2013

The impact of domestic violence upon default from colposcopy services

Rachael R. Collier
University of Notre Dame Australia

Follow this and additional works at: http://researchonline.nd.edu.au/theses

Part of the Medicine and Health Sciences Commons

COMMONWEALTH OF AUSTRALIA
Copyright Regulations 1969

WARNING
The material in this communication may be subject to copyright under the Act. Any further copying or communication of this material by you may be the subject of copyright protection under the Act.
Do not remove this notice.

Publication Details

This dissertation/thesis is brought to you by ResearchOnline@ND. It has been accepted for inclusion in Theses by an authorized administrator of ResearchOnline@ND. For more information, please contact researchonline@nd.edu.au.
The Impact of Domestic Violence upon Default from Colposcopy Services

Student: Ms Rachael Collier
Student number: 20085151

Principal supervisor:
Professor Julie Quinlivan (University of Notre Dame Australia)

Secondary supervisor:
Associate Professor Rodney Petersen (Edith Cowan University)

Degree: Masters in Research (Medicine)
Executive summary

Intimate partner violence (IPV) is common. Statistics vary, but several surveys (Chalk R & King, 1998; Tjaden & Thoennes, 2000; Quinlivan & Evans, 2001; Quinlivan & Evans, 2005; McLennon, 1996; Wathen & MacMillan, 2003; Grande & Hickling, Taylor, & Woolacott, 2003), place the lifetime prevalence of IPV against women at between 25% to 30% and the annual prevalence between 2% to 12% (McLennon, 1996; Tjaden and Thoennes, 2000; Wathen et al., 2003). IPV is associated with adverse healthcare outcomes in women. It is common co-morbidity in women presenting to healthcare services.

Much, but not all, of the adverse healthcare outcomes can be explained by direct acts of violence causing physical damage and psychological symptomatology. However, violence alone does not completely explain the picture of poor health outcomes that impact upon disease manifestation in many organ systems and particularly in suboptimal responses to standard treatment and management programmes.

In prevalence studies, women exposed to domestic violence have higher rates of both presentation for care and for retreatment, suggesting that they also have poorer rates of cure which cannot be directly explained by exposure to violence (Chalk & King, 1998; Tjaden & Thoennes, 2000; McLennon, 1996). These poor outcomes contribute towards the high cost of care in patients exposed to domestic violence (Chalk & King, 1998; Tjaden & Thoennes, 2000).

We hypothesized that default from care could be a causal pathway by which IPV impacts upon clinical management and leads to adverse outcomes beyond the direct impact of the violent action.
In the present study, our hypothesis was that women exposed to IPV would demonstrate high rates of default from colposcopy services and eventual loss to care despite optimal hospital practices to encourage attendance.

A cohort of women were followed up over a three year period to determine the rate of default and loss to follow up. No previous prospective study has sought to follow women exposed to violence to determine whether adverse outcomes may be explained by care default.

**Methods**

Institutional ethics committee and informed patient consent were obtained. A prospective cohort study was performed. The patient population consisted of all women booked to attend a colposcopy service at the Sunshine Hospital over a 12 month period. The Sunshine hospital services a population of 500,000 in the western region of Melbourne, Australia. The area has high index of socioeconomic disadvantage (Wei Leng Kwok, “Women in Melbourne’s West” n.d.). Sunshine hospital is the main provider of women’s health services in the region.

The study specifically included all women, regardless of their primary language. Non English speaking women and women in whom English was a second language were included by the use of medical interpreters and appropriate information sheets. This was to ensure that the data reflected as far as possible, an ‘all comers’ approach to the prevalence of domestic violence in the attending population. All women were provided with an information sheet by a research assistant and following informed consent, were invited to complete a short screening questionnaire. Of note, the process of obtaining informed consent and completion of the questionnaire were only obtained when the woman could be spoken to privately without a partner being present.
The interviews were conducted in a room attached to the clinical service room to ensure privacy. All women who made a disclosure of domestic violence were offered referral to ongoing counselling and social support services. The clinic had a safe back exit in case of a threatening disclosure of violence.

The completion of the questionnaire was undertaken by questions being read to the patient in her primary language by the research assistant or via a qualified medical interrupter if required. If the patient gave consent, information in relation to the domestic violence was also disclosed to the woman’s attending doctor. However if the women wished this information to remain confidential, this information was not disclosed. Likewise all women were offered the opportunity to have the information disclosed to the hospital social support services. Demographic questionnaires were also read to the patient and addressed age, race, parity, smoking status, housing stability and the Yale single item depression screen.

Women were then followed through matching of their hospital unit code through the hospital computerised appointment system. Information on all appointments to colposcopy clinics over the next 36 month period of follow-up was then extracted.

Outcomes of every clinics booking were determined and coded as follows:

1) Patient attended;
2) patient default – first, second and third occasion;
3) hospital default (this occurred if the hospital could not provide the service on the day the patient attended);
4) rebooked at patient request;
5) rebooked at hospital request; and
6) lost to follow up.
Lost to follow up occurred when a patient failed to attend despite receiving three letters and three appointment times as well as a final registered letter, which required a signature at point of delivery to ascertain that it had been delivered and received, along with a final letter being sent to the patient’s referring general practitioner.

Data were presented as number and percentage for discreet variables and as mean and standard deviation for continuous variables that had a normal distribution. Skew data were described as median and interquartile range. Chi square tests with Yates Correction were undertaken to compare discreet data except where the cell size was less than 5 when Fisher Exact test was utilised. Student t-test was used for continuous data. Multivariate linear regression models were performed that included variables associated with default or loss to follow up at p-value of 0.1 or less on univariate analysis. Analyses were undertaken using Minitab 16 (Melbourne University, Victoria, Australia 2011; 10), on a computerised database. A p-value of 0.05 was considered significant.

**Results**

Of 581 women approached to participate in the trial, consent was obtained from 574 women (99%). One woman subsequently withdrew whilst completing the questionnaire. In six cases a partner came into the room during the process of completing the questionnaire. In this scenario the research assistant had been advised to stop and change to another activity as issues of female safety were paramount. In these cases ascertainment of domestic violence was not able to be determined. One other woman gave ambiguous responses to IPV questions and her data were also excluded. Thus final outcome data were available on 566 women.

The average age of the study population was 33.7 years and the majority were Caucasian. A quarter had never been pregnant and one third were nulliparous.
Half were current or ex smokers. A majority of women reported having a current sexual partner. Almost one third of women had presented with pap smears demonstrating a high grade abnormality.

Overall 33% of the study cohort reported IPV within 12 months of the survey. Whilst in 14.5% of the cohort the female reported being the sole recipient of violence, in a further 16.6% of the cohort, the women reported that they had both received and been the perpetrator of violence. In these cases, the majority of women reported that they had responded to verbal, emotional or physical intimidation with violence. In only 1.9% of the cohort did the woman report being the sole perpetrator of violence.

Women exposed to violence were more likely to default from colposcopy once (26.2% vs 7.4%; p<0.0001), twice (11.2% vs 3.2%, p=0.0001), or thrice (10.7% vs 2.4%, p<0.0001). They were more likely to be lost to follow up (8.0% vs 1.1%, P<0.0001).

In multivariate analysis, variables found to have an association with default from colposcopy on univariate analysis with a p-value of 0.1 or less were included in the model. These variables were: exposure to domestic violence, housing instability and a positive Yale Depression screen. The demographic variables of age, smoking, English as first language and parity were also included in the model. The only variable with a significant association with default and loss to follow up was exposure to domestic violence (p=0.002).
Discussion

The present study indicates that exposure to domestic violence is a significant independent association of recurrent default from colposcopy services. It is also associated with significantly higher rates of loss to follow up. This association persisted in multivariate analysis.

High rates of default from care and loss to follow up are reported widely in the literature in relation to colposcopy and antenatal clinical services (Quinlivan & Evans, 2001; Quinlivan & Evans, 2005; Balasubramanil, Orbell, Hagger, Brown & Tidy, 2008; Miller, Siejak & Schroeder, 1997). Default from care adds considerable cost to the public health system and can result in longer waiting periods for access to care. Despite various interventions that have been trialled in the research literature such as reminder letters, text messages, partial and full booking of lists, default remains a clinical problem (Balasubramani et al., 2008; Lester & Wilson, 1999).

Exposure to domestic violence may be a barrier to women’s access to colposcopy and completion of programs of care. This failure may result in suboptimal healthcare outcomes and further aggravate the damage done to women. It may be necessary for clinical services to screen for domestic violence and to provide flexibility for these vulnerable women to access care beyond rigid appointment systems. Strategies that direct default strategies in a targeted manner are more likely to be effective than nondirected strategies.
Acknowledgements

This project would not have been possible without the support of many people.

Above all, I want to offer my sincerest gratitude to my Principal Supervisor Professor Julie Quinlivan. Throughout this journey you have offered me an abundance of support and encouragement and it was with your patience and knowledge that I attribute the level of this master’s degree. You have always inspired me to keep going and believed in me and without your guidance this thesis would not have been written. I truly could never have wished for a more knowledgeable and friendlier supervisor.

My Secondary Supervisor, Associate Professor Rodney Petersen, you have been a great support, always friendly and approachable. It was with your guidance that I was introduced to the wonderful world of research many years ago.

Above all, I would like to thank my husband Michael for his love and encouragement, for keeping me going and for sharing my wish to reach this goal of completing this task. My beautiful children Erin-Jo, Jake, Bailey and Ellie who have had to endure me throughout this process – I love you all very much.
Quote

“What is the recipe for successful achievement? To my mind there are just four essential ingredients: Choose a career you love, give it the best there is in you, seize your opportunities, and be a member of the team”. Benjamin Franklin Fairless
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPV</td>
<td>Intimate Partner Violence</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>HPV</td>
<td>Human papilloma virus</td>
</tr>
<tr>
<td>CIN</td>
<td>Cervical Intraepithelial Neoplasia</td>
</tr>
<tr>
<td>LLETZ</td>
<td>Large loop excision of the transformation zone</td>
</tr>
<tr>
<td>RANZCOG</td>
<td>Royal Australian and New Zealand College of Obstetricians and Gynaecologists</td>
</tr>
</tbody>
</table>
Table of Contents

1 INTRODUCTION 15
  1.1 DEFINITIONS 15
    1.1.1 Defining violence 15
    1.1.2 Defining intimate partner violence 17
  1.2 THE BURDEN OF INTIMATE PARTNER VIOLENCE 19
    1.2.1 Prevalence of intimate partner violence 19
    1.2.2 Cost of intimate partner violence 19
  1.3 RISK FACTORS FOR INTIMATE PARTNER VIOLENCE 22
    1.3.1 Risks in the female 22
    1.3.2 Risk factors in the perpetrator 24
  1.4 SCREENING FOR INTIMATE PARTNER VIOLENCE 26
  1.5 PREVENTION OF INTIMATE PARTNER VIOLENCE 29
  1.6 ASSOCIATIONS BETWEEN INTIMATE PARTNER VIOLENCE AND POOR HEALTH OUTCOMES 32
  1.7 ASSOCIATION BETWEEN INTIMATE PARTNER VIOLENCE AND CERVICAL DISEASE 35
    1.7.1 Human Papilloma virus 36
    1.7.2 Cervical Intraepithelial Neoplasia 38
    1.7.3 Cervical cancer 41
    1.7.4 Human Papilloma Virus Vaccine 41
  1.8 INVESTIGATION AND TREATMENT OF CIN AND CERVICAL CANCER 42
    1.8.1 The Pap smear 42
    1.8.2 History of the Pap test 46
    1.8.3 Treatment of CIN 50
    1.8.4 Treatment of cervical cancer 53
  1.9 FOLLOW UP OF PATIENTS 53
    1.9.1 Follow-up of Cervical intraepithelial neoplasia 53
    1.9.2 Follow-up of cervical cancer 53
  1.10 RECURRENCE 53
    1.10.1 CIN 53
    1.10.2 Recurrence of cervical cancer 54
  1.11 STUDY HYPOTHESES 54

2 METHODS 55
  2.1 STUDY TYPE 55
  2.2 ETHICS APPROVAL 55
  2.3 SAFETY CONSIDERATIONS 55
  2.4 STUDY PARTICIPANTS 56
  2.5 ENROLMENT DATA 56
    2.5.1 Reading out questionnaires 56
    2.5.2 Intimate partner violence questions 57
    2.5.3 General demographic questions 58
    2.5.4 Yale Depression Screen 58
    2.5.5 Housing instability 59
  2.6 CLASSIFICATION OF SUBJECTS 59
  2.7 PARTICIPANT FOLLOW UP 59
2.8 Outcome data 60
2.9 Primary outcomes 61
2.10 Data analysis 62
  2.10.1 Prevalence 62
  2.10.2 Associations of IPV 62
  2.10.3 Default and loss to follow up rates 62
  2.10.4 Multivariate analysis 62
3 Results 63
  3.1 Recruitment results 63
  3.2 Demographics of the study cohort 63
  3.3 Prevalence of IPV 65
  3.4 Association of IPV 67
  3.5 Default and loss to follow up at colposcopy clinics 69
4 Discussion 75
  4.1 Recruitment 75
  4.2 Prevalence 77
  4.3 Association of IPV 78
  4.4 Default and loss to follow up from colposcopy 79
  4.5 Default and loss to follow up from women’s health clinics 81
  4.6 What we have learnt from this thesis 82
  4.7 Where to from here? 83
References 86
Appendix 100
  Appendix 1 Approval letters 102
  Appendix 2 Paper 110
  Appendix 3 Conference presentation 128
List of Tables

TABLE 1.5.1 RISK FACTORS FOR IPV 31
TABLE 1.7.1 COMMON GENOTYPES ACCORDING TO THEIR ONCOGENIC POTENTIAL 37
TABLE 3.2 DEMOGRAPHICS OF THE STUDY COHORT 64
TABLE 3.3 PREVALENCE OF INTIMATE PARTNER VIOLENCE IN THE PREVIOUS 12 MONTHS BY SUBTYPE IN STUDY COHORT 66
TABLE 3.4 DEMOGRAPHIC DIFFERENCES IN WOMEN EXPOSED TO IPV AND THOSE WHO WERE NOT. 68
TABLE 3.5.1 DEFAULT RATES FROM COLPOSCOPY CLINICS. 70
TABLE 3.5.2 SUMMARY OUTPUT MULTIVARIATE ANALYSIS OF DEFAULT FROM COLPOSCOPY ON TWO OR MORE OCCASIONS. 71
TABLE 3.6.1 ATTENDANCE AND DEFAULT FROM OTHER WOMEN’S HEALTH CLINICS (EXCLUDES COLPOSCOPY CLINICS). 73
TABLE 3.6.2 MULTIVARIATE ANALYSIS DEFAULT FROM WOMEN’S HEALTH CLINICS 74

List of Figures

FIGURE 1.7.2.1 NORMAL APPEARING CERVIX 39
FIGURE 1.7.2.2 CIN1 39
FIGURE 1.7.2.3 CIN2 40
FIGURE 1.7.2.4 CIN3 40
FIGURE 1.8.1.1 LONGITUDINAL SECTION OF THE FEMALE ORGANS AFTER INSERTION OF A SPECULUM 44
1.8.1.2 VIEW OF THE CERVIX THROUGH A SPECULUM 45
FIGURE 1.8.2.2.1 COLPOSCOPE 48
FIGURE 1.8.2.2.2 COLPOSCOPY EXAMINATION ROOM 49
FIGURE 1.8.2.2.3 COLPOSCOPE, CERVIX AND MAGNIFIED VISUALISATION OF THE CERVIX THROUGH A COLPOSCOPE 49
FIGURE 2.5.1.1 INTERVIEW ROOM 57
1 Introduction

This thesis explores a possible mechanism by which the presence of domestic violence may lead to poorer health outcomes in women. Whilst the cost and impact of domestic violence in the literature has been well documented, it is less clear exactly ‘how’ domestic violence leads to the reported variety of adverse health outcomes. The key hypothesis in this thesis is that the health impact of domestic violence is partly mediated through failure of affected women to attend for treatment and follow up. This then results in their poorer health outcomes.

1.1 Definitions

1.1.1 Defining violence

Defining violence is not an easy task with many different definitions in the literature. One leading author has defined violence as follows:

“At its simplest, a definition needs to tell us what something is and what it is not, and how to recognize when it is present and when it is not. Without definition, communal, comprehensible discourse about violence cannot proceed” (Krauss, 2006).

However, historical and cultural factors may impact upon the acceptability, definition and level of violence. The following examples have previously been used to demonstrate how cultural factors play in the expression of violence.

It was a typical husband/wife argument. She wanted to visit her parents. He wanted her to stay at home. So they settled it in, what some here say is an all too-typical fashion, Rosalynn Isimento-Osibuamhe recalled of the incident in December 2001. Her husband Emmanuel, followed her out the door. Then he beat her unconscious, she says, and left her lying in the street near their
apartment. Mrs. Isimento-Osibua, then 31, and in the fifth year of her marriage, had broken an unwritten rule in this part of the world; she had defied her husband. Surveys throughout sub-Saharan Africa show that many men and women, too-consider such disobedience ample justification for a beating (LaFraniere, 2005).

The highest rates of violence have been reported from Zambia, where nearly half of women surveyed said a male partner had beaten them, according to a 2004 survey financed by the United States that surveyed nine nations on three continents (LaFraniere, 2005).

For the purposes of this thesis, we have utilised the WHO Global Consultation on Violence and Health definition. This definition has taken a very broad definition of violence as they have a role in to ensure that society’s weakest members are protected. Their current definition is as follows:

“The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation” (WHO, 1996).

The WHO then go on to subdivide violence into three major categories. These are;

- Self-directed
- Interpersonal
- Collective

From this, interpersonal violence is subdivided into three subcategories. These are;

- Family
- Intimate partner
- Community
1.1.2 Defining intimate partner violence

This thesis explores the impact of intimate partner violence on women’s attendance at colposcopy and women’s health services.

As with the term ‘violence’, there are likewise many different definitions of the term intimate partner violence used in the literature. In many cases, family violence is confused with intimate partner violence. An Australian review article stated that:

“The terms ‘violence’, ‘abuse’ and ‘battering’ are frequently used interchangeably. In studies of the Australian community, ‘domestic violence’ is usually taken to mean partner abuse, specifically physical violence between a male and female partner, most commonly perpetrated by the male partner” (Hegarty & Hindmarsh, 2000; ANOP, 1995).

The Australian legal definition states that domestic violence refers “exclusively to violence committed by a heterosexual partner”. In a healthcare setting a much broader definition is required. Partner abuse can also be characterized by emotional and psychological abuse. “Most women experiencing partner violence abuse report that the physical violence is the least damaging suffered: it is the relentless psychological abuse that cripples and isolates the women” (Hagarty & Hindmarsh, 2000).

The Australian Public Health Association also uses a very broad definition...

The Australian Public Health Association employs a comprehensive definition of ‘domestic violence’, outlining examples of abusive behavior:

- Physical abuse, causing pain and injury; denial of sleep, warmth or nutrition; denial of needed medical care; sexual assault; violence to property or animals; disablement; and murder;
• Verbal abuse, in private or in a public, designed to humiliate, degrade, demean, intimidate, subjugate, including the threat of physical violence;

• Economic abuse, including deprivation of basic necessities, seizure of income or assets, unreasonable denial of the means necessary for participation in social life; and

• Social abuse, through isolation, control of all social activity, deprivation of liberty, or the deliberate creation of unreasonable dependence. (Australian Public Health Association. 1990).

Under these inclusive definitions, violence has many forms including:

• physical aggression;

• threatening behavior;

• sexual abuse;

• emotional abuse;

• verbal abuse;

• intimidating behavior;

• controlling behavior; and

• domineering behavior

Intimate partner violence (IPV) can therefore be broadly defined as a pattern of abusive behaviors in an intimate relationship. For the purposes of this thesis we have defined intimate partner violence as; physically, sexually, verbally and/or emotionally abusive behavior in an intimate relationship that is in any way hurtful or unwanted.
1.2 The burden of Intimate Partner Violence

1.2.1 Prevalence of intimate partner violence

Intimate partner violence is common. Statistics vary, but surveys place the lifetime prevalence of intimate partner violence against women at between 25% to 30% and the annual prevalence between 2% to 12% (McLennon, 1996; Tjaden and Thoennes, 2000; Wathen & MacMillan, 2003). A recent SA telephone poll of 6004 interviews confirmed that 17.8% of adults, both male and female, reported some form of IPV by a current or former partner (Grande, Hickling, Taylor & Woolacott, 2003). In a more recent study (Fanslow & Robinson, 2011), data collected in New Zealand showed that as many as 55% of women interviewed that had ever had a partner had experienced some sort of IPV in her lifetime. Garcia-Moreno et al. (2006), reviewed data collected from 24,000 women from various diverse cultural, geographical and urban/rural settings and the findings revealed IPV being as widespread as 70% in some places however in some sites, women who had a history of IPV in their lifetime were as low as 15%.

IPV against women is widespread, due to demographic variables within settings it is more prevalent in some areas. Routine screening programs for IPV can be a useful tool in determining victims so prevention strategies can be implemented.

1.2.2 Cost of intimate partner violence

The health consequences of IPV have been well documented, but the economic cost has only been the focus of research since the late 1980s. Violence against women was brought to the public’s attention by activists during the second wave of the feminist movement. It was argued that if violence against women was so prevalent, then there
was a social responsibility to protect the recipients of the violence and punish the perpetrators (Carrie, 2010).

During the late 1980s and early 1990s campaigns altered strategy and instead of calling for punitive measures, they began to focus on the economic cost of violence against women. Researchers around the world began to publish estimates of the economic cost of intimate partner violence.

Partner violence incurs huge direct costs to healthcare services, as well as indirect costs to social care, the legal system and a loss in economic productivity (Max, Rice, Finkelstein, Bardwell & Leadbetter, 2004). One study analysed national survey data from the National Violence Against Women Survey and the Medical Expenditure Panel Survey from the United States. The authors estimated that the economic cost of intimate partner violence perpetrated against women in the US, including expenditures for medical care and mental health services, and lost productivity from injury and premature death was $5.8 billion (95% confidence interval: $3.9 to $7.7 billion in 1995 dollars)(Max et al., 2004).

Other studies report annual figures as high as $67 billion (Donovan, Peterson & Francas, 1999). However, a systematic review from Germany that reported on nine cost estimates studies and included direct, indirect and intangible costs found that there was incomplete data and considerable heterogeneity in cost categories. They concluded that the real costs are higher than those reported in studies (Niebuhr, Salge & Brzank, 2012). In one study, the estimates of the medical cost burden of intimate partner violence in the first 12 months after victimization ranged from USD 2.3 billion to USD 7.0 billion, depending on the economic method used (Brown, Finkelstein & Mercy, 2008).

One of the better cost-analysis studies looked at costs in a community sample of 309 Canadian women who had left an abusive male partner on average 20 months
previously. The authors reported that the total annual estimated cost attributable to violence was $13,162.39 per woman (Varcoe et al., 2011).

Furthermore, the results indicated that costs continued long after leaving the violent relationship. They reported a national annual cost of $6.9 billion for women aged 19–65 who had left abusive partners and a further $3.1 billion for those who had experienced violence within the past three years (Varcoe et al., 2011).

Rather than talk of absolute costs, other researchers have summarized the cost of IPV in relative terms of percentage increase in healthcare utilization. One US study evaluated costs in a sample of 3,333 women (ages 18-64) who were randomly sampled from the membership files of a large health plan located in a metropolitan area and who participated in a telephone survey to assess IPV history. Annual health care utilization and costs were assembled over 7.4 years (Bonomi, Anderson, Rivara & Thompson, 2009).

The authors reported that mental health utilization was significantly higher for women with physical or nonphysical abuse only compared with never-abused women. The highest use was observed in women with ongoing abuse (relative risk for those with ongoing abuse: physical, 2.61; nonphysical, 2.18) (Bonomi et al., 2009). Physically abused women used more emergency department, hospital outpatient, primary care, pharmacy, and specialty services (Bonomi et al., 2009).
1.3 Risk factors for intimate partner violence

1.3.1 Risks in the female

Studies suggest that the most significant risk factors for IPV for the female gender is age, low education and exposure in childhood. A recent study in Curacao reported that single parenthood and unemployment increased the IPV risk for women, but not for men (Van Wijk & De Bruijn, 2012).

A study that examined the risk factors for IPV among older Chinese couples in Hong Kong also reported that significant risk factors were unemployment, substance abuse problems, prior witness of parental violence in childhood, criminal history, low level of assertiveness, anger management problems, low levels of social support and/or experiencing stressful conditions, were all factors associated with IPV (Yan & Chan, 2012).

The National Institute of Health and Family Welfare in New Delhi, India researched IPV in eighteen states in India in a study with over 14,500 female participants. Of the cohort, 39 percent of women were abused. Women who had a lower household income, were illiterate, belonged to lower caste, and who had a partner who drank/gambled were at significant risk of experiencing IPV (Mahapatro, Gupta & Gupta, 2012).

Growing evidence suggests that IPV and substance misuse are common problems that affect low-income women. The authors of a study based in an emergency department assessed the associations between different types of drug and alcohol use and different types of IPV in the Bronx, New York. Those who reported using heroin in the previous 6 months were twice as likely to present to the emergency department with IPV related injuries than non-heroin using women. However, those with an increased likelihood of
IPV and severe verbal abuse reported the use of crack or cocaine use in the past 6 months (Gilbert, El-Bassel, Chang, Wu & Roy, 2012).

Substance abuse tends to be a contributing factor in many recent investigations into IPV risk factors. In a study that observed the substance abuse of alcohol with cocaine or marijuana in 2004-2005, the authors concluded that overall, substance use disorders were consistently related to IPV (Smith, Homish, Leonard & Cornelius, 2012). Of the substance use disorders observed (alcohol, cocaine, cannabis and opioids), alcohol abuse was the most prevalent for both the perpetrator (21.7%) and the victim (24.6%) followed by cannabis use for both the perpetrator and the victim (5.8% and 7.4%, respectively) (Smith, Homish, Leonard & Cornelius, 2012).

While most of the literature has recognized that substance abuse stands out as a risk factor in IPV, researchers have also explored the psychosocial link to IPV.

IPV against women is a growing global public health problem that is related to various psychosocial, cultural, mental and economic factors. A study in Turkey explored 306 women from Edirne, in this study, 61% of women were exposed to some kind of IPV. The researchers examined the various factors that contributed to different types of IPV (Oyekcin, Yetim & Sahin, 2012). In this study, women who married against family consent were 4 times more likely to be exposed to some kind of violence and women that were in arranged marriages were over 2 times more at risk. Early exposure to violence in the spouse’s upbringing increased the physical violence against women by 6 times (Gulec Oyekcin et al., 2012).

There is considerable literature supporting the link between substance abuse and alcohol. A recent study assessed the relationships between alcohol outlet density, alcohol use and IPV among young women in the United States' (Waller, Iritani &
Christ, 2012). It was found that outlet density was a non-significant contributing factor to IPV, the data results indicated that young women who drank heavily were at significant risk for receiving IPV (Waller et al., 2012).

Although many studies support a direct link with substance abuse, other social factors are important. A researcher with The Bureau of Crime and Statistics and Research in New South Wales examined the relationship between personal stress, financial stress, social support and violence against women in 2006. The study reported that financial and personal stress and a lack of social support were related to an increased risk for IPV. The correlation persisted regardless of age, being a sole parent and having a substance abuse problem (Bureau of Crime Statistics and Research, New South Wales, 2011).

1.3.2 Risk factors in the perpetrator

Anyone can be a victim of intimate partner violence. However, extensive research demonstrates that women are substantially more likely to be victims than men. Studies suggest that as many as 73% of family violence victims are women. Women also make up to 84% of spouse abuse victims and 86% of victims of abuse by a boyfriend or girlfriend (Intimate partner violence and gender, n.d.).

In most cases men are the perpetrator of IPV against women. In a study that looked at the correlation between alcohol abuse and IPV in a rural setting (2012), 56% of the cohort were perpetrators of IPV and of those, 77% admitted to being under the influence of alcohol during the IPV act (Brisbe, Ordinoiha & Dienye, 2012). Although substance abuse has been an overwhelming factor in IPV perpetration, studies suggest that that there are other factors that contribute towards males becoming IPV perpetrators.
Men who have a history of bullying peers as a child are more likely to become IPV perpetrators as adults. Bullying and IPV are both thought to stem from a desire for power and control over others (Falb, McCauley, Decker, Gupta, Raj & Silverman, 2011). In a study from the Archives Of Pediatrics & Adolescent Medicine (2011), men who ever bullied in school were over 1.5 times more likely to perpetrate IPV than men who did not. Men who bullied frequently were almost 4 times more likely to be perpetrators of IPV. From this study, it is evident that bullying as a child, especially frequent bullying is associated with an increased risk of IPV as an adult (Falb et al., 2011).

Alcohol consumption is widespread amongst men associated in IPV. Men who drink heavily are also associated as a risk factor for perpetration of IPV. A recent study (Testa et al., 2012), revealed that alcohol dependence on a daily basis was linked to the likelihood and frequency of IPV. Men with alcohol dependence symptoms contributed to the occurrence of IPV (Testa et al., 2012).

It is also worth noting that for male perpetrators, childhood experiences of violence in the home is associated with male IPV perpetration (Djikanovic, Jansen & Otasevic, 2009). All though there are a variety of other risk factors for the male perpetrator such as daily alcohol consumption, having affairs, fighting with other men and his mother having experienced spousal abuse. The most significant factor associated with male perpetrated IPV was childhood experiences of violence in the family home (Djikanovic et al., 2009).

Because there are strong associations between IPV and childhood exposure, IPV is “passed” from one generation to the next. It not only affects the victim but the sometimes the innocent witnesses. This has been proven to have a direct affect on the
psychological states and psychosocial development of children witnessing IPV (Selic, Pesjak & Kersnik, 2011). Studies have reported that those who have been the victim of or witnessed violence during their childhood will use violence to a greater extent as adults with their own families (Selic et al., 2011). A recent study suggests that childhood physical abuse history is one of the major risk factors for being a IPV perpetrator in adulthood. There is a large body of research indicating that adults who have been abused as children are more likely to abuse their own children than adults without this history (Selic et al., 2011).

1.4 Screening for Intimate partner violence

In many cases, those who have been affected by IPV suffer alone and the violent behaviour continues in future generations. It is often not until a health care provider has become aware of the IPV in the home that the situation is managed.

Health care providers and patients agree that domestic violence presents a serious health issue that falls within the area of medical care. Screening for IPV provides an opportunity for disclosure of IPV and gives an affected women and her healthcare provider an opportunity to develop a plan to protect her safety and that of her family.

In a recent study in International Nursing Review (Ben Natan, Ben Ari, Bader & Hallak, 2012), the benefit of knowledge of patients affected by IPV and the attitudes of the healthcare providers were investigated as well as the attitudes to the screening process by patients. This study was undertaken in Israel where one in seven women are reported to have a lifetime risk of being affected by IPV. In the study, patients reported that screening was essential for preventing IPV. However, both nursing and medical staff were reluctant to screen. The authors concluded “Nurses' and physicians' screening of women about domestic violence is a fundamental intervention with
implications for health care in general and basic human rights in particular” (Ben Natan et al., 2012).

In 2004 the US Preventive Task Force reviewed evidence on the effectiveness of screening and interventions for women in health care settings in reducing IPV. They established that screening instruments accurately identify women who are experiencing IPV and can provide benefits that vary by population and potential adverse effects have minimal effect on most women (Heidi, Nelson, Bougatsos & Blazina, 2012).

Since then, there has been an increased promotion to involve healthcare providers in IPV prevention through screening.

In 2010 a study conducted by the University of New South Wales (Spangaro, Zwi, Poulos & Man, 2010), measured the changes in abuse six months after routine screening for IPV in various healthcare settings. Report findings exposed that after 6 months abused women were now in agreement with attitudes relating to abuse, particularly that “being hurt by another partner affects a women’s health and health services should ask about abuse”. In this study, the proportion of women reporting current abuse was significantly lower after 6 months (Spangaro et al., 2010).

Data suggests that screening for IPV is a valuable tool and allows an abused woman to receive the help that she may not otherwise get. However the strength of the risk assessment is merely the first step in preventing IPV in family relationships (Williams & Grant, 2006). It is fundamental to train healthcare professionals that are associated with addressing IPV issues to properly link valid risk assessments obtained from abused women to well organised strategies of supervision and treatment so that the victims are protected (Williams & Grant, 2006).
The patient-physician consultation could theoretically assist IPV victims in considering their options of living without violence. It could also play a critical role in preventing future violence. Despite this, many professionals in the health care system do not appreciate the benefits of such interactions (Hamberger & Phelan, 2004). Hamburger and Plehan (2004), investigated the barriers to screening for IPV by healthcare providers. With regards to professionals, typically the biggest barrier was that the lack of training about IPV would leave most health care providers unprepared to screen, identify and help IPV victims (Hamberger, Phelan, 2004).

A 2004 study from Japan (Kataoka, Yaju, Eto, Matsumoto & Horiuchi, 2004) comparing the various types of screening tools for IPV victims, identified that there was a requirement for post screening counseling sessions. Although they concluded all pregnant women should be routinely screened for IPV, considering the high burden of suffering they experience, they emphasized that acceptable screening tools should be introduced in parallel with effective interventions (Kataoka et al., 2004).

There is little data that evaluates the willingness of women to disclose a possible IPV history. It is unwise to assume that simply offering a series of questions via a questionnaire is all that is needed to support abused women. The women’s willingness to discuss and openness for getting help for health issues also should be considered (Kelsey, Hegarty, O’Doherty, Astbury & Gunn, 2004). In a study by the Kelsey et al. (2004) participants were screened for health and lifestyle issues. The survey included questions about the requirement for more physical activity, smoking status, substance abuse, control over eating, feeling depressed and fear of a partner. The survey revealed that of all of these issues women were least comfortable in disclosing fear of a partner in a healthcare setting, unless they felt safe in that setting (Kelsey et al., 2004).
1.5 Prevention of Intimate partner violence

Table 1.5.1 summarises the risk factors of IPV. Given risk factors have been identified, it would be reasonable to plan IPV prevention strategies to detect the risk factors and implement interventions to reduce them. Data suggests that IPV is widespread across the globe. Although demographic variables may impact on the prevalence of IPV the fact remains that IPV is common. We know that a common risk factor for IPV is exposure during childhood, either as a witness to IPV or a victim of domestic violence in childhood. Prevention strategies put in place in healthcare settings may reduce the occurrence of IPV, in turn less children will be exposed and families in future generations may avoid being affected. Pregnancy and general women health services are obvious targets for implementations strategies.

In 2006, a randomized, two arm clinical trial in public primary care clinics examined interventions with 360 women who had been abused by their partner. In this study the two interventions were a wallet size referral card that lists safety plans and resources for IPV services, and a 20 minute nurse case management protocol. Although there was a noteworthy difference between groups, both groups reported significantly fewer threats of abuse, and were adopting more safe behaviour 24 months after the study commencement. These researchers went on to discuss that regardless of type of treatment, assessment and referral information alone is an important intervention to improve outcomes for abused women (McFarlane, Groff, O’Brien & Watson, 2006).

Pronyk et al (2006) studied the effect of a brief intervention with microfinancing as an intervention for the prevention of IPV. In this trial, a learning and action program that had been integrated into loans that were offered to the poorer women in the intervention
group. In one cohort, IPV was reduced by as much as 55% following a combined microfinance and training intervention.

IPV prevention in a health care setting should begin with screening followed by intervention that allows women to talk confidentially to somebody they trust and can give them information about resources for IPV services.
Table 1.5.1 Risk factors for IPV

<table>
<thead>
<tr>
<th><em><strong><strong>IPV - Risk factors in the female victim</strong></strong></em></th>
<th><em><strong><strong>IPV - Risk factors in the male perpetrator</strong></strong></em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Substance abuse</td>
</tr>
<tr>
<td>Low education</td>
<td>History of bullying peers</td>
</tr>
<tr>
<td>Childhood exposure</td>
<td>Alcohol abuse</td>
</tr>
<tr>
<td>Single parenthood</td>
<td>Alcohol dependence</td>
</tr>
<tr>
<td>Unemployment</td>
<td>Childhood violence experience</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>Daily alcohol consumption</td>
</tr>
<tr>
<td>Criminal history</td>
<td>Having affairs</td>
</tr>
<tr>
<td>Anger management problems</td>
<td>Tendency to fight with other men</td>
</tr>
<tr>
<td>Low social support</td>
<td>Mother having IPV history</td>
</tr>
<tr>
<td>Stressful conditions</td>
<td>Witnessing IPV as a child</td>
</tr>
<tr>
<td>Lower income</td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td></td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td></td>
</tr>
<tr>
<td>Marital dysfunction</td>
<td></td>
</tr>
<tr>
<td>Alcohol abuse at a young age</td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td></td>
</tr>
<tr>
<td>Sole parenthood</td>
<td></td>
</tr>
</tbody>
</table>
1.6 Associations between intimate partner violence and poor health outcomes

Intimate partner violence is associated with many health risks. Those who are at risk are not only the victim of the violence but also the children who have been subjected to witnessing the violence on a regular basis. Although it is self-evident that injuries due to trauma as a result of violence will be coupled with health risks, studies indicate that there are many other health risks associated with IPV.

Much of the data supports the idea that IPV is closely associated with poor mental health outcomes for both males and females (Afifi, MacMillan, Cox, Asmundson, Stein & Sareen, 2009).

In a study that investigated the correlation of exposure to IPV during childhood and women’s health, women who were exposed to violence or witnessed IPV during their childhood reported poorer health status and a higher prevalence of depression and IPV in adulthood. It was also observed that there was a greater use of health care and mental health services for women with past IPV exposure during their childhood compared with women who had no past exposure (Cannon, Bonomi, Anderson, Rivera & Thompson, 2010).

In a study compiled by the Department of Child, Adolescent and Women's Health in Peking University School, 1577 women were surveyed for previous IPV exposure. The study found 24.6% of women suffered psychological aggression and 5.5% suffered physical assault in the year following the IPV incident. The authors concluded that domestic violence posed a severe threat to women's physical and mental health (Gao & Jacka, 2012).
A meta-analysis looking to evaluate the co-morbidity of IPV and specific depression outcomes in affected women (Beydoun, Beydoun, Kaufman, Lo & Zonderma, 2010), suggested that women who have been exposed to IPV had a two to three-fold increased risk of a major depressive disorder and up to two-fold increased risk of elevated depressive symptoms and postpartum depression compared to non-exposed women.

In the Journal of Interpersonal Violence, Hegarty et al (2012) conducted a study of women attending Australian general practices who reported a fear of partners during the last 12 months. Of the participants, in the last year, over one third had seen a psychologist or had at least 5 GP visits and reported poor or fair health. Despite the use of more medications, women with severe combined abuse had poor quality of life and mental health. The study concluded that health practitioners should take a history of type and severity of abuse, particularly for women with mental health issues and assist them in accessing specialised services (Hegarty et al., 2012).

While there is much research to prove that women that have been exposed to IPV both as adults and those who witnessed IPV as children are at greater risk of poor mental health outcomes as adults, it is also fair to say those exposed to IPV are more at risk of other poor reproductive outcome. In a study titled “women who had a lifetime experience of violence and adverse reproductive outcomes” Yoshikawa (2012), investigated the association between a lifetime experience of IPV and terminated pregnancies among married Indian women. In this study the National Family Health Survey was evaluated with detailed information about IPV in relation to a question relating to pregnancy outcomes. Results showed that 39.6% of Indian women were victims of IPV. 18.3% had terminated a pregnancy during their lifetime. The odds ratio of a terminated pregnancy among those who had been exposed to IPV was 1.62. The results suggest that the prevention of IPV would reduce the high incidence of terminated
pregnancies, thus improving maternal health in India (Yoshikawa, Agrawal, Poudel & Jimba, 2012).

The World Health Organization, Department of Reproductive Health and Research, Geneva, Switzerland conducted a study in 2012 aimed to inspect the association between IPV, abortion and unintended pregnancies (Pallitto, Garcia-Moreno, Gansen, Heise, Ellsberg & Watts, 2012). In this study, population data was extracted from 17,518 ever-partnered women participating in the WHO Multi-Country Study on Women's Health and Domestic Violence over 15 sites in 10 countries. The conclusion of this vast study was that IPV was a frequent and strong risk factor for both unplanned pregnancy and termination of pregnancy. It was concluded that reducing IPV could therefore significantly reduce risks to maternal and reproductive health (Pallitto et al., 2012).

Exposure of IPV was found to be a contributor to sexual risk behavior resulting in adverse sexual health outcomes (Laanpere, Rimgmets, Part & Karro, 2012). The study investigated the associations IPV and sexual health outcomes in Estonia, Europe. In this trial, participants were non pregnant females aged between 16-44.

Of 1966 respondents, 362 (18.4%) reported IPV during 12 months preceding the survey. Physical IPV was reported by 339 (17.2%), sexual by 80 (4.1%) and both physical and sexual by 35 (1.8%) of respondents. After controlling for significant confounding socio-demographic factors, exposure to IPV was found to be associated with contraception non-use [adjusted odds ratio (AOR) = 2.02, 95% confidence interval (CI) 1.44-2.82] or the use of unreliable contraceptive methods (AOR = 1.54, CI 1.16-2.04) during the most recent sexual intercourse, having never used a condom (AOR = 1.53, CI 1.12-2.10), repeat induced abortion (AOR = 1.72, CI 1.24-2.37), lifetime risk of sexually transmitted infections (AOR = 2.05, CI 1.56-2.68) and dyspareunia (AOR = 2.14, CI 1.65-2.77) (Laanpere et al., 2012).
1.7 Association between intimate partner violence and cervical disease

In the late 1990s the first links between IPV and cervical disease were reported (Quinlivan, Petersen, Davy & Evans, 2004). Women exposed to intimate partner violence may be at increased risk of developing precancerous or cancerous lesions of the cervix. There is evidence that they are at increased risk of acquiring sexually transmitted infections, including high risk human papilloma virus, a mandatory precursor for such lesions.

In a study of 375 women attending a sexually transmitted disease clinic, 37.6% of women reported ever having experienced physical assault by an intimate partner and 32.8% reported verbal threats (Augenbbraun, Wilson & Allister, 2001).

A study of 774 women attending a prenatal clinic found that women who reported exposure to intimate partner violence were more than twice as likely to have been diagnosed with a sexually transmitted infection (Martin, Matza, Kupper, Thomas, Daly, Cloutier et al., 1999).

An Australian study in a teenage pregnancy population reported that teenagers exposed to domestic violence were at seven-fold risk of having an abnormal Pap smear compared to those teenagers not exposed to partner violence (Quinlivan and Evans, 2001).
1.7.1 Human Papilloma virus

Human papilloma virus (HPV) is a very common infection that can be passed from person to person through sexual contact. Studies suggest that four out of every five people who have sex will get HPV at some point in their lives. According to The Victorian Cancer Council, HPV is so common that it could be considered a normal part of life after becoming sexually active (Cancer council Victoria 2008). Most women will only become aware of the infection when they have an abnormal Pap smear test result that has been caused by the virus. The majority of women who acquire HPV will subsequently clear the virus as a result of activation of their immune system.

Certain subtypes of HPV infections can cause abnormal cell growth (dysplasia) on the cervix.

There are 80 HPV genotypes. Of these, 30 are known to infect the genital tract and 20 have been identified as carcinogenic.

Table 1.7.1 outlines the common genotypes according to their oncogenic potential. Genotypes 6 and 11 are typically associated with low risk while types 16 and 18 are most commonly found in malignant lesions. A recent bulletin from the World Health Organization concluded that nearly all cervical cancer resulted from genital infection with a high-risk HPV (WHO, 2012). The immune system appears to be able to clear low-risk viruses. However, it has difficulty clearing the high-risk subtypes. The prolonged exposure results in dysplasia or malignant changes within the cervical cells.

While condoms are an effective barrier against many sexual infections, they do not fully cover all of the genital skin and therefore they do not reliably protect against HPV.

Although genital warts resulting from HPV infections can be treated, there is currently no cure (Cutts et al., 2007).
### Table 1.7.1 Common genotypes according to their oncogenic potential

<table>
<thead>
<tr>
<th></th>
<th>Carcinogenic HPV Genotypes of the genital tract</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low risk</strong></td>
<td>6 11 41 44</td>
</tr>
<tr>
<td><strong>Intermediate</strong></td>
<td>31 33 35</td>
</tr>
<tr>
<td><strong>High risk</strong></td>
<td>16 18 45 56</td>
</tr>
</tbody>
</table>
1.7.2 Cervical Intraepithelial Neoplasia

When a cell is infected with the HPV it can result in nuclear change that results in cervical intraepithelial neoplasia. This is graded as;

- CIN1 (Cervical intraepithelial neoplasia 1)
- CIN2 (Cervical intraepithelial neoplasia 2)
- CIN3 (Cervical intraepithelial neoplasia 3)

HPV infection in cells without dysplasia and CIN1 are referred to as a low-grade precancerous change. These changes are frequently reversible over 12-24 months.

CIN 2 and 3 are referred to as high grade precancerous changes. These changes resolve less frequently and may progress to definite cervical cancer. As a result, these lesions require treatment.

Figures 1.7.2.1, 1.7.2.2, 1.7.2.3 and 1.7.2.4 demonstrates the differences in the colposcopic appearance of a normal appearing cervix compared to CIN1, 2 and 3.
Figure 1.7.2.1 Normal appearing cervix

Accessed from,
http://www.brooksidepress.org/Products/Military_OBGYN/Textbook/CervicalDisease/cervical_disease_and_neoplasia.htm (date: 10 March 2012)

Figure 1.7.2.2 CIN1

Figure 1.7.2.3 CIN2


Figure 1.7.2.4 CIN3

Accessed from http://www.turhanuslu.com/CIN3.png (Date 2 April 2012)
Most low-grade cell changes or abnormalities are caused by transient HPV infection. Low-grade changes are sometimes referred to as mild dysplasia or cervical intraepithelial neoplasia (CIN) 1. Some of these low-grade changes are also seen with other infections or occasionally in women after menopause (atrophic changes). These minor cell changes usually clear up by themselves. Most women with low-grade changes on their Pap tests will be asked to have another test in 12 months rather than two years.

1.7.3 Cervical cancer

Cervical cancer is a preventable but common cancer in women and is the most common cancer affecting women in developing countries. An article from the World Health Organization reports that cervical cancer has been responsible for an estimated 260,000 deaths and 500,000 new cases in 2005 (WHO HPV and HPV vaccine, 2007). Squamous cell carcinoma is the most common type of cervical cancer. Over 90% of these cases and deaths were reported from low and middle income regions where there is limited or no access to cervical cancer screening and treatment. The World Health Organization predicts that in 2030 deaths from cervical cancer will double to 435,000 despite the availability of screening and treatment for the disease (WHO, 2007).

1.7.4 Human Papilloma Virus Vaccine

The mainstay of combating cervical cancer is through prevention of the cancer by the use of the human papilloma virus vaccine. Currently, vaccines against HPV are being implemented in many developed nations. Australia has a national immunization program for 12 year old girls. In theory, cervical cancer can be prevented and treated by
HPV vaccine therapy. Important progress has been made towards producing recombinant, type specific, vaccines both preventive and therapeutic. Studies have shown significant effects on prevention of cervical cytological abnormalities and CIN and these are now moving to the next phase in terms of evaluation. The conclusion from these studies is that vaccinations could substantially reduce the incidence of cervical cancer. However, the cost of these vaccine programs is prohibitive for developing nations and the available vaccines do not cover all high-risk HPV subtypes. Until vaccines eradicate this disease, the mainstay of management is detection of early HPV infection and precancerous changes of CIN1, CIN2 and CIN3 and their treatment before progression to cancer. In developed countries this is achieved through the Pap smear screening program (WHO, 2007).

In Australia, the national cervical screening program (2012), aims to reduce deaths from cervical cancer through cervical screening and encourages women to have regular pap tests, the mortality rate from cervical cancer has more than halved from the start of the program.

1.8 Investigation and Treatment of CIN and Cervical Cancer

1.8.1 The Pap smear

The Pap test is a simple test the checks for changes to the cells of the cervix. A cervical smear is taken by a trained healthcare professional, usually a general practitioner at their local practice. Using a speculum the cervix is visualized (see figure 1.8.1.1 & 1.8.1.2). Once the cervix is visible, a wooden spatula or plastic brush placed onto the cervix and into the endocervical canal and used to scrape cells from these sites. The cells are then smeared onto a glass slide preserved with a fixative, and sent to a laboratory for analysis (Bain, Burton & MrGavigan, 2011).
It is recommended by the National cervical screening program (2012), that all women over the age of 18 who have ever had sex have a Pap smear test every two years until the age of 70 years.
Figure 1.8.1.1 Longitudinal section of the female organs after insertion of a speculum

1.8.1.2 View of the cervix through a speculum

1.8.2 History of the Pap test

The pap smear test was invented by Georgious Papanikolaou. After reading a book by Walter Hayle Walshe (1843) “A Practical treatise on the diseases of the lungs”, Georgious Papanikolaou learned that malignant cells could be recognised under a microscope. Papanikolaou began testing the cells from the cervix. Before Papanikalaou discovered that cells collected from the cervix could be analysed under a microscope and abnormal but precancerous stage changes could be identified, cervical cancer was usually not detected until it reached an advanced stage.

With the discovery of the Pap test, cellular changes could be detected before they became cancerous. Premalignant cells detected on a Pap test can be successfully treated. Cervical cancer deaths have dropped by over 70 percent as a result of the widespread introduction of the Pap smear in developed countries (The history of pap screening test, 2010).

1.8.2.1 Abnormal Pap test result

An abnormal Pap test result is when some cells of the cervix appear to differ from the normal cells resulting in either low-grade or high-grade change. A patient who has had a low grade abnormality on her Pap screen test for the first time may be advised to have a repeat Pap smear in 12 months time. In cases where low-grade change persists or a high-grade change has been identified, the patient will be referred to a gynaecologist for further testing.

1.8.2.2 Colposcopy

Once a patient has been referred for further investigation, she will undergo a colposcopy. A colposcopy is an examination of the cervix, vagina and vulva using an
instrument called a colposcope. A colposcope is equipped with a microscope and an appropriate light source to enable close visual inspection of the cervix Figure 1.8.2.2.1 shows a standard looking colposcope (Shafi & Nazeer, 2012).

Like a Pap smear, during a colposcopy examination, a speculum is used so that the gynaecologist can have a clear view of the cervix. During the colposcopy a speculum is positioned into the vagina and an acetic acid solution is applied to the cervix using a swab. The acetic acid solution is left for 30-60 seconds during which time abnormal areas may become white and visible through denaturing of unstable proteins. If an abnormal area is identified a biopsy is required. Biopsy forceps are used to collect a small tissue sample from the abnormal area on the cervix. The biopsy sample is sent off to a laboratory to get a histological diagnosis. Arrangements are made for the patient to return to the clinic to discuss the results of the biopsy some weeks later. Figure 1.8.2.2.2 shows the colposcopy examination room at Sunshine Hospital. Figure 1.8.2.2.3 shows magnified visualisation of the cervix using a colposcope, an example of both normal and abnormal appearing cervix can be seen.
Figure 1.8.2.2.1 Colposcope

Figure 1.8.2.2 Colposcopy examination room

Figure 1.8.2.3 Colposcope, cervix and magnified visualisation of the cervix through a colposcope

Accessed from
http://images.emedicinehealth.com/images/healthwise/medical/hw/h9991562_001.jpg
(date 20 April 2012)
1.8.3 Treatment of CIN

The key step in the prevention and treatment of cervical cancer is for women to regularly engage with their healthcare providers and have screening every 2 years with pap smears to identify if there is an abnormal result. If a problem has been identified it is important that women attend clinical services to participate in treatment of pre-cancerous changes until they have achieved a cure.

Because 90% of cervical cancers begin as pre-cancerous CIN, the screening for CIN (with pap smears) and the treatment of high grade CIN (CIN 2 or 3) is the most effective method of preventing a woman from developing cervical cancer. Follow up after treatment may take up to 2 years for high-grade precancerous lesions. The two main methods of treatment of CIN are ablative techniques and excisional methods (Edmonds, 2007, pp 614-22).

1.8.3.1 Ablative Techniques

There are four main ablative therapies to treat precancerous changes of the cervix.

1.8.3.1.1 Cryocautery

Cryocautery is a procedure that uses very cold temperatures to cause tissue destruction to treat abnormalities of the cervix. Cryocautery is best reserved for small lesions due to a lack of ability to gauge the depth of destruction with this technique. Current practice in developed countries is not to use cryocauters. It does, however, have a role in developing countries with low resources who use a “see and treat” after visual inspection of the cancer (Edmonds, 2007, p 614-22).
1.8.3.1.2 Electrodiathermy

Electrodiathermy, destroys more tissue than cryocautery. This procedure is done under a general or local anesthesia and with colposcopy guidance, an extension of electrodiathermy commonly used is wire loop excision.

1.8.3.1.3 Cold Coagulation

Cold Coagulation can be used to destroy the affected area, this method also requires the use of a local anesthesia. Unlike other methods of treatment, cold coagulation removes cells using heat that has been applied to a Teflon-coated thermosound. The use of this procedure can treat the whole of the transformation zone.

1.8.3.1.4 Laser

Laser technique is precise and is done using a micromanipulator attached to the colposcope. The laser treatment is useful for treating premalignant disease of the vagina (Edmonds, 2007, pp 614-22).

1.8.3.2 Excisional methods to treat CIN

The mainstay of excisional treatment is the wire loop excision (LLETZ), laser cone and cold knife cone.

1.8.3.2.1 Large loop excision of transformation zone

Large loop excision of transformation zone (LLETZ), also referred to as wire loop excision is the preferred method of treatment for dysplasia according to the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)(Abnormal pap smear. Ed 3, 2007).
During the LLETZ procedure, local anesthetic is injected to make the cervix numb. Similar to colposcopy, a weak acetic acid and/or iodine solution is then applied to the surface of the cervix to make the areas of abnormal cells more visible. Layers of abnormal cells are then cut away from the cervix with a fine semi-circular wire loop that has an electrical current flowing through it. The wire loop is used to remove the portion of the cervix that has been identified as containing the precancerous changes. The abnormal appearing tissue is then sent to the pathology for examination.

The pathology analysis will then confirm whether all of the abnormal calls have been removed and the type of abnormality is determined.

The procedure takes about 15 to 30 minutes and most women are able to return to normal activities within two to three days (RANZCOG, 2007).

1.8.3.2.2 Cone Biopsy

A cone biopsy is done when Pap smear results indicate abnormal changes in glandular cells, abnormal cells are in the endocervical canal or early cancer is suspected (RANZCOG, 2007).

Cone biopsy is an operation that requires the patient to have a general anesthetic. During this procedure the cervix is painted with iodine solution to highlight any abnormal areas of the cervix and a cone shaped wedge of tissue containing abnormal cells is removed using a laser or scalpel. This tissue is sent to pathology laboratory for examination (RANZCOG, 2007).
1.8.4 Treatment of cervical cancer

Once cancer is present, full disease staging and major operative treatment with a radical hysterectomy and pelvic lymph nodes dissection, radiation or chemotherapy may be required.

1.9 Follow up of patients

Patients with CIN and cervical cancer require follow-up to optimise outcomes.

1.9.1 Follow-up of Cervical intraepithelial neoplasia

Patients with CIN2 and CIN3 treated with ablative or excisional techniques require a 2 year period of follow-up involving colposcopy, Pap smear and Digene tests for HPV. In Australia, this follow-up occurs at 6 months, 12 months and 24 months past surgery.

1.9.2 Follow-up of cervical cancer

Patients with cervical cancer require 5 years follow up with vault smears and periodic examinations. Follow-up is tailored to disease stage at diagnosis.

1.10 Recurrence

1.10.1 CIN

Approximately 1 in 10 women who have CIN2 or CIN3 will develop disease recurrence within the 2 year follow-up period. Re-treatment results in the CIN being cured in 90% of cases.
1.10.2 Recurrence of cervical cancer

Recurrence in women with cervical cancer depends upon disease stage at diagnosis and varies from 30% to 90% 5 year survivals (Cervical cancer Research UK, 2012).

1.11 Study hypotheses

IPV does not directly cause cervical cancer. However, IPV is a risk factor for the acquisition of high-risk HPV through sexual activity.

This still does not explain why outcomes of treatment would be less effective than with women not exposed to IPV. We hypothesise that indirect processes may impact upon a women’s capacity to access and participate in treatment programs. IPV may therefore be a key identifier of women with sub optimal participation in precancerous treatment programs of the cervix.

We hypothesised that the presence of IPV would be associated with disorganised behaviour and depression that increases the likelihood of women being lost to follow up when they otherwise had potentially treatable precancerous condition such as CIN.

1.12 Study aim

The aim of the present thesis is to:

1 – Explore the prevalence of domestic violence in a cohort of women attending a gynaecological clinic for evaluation of an abnormal Pap smear and to look for associated psycho social and demographic factors in these women.

2 – Investigate whether the poorer cancer outcomes in women exposed to domestic violence might be explained by high default rates in routine aspects of care.
3 – Investigate whether default risks apply to confronting gynaecology clinics such as colposcopy, also apply to less stressful and confronting clinical services such as family planning and maternity services.

2 Methods

2.1 Study type

A prospective longitudinal cohort study was undertaken.

2.2 Ethics approval

Institutional ethics approval from the hospital ethics committee and University were obtained (see appendix 1 for ethics approval forms). Furthermore, written information sheets were provided and individual informed consent was obtained from each participant.

2.3 Safety considerations

Because the study involved IPV, safety issues were specifically considered and addressed prior to the commencement of the study. Women attending the colposcopy clinic were invited to meet with a research nurse in a private room in the absence of their partner. Women were interviewed in a room with two exits so that any serious disclosure issues would be able to be managed in a safe manner, with the woman having a secure exit from the clinic and service area. Local police authorities were consulted about the study to ensure that they were happy with study protocols. With the subject’s consent, the attending clinician was advised of the disclosure and any positive results in the questionnaire. Participants were also offered access to a social worker for further information and support if they requested this service.
2.4 Study participants

The study participants were consecutive women attending a major gynaecological referral service designed to evaluate precancerous changes identified on Pap smear screening. All women were approached to participate in the study. Non English speaking women were able to attend through the use of female medical interpreters who were available to assist the research student. The hospital serviced a population of 500,000 and encompassed middle to lower socioeconomic status group.

2.5 Enrolment data

2.5.1 Reading out questionnaires

Women were invited to complete a short questionnaire with the assistance of a nurse and an interpreter if required. The questionnaire utilised screening questions for domestic violence that had been validated in previous research and utilized in Australian maternity clinic settings (Feldhaus, Kaziol-McLain, Ambury, Norton, Lowenstein & Abbott, 1997). The questionnaire was verbally read out to the participant and their answers were coded directly onto a data sheet by the interviewer. Figure 2.5.1.1 shows the interview room with research nurse that was used during recruitment.
2.5.2 Intimate partner violence questions

The questions relating to domestic violence were as follows:

1. Are you ever afraid of your partner?
2. In the last year, has your partner hit, kicked, punched or otherwise hurt you?
3. In the last year, has your partner put you down, humiliated you or tried to control what you can do?
4. In the last year, has your partner threatened to hurt you?

These questions have been validated and used in Queensland (Stratigos, 1999) and New South Wales (NSW Health, 2001). All women who made a disclosure of domestic violence were offered referral to ongoing counselling and social support services. The clinic had a safe back exit in case of a threatening disclosure of violence.
If the patient gave consent, information in relation to the domestic violence was also disclosed to the woman’s attending doctor. However if the women wished this information to remain confidential, this information was not disclosed. Likewise all women were offered the opportunity to have the information disclosed to the hospital social support services.

2.5.3 General demographic questions

Subjects were also asked routine demographic questions such as age, gravidity, parity, race and smoking status.

2.5.4 Yale Depression Screen

To evaluate the presence of depression as a covariate, the Yale single item depression screen was utilised (Watkins et al., 2007). This question is as follows:

“What do you often feel sad or depressed?”

The Yale Single item depression screen has been used widely in clinical practice when a simple measure of depression is required and it is important to keep questionnaires short to facilitate compliance. A study (Watkins et al., 2007), searching for a simple and reliable tool to facilitate the evaluation of depression in patients who have recently had a stroke, concluded that the Yale which only requires a yes or no answer to a single question was a useful screening tool in identifying possible depression both two weeks and three months post stroke. The Yale one question screening tool was also tested in a study of patients suffering multiple sclerosis in comparison to a formal clinical diagnosis (Vahterg, Kreegipuu, Talvik & Gross-Paju, 2007). They concluded that the one-question screening tool was useful in screening for depression in people with multiple sclerosis and it confirms existing depression in over 91% of cases.
2.5.5 Housing instability

To evaluate housing instability women were asked two questions as follows:

Question 1

What is your current address?

If the woman was not able to give an address they were deemed to be homeless. If able to give an address they were asked the following

Question 2

How long have you lived at your current address?

a) More than two years
b) Twelve to twenty four months
c) Six to twelve months
d) One to six months
e) Less than one month

If women answered d or e they were coded as having unstable housing status.

2.6 Classification of subjects

Based on the IPV question response, women were classified as being exposed to IPV (exposed), or not (control).

2.7 Participant follow up

All women were followed for three years and all subsequent clinic booking outcomes were audited and entered onto the dataset.
2.8 Outcome data

All clinic booking outcomes at the colposcopy services (variable called Colposcopy data) and all other women’s health services (except for Colposcopy services) (variable called Women’s health data) were audited over the next 3 years. Data was extracted from the HOMER system. HOMER is a computer program that was used by Western Hospital, Sunshine until late 2009. To manage appointments each patient that used the Hospital was identified by a 6 digit number. All staff members that were permitted access could log into HOMER and enter the patient number and HOMER would have information specific to the patient saved on its data program. Some of the individual information that was saved onto HOMER were:

- Patient name
- Date of birth
- Address
- Contact details
- Next of kin
- Language spoken (if non English speaking)
- Hospital admissions
- Presentations to emergency department
- Outpatient clinic booking appointments
- Clinic booking outcomes
Possible clinic booking outcomes included

- **Attendance.** This meant that the participant made an appointment and attended the appointment as scheduled.
- **Failure to attend.** This meant the participant failed to attend the follow up appointment that she was given at the end of her colposcopy visit.
- **Hospital cancellation.** This meant that the hospital cancelled the appointment that was given to the participant at her last colposcopy visit.
- **Patient cancellation.** This meant that the patient called the hospital and cancelled the appointment that was made at her last colposcopy visit.
- **Pregnancy.** This meant that after the participants colposcopy visit the participant became pregnant and had antenatal visits to attend.

### 2.9 Primary outcomes

The primary outcomes were:

1) To determine the prevalence of domestic violence in a colposcopy clinic population.

2) To determine the demographic associations of IPV.

3) To determine whether exposure to IPV was associated with an increased risk of default from colposcopy clinic services.

4) To determine whether exposure to IPV is associated with an increased risk of default from less confronting clinical care such as obstetric and general women’s health clinic services.
2.10 Data analysis

Data was entered into a data base and analysed using Minitab (Minitab16 University of Melbourne).

2.10.1 Prevalence

To evaluate the prevalence, data was recorded as number and percentage.

2.10.2 Associations of IPV

To evaluate the associations of IPV, data were presented as number and percentage for discrete data and as mean and standard deviation for continuous data. Comparisons of discrete data were made using Chi Square with Yates correction and comparisons of continuous data were made using student t test. A p-value of 0.05 was considered significant.

2.10.3 Default and loss to follow up rates

Data were presented as number and percentage for discrete data. Comparisons of discrete data were made using Chi Square with Yates correction and Fisher exact test where cell size was less than five. A p-value of 0.05 was considered significant.

2.10.4 Multivariate analysis

All variables significant at a univariate level of p<0.1 against an outcome measure were included in a multivariable regression analysis. Those variables with a p-value <0.05 on multivariate analysis were considered significant independent associations. Because there were limited analyses undertaken, the p-value was not adjusted from 0.05 for significance.
3 Results

3.1 Recruitment results

Of 581 women approached to participate in the trial, consent was obtained from 574 women (99%). One woman subsequently withdrew whilst completing the questionnaire. In six cases a partner came into the room during the process of completing the questionnaire and in this scenario the researcher had been advised to stop and change to another activity as issues of female safety were paramount. In these cases ascertainment of IPV was not able to be determined. One other woman gave ambiguous responses to domestic violence questions and her data were also excluded. Thus final outcome data were available on 566 women.

3.2 Demographics of the study cohort

The demographics of the study cohort are summarised in table 3.2. The average age of the study population was 33.7 years and the majority were Caucasian. A quarter had never been pregnant and one third were nulliparous. Half were current or ex smokers. A majority of women reported having a current sexual partner. One third of women had presented with pap smears demonstrating a high grade abnormality.
### Table 3.2 Demographics of the study cohort

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%) N=566</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age in years mean (std deviation)</strong></td>
<td>33.7 (10.5)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>- Caucasian</td>
<td>479 (84.5%)</td>
</tr>
<tr>
<td>- Aboriginal or Torres Strait Islander</td>
<td>4 (0.7%)</td>
</tr>
<tr>
<td>- Asian</td>
<td>48 (8.6%)</td>
</tr>
<tr>
<td>- Other</td>
<td>35 (6.2%)</td>
</tr>
<tr>
<td><strong>Gravidity</strong></td>
<td></td>
</tr>
<tr>
<td>- 0</td>
<td>129 (22.7%)</td>
</tr>
<tr>
<td>- 1</td>
<td>99 (17.7%)</td>
</tr>
<tr>
<td>- 2</td>
<td>131 (23.0%)</td>
</tr>
<tr>
<td>- 3 or more</td>
<td>207 (36.6%)</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
</tr>
<tr>
<td>- 0</td>
<td>199 (35.0%)</td>
</tr>
<tr>
<td>- 1</td>
<td>90 (16.1%)</td>
</tr>
<tr>
<td>- 2</td>
<td>160 (28.4%)</td>
</tr>
<tr>
<td>- 3 or more</td>
<td>117 (20.5%)</td>
</tr>
<tr>
<td><strong>Smoking status</strong></td>
<td></td>
</tr>
<tr>
<td>- I have never smoked cigarettes</td>
<td>266 (47.1%)</td>
</tr>
<tr>
<td>- I used to smoke cigarettes but stopped over a year ago</td>
<td>44 (7.7%)</td>
</tr>
<tr>
<td>- I used to smoke cigarettes but stopped in the past year</td>
<td>15 (2.7%)</td>
</tr>
<tr>
<td>- I still smoke cigarettes</td>
<td>241 (42.5%)</td>
</tr>
<tr>
<td><strong>Symptoms at time of screening</strong></td>
<td></td>
</tr>
<tr>
<td>- Yes</td>
<td>189 (33.6%)</td>
</tr>
<tr>
<td>- No</td>
<td>377 (66.4%)</td>
</tr>
<tr>
<td><strong>Current partner</strong></td>
<td></td>
</tr>
<tr>
<td>- Yes</td>
<td>436 (77.0%)</td>
</tr>
<tr>
<td>- No</td>
<td>130 (23.0%)</td>
</tr>
<tr>
<td><strong>Presenting Pap smear report</strong></td>
<td></td>
</tr>
<tr>
<td>- Low grade abnormality</td>
<td>306 (54.2%)</td>
</tr>
<tr>
<td>- High grade abnormality</td>
<td>173 (30.5%)</td>
</tr>
<tr>
<td>- Other</td>
<td>87 (15.3%)</td>
</tr>
</tbody>
</table>
3.3 Prevalence of IPV

Table 3.3 summarises the prevalence of IPV in the study cohort. Overall 33% of the study cohort reported intimate partner violence within 12 months of the survey. Whilst in 14.5% of the cohort the female reported being the sole recipient of violence, in a further 16.6% of the cohort, the women reported that they had both received and were the perpetrator of the violence. In these cases, the majority of women reported that they had responded to verbal, emotional or physical intimidation with violence. In only 1.9% of the cohort did the woman report being the sole perpetrator of violence.
Table 3.3 Prevalence of intimate partner violence in the previous 12 months by subtype in study cohort

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No IPV</td>
<td>379 (67%)</td>
</tr>
<tr>
<td>IPV where female subject was the perpetrator</td>
<td>11 (1.9%)</td>
</tr>
<tr>
<td>IPV where female subject was the recipient of violence</td>
<td>82 (14.5%)</td>
</tr>
<tr>
<td>IPV where female subject was both perpetrator and recipient of violence</td>
<td>94 (16.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>566 (100%)</td>
</tr>
</tbody>
</table>
### 3.4 Association of IPV

Table 3.4 summarises demographic differences between women who reported domestic violence compared to those who did not. Women who reported violence were 3 years younger ($p=0.01$). They were more likely to be current smokers (51.3% compared to 38.2%) and to report greater housing instability (32.2% compared to 12.2%) and have a positive Yale screen based on symptoms in the past week of their life (50.0% compared to 24.6%).

Overall 36.9% of women reported having another symptom at the time of screening. There were no differences in the proportion of women with current partners, nor were there significant racial, gravidity or parity differences between the two groups of women.

In multivariate analysis, the variables that were significantly associated with IPV were smoking status, housing instability and a positive Yale screen (all $p<0.01$).
Table 3.4 Demographic differences in women exposed to IPV and those who were not.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Domestic violence N=187</th>
<th>No domestic violence N=379</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age mean (sd) in years</td>
<td>32 (9.7)</td>
<td>35 (11.0)</td>
<td>0.01</td>
</tr>
<tr>
<td>Gravidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>33 (17.6%)</td>
<td>96 (25.3%)</td>
<td>0.09</td>
</tr>
<tr>
<td>1</td>
<td>30 (16.0%)</td>
<td>69 (18.2%)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>44 (23.5%)</td>
<td>87 (23.0%)</td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>80 (42.8%)</td>
<td>127 (33.5%)</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>59 (31.6%)</td>
<td>140 (36.9%)</td>
<td>0.56</td>
</tr>
<tr>
<td>1</td>
<td>34 (18.2%)</td>
<td>56 (14.8%)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>54 (28.9%)</td>
<td>106 (28.0%)</td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>40 (21.4%)</td>
<td>77 (20.3%)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td>0.35</td>
</tr>
<tr>
<td>Caucasian</td>
<td>162 (86.6%)</td>
<td>317 (83.6%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>25 (13.4%)</td>
<td>62 (16.4%)</td>
<td></td>
</tr>
<tr>
<td>Have a current partner</td>
<td></td>
<td></td>
<td>0.09</td>
</tr>
<tr>
<td>Yes</td>
<td>136 (72.7%)</td>
<td>300 (79.2%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>51 (27.3%)</td>
<td>79 (20.8%)</td>
<td></td>
</tr>
<tr>
<td>Other current gynaecological symptoms</td>
<td></td>
<td></td>
<td>0.21</td>
</tr>
<tr>
<td>Yes</td>
<td>69 (36.9%)</td>
<td>120 (31.7%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>118 (63.1%)</td>
<td>259 (68.3%)</td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td></td>
<td></td>
<td>0.0004</td>
</tr>
<tr>
<td>Never smoked</td>
<td>66 (35.3%)</td>
<td>200 (52.8%)</td>
<td></td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>25 (13.4%)</td>
<td>34 (9.0%)</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>96 (51.3%)</td>
<td>145 (38.2%)</td>
<td></td>
</tr>
<tr>
<td>Housing stability (current)</td>
<td></td>
<td></td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Very stable</td>
<td>73 (42.0%)</td>
<td>239 (64.8%)</td>
<td></td>
</tr>
<tr>
<td>Semi stable</td>
<td>45 (25.8%)</td>
<td>85 (23.0%)</td>
<td></td>
</tr>
<tr>
<td>Unstable</td>
<td>51 (32.2%)</td>
<td>45 (12.2%)</td>
<td></td>
</tr>
<tr>
<td>Did not answer</td>
<td>18</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Yale Depression Inventory positive screen</td>
<td></td>
<td></td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Yes</td>
<td>88 (50.0%)</td>
<td>96 (24.6%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>88 (50.0%)</td>
<td>294 (75.4%)</td>
<td></td>
</tr>
<tr>
<td>Did not complete</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>
3.5 Default and loss to follow up at colposcopy clinics

Table 3.5.1 summarises the impact of IPV on default. Compared to women not exposed to IPV, women exposed to violence were more likely to default from colposcopy once (26.2% vs 7.4%; p<0.0001), twice (11.2% vs 3.2%, p=0.0001), or thrice (10.7% vs 2.4%, p<0.0001). They were more likely to be lost to follow up (8.0% vs 1.1%, P<0.0001) compared to women who were not exposed to IPV.

Table 3.5.2 summarises the multivariate analysis of factors associated with default from colposcopy. Variables associated with default on two or more occasions at colposcopy services were IPV, housing instability and a positive Yale screen (all p<0.01).
Table 3.5.1 Default rates from colposcopy clinics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Domestic violence N=187</th>
<th>No domestic violence N=379</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single episode of default</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>49 (26.2%)</td>
<td>28 (7.4%)</td>
<td>P&lt;0.0001</td>
</tr>
<tr>
<td>No</td>
<td>138 (73.8%)</td>
<td>351 (92.6%)</td>
<td>RR 2.25</td>
</tr>
<tr>
<td>Two episodes of default</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21 (11.2%)</td>
<td>12 (3.2%)</td>
<td>P=0.0001</td>
</tr>
<tr>
<td>No</td>
<td>166 (88.8%)</td>
<td>367 (96.8%)</td>
<td>RR 2.04</td>
</tr>
<tr>
<td>Three or more episodes of default</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20 (10.7%)</td>
<td>9 (2.4%)</td>
<td>P&lt;0.0001</td>
</tr>
<tr>
<td>No</td>
<td>167 (89.3%)</td>
<td>370 (97.6%)</td>
<td>RR 2.22</td>
</tr>
<tr>
<td>Lost to follow up care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15 (8.0%)</td>
<td>4 (1.1%)</td>
<td>P&lt;0.0001</td>
</tr>
<tr>
<td>No</td>
<td>172 (92.0%)</td>
<td>375 (98.9%)</td>
<td>RR 2.51</td>
</tr>
<tr>
<td>Appointments rebooked by hospital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9 (4.8%)</td>
<td>21 (5.5%)</td>
<td>P=0.716</td>
</tr>
<tr>
<td>No</td>
<td>178 (95.2%)</td>
<td>358 (94.5%)</td>
<td>RR 0.90</td>
</tr>
<tr>
<td>Appointments rebooked by patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>19 (10.2%)</td>
<td>25 (6.6%)</td>
<td>P=0.136</td>
</tr>
<tr>
<td>No</td>
<td>168 (89.8%)</td>
<td>354 (93.4%)</td>
<td>RR 1.34</td>
</tr>
</tbody>
</table>
Table 3.5.2 SUMMARY OUTPUT Multivariate analysis of default from colposcopy on two or more occasions.

<table>
<thead>
<tr>
<th>Regression statistics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>65535</td>
</tr>
<tr>
<td>R Square</td>
<td>0.063</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.102</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.488</td>
</tr>
<tr>
<td>Observations</td>
<td>566</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANOVA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
</tr>
<tr>
<td>Regression</td>
<td>6</td>
</tr>
<tr>
<td>Residual</td>
<td>562</td>
</tr>
<tr>
<td>Total</td>
<td>566</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Instability</td>
<td>0.020</td>
<td>0.006</td>
<td>3.433</td>
<td>&lt;7.3E-04</td>
<td>0.009</td>
</tr>
<tr>
<td>IPV</td>
<td>0.248</td>
<td>0.047</td>
<td>5.232</td>
<td>&lt;4.3E-07</td>
<td>0.155</td>
</tr>
<tr>
<td>Positive Yale</td>
<td>0.108</td>
<td>0.032</td>
<td>3.367</td>
<td>&lt;9.2E-04</td>
<td>0.045</td>
</tr>
<tr>
<td>Age</td>
<td>0.004</td>
<td>0.021</td>
<td>0.197</td>
<td>0.844</td>
<td>0.038</td>
</tr>
<tr>
<td>Smoking</td>
<td>0.002</td>
<td>0.080</td>
<td>0.023</td>
<td>0.982</td>
<td>-0.159</td>
</tr>
<tr>
<td>Symptoms at Screening</td>
<td>0.078</td>
<td>0.031</td>
<td>2.515</td>
<td>0.053</td>
<td>0.139</td>
</tr>
</tbody>
</table>
Table 3.6.1 summarises default rates at women’s health clinics other than colposcopy clinic during the 36 months of follow up. Of the 187 women who reported IPV at screening, 94 (50.3%) required referral to women’s health clinics other than colposcopy during the follow up period. In contrast, only 32.2% of the women who screened negative to domestic violence required referral to women’s health service other than colposcopy clinic in the follow up period (p<0.0001).

Women exposed to IPV were more likely to default from attendance at other women’s health care clinics once (14.9% vs 3.3%, p=0.005), twice (11.7% vs 0.8%, p=0.001) or thrice (9.6% vs 0%, p=0.0004). Compared to women not exposed to IPV, they were also more likely to be lost to follow up (9.6% vs 0%, p=0.0004), as well as more likely to rebook appointments (13.8% vs 4.9%, p=0.02) but there was no significant difference in reappointment rates made by the hospital.

Table 3.6.2 summarises the multivariate analysis. In multivariate analysis, variables associated with default on two or more occasions at women’s health clinic services were IPV (p=0.0009) and housing instability (p=0.015).
Table 3.6.1 Attendance and default from other women’s health clinics (excludes colposcopy clinics).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Domestic violence</th>
<th>No domestic violence</th>
<th>P-value</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the patient require an appointment at another women’s health clinic in the 36 month follow up period?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>94 (50.3%)</td>
<td>122 (32.2%)</td>
<td>P&lt;0.0001</td>
<td>RR 1.64</td>
</tr>
<tr>
<td>No</td>
<td>93 (49.7%)</td>
<td>257 (67.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If Yes, did she default on one occasion?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (14.9%)</td>
<td>4 (3.3%)</td>
<td>P=0.005</td>
<td>RR 1.92</td>
</tr>
<tr>
<td>No</td>
<td>80 (85.1%)</td>
<td>118 (96.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, did she default on two occasions?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11 (11.7%)</td>
<td>1 (0.8%)</td>
<td>P=0.001</td>
<td>RR 2.25</td>
</tr>
<tr>
<td>No</td>
<td>83 (88.3%)</td>
<td>121 (99.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, three or more episodes of default</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9 (9.6%)</td>
<td>0 (0%)</td>
<td>P=0.0004</td>
<td>RR 2.44</td>
</tr>
<tr>
<td>No</td>
<td>85 (90.4%)</td>
<td>122 (100%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, was she lost to follow up?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9 (9.6%)</td>
<td>0 (0%)</td>
<td>P=0.0004</td>
<td>RR 2.44</td>
</tr>
<tr>
<td>No</td>
<td>85 (90.4%)</td>
<td>122 (100%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appointments rebooked by hospital</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5 (5.3%)</td>
<td>8 (6.6%)</td>
<td>P=0.70</td>
<td>RR 0.88</td>
</tr>
<tr>
<td>No</td>
<td>89 (94.7%)</td>
<td>114 (93.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appointments rebooked by patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13 (13.8%)</td>
<td>6 (4.9%)</td>
<td>P=0.02</td>
<td>RR 1.66</td>
</tr>
<tr>
<td>No</td>
<td>81 (86.2%)</td>
<td>116 (95.1%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3.6.2 Multivariate analysis default from women’s health clinics

SUMMARY OUTPUT

<table>
<thead>
<tr>
<th>Regression Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
</tr>
<tr>
<td>R Square</td>
</tr>
<tr>
<td>Adjusted R Square</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Observations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>df</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Regression</td>
</tr>
<tr>
<td>Residual</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>0.02542</td>
<td>0.014814</td>
<td>1.716001</td>
<td>0.087742</td>
<td>-0.003794</td>
</tr>
<tr>
<td>Housing Instability</td>
<td>0.29964</td>
<td>0.144085</td>
<td>2.079606</td>
<td>0.038863</td>
<td>0.015484</td>
</tr>
<tr>
<td>IPV</td>
<td>0.575483</td>
<td>0.170604</td>
<td>3.373212</td>
<td>0.039028</td>
<td>0.239028</td>
</tr>
<tr>
<td>Smoking</td>
<td>0.127964</td>
<td>0.164466</td>
<td>0.778058</td>
<td>0.437473</td>
<td>-0.196385</td>
</tr>
</tbody>
</table>
4 Discussion

4.1 Recruitment

Participants for this trial were recruited from Western Hospital, Sunshine. Sunshine Hospital catchment extends from the inner Western Suburbs of Melbourne and surrounding areas. Approximately 738,000 people live in Western Health’s catchment area (Western Health, 2010). Sunshine Hospital is located in St Albans, an inner Western Suburb of Melbourne about 17 kilometres from Melbourne’s CBD. According to St Albans demographics local statistics the median age is 36 and less than 35% of people living in St Albans were born in Australia and less than 25% speak English as their first language. Unemployment is over 11% and almost 30% of homes in St Albans are rented (St Albans demographics, 2011). These statistics are typical for Melbourne’s inner Western Suburbs.

Recruitment was undertaken at Sunshine Hospital Women’s Clinic outpatient department. Women attending appointments for colposcopy services were invited to participate.

Of the 581 women approached to participate in the trial, consent was obtained from 574 women (99%), following initial recruitment one woman withdrew whilst completing the questionnaire and another woman gave ambiguous responses to IPV and her data was excluded. In six cases a partner came into the room during the process of completing the questionnaire and in case of a possible risk to the safety of the participant recruitment activity was ceased. In these cases ascertainment of IPV was not able to be determined.
Overall recruitment was high due to many contributing factors. The questionnaire used was very short and did not take up a lot of the participant's time. Women were also advised at the time of recruitment that following completion of the confidential questionnaire they would not be required to do anything further and the questionnaire was completed in the time that the women were waiting to be called into the room for their colposcopy appointment visit. During this waiting time many women feel very nervous as they pass the time before they go in for what is often an invasive procedure. Many welcomed a conversation with the researcher to help them feel calm before they entered the room with the treating doctor.

The questions were read to the participants by the researcher or with the assistance of a medical interpreter. Following completion of the questionnaire, the researcher escorted the participants into the treatment room. They were then welcomed by the Consultant Gynaecologist who continued to do the colposcopy consultation, where I was the nurse chaperone/assistant during the procedure. I felt very comfortable talking to the patients because I was familiar with approaching them and had experience as a gynaecology nurse in Women’s Clinic, Sunshine Hospital for many years.

The interviews were conducted in a private room with 2 exits in the case of threatening disclosure of violence. All women who made a disclosure of domestic violence were offered referral to ongoing counselling and social support services. If the patient gave consent, information in relation to IPV was also disclosed to the woman’s attending doctor. However if the women wished this information to remain confidential, this information was not disclosed. All women were offered the opportunity to have the information disclosed to the hospital social support services.
The hospital appointment system was then accessed and information on all appointments specific to the participant and her colposcopy appointments were extracted and other women’s health appointments were extracted over a 36 month follow up period.

A final important factor resulting in a high recruitment rate was the fact that very few partners attend colposcopy outpatient appointments compared to other clinical services such as antenatal clinic visits. Those partners that did attend usually chose to wait in the waiting room when the patient was called.

### 4.2 Prevalence

The prevalence of IPV in the clinic population was high with a disclosure in one third of the cohort. In half of these, the violence was unilaterally directed by the male partner towards the women, but in the remaining cases, violence was bi-directional. In only 1.9% of the cohort was the woman the sole perpetrator of violence. The high prevalence of exposure to domestic violence suggests that screening in this population is warranted.

In three studies conducted in clinical settings, IPV prevalence was high. In a trial conducted in an emergency department with almost 1,500 participants, IPV prevalence was as high as 18% (Mathew., A. E., Marsh, B., Smith, L.S & Houry, D. 2012). Another study conducted in an antenatal clinic with HIV positive women, disclosure was as high as 32% (Ezaenochie, Olagbuji, Ande, Kubeyinje & Okonofue, 2011). A study conducted in fracture clinic exposed IPV prevalence persisted at 32% (Bhandari et al., 2011).

Although statistics vary, when a screening tool is used, disclosure for IPV in a clinical setting is high.
4.3 Association of IPV

In the present study, we found that women exposed to violence were slightly younger than those who were not, however, the difference of two years is of doubtful clinical significance. However, they were also more likely to be current smokers. Numerous studies have reported an association between IPV and cigarette smoking. One of the largest studies involved a survey in the United States of 13,494 adults which reported a 2 to 4 fold increase in risk of smoking in women exposed to family violence (Felitti et al., 1998). The finding is relevant in the context of the colposcopy clinic, as there is evidence that toxins within cigarettes are excreted within the cervical mucus and may influence the ability of the immune system to overcome localised human papilloma virus infection and may interfere with the regression of low grade lesions on the cervix (Karlsson, 2009).

Women exposed to violence were more likely to be depressed as measured by the Beck Depression Inventory. This finding has also been reported elsewhere (Lester & Wilson, 1999). In a study of 65 women living in sanctuary houses as a result of violence who were screened with the Beck Depression Inventory (Beck, Ward & Mendelson, 1961), every woman interviewed was found to score above the cut off recommended for treatment. Women were also found to have high rates of menstrual irregularities, genital tract infections and premenstrual syndrome symptomatology (Lester & Wilson, 1999).

Perhaps the most important association was between the observation of housing instability and default from the first clinic attendance. A recent Indian study of 2435 women which focussed on the interplay of life factors involved in women’s reproductive health experiences, documented a link between violence and homelessness (Fung-Kee_Fung, Howlett & Oliverer, 2010). An Australian study of teenage mothers...
also reported an association between IPV, homelessness and sexually transmitted infections (Siemieniuk, Krentz, Gish & Gill, 2010).

Housing instability can result in women moving address and missing hospital appointments that are routinely sent through the postal service. This can lead to higher rates of primary default from care.

These linkages and associations may explain why women exposed to IPV have poorer healthcare outcomes compared to other subgroups of women. Researchers have previously explored reasons for default at colposcopy clinics and reported that the routinely collected demographic variables did not identify a subgroup of women at risk for default (Quinlivan & Evans, 2005). However, these routine variables do not include IPV and housing stability, which would need to be captured using a specific screening protocol in colposcopy clinics.

4.4 Default and loss to follow up from colposcopy

The present study indicates that exposure to domestic violence is a significant independent association of recurrent default from colposcopy services. It is also associated with significantly higher rates of loss to follow up. This association persisted in multivariate analysis.

High rates of default from care and loss to follow up are reported widely in the literature in relation to colposcopy and antenatal clinical services (Quinlivan and Evans, 2001; Balasubramani, Orbell, Haggar, Brown & Tidy, 2008; Audi & Segall-Correa, 2008; Miller, Siejak & Schroedar, 1997). Default from care adds considerable cost to the public health system and can result in longer waiting periods for access to care. Despite various interventions that have been trialled in the research literature such as reminder
letters, text messages, partial and full booking of lists, default remains a clinical problem (Balasubramani et al., 2008; Lester & Wilson, 1999).

Many organisations have developed strategies to reduce default from colposcopy services (Balasubramani et al., 2008; Millier et al., 1997; Fung-Kee_Fung et al., 2010). However, a large postal survey in the UK found that default was hard to predict using standard demographic variables, although an intention to attend the clinical service three weeks before the appointment date was associated with a higher rate of attendance.

One study reported that smoking and distance to the hospital were associated with higher default rates (Balasubramani et al., 2008). Of note, this study did not identify domestic violence status or undertake multivariate analysis. In our study, smoking was not a significant association of persistent default in multivariate analysis.

Other organisations have used evidence-based guidelines to develop service protocols designed to improve care outcomes and minimise default (Fung-Kee_Fung et al., 2010). These processes have not relied upon close examination of the individual features and social circumstances of the attending patients. Their long term efficacy remains unclear.

The problem may be a general one with default in attending for care, rather than a specific type of care. In a qualitative study in HIV positive patients who were exposed to IPV, women reported how domestic violence diminished their ability to obtain regular care (Siemieniuk et al., 2010). The study reported that “Abused women were reluctant to keep appointments if they were afraid of their partners, if they were depressed, feeling ill or ‘too worn down’, or if they were ashamed of being abused (Siemieniuk et al., 2010).” In a Brazilian study, exposure to IPV was associated with self reported difficulty in attending for antenatal care (Audi et al., 2008).
We conclude that exposure to IPV may be a barrier to women’s access to colposcopy and completion of programs of care. This failure may result in suboptimal healthcare outcomes and further aggravate the damage done to women. It may be necessary for clinical services to screen for domestic violence and to provide flexibility for these vulnerable women to access care beyond rigid appointment systems. Strategies that direct default strategies in a targeted manner are more likely to be effective than non directed strategies.

Housing instability and depression were also independent associations of default in the multivariate analysis. This finding is consistent with several pre-existing studies (Hasker et al., 2008; Jakubowiak, Bogorodskaya, Borisov, Damilova, Kourbatova, 2007; House, 1989; Kerins, McKee & Bennett, 2010).

4.5 Default and loss to follow up from women’s health clinics

The present study indicates that exposure to domestic violence is a significant independent association of recurrent default from women’s health clinic services. Despite various interventions that have been trialled in the research literature such as reminder letters, text messages, partial and full booking of lists, default remains a clinical problem (Balasubramani et al., 2008; Lester & Wilson, 1999). Exposure to IPV may be a barrier to women’s access to women’s health services and completion of care. This failure may result in suboptimal healthcare outcomes. It may be necessary for clinical services to screen for domestic violence and to provide flexibility for these vulnerable women to access care beyond rigid appointment systems. Strategies that direct default strategies in a targeted manner are more likely to be effective than non directed strategies. Unstable housing was also a significant independent association of
default from other women’s health clinics (Harker et al., 2008; Jakubowiak et al., 2007).

4.6 What we have learnt from this thesis

The prevalence of IPV in the colposcopy clinic population was high with a positive disclosure in one third of the cohort. In half of these, the violence was unilaterally directed by the male partner to the women, but in the remaining cases, violence was bi-directional. In only 1.9% of cases was the woman the sole perpetrator of violence. The prevalence suggests that screening in this population is warranted. Those at higher risk of IPV are more likely have been exposed during childhood and it is therefore accepted as normal and disclosure is not common.

Without screening, women exposed to IPV may be at increased risk of developing other health problems including precancerous or cancerous lesions of the cervix. There is evidence that they are at increased risk of acquiring sexually transmitted infections (Coker et al., 2004). It has been reported that in a teenage pregnancy population that teenagers exposed to domestic violence were at 7 fold risk of having an abnormal Pap smear compared to those pregnant teenagers not exposed to IPV (Quinlivan and Evans, 2001). Women exposed to violence were also more likely to report being sad or depressed (Valentine, Rodriguez, Lapeyrouse & Zang, 2011; Koopman et al., 2007; Dutton, Kaltman, Goodman, Weinfurt & Vankos, 2005). Women exposed to violence were slightly younger than those who were not, however, the difference of 2 years is of doubtful clinical significance. However, they were also more likely to be current smokers.

Women exposed to IPV were more likely to be lost to follow up in a colposcopy outpatient setting therefore leaving them more at risk of cervical cancer. Exposed
women are also less likely to be compliant in attending other women’s health clinic appointments. It is reasonable to assume that some of the poorer health outcomes seen in women who have been affected by IPV are due to noncompliance in outpatients attendance as a result of exposure to IPV.

4.7 Where to from here?

Routine screening tools should be used as a fundamental part of all women’s health outpatient appointment settings. Medical and nursing staff should receive adequate training in screening of IPV as studies suggest that they are then significantly more likely to screen for IPV (Frank, Elon, Seltzman, Houry, McMahon & Doyle, 2006). It may be necessary for clinical services to provide flexibility for these vulnerable patients to access care. Patients that have been identified as having exposure to IPV could be offered a referral to a social work/mental health worker who is equipped in offering support and implementing appropriate intervention and future prevention strategies.

Part of the consultation should address the need to complete care, individualised strategies to promote compliance should be crafted by the clinician and woman. This could include additional contact numbers being provided by the women to the clinician of “safe” contacts who would be contacted if default occurs to assist the patient to attend for care. If patients have unstable housing or are homeless then referral to social work supports may assist in obtaining “safe” addresses of friends for mail may be helpful. If patients have depressive symptoms then patients may default from care.

No single strategy is likely to be effective, but simply undertaking a discussion on default and how to minimize it may reinforce the message of the importance of completing care especially when dealing with premalignant conditions.
Medical organisations should have a strategy in dealing with patients that have been identified as having IPV exposure. Attendance should be monitored and effective strategies to reduce default should be assessed.
References


Laing, L (2003), Routine Screening for Domestic Violence in Health Services. *Australian Domestic Violence and Family Violence Clearinghouse*. 


Testa, M., Kubiak, A., Quigley, B.M., Houston, R.J., Derrick, J.L., Levitt, A., ...


first year postpartum among Latinas. *Archives of Women's Mental Health*. 14, Issue 2, pp 135-143. doi: 10.1007/s00737-010-0191-1


Appendix
Appendix 1 Approval letters

University letter for ethical approval
Hospital letter for ethical approval
5 July 2010

Ref: 010125S

Julie Quinlivan
School of Medicine
The University of Notre Dame Australia
Fremantle Campus

Dear Julie,

I am writing to you in regards to your Low Risk Application for Ethics Clearance for your proposed research project, to be undertaken as a staff research project at The University of Notre Dame Australia.

The title of this project is: "Impact of Domestic Violence upon Default from Colposcopy Services at Sunshine Hospital."

I am pleased to advise that your proposal has been reviewed by the University’s Human Research Ethics Committee and approval has been endorsed conditional on addressing the following:

- The old “ Expedited Review ” checklist and form have been used for this application and we require applications to be submitted in the latest format which can be found on the Research Office website. Please re-submit your application on the new form.
- In regards to the Checklist it is noted that no box is ticked for Section 1: please tick the appropriate box.
- Section 1.1 and 1.2 of the application form: the dates of the project listed here need to relate to the specific research described in this application and not to anything in the past.
- Section 2.2/2.3: please advise how many cases of DV you expect to get out of the study cohort of 550 women. Please also advise whether this is enough for the study to have sufficient statistical power.
- Ms Rachael Collier will need to be listed as a researcher in Section 0.4 and will also need to sign the application on page 9.

Please respond to above by e-mailing me at nvandijk@nd.edu.au by Thursday 29 July 2010. Failure to respond and/or communicate by this time could result in a suspension of the approval and/or endorsement of ethical review of the project.

Should the design of the study, the choice of instrument, or its manner of administration be altered in any significant way as the study progresses, you will be required to provide an amendment to your clearance application for fresh consideration by the University.

On behalf of the University and the Human Research Ethics Committee, I wish you well with what promises to be a most interesting and valuable study.

Yours sincerely,

Nicolette van Dijk
Executive Officer, Human Research Ethic Committee
Research Office

cc. Rachael Collier, School of Medicine
13 December 2010

Julie Quinlivan
School of Medicine
The University of Notre Dame, Australia
Fremantle Campus

Ref: 0101258

Dear Julie,

I am writing to you in regards to the proposed amendment(s) to your ethics application.

The title of the project is: "Impact of Domestic Violence upon Default from Colposcopy Services at Sunshine Hospital"

Your amendments have been reviewed by the University's Human Research Ethics Committee, and based on the information provided the project has been assessed as meeting all the requirements as mentioned in the National Statement on Ethical Conduct in Human Research (2007). I am therefore pleased to advice that ethical clearance is now unconditional for this proposed study.

Please note the following conditions of approval which apply to your research project:

- Ethics approval for this project is valid for 3 years. Under the National Statement you are required to report on the project's progress on an annual basis and the first annual report is therefore due in December 2011. Once your project is completed you are required to complete the Annual Report as a Final Report on your project. You are also required to notify the HREC Executive Officer in writing if this project is abandoned. The Annual Report form can be found at: http://www.nd.edu.au/research/hrec/apply.shtml

- As a researcher you are required to immediately report to the HREC Executive Officer anything which might warrant review of ethical approval of the project, including unforeseen events that might affect continued ethical acceptability and any complaints made by participants regarding the conduct of the project.

- If the design of the study, the choice of instrument, or its manner of administration is altered in any significant way as the study progresses, you are required to submit an amendment in regards to the changes for ethical consideration to the HREC. The Amendment form can be found at: http://www.nd.edu.au/research/hrec/apply.shtml

On behalf of the Human Research Ethics Committee, I wish you well with what promises to be a most interesting and valuable study.

Yours sincerely,

Nicole van Dijk
Executive Officer, Human Research Ethics Committee
Research Office

cc Rachael Collier, School of Medicine
Western Health Office for Research

Research and Education Centre
Sunshine Hospital
176 Furlong Rd
St Albans 3021

27th March 2009

Associate Professor Michael Sedgley
Director of Clinical Services
Women’s and Children’s
Western Health
Footscray 3011

Re: Impact of Domestic Violence upon Default from Colposcopy Services at Sunshine Hospital. (WHRP: 2009.05)

Dear Michael,

Thankyou for your quality assurance application. I am pleased to advise you that your application has been approved as of the 27th March 2009.

Regards

Louise Sillar
Manager, Office for Research
Western Health

Education and Research Centre
Sunshine Hospital
176 Furlong Rd
St Albans 3021
Ph: 61 3 83451504
Fax: 61 3 83184790
Email: Louise.Sillar@wh.org.au
Appendix 2 Paper
Prevalence and Associations of Domestic Violence at an Australian Colposcopy Clinic

Julie A. Quinlivan, PhD, MBBS, FRANZCOG, Rachael R. Collier, and Rodney W. Petersen, FRANZCOG, MBBS, MBA

1University of Notre Dame Australia, Fremantle; 2Ramsay Healthcare Joondalup Health Campus; and 3Edith Cowan University, Joondalup, Western Australia, Australia

Abstract

Objective. Domestic violence is associated with significant mortality and morbidity including gynecological morbidity. We report the prevalence and associations of domestic violence in an Australian colposcopy service.

Methods. A prospective study was performed from consecutive patients attending colposcopy clinics at a major metropolitan hospital in Australia. Key outcomes were the prevalence of intimate partner violence and its key demographic associations.

Results. Consent was obtained from 574 and domestic violence status was ascertained in 566 of 583 women approached. Overall, 33% of respondents reported violence within 12 months. In 14.5%, the female reported being sole recipient of violence; in another 16.5%, violence was bidirectional, and in 19% of cases, a woman was the sole perpetrator. Key associations of violence were younger age at presentation (32 vs 35 y, p = .01), higher rates of smoking (51.3% vs 38.2%; p = .006), higher rates of housing instability (32.2% vs 12.2%; p < .0001), a positive Beck Depression Inventory screen (50.0% vs 24.6%; p < .0001), and higher rates of default to initial attendance (15.5% vs 4.7%; p < .0001).

Conclusions. Domestic violence is common in women presenting to colposcopy services and may be associated with poor housing stability and higher default rates.

Key Words: domestic violence, colposcopy, screening, default, homelessness

Domestic violence is associated with significant mortality and morbidity, especially among women [1–3].

Two large US government reviews have confirmed the lasting legacy of domestic violence across the life span of women and into the life span of any children they rear [1, 2]. Physical and psychological morbidities are common in both the woman and her offspring. A large Australian review has also confirmed the major morbidity associated with domestic violence in women and children [4].

Intimate partner violence is common. Statistics varies, but surveys place the lifetime prevalence of intimate partner violence against women at between 25% and 30% and the annual prevalence between 2% and 12% [2, 4–6].

Domestic violence is associated with significant gynecological mortality and morbidity. A large survey from the United States concluded that women who reported a history of physical or sexual abuse in the context of family violence were significantly more likely to have experienced a sexually transmitted disease. This included the high-risk human papillomavirus infections [7, 8].

We hypothesized that the prevalence of domestic violence in a colposcopy clinical service would be high. We planned to evaluate associations of domestic violence within this clinical service context to determine whether we could improve wider aspects of women’s health care. Unlike previous prevalence studies, we utilized a prospective approach and specifically included all women, including those with English as a second language, to capture true prevalence rates.

MATERIALS AND METHODS

Institutional ethics committee and informed patient consent were obtained. A prospective cohort study was performed. The patient population consisted of all women booked to attend a colposcopy service at the...
Sunshine Hospital in western Melbourne, Australia, during a 12-month period. The study included all women, regardless of their primary language. Non-English speaking women and women in whom English was a second language were specifically included by the use of medical interpreters and appropriate information sheets. This was to ensure that the data reflected, as far as possible, an "all-comers" approach to the prevalence of domestic violence in the attending population.

All women were provided with an information sheet by a research assistant, and after informed consent was obtained, they were invited to complete a short screening questionnaire. The process of obtaining informed consent and completion of the questionnaire were obtained only when the women were able to be spoken to privately without a partner being present. The interviews were conducted in a room attached to the clinical service room to ensure privacy. All women who made a disclosure of domestic violence were offered referral to ongoing counseling and social support services. The clinic had a safe back exit.

The completion of the questionnaires was undertaken by questions being read to the patient in her primary language by the research assistant or via a qualified medical interpreter if required. If the patient gave consent, information in relation to the domestic violence was also disclosed to the woman's attending doctor. However, if a woman wished this information to remain confidential, this information was not disclosed. Likewise, all women were offered the opportunity to have the information disclosed to the hospital social work services. In only 2 cases of positive disclosure did the patient decline to have the information transmitted to her doctor and to the hospital social support services.

A demographic questionnaire was also read to the patient and completed. This included questions on age, race, parity, housing status, associated gynecological symptoms, and the Beck Depression Inventory [3].

Statistics were obtained on the prevalence of domestic violence, and this was broken down into subtypes. Data are represented as number and percentage for discrete data and as mean and SD for continuous data that were normally distributed. χ² tests were undertaken to compare discrete data and Student t tests for continuous data. A multivariate analysis of variance was performed in a model that included all factors found to have an association with the outcome of domestic violence at a univariate level with a p < .1. Factors assessed for inclusion in the model were age, smoking, alcohol or illicit drug use, marital status, gravidity, parity, housing status, associated symptoms, educational level, Beck Depression Inventory score, and socioeconomic status, which was assessed using the postal code of the home address as a surrogate measure. A p = .05 was considered significant. Analyses were undertaken using SPSS 16 (University of Melbourne, Melbourne, Victoria, Australia) [16] on a computerized database.

RESULTS

Of 581 women approached to participate in the trial, 574 women (99%) provided consent. One woman subsequently withdrew while completing the questionnaire. In 6 cases, a partner came into the room during the process of completing the questionnaire, and in this scenario, the research assistant had been advised to stop and change to another activity because issues of female safety were paramount. In those cases, ascertainment of domestic violence was not able to be determined. One other woman gave ambiguous responses to domestic violence questions, and her data were also excluded. Thus, final outcome data were available in 566 women.

The demographics of the study cohort are summarized in Table 1. The mean age of the study population

<table>
<thead>
<tr>
<th>Variable</th>
<th>n = 566</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), y</td>
<td>33.7 (7.0)</td>
</tr>
<tr>
<td>Race, n (%)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>472 (84.5)</td>
</tr>
<tr>
<td>Aboriginal or Torres Strait Islander</td>
<td>4 (0.7)</td>
</tr>
<tr>
<td>Asian</td>
<td>48 (8.6)</td>
</tr>
<tr>
<td>Other</td>
<td>36 (6.2)</td>
</tr>
<tr>
<td>Gravidity, n (%)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>129 (22.7)</td>
</tr>
<tr>
<td>1</td>
<td>99 (17.7)</td>
</tr>
<tr>
<td>2</td>
<td>3 (0.5)</td>
</tr>
<tr>
<td>3 or more</td>
<td>207 (36.6)</td>
</tr>
<tr>
<td>Parity, n (%)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>199 (35.0)</td>
</tr>
<tr>
<td>1</td>
<td>90 (16.1)</td>
</tr>
<tr>
<td>2</td>
<td>160 (28.4)</td>
</tr>
<tr>
<td>3 or more</td>
<td>117 (20.5)</td>
</tr>
<tr>
<td>Smoking status, n (%)</td>
<td></td>
</tr>
<tr>
<td>I have never smoked cigarettes</td>
<td>266 (47.1)</td>
</tr>
<tr>
<td>I used to smoke cigarettes but stopped more than a year ago</td>
<td>4 (0.7)</td>
</tr>
<tr>
<td>I used to smoke cigarettes but stopped in the past year</td>
<td>15 (2.7)</td>
</tr>
<tr>
<td>I still smoke cigarettes</td>
<td>261 (46.2)</td>
</tr>
<tr>
<td>Symptoms at time of screening, n (%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>199 (35.3)</td>
</tr>
<tr>
<td>No</td>
<td>367 (64.6)</td>
</tr>
<tr>
<td>Current partner, n (%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>436 (77.3)</td>
</tr>
<tr>
<td>No</td>
<td>131 (22.7)</td>
</tr>
<tr>
<td>Presenting Paediatric report, n (%)</td>
<td></td>
</tr>
<tr>
<td>Low-grade abnormality</td>
<td>366 (64.2)</td>
</tr>
<tr>
<td>High-grade abnormality</td>
<td>131 (22.7)</td>
</tr>
<tr>
<td>Other</td>
<td>87 (15.3)</td>
</tr>
</tbody>
</table>
was 23.7 years, and the majority were white. A quarter had never been pregnant, and one third was unilateral.
Half was current or ex-smokers. Majority of the women reported having a current sexual partner. One third of the women had presented with Pap smears demonstrating a high-grade abnormality.

Table 2 summarizes the prevalence of domestic violence in the study cohort. Overall, 33% of the study cohort reported intimate partner violence within 12 months of the survey. There were 3 types of violence patterns elicited within the cohort. Overall, 14.5% of the total cohort reported being the sole recipient of violence. A further 16.6% of the cohort reported that they had been both the recipient and perpetrator of violence. Only 1.9% of the total cohort reported being the sole perpetrator of violence.

Table 3 summarizes demographic differences between women who reported domestic violence compared to those who did not. Women who reported violence were 3 years younger (p = .01). They were more likely to be current smokers (51.3% compared with 38.2%; p = .0004) and to report greater housing instability (32.2% compared with 12.2%; p < .0001) and have a positive Beck Depression Inventory screen based on symptoms in the past week of their life (50.0% compared with 24.6%; p < .0001).

Despite 36.9% having another symptom at the time of screening, women reporting exposure to domestic violence were significantly more likely to have defaulted from their first colposcopy appointment compared with women not exposed to violence (15.5% compared with 4.7%, p < .0001). These symptoms included vaginal discharge, abnormal vaginal bleeding, dyspareunia, pelvic pain, and vulval pain or itch. There were neither differences in the proportion of women with current partners nor significant racial, gravidity, or parity differences between the 2 groups of women.

In multivariate analysis, smoking status, housing instability, a positive Beck Depression Inventory, and

Table 2. Prevalence of Domestic Violence in the Previous 12 Months by Subtype in Study Cohort

<table>
<thead>
<tr>
<th>Variable</th>
<th>Domestic violence</th>
<th>No Domestic violence</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No domestic violence</td>
<td>379 (97)</td>
<td>436 (56)</td>
<td></td>
</tr>
<tr>
<td>Domestic violence where female subject was the perpetrator</td>
<td>11 (1.8)</td>
<td>38 (5.1)</td>
<td></td>
</tr>
<tr>
<td>Domestic violence where female subject was the recipient of violence</td>
<td>82 (14.3)</td>
<td>35 (4.9)</td>
<td></td>
</tr>
<tr>
<td>Domestic violence where female subject was both perpetrator and recipient of violence</td>
<td>94 (16.4)</td>
<td>106 (14.5)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>566 (100)</td>
<td>773 (100)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Demographic Differences in Women Exposed to Domestic Violence and Those Who Were Not

<table>
<thead>
<tr>
<th>Variable</th>
<th>Domestic violence, n = 187</th>
<th>No Domestic violence, n = 379</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), y</td>
<td>32 (9.7)</td>
<td>35 (11.9)</td>
<td>.01</td>
</tr>
<tr>
<td>Sexuality, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>33 (17.6)</td>
<td>96 (25.5)</td>
<td>.09</td>
</tr>
<tr>
<td>1</td>
<td>80 (42.8)</td>
<td>127 (33.5)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>44 (23.5)</td>
<td>87 (23.0)</td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>80 (42.8)</td>
<td>127 (33.5)</td>
<td></td>
</tr>
<tr>
<td>Parity, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>59 (31.6)</td>
<td>140 (36.8)</td>
<td>.56</td>
</tr>
<tr>
<td>1</td>
<td>34 (18.2)</td>
<td>56 (14.8)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>54 (28.9)</td>
<td>108 (28.0)</td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>40 (21.4)</td>
<td>77 (20.0)</td>
<td></td>
</tr>
<tr>
<td>Race, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>102 (86.6)</td>
<td>317 (83.4)</td>
<td>.35</td>
</tr>
<tr>
<td>Other</td>
<td>15 (13.4)</td>
<td>62 (16.6)</td>
<td></td>
</tr>
<tr>
<td>Have a current partner, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>136 (72.7)</td>
<td>300 (79.2)</td>
<td>p&lt;.05</td>
</tr>
<tr>
<td>No</td>
<td>51 (27.3)</td>
<td>79 (20.8)</td>
<td></td>
</tr>
<tr>
<td>Other current gynecological symptoms, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69 (36.9)</td>
<td>120 (31.7)</td>
<td>.21</td>
</tr>
<tr>
<td>No</td>
<td>118 (63.1)</td>
<td>259 (68.3)</td>
<td></td>
</tr>
<tr>
<td>Smoker, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoked</td>
<td>66 (35.3)</td>
<td>300 (82.8)</td>
<td>.0004</td>
</tr>
<tr>
<td>Former smoker</td>
<td>25 (13.4)</td>
<td>38 (10.0)</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>96 (51.1)</td>
<td>145 (37.2)</td>
<td></td>
</tr>
<tr>
<td>Housing instability (tremend), n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very stable</td>
<td>73 (62.0)</td>
<td>239 (64.6)</td>
<td>.0001</td>
</tr>
<tr>
<td>Semistable</td>
<td>45 (25.8)</td>
<td>85 (23.6)</td>
<td></td>
</tr>
<tr>
<td>Unstable</td>
<td>51 (29.2)</td>
<td>45 (12.2)</td>
<td></td>
</tr>
<tr>
<td>Did not answer</td>
<td>19</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Beck Depression Inventory positive screen, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>84 (45.0)</td>
<td>96 (25.6)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>No</td>
<td>88 (50.0)</td>
<td>244 (64.4)</td>
<td></td>
</tr>
<tr>
<td>Did not complete</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Defaulted before first clinical attendance, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20 (11.5)</td>
<td>18 (4.7)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>No</td>
<td>157 (88.5)</td>
<td>361 (95.3)</td>
<td></td>
</tr>
</tbody>
</table>

default from first clinical attendance were significantly associated with a positive screen for domestic violence (all p < .01).

**DISCUSSION**

There was a disclosure of domestic violence in one third of the cohort. In half of these cases, the violence was unilaterally directed by the male partner toward the woman, but in the remaining cases, violence was bidirectional. In only 1.9% of the cohort was the woman the sole perpetrator of violence.

The questionnaire utilized in the study has been well validated and has been implemented into public obstetric practice in many Australian hospitals [11]. The questionnaire focuses on reports of physical abuse and safety rather than psychological abuse. Research has concluded that disclosures to health services can link
women into community support and improve health care outcomes [11, 12]. Given this, the prevalence of exposure to domestic violence reported in this study would seem to justify a policy to implement routine screening.

Women exposed to intimate partner violence may be at an increased risk of developing precancerous or cancerous lesions of the cervix. There is evidence that they are at an increased risk of acquiring sexually transmitted infections, including high-risk human papillomavirus, a mandatory precursor for such lesions [8, 13, 14]. In a study of 375 women attending a sexually transmitted disease clinic, 37.6% reported ever having experienced physical assault by an intimate partner and 32.8% reported verbal threats [14]. A study of 774 women attending a prenatal clinic found that women who reported exposure to intimate partner violence were more than twice as likely to have been diagnosed with a sexually transmitted infection [13]. An Australian study in a teenage pregnancy population reported that teenagers exposed to domestic violence were at 7-fold risk of having an abnormal Pap smear compared with those teenagers not exposed to partner violence [8].

In this study, we found that women exposed to violence were slightly younger than those who were not; however, the difference of 2 years is of doubtful clinical significance. However, they were also more likely to be current smokers. Numerous studies have reported an association between domestic violence and cigarette smoking. One of the largest studies involved a survey in the United States of 13,494 adults who reported a 2-fold to 4-fold increase in risk of smoking in women exposed to family violence [15].

Women exposed to violence were more likely to be depressed as measured by the Beck Depression Inventory. This finding has also been reported elsewhere [16].

In a study of 65 women were living in sanctuary houses as a result of violence and who were screened with the Beck Depression Inventory [10], every woman interviewed was found to score above the cutoff recommended for treatment. Women were also found to have high rates of menstrual irregularities, genital tract infections, and premenstrual syndrome symptomatology [16].

Perhaps the most important association was between the observation of housing instability and default from the first clinic attendance. A recent Indian study of 2435 women, which focused on the interplay of life factors involved in women's reproductive health experiences, documented a link between violence and homelessness [17]. An Australian study of teenage mothers also reported an association among domestic violence, homelessness, and sexually transmitted infections [18]. In the United States, the Violence Against Women Act of 2005 was passed to help create safe and independent housing for survivors of violence [19]. Housing instability can result in women moving address and missing hospital appointments that are routinely sent through the postal service. This can lead to higher rates of primary default from care.

These linkages and associations may explain why women exposed to domestic violence have poorer health care outcomes compared with other subgroups of women. We have previously explored reasons for default at colposcopy clinics and reported that the routinely collected demographic variables did not identify a subgroup of women at risk for default [20]. However, these routine variables do not include domestic violence and housing stability, which would need to be captured using a specific screening protocol in colposcopy clinics.

The high rates of domestic violence and associated levels of housing instability may partially explain the high rates of default from colposcopy clinics. If these defaults persist, this could be one of the mechanisms behind the poorer cervical screening and treatment outcomes observed in women exposed to domestic violence.

We have now recommended the introduction of screening into colposcopy services at our hospitals. Future directions for research include following up this cohort of women to determine if the issue of default at primary attendance persists following treatment and extends into other women's health services and to determine whether routine screening can improve quality of life and health care outcomes in other areas of health.

REFERENCES


16. Innoy OC, Yold H. Reproductive health problems and depression levels of women living in sanctuary houses as a result of husband violence. Health Care Women Int. 2011;32:795-810.


Appendix 3  Conference presentation
Abstract

Introduction: Domestic violence is common in women and is associated with poorer healthcare outcomes. However, no causal pathway has been identified to explain this observation. We have followed a cohort of women to determine whether poorer outcomes can be explained by high rates of default and loss to follow up.

Methods: A prospective cohort study was performed. Institutional ethics approval was obtained. Participants were consecutive patients attending colposcopy clinics at a major metropolitan hospital in Australia. Following ascertainment of domestic violence status, appointment outcomes for colposcopy and women’s health services were tracked for a three year period. Multivariate analysis was undertaken to determine demographic factors associated with default from care.

Results: Of 581 women approached, consent was obtained from 574 women (99%). Ascertainment of domestic violence status was obtained from 566 women, of whom 187 (33%) had a recent history of exposure. Women exposed to violence were more likely to default from colposcopy once (26.2% vs 7.4%; p<0.0001), twice (11.2% vs 3.2%, p<0.0001), or twice (10.7% vs 2.4%, p<0.0001). They were more likely to be lost to follow up (8.0% vs 1.1%, P<0.0001). They were more likely to change appointments (10.2% vs 6.6%, p=0.0xx). They were also more likely to be referred to other women’s health services (50.3% vs 32.2%, p<0.0001) and to default from attendance at these services once (14.9% vs 3.3%, p=0.003), twice (11.7% vs 0.8%, p=0.001) or twice (9.6% vs 0%, p<0.0001) and be lost to follow up (9.6% vs 0%, p<0.0001). They were also more likely to rebook appointments (13.8% vs 4.9%, p=0.029).
Conclusion: Domestic violence is a risk factor for default from attendance and loss to follow up at women’s health services. This may explain the mechanism behind adverse healthcare outcomes seen. Screening and targeted appointment intervention programs may improve clinical compliance.