrolled the national health insurance program which requires three times higher co-pay than employment-based health insurance programs may have more barriers to access to health care services than women on welfare assistance.

Seeking informal or formal help increased IPV specific health care seeking over the life course. While formal help seeking increased the first IPV specific health care seeking, informal help seeking did not. The cumulative experience of informal or formal help seeking, however, did not have a significant impact on IPV specific health care seeking over the life course. When victims of IPV receive help from a formal help source, it might be easier for them to seek health care services.

Childbirth did not have impact on the first IPV specific health care seeking and IPV specific health care seeking over the life course. Women who have a child have a higher risk of being a victim of IPV (Bair-Merritt, Holmes, Holmes, Feinstein & Feudtner, 2008). However, childbirth itself may not affect IPV specific health care seeking immediately. It would be more important to analyze the impact of parenting on IPV specific health care seeking.

The results of this study regarding self-rated health and smoking are consistent with previous studies. Previous studies show that self-rated health status is often associated with health care seeking: worse self-rated health status increases health care seeking (e.g. Ng, Jin, Ho, Chua, Fones & Lim, 2008). Smoking is associated with health care seeking as previous studies found (e.g. Abu-Mourad, Alegakis, Shashaa, Koutis, Lionis & Philalithis, 2008).

While older age increased IPV specific health care seeking over the life course, educational level did not. This result is consistent with previous studies that concluded older people were more likely to seek health care services than younger people (e.g. Adamson, Donovan, Ben-Shlomo, Chaturvedi, Bowling, 2008). However, the result that educational level did not affect IPV specific health care seeking is different from the

previous studies which found that victims of IPV with higher educational level were more likely to seek health care services (e.g. Coker, Derrick, Lumpkin, Aldrich & Oldendick, 2000). This may be because there was a lack of variation in educational level among the respondents of this study, considering most of them had at least a high school diploma.

Japanese and IPV

Because this study does not compare Japanese victims with non-Japanese victims, it is not clear whether the findings from this study are specific for the Japanese population or are universal. This study does not examine all possible Japanese specific factors affecting IPV or IPV specific health care seeking, but utilizes some specific factors described in previous studies.

The survey conducted by the Japanese government (Gender Equity Bureau, 2009b) is helpful in describing Japanese victims in addition to the results of this study. While the survey results did not find financial barriers to IPV specific health care services, they suggest financial factors can be the main reasons that female victims stay with their abusers. In the survey results, about 30 % of female IPV victims decided to stay with an abusive spouse because of financial reasons. For male IPV victims, the percentage was only 3 %. In Tokyo, female workers earned only about 70 % of male workers' average salary in 2002 (Tokyo Metropolitan Government, 2002). Economic inequality between women and men may be an important factor that influences female victims staying with their abusers. Unfortunately, this study does not have information about income discrepancy between a victim of IPV and her abusive partner. Further

investigation would be necessary to clarify how economic inequality affects IPV in Japan and in other countries.

Yamawaki, Ostenson, and Brown (2009) surveyed Japanese students and non-Asian American students, all of whom were college students in the U.S., to examine the impact of gender-role tradition, sexism and injury from domestic violence. Japanese students were more likely to minimize, blame or excuse domestic violence than U.S. students. The results of this study show that the Japanese might have some different perceptions about IPV from American or other non-Japanese people. The perception of IPV may affect how victims of IPV perceive their victimization or seek help for IPV.

In addition to perception, attitudes toward violence against women may influence IPV. Nayak, Byrne, Martin and Abraham (2003) compared attitudes toward violence against women in four countries, Japan, India, Kuwait and the U.S. Undergraduate students, both men and women, filled out a questionnaire about attitudes toward violence against women. The researchers examined if national background or gender had a greater impact on the attitudes and found national differences were greater than gender differences. They concluded that socio-cultural factors might have affected the attitudes toward violence against women.

Although the Japanese can be different from Japanese Americans, studies on Japanese Americans and IPV might provide some additional information about Japanese culture and its influence on help seeking for IPV. Leung and Cheung (2002) examined the prevalence of IPV and help seeking for IPV among Asian Americans, including Vietnamese, Filipinos, Indians, Koreans, Japanese and Chinese. The prevalence of IPV was as follows: Vietnamese 22.4%, Filipinos 21.8 %, Indians and Koreans 19.5 %,

Japanese and Chinese 9.7%. Although the prevalence of IPV varied among these Asian American groups, Japanese and Chinese Americans shared the same help seeking tendencies in that they were likely to see help from friends and medical professionals. Health care professionals might have the potential to help victims of IPV due to the lack of a psychological barrier to these services.

The results from previous studies suggest there may be some Japanese specific factors affecting IPV and health care seeking. This study does not distinguish Japanese specific from universal factors on IPV specific health care seeking. If comparable data are collected from non-Japanese subjects in the future, it would be possible to find what factors are Japanese specific.

Theoretical Discussions and Model Development

Anderson's Behavioral Model of Health Care Utilizations and specific IPV

Anderson's Behavioral Model of Health Care Utilization helped in organizing various factors which might affect women's health care seeking for IPV. The results of this study show that Anderson's model can be applicable to IPV specific health care seeking. Based on the results of this study, a variety of predisposing, enabling and need factors have been found to affect IPV specific health care seeking.

To develop an IPV specific model of health care seeking, it would be necessary to incorporate the recurrent nature of IPV and health care seeking to Anderson's model because most respondents experienced IPV after their first IPV specific health care seeking experience and sought this care more than once. Furthermore, it would be necessary to distinguish the first IPV specific health care seeking from recurrent IPV

specific health care seeking because more specific factors affected the first IPV specific health care seeking.

Cumulative risks and health care seeking

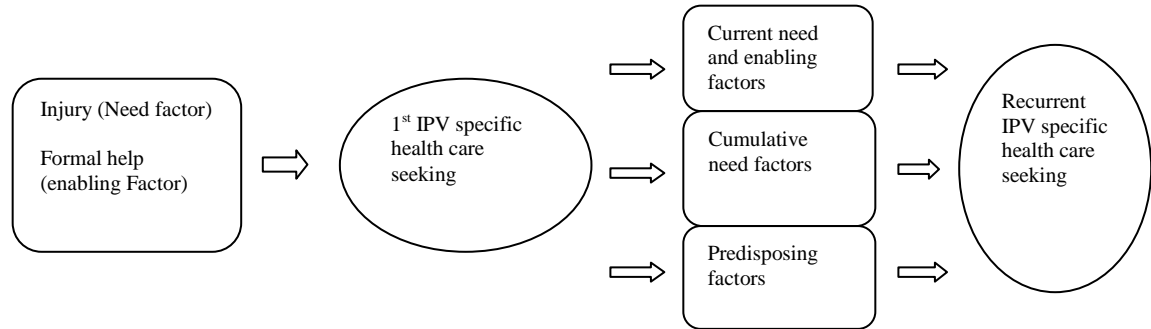
The results of this study suggest that the cumulative experience of sexual IPV and injury increases the likelihood of IPV specific health care seeking over the life course. Based on these results, cumulative risk theory is applicable to the cases of IPV. The cumulative victimization of IPV may affect the victims' health status and health care seeking over time.

The current and cumulative factors affected IPV specific health care seeking differently. The cumulative experience of sexual IPV increased the likelihood of IPV specific health care seeking and may be more likely associated with delay to seek health care services or chronic health problems over the life course. Injuries may cause immediate and long-term health problems and the need for health care services.

Model development

Based upon the results of this study, Anderson's model and cumulative risk theory, the model presented in Figure 7.1 has been developed.

Figure 7.1: Model of Health Care Seeking for IPV



In this model, factors influencing the first IPV specific health care seeking is injury and formal help. Based on Anderson’s model, injury can be classified as a need factor while formal help is an enabling factor. After the first IPV specific health care seeking, victims of IPV are likely to be victimized by IPV again. There are three types of factors which influence recurrent IPV specific health care seeking: current need and enabling factors, cumulative need factors, and predisposing factors.

Although predisposing factors did not have significant impact on IPV specific health care seeking in this study, they are included in this model. The respondents of this study were relatively homogeneous in terms of predisposing factors. All of them are Japanese women living in the same geographical location. Most of them had high school diploma. The impact of predisposing factors should be examined further in future research using more heterogeneous respondent population.

Policy Implications

The main purpose of this study was to examine the factors affecting the first IPV specific health care seeking, IPV specific health care seeking over the life course, and the trajectory of IPV specific health care seeking using life course data. The findings from

this study provide insights for some important policy implications for health care services, individuals and the community.

Awareness of IPV as health problems

The trajectory of health care seeking was fairly different from that of IPV incidents but was similar to that of injury occurrences. Health care seeking was much lower than that of IPV incidents over the life course. A single incidence of physical IPV does not necessarily require health care services immediately. The cumulative experience of sexual IPV may cause delay in seeking health care services or create an increase in health problems in the long term. The cumulative impact of sexual IPV on health may often be hard to be recognize if health problems from sexual becomes inevitable a while after incidents of sexual IPV. Both victims of IPV and health care professionals should have educational opportunities to understand IPV such that victims of IPV receive health care services timely and health care professionals promptly find out the cause of the victims' health problems. The specific structure and logistics of such educational programs should be developed by further research and evaluation.

When a victim of IPV seeks health care for IPV for the first time, it is very important for health care professionals to be able to identify this occurrence to prevent future victimization and health problems. A victim of IPV might seek health care for IPV for the first time for injury, but the victims may be other health problems as well. If health care professionals treat only the injury, the victim would be more likely to be continued to be victimized, to develop further health problems and seek health care repeatedly.

It is important to screen IPV victims for potential IPV related health problems. As the results of this study suggest, the cumulative experience of sexual IPV increases IPV specific health care seeking over the life course. The result implies that some of the health problems from sexual IPV might have accumulated before the respondent sought health care services. For example, it would be helpful for health care professionals to use standardized questionnaires to screen victims of IPV for health problems that may be derived from previous IPV incidents.

Enhancing the involvement of medical professionals to improve health and safety of victims of IPV

The Act on the Prevention on Spousal Violence and Protection of Victims of 2001 warranted that Spousal Violence Counseling and Support Centers provide medical and psychological guidance to victims of spousal violence to improve their physical and psychological health. Under this act, physicians or other medical professionals have the ability to report the potential cases of spousal violence to Spousal Violence Counseling and Support Centers or to the police but reporting is not required.

This dissertation provides an analysis of health care seeking for IPV from the victims' perspectives. However, little is known about the percentage of medical professionals that identify patients with experiences of IPV and the percentage of medical professionals that actually report patients with experiences of IPV to the police or other relevant organizations. Further research is necessary to examine IPV health care utilization from the health care professionals' perspectives. If a gap exists between the patients and health care professionals regarding health care seeking for IPV, the policy may need to be adjusted to address this gap. For example, implications may include IPV

training for health care professionals or .organizational efforts such as developing protocol to identify victims of IPV.

At the same time, such policies should be carefully examined before implementation. For example, a study found that about 70 % of abused women who lived in San Francisco and were interviewed did not prefer mandatory reporting system for IPV related injury from medical clinician to police (Rodriguez, Sheldon & Rao, 2002). Medical professionals reporting incidents of IPV to the police may discourage victims to seek health care. It is essential that both patients and medical professionals mutually understand that IPV is considered a crime as well as a health problem. Educational programs for victims of IPV and medical professionals would help in eliminating the gap between patients and medical care professionals.

Importance of non-physical IPV

The findings of this dissertation show emotional IPV had a high prevalence over the life course. Although emotional IPV do not necessarily physically harm the victims of IPV directly, it may have an impact on health problems.

The current services for victims of IPV in Japan focus on increasing the safety of the victims and providing assistance for housing or financial matters. The services for dealing with non physical IPV or financial issues are currently not well developed. It is important to further develop counseling services for dealing with problems from emotional IPV to enhance victims' well-being and to potentially prevent continued victimization. It is also essential for health care professionals to consider the possibility

of non-physical IPV even when patients experiencing IPV seek health care for physical health problems.

Importance of formal and informal help

Formal help seeking increased the likelihood of the first IPV specific health care seeking and IPV specific health care seeking over the life course. Informal help seeking increased IPV specific health care seeking over the life course. These findings imply that formal and informal help seeking might be important for victims of IPV in order to prevent delay in health care seeking. Early intervention through formal or informal help could be especially important encouraging the utilization of health care services. To promote appropriate referral to health care facilities from other formal help sources or vice versa, health care facilities and other formal help sources would need to coordinate their services with each other.

The Act on the Prevention on Spousal Violence and Protection of Victims of 2001 describes the following formal help sources: governmental aids, Spousal Violence Counseling and Support Centers, medical services, police, welfare offices and legal services. Little is known about how these organizations actually work together. Further research could focus on how these formal help sources collaborate or do not collaborate with each other and the outcomes of their services.

Informal help from family or friends also helps victims of IPV in seeking health care services, yet family or friends may not know how to help the victims of IPV. For example, studies have found that some of the family or friends of victims of IPV blamed the victims, not the abusers (West, 2002). It would be essential to promote community

awareness programs in order for victims of IPV to get suitable help from their family or friends. Otherwise, it would be difficult for some of the victims of IPV to openly talk about their IPV experience with their family or friends.

Applications for IPV in the United States

Most of the policy implications developed from this study are applicable to the cases of IPV in the United States. It is important that health care professionals and organizations are aware of the issue of IPV (Allen, Lehrner, Mattison, Miles & Russell, 2007; Borowsky & Ireland, 2002). Community awareness (Lee & Hadeed, 2009; Allen, 2006) and social support (Goodman & Epstein, 2005) are also essential in increasing the safety of victims of IPV. Informal networks as well as formal networks to help victims of IPV should be well developed (Fraser, McNutt, Clark, Williams-Muhammed & Lee, 2002). Over all, developing more integrated programs or making information about support sources more available would be necessary to increase accessibility to help sources (Lee & Hadeed, 2009; Fraser, McNutt, Clark, Williams-Muhammed & Lee, 2002). There are some similarities between policy implications from this study and those from previous study in the United States. This study has the potential to contribute to improving the understandings of IPV specific health care seeking not only in Japan but also in the United States.

At the same time, as described in the previous section, the results of this study may include Japanese specific factors as well as universal factors. It is difficult to discern which factors are Japanese specific. For example, it is unknown that cumulative experience of sexual IPV may cause delay to seek health care services in other countries.

To apply the model developed from this study to cases in other countries for policy implications, cross-national studies or testing the model using non-Japanese data would be necessary.

Comparison with non-Japanese literature

Although the results from this study can possibly apply to the cases of IPV in non-Japanese settings, each nation may have unique circumstances. However, there are few international comparisons on health care seeking for IPV and its policy implications. Some previous studies conducted in non-Japanese contexts imply nations which have different policy or cultural backgrounds may require developing distinct policies. For example, while all Japanese people living in Japan theoretically have health insurance, not everyone in other countries are enrolled in a health insurance program. In Mexico, the percentage of women who utilized medical care for IPV related injury was very low (Hijar, Avila-Burgos & Valdez-Santiago, 2006). About half of the women in the sample did not have health insurance. The uninsured might have additional barriers to accessing health care services even when they injured because of IPV. In this kind of circumstance, it would be important to lessen access barriers by developing health insurance programs or financial assistance for victims of IPV.

Likewise, in some nations, it may be necessary to develop reliable health surveillance systems so that victims of IPV can seek health care services. In Vietnam, only 58% of women who had IPV related injury sought health care services (Vung, Ostergren & Krantz, 2009). The authors concluded that the reasons may be because of

lack of a reliable health surveillance system and of medical professionals' awareness of the implications of IPV.

In some cultures or communities, informal or formal help may be more available for victims than in the Tokyo Metropolitan area where the respondents of this study lived. For example, the majority of black women who lived in African American communities in the United States and had experienced IPV reported they felt some comfort seeking informal or formal help (Fraser, McNutt, Clark, Williams-Muhammed & Lee, 2002).

While some of the policy implications from this study may be applicable to other nations, each nation may require developing its own unique policies around IPV related health care seeking. Future research would be necessary to determine what policies are universal and what policies potentially meet unique national or cultural needs.

Study limitations

While this study has significant uniqueness and strengths, there are some limitations. Such limitations come from the sample size, location of the data collection, selection of respondents, the lack of information about health care services and health status, and the utilized unit of time.

Small sample size

The number of the respondents in this study is relatively small. While the data used for this study include more than 3,000 person years, the data are from only 101 respondents. The respondents who experienced some of the life events for many years or were older at the time of the interview may have affected overall results. Recruiting

victims of IPV, however, can be very difficult. Given that many victims of IPV would not talk about their experience of IPV openly, recruiting 101 respondents can be considered a significant achievement.

Location of the data collection

The data were collected in the Tokyo Metropolitan area. While the demographical characteristics of the respondents are similar to the women living in the same area, the respondents do not necessarily represent all Japanese women who have a history of IPV. At the same time, it can be easier to recruit study participants in an urban area, which allows for a greater sample. Moreover, respondents are more likely to be able to remain anonymous if data are collected in urban settings. This can be important for respondents' safety.

Motivated respondents

It is highly possible that the respondents of this study were motivated to talk about their experience of IPV more than other victims of IPV. For example, about half of the women who have experienced spousal IPV did not talk about their victimization with anyone from the survey conducted in Japan (Gender Equity Bureau, 2009b). Given that victims of IPV tend not to reveal their experience of IPV victimization in general, the respondents of this study may not be the typical victims of IPV. They might be more likely to seek help including health care services than other victims of IPV who were not in this study.

Types of health care services and health problems

The data for this study do not include the information about what type of health care services the respondents sought for specific health problems. This makes it difficult to know the direct connection between the types of IPV they experienced and the health care services they sought as well as health care needs and chronic health problems.

Measurement and scale of health care seeking per year

The unit of time for the data is a year. In the data set, for example, a woman who sought health care services 20 times a year had a code of “1” for her health care seeking in the given year, which is same for a woman who sought health care services only once a year. Women who seek health care often may be more likely to have chronic health problems while women who seek health care only once a year may have acute health problems or significant barriers to access to health care services. The data, however, do not distinguish them from each other. Actual numbers of health seeking experiences are unknown. Moreover, the sequence between events in the same year is unknown.

Future Research

The findings, policy implications and limitations of this dissertation provide suggestions for future research. As mentioned in the earlier sections, the results of this study are not enough to conclude whether the factors influencing IPV specific health care seeking and the developed model can be directly applied to non-Japanese cases. There are two possible types of future studies to enhance this study. One is a cross- national study to compare the results from the Japanese data with comparable data in other nations to

examine Japanese specific and universal factors influencing IPV specific health care seeking. The other is examining the model developed from this study by using non-Japanese data.

Future research is also needed to clarify the relationships among the incidents of IPV, the health problems caused by IPV, the health problems leading or not leading to health care seeking and the types of health care services that the victims of IPV seek over time. Examining these relationships will better discern the causal relationship between IPV and health care seeking. By analyzing such associations in greater detail, further examination of the factors influencing health care seeking over time may provide clearer insights into what factors affect IPV specific health care seeking. Furthermore, future research may be helpful in preventing victims of IPV from delaying seeking health care services or accumulating health problems.

Furthermore, future research could examine the outcome of health care utilization. Women who have experienced IPV seek health care services for their health problems or injuries caused by IPV. Studies exploring the impact of health services on the incidents of IPV, however, are significantly lacking (Plichta, 2007; Wathen & MacMillan, 2003). As found from this study, health care seeking for IPV is not a onetime event but recurrent over the life course. After they have sought health care services, respondents continued experiencing IPV victimization and sought health care services repeatedly. It would be important to evaluate the effect of health care services on health and social outcomes.

Finally, the first entry to IPV specific health care seeking is important to examine from the perspectives of health care practice. If victims of IPV are appropriately treated by their health care services or are informed of the health hazards of IPV at the first IPV

specific health care seeking experience, these factors may help in preventing or reducing future health problems and potentially increasing utilization of health care services. The background of the first IPV specific health care seeking should be explored from the perspectives of patient and health care professionals. Such investigations will be useful to develop programs to address the health problems caused by IPV at the time of the first IPV specific health care seeking.

Conclusion

IPV is a critical and universal issue which affects individuals and society. The life time prevalence of IPV is high in many nations. Victims of IPV can be found across gender, nations, ethnicities or races and age groups. IPV is also a very important public health issue. The consequences of IPV include poor health status and high medical expenditure. Health care services are one of the resources which victims of IPV utilize to seek help. Health care services for victims of IPV, however, are still not well developed to reduce the health hazard from IPV.

This dissertation aims to add new insights to existing studies on the issue of IPV and health care seeking to provide theoretical applications and policy implications. Because of the recurrent and unique characteristics of IPV, existing theories are not necessarily applicable to the cases of IPV and health care seeking. Factors influencing the first or life time IPV specific health care seeking include not only some specific types of IPV but also other life events. These factors are different depending upon the timing and nature of the health care seeking and the life time event.

Future work is needed to construct theories and services which can be helpful to understand nation-specific factors influencing IPV specific health care seeking, why and when the victims of IPV seek health care services, the outcomes of health care service utilization, and the first entry to health care services among victims of IPV. Regarding policy implications, it is evident that individuals, communities and health care professionals need to be provided services or training programs to promote awareness of the IPV as a health problem. This study is expected to be a stepping stone for future research, health care services and health policy to promote better health and systems for those who experiencing IPV not only in Japan but also any other countries.

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