

PREVALENCE OF BACTERIAL VAGINOSIS AND CHLAMYDIA  
TRACHOMATIS AMONG PREGNANT ABUSED  
HISPANIC WOMEN

---

A DISSERTATION  
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY  
IN THE GRADUATE SCHOOL OF THE  
TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING

BY  
ELIZABETH A. KING, M.S.N.

---

DENTON, TEXAS

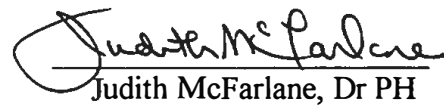
DECEMBER 1998

TEXAS WOMAN'S UNIVERSITY  
DENTON, TEXAS

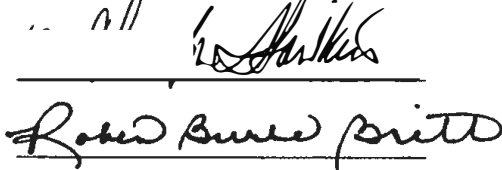
October 21, 1998

To the Associate Vice President for Research and Dean of the Graduate School:


I am submitting herewith a dissertation written by Elizabeth A. King entitled "Prevalence of Bacterial Vaginosis and Chlamydia Trachomatis Among Pregnant Abused Hispanic Women." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Nursing.

  
Judith McFarlane, Dr PH

We have read this dissertation  
and recommend its acceptance:

  
Robert Bruce Smith

Accepted

  
Associate Vice-President for Research  
And Dean of the Graduate School

## DEDICATION

‘I can do all things through Christ who strengthens me’ Philippians 4:13.

This dissertation is dedicated to my husband, Lowell, and our children, whose love and encouragement are my support.

## ACKNOWLEDGMENTS

I wish to express my gratitude and sincere appreciation to:

Judith McFarlane, DrPH, for her guidance and generosity of spirit.

Christine Hawkins, PhD, and Robin Britt, EdD, for their interest and enthusiasm in this endeavor.

PREVALENCE OF BACTERIAL VAGINOSIS AND CHLAMYDIA  
TRACHOMATIS AMONG ABUSED PREGNANT  
HISPANIC WOMEN

ABSTRACT

ELIZABETH A. KING, B.S.N. M.S.N.

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING  
DECEMBER 1998

A case-control descriptive survey was completed as part of a chart audit in order to compare the prevalence of bacterial vaginosis (BV) and chlamydia trachomatis (CT) among a cohort of abused pregnant Hispanic women who attended three prenatal clinics of a large, metropolitan public health system between September 1, 1995, and August 31, 1996, and to compare this figure with prevalence of BV and CT in a larger group of pregnant Hispanic women who were not abused. The sample of 701 consisted of 233 abused and 468 nonabused women. The pre-admission book at each clinic was used to compile the list of nonabused women who attended their first prenatal clinic visit on the same day as the abused women.

Demographic comparison of the two groups revealed no significant difference at the .05 level, two-tailed, for age, pregnancy gestation at entry into prenatal care, or number of clinic visits. Comparison of the two groups on the basis of vaginal infection indicated no difference in CT infection prevalence, but the  $z$  score of 1.986 revealed a significant difference between the two groups in diagnosed bacterial vaginosis. The results of this study indicate that, in this population of pregnant Hispanic women, reported abuse is associated with a significantly higher prevalence of bacterial vaginosis. BV infection is a risk factor for preterm delivery; therefore, the abused pregnant Hispanic woman is more at risk for BV and associated preterm delivery than the nonabused pregnant Hispanic woman.

## TABLE OF CONTENTS

DEDICATION.....	iii
ACKNOWLEDGMENTS.....	iv
ABSTRACT.....	v
LIST OF TABLES.....	ix
CHAPTERS	
I. INTRODUCTION .....	1
Problem of the Study.....	5
Rationale for Study.....	6
Conceptual Framework.....	9
Assumptions.....	12
Research Questions.....	12
Definition of Terms.....	13
Limitations.....	15
II. REVIEW OF THE LITERATURE.....	16
Bacterial Vaginosis.....	16
Chlamydia Trachomatis.....	19
BV and CT in Pregnant Hispanic Women.....	21
BV and CT in Pregnant Abused Hispanic Women.....	23
Summary.....	25
III. PROCEDURE FOR COLLECTION AND TREATMENT OF DATA.....	27
Setting.....	27

Population and Sample.....	28
Protection of Human Subjects.....	29
Instrument.....	30
Procedure for Data Collection.....	32
Treatment of Data.....	33
IV. ANALYSIS OF DATA.....	36
Description of the Sample.....	36
Findings.....	39
Summary of the Findings.....	41
V. SUMMARY OF THE STUDY.....	43
Summary.....	43
Discussion of the Findings.....	44
Conclusion and Implications.....	45
Recommendations for Future Study.....	46
REFERENCES.....	48
APPENDIXES.....	58
APPENDIX A: Abuse Assessment Screen .....	59
APPENDIX B: Agency and University Approvals.....	61
APPENDIX C: Vaginal Infection in Pregnancy Record.....	67



## LIST OF TABLES

### TABLE

1. Marital Status of Pregnant Hispanic Women at  
First Prenatal Visit By Abuse Status..... 37
2. Number and Percentage of Pregnant Hispanic Women With  
Bacterial Vaginosis or Chlamydia Trachomatis by  
Abuse Status..... 40

## CHAPTER 1

### INTRODUCTION

Sexually transmitted disease is a major health problem: an estimated 40% of preterm births involve genital tract infections as a contributory factor (Hack & Merkatz, 1995; Holst, Goffeng, & Andersch, 1994; McGregor et al., 1995). Annual costs based on consequences of sexually transmitted diseases amount to more than \$2.4 billion (Youngkin, 1995). The most common sexually transmitted bacterial pathogen in the United States is chlamydia trachomatis (CT), which has reached epidemic proportions (Centers for Disease Control [CDC], 1996). When CT is present during pregnancy, it can result in significant morbidity and mortality including abortion, stillbirth, premature labor, acute neonatal illness, pelvic inflammatory disease, and death (Benoit, 1988). Prevalence of CT in nonpregnant African-American and Caucasian women was cited as 13.4% by Winter, Goldy, and Baer (1990) and 7.2% by Langille and Shoveller (1993). Acosta-Cazares, Ruiz-Maya, and Escobedo de la Pena (1996) reported a

7.3% incidence of CT in Mexican women, but pregnant women were excluded from their study. Gershman and Barrow (1996) reported a 3.5% prevalence among non-pregnant Hispanic women attending a family planning clinic. Prevalence of CT in Hispanic women in the United States has not been well documented and prevalence of CT in pregnant Hispanic women even less so. Data collection is complicated by multiple countries of origin and the combining of foreign-born and U.S.-born Hispanics into a single category.

Another infection of the genital tract frequently observed among sexually active women is bacterial vaginosis (BV), otherwise known as nonspecific vaginitis. In fact, BV is one of the most common single types of vaginitis in pregnancy, affecting from 12% to 22% of pregnant women (Hay et al., 1994; Kurki, Sivonen, Renkonen, Savia, & Ylikorkala, 1992). If left untreated during pregnancy, BV can lead to amniotic fluid infection, premature rupture of membranes, preterm labor and birth, and postpartum endometritis (McGregor et al., 1995; Thomason, 1991). Researchers have increasingly indicated that BV approximately doubles the risk of preterm delivery (Hillier, Nugent, & Eschenbach, 1995; Holst, Goffeng, & Andersch,

1994; Kurki et al., 1992). Prevalence of BV has not been well established. This deficit is probably because it is not a reportable disease and current recommendations do not advocate routine universal screening of pregnant women for BV (CDC, 1998).

In addition to the risk posed by vaginal infection to the well-being of mother and fetus, abuse by the intimate male partner presents an additional risk to the health of mother and child (McFarlane, Parker, & Soeken, 1996). Reported rates of abuse during pregnancy vary between 8% ( $N = 290$ ) (Helton, McFarlane, & Anderson, 1987) and 16% ( $N = 1,203$ ) (McFarlane et al., 1996). The primary predictor of abuse during pregnancy is prior abuse, and sometimes the abuse actually increases because of the pregnancy (Helton et al. 1987). This health problem is not confined to any ethnic group: McFarlane et al. (1996) found that 18% of pregnant African-American women, 17% of pregnant Caucasian women, and 13% of pregnant Hispanic women reported abuse during pregnancy.

Women who are victims of abuse while pregnant are at risk for more than the immediate injury; the pregnancy outcome can be adversely affected. Abuse of a pregnant woman has been associated with lowered infant birth

weight, anemia, and infections (McFarlane et al., 1996) and an increased incidence of fetal distress or fetal death (Dye, Tollivert, Lee, & Kenney, 1995). Women who are abused are more likely to receive late or inadequate prenatal care (Campbell, Poland, Waller, & Ager, 1992; McFarlane, Parker, Soeken, & Bullock, 1992), which can lead to late diagnosis of serious complications of pregnancy (Berenson, Wiemann, Wilkinson, Jones, & Anderson, 1995). Inadequate prenatal care, particularly late entry into prenatal care, has been shown to be associated with higher rates of preterm birth (Luke, Williams, Minogue, & Keith, 1993; Verrier, Spears, Ying, & Kerr, 1994).

In a 1996 study by King, McFarlane, and Wiist (unpublished) of 109 pregnant abused Hispanic women, 23.85% ( $N = 26$ ) were diagnosed with one or more nonyeast vaginal infections when they presented for their first prenatal visit. The most commonly observed type of nonyeast vaginal infection was BV (11.01%;  $N = 12$ ), followed by CT (7.31%;  $N = 8$ ). In one study, rates of BV in women attending gynecology clinics varied from 5% in asymptomatic women to 25% in those with gynecologic symptoms (Mead, 1993). None of the published studies screened subjects for domestic

violence; therefore, it was not known whether rates of CT and BV are different in abused women compared to nonabused women.

Published studies to date have not addressed CT or BV in pregnant, abused Hispanic women; therefore, it was deemed important to investigate the incidence of bacterial vaginosis and chlamydia trachomatis in a sample of pregnant, abused Hispanic women and to compare this rate with a group of pregnant, nonabused Hispanic women. The findings of this study may have implications for prenatal treatment protocols for abused women.

### Problem of the Study

The nation's health objectives for the year 2000 (Healthy People, 1991) identified maternal-child health as a priority area to be addressed. Infections of the genital tract present a particular danger to childbearing women and neonates. Vaginal infection is easily transmitted during vaginal delivery and may seriously threaten the health of the baby born to an infected woman. Current recommendations (American College of Obstetricians and Gynecologists [ACOG], 1994) are for CT diagnostic testing, if possible, at the first prenatal visit for all pregnant women and again in the third trimester

for those at high-risk. Although BV is significantly associated with increased risk of pregnancy loss, preterm premature rupture of membranes, and preterm birth (McGregor et al., 1995; Romero, Mazor, & Wu, 1988), routine screening of pregnant women for BV is not recommended (CDC, 1998). The purpose of this study was to determine whether prevalence of BV and CT is greater in pregnant Hispanic women who were abused than in pregnant Hispanic women who were not abused.

### Rationale for the Study

For pregnant women at high risk for STDs, ACOG (1994) recommends that diagnostic testing be performed at the first prenatal visit and again in the third trimester. The power and control associated with domestic abuse may serve as a barrier to accessing prenatal care: many women in the McFarlane et al. (1996) study reported that the significant other prevented them from filling prescriptions and keeping return appointments. The abused woman is more likely to start prenatal care during the second or third trimester (McFarlane et al., 1992), and sometimes she may not be allowed to return for follow-up testing.

Hispanic women constitute one of the fastest growing groups in the United States (Pearce et al., 1996), and this holds true in Harris County, Texas where Hispanic women had more live births (22,798) in 1994 than African-American (11,607) or Caucasians (20,031) (Texas Department of Health [TDH], 1995). Hispanic women in general tend to commence prenatal care later than other groups (Byrd, Mullen, Selwyn, & Lorimor, 1996). Early prenatal care is defined as starting medical care in the first trimester of pregnancy and continuing care until delivery. The TDH reported that in 1994 Hispanic women were the least likely to receive early prenatal care, compared to African-American or Caucasian women. The rate of inadequate prenatal care for Hispanic women was 28.5%, for African-American women 25.7% and for Caucasian women 12.3%.

Minority status is a risk factor, not only for inadequate prenatal care, but also for sexually transmitted disease. Smith, Phillips, Faro, McGill, and Wait (1988) found that adolescence, poverty, and minority status were factors associated with STD infection. In Harris County, Texas for 1994, there were 3,894 cases of chlamydia in girls aged 15 to 19 years (TDH, 1995). The highest number of cases (1,257) were in African-American girls, and the



second highest number of cases (584) were in Hispanic girls (Texas Department of Health, 1995). Since all sexually active adolescents and young adults are at high risk (Gershman & Barrow, 1996; Smith et al., 1988), the population of this study can be considered at greater risk for STD because they are of low socio-economic status and because Hispanic women tend to become sexually active at a young age.

Women who were abused during pregnancy are at risk for inadequate prenatal care (McFarlane et al., 1992). Taggart and Mattson (1996) reported that abused women sought prenatal care 6.5 weeks later than a nonabused sample. It is not known whether abused pregnant women are at greater risk for STD than nonabused pregnant women. The population from which the present sample was drawn is already considered at risk for STD due to young age, poverty, ethnic group, and late entry into prenatal care. This study is important, therefore, because it is not known whether abuse during pregnancy is associated with STD, particularly in conjunction with existing risk factors. If research reveals that abused women are more likely to have vaginal infection in pregnancy, then this fact, combined with the delay in seeking prenatal care puts the women and their unborn infants at even greater risk.

Data are essential for setting goals, developing programs, evaluating outcomes, and measuring the cost effectiveness of existing protocols.

### Conceptual Framework

Radical feminist theory as described by Tong (1989) was used to guide this study. The central perspective of radical feminism is that sexuality is the root cause of women's oppression (Tong). There are many different versions of feminism: each is focused on a different aspect of women's oppression and each suggests its own solutions for achieving emancipation. Radical feminist theory emerged out of the women's liberation movement, and it encompasses the study, by women, of women's lived experiences with the goal of empowering women in a society unequally structured along the dimension of gender. Radical feminism emphasizes the sexual differences that account for male dominance: the belief that patriarchy, or male domination, is the basis of women's oppression.

The traditional patriarchal culture has always viewed men as physically and intellectually superior to women. This belief, although no longer fashionable, was historically supported by legal and religious authorities

which were structured to maintain female subordination by placing power in the hands of men (Tong).

Radical feminist theory is centered on women's control of their own bodies in reproductive terms, and it asserts that the male desire to control (i.e., the love of power) is the cause of physical abuse (Tong, 1989). Male violence against women is viewed as a consequence of women's lesser position in a male-dominated society. The goal of radical feminism is to empower women (Tong). Heide (1985) defined empowerment as "a state where the power of love (in the sense of caring for ourselves and each other) is greater than the love of power" (p.12). Feminist theory encourages self-care and health promotion in terms of the larger community and also in terms of specific groups in that community.

Feminist research methodology, as described by Duffy (1985), was used to guide the study. Feminist research methodology has been used as an alternative to the traditional biomedical approach for the study of issues that concern women, such as eating disorders (White, 1991) and ageing (Pohl & Boyd, 1993). The purpose of feminist research is to describe and interpret the various phenomena of women's lives, with the object of removing

oppressive constraints where they exist (Hall & Stevens, 1991). Pregnancy is an experience unique to women, and domestic abuse during pregnancy is an oppressive constraint resulting from the male desire to control. By conducting research into risks associated with abuse during pregnancy, the nursing profession can raise awareness of this misuse of power over women. Radical feminist theory (Tong, 1989) has a philosophy of valuing women and validating their unique experiences, ideas, and needs, which makes it the ideal framework for nursing research into pregnancy and abuse issues. This study followed all of the criteria for feminist research identified by Duffy (1985):

1. The principal investigator was a woman.
2. There was interaction between the researcher and the subject in a nonhierarchical relationship. Feminist theory recognizes the equality of the researcher and the subject.
3. The study was conducted with the goal of improving women's quality of life.
4. Women's experiences, in a specific situation, were the major object of the investigation.

5. The purpose of the investigation was the study of women and to view the world from the woman's vantage point.
6. The word "feminist" or "feminism" appears in the report.
7. Feminist literature references are used.
8. Nonsexist language is used.

This feminist research method was designed to empower the woman and to validate her lived experience.

### Assumptions

Assumptions, based on the conceptual framework, were as follows:

1. Power inequity exists in relationships between women and men (Tong, 1989).
2. Power inequity is a central cause of violence toward women (Tong, 1989).

### Research Questions

Research questions formulated for this study were:

1. What is the prevalence of bacterial vaginosis among pregnant Hispanic women reporting abuse during the last 12 months by their male intimate partner, compared to prevalence among pregnant Hispanic women not

reporting abuse during the last 12 months?

2. What is the prevalence of chlamydia trachomatis among pregnant Hispanic women reporting abuse during the last 12 months by their male intimate partner, compared to prevalence among pregnant Hispanic women not reporting abuse during the last 12 months?

### Definition of Terms

The following terms were defined for this study:

Bacterial vaginosis (BV) is characterized by a polymicrobial proliferation of *Gardnerella vaginalis* and *Mycoplasma hominis* as well as disappearance of the normal lactobacilli-dominated flora (Holmes, Mardh, & Sparling, 1989). The clinics from which the data were obtained follow ACOG (1994) recommendation for diagnosis of BV: presence of three of the following four findings: pH >4.5; clue cells; positive KOH Amine test; and/or homogenous discharge. For the purpose of this study, the operational definition of BV was clinical diagnosis in the medical chart by the physician or nurse-practitioner of nonspecific vaginitis, or by laboratory findings of *Gardnerella*, *Mycoplasma*, or BV.

Chlamydia trachomatis (CT) is a gram-negative, intracellular parasite which infects metaplastic or columnar epithelium (Lowdermilk, Perry, & Bobak, 1997). For the purposes of this study, CT was defined as diagnosis of Chlamydia by laboratory report after screening by DNA Probe.

Abuse is conceptually defined as intentional injury, physical or sexual, within a relationship (Yllo & Bograd, 1988). Operationally, domestic abuse was defined as a positive response to any question on the Abuse Assessment Screen (Appendix A) administered during the first prenatal visit.

Nonabused women are conceptually defined as those women who did not acknowledge suffering abuse by a partner. Operationally, these women were those who answered “no” to all questions on the Abuse Assessment Screen administered during the first prenatal visit.

Intimate male partner. For the purposes of this study, the intimate male partner included the husband, boyfriend, ex-husband, or ex-boyfriend. Each respondent was asked to identify the male relationship on the Abuse Assessment Screen.

### Limitations

Generalizability of the study findings is limited to Hispanic women who present at three prenatal clinics at a large urban public health department. The DNA probe method of diagnosing CT, which was used in the clinics from which this sample was drawn, has a documented accuracy of 66.6% to 100% and specificity of 94.9% to 97.8% (Bryant, Fox, Spigland, Childers, Motyl, & Rosenfeld, 1995; Biro, Reising, Doughman, Kollar, & Rosenthal, 1994; Szell, Tisza, & Horvath, 1994). However, the prevalence of CT infection may be underestimated by one single diagnostic test, particularly in the asymptomatic patient. No other variables relating to prevalence of BV were explored such as douching or use of powders, gels, and bath salts.



## CHAPTER 2

### REVIEW OF THE LITERATURE

In this literature review, bacterial vaginosis (BV) and chlamydia trachomatis (CT) are discussed in the following categories: the organism, incidence, and related reproductive morbidity in women of BV and CT. In addition, research studies involving BV and CT in Hispanic women as well as BV and CT in pregnant abused Hispanic women are critically reviewed.

#### Bacterial Vaginosis

BV is sometimes classified as an infection that is associated with sexual activity (Freeman, 1995; Joesoef et al., 1996) and sometimes as an STD (Ament & Whalen, 1996; Benoit, 1988; Iams, Zuspan, & Quilligan, 1990; Youngkin, 1995). BV is currently the most common cause of vaginal discharge among sexually active women (Centers for Disease Control [CDC], 1993) with prevalences ranging from 5% for women without any symptoms to 25% in symptomatic women (Mead, 1993). The disease is a

polymicrobial infection characterized by replacement of the normal vaginal lactobacillus with a massive polymicrobial overgrowth of anaerobic bacteria (Schmitt, Sobel, & Meriwether, 1992). The cause of BV is unknown, but it is associated with multiple sex partners, douching and any variable that changes vaginal pH (Freeman, 1995). BV has a rich history in names, such as nonspecific vaginitis, *Hemophilus vaginalis*, *corynebacterium vaginalis*, and *Gardnerella vaginalis*, but the name bacterial vaginosis has been used in place of other names since 1984 (Brucker, 1997).

Symptomatic women with BV may complain of pruritis and/or a malodorous vaginal discharge (Eschenbach et al., 1988). Microscopic examination of a wet mount may reveal presence of clue cells, which are clumps of coccobacillus bacteria on the surface of the epithelial cells. BV organisms may be identified by a Papanicolaou (Pap) smear of the vagina or cervix in 80% to 85% of cases (Lewis & O'Brien, 1969), but the easiest diagnostic test for BV is the Amine test in which a mixture of vaginal secretions with a few drops of 5% or 10% potassium hydroxide (KOH) causes the breakdown of bacteria with subsequent release of a fishy type odor. The American College of Obstetricians and Gynecologists (ACOG,

1994) recommends diagnosis by the presence of three of the following four findings: pH > 4.5, presence of clue cells, positive KOH Amine test, and/or homogenous discharge.

BV is associated with endometritis, especially among women with clinically suspected pelvic inflammatory disease (Hillier et al., 1996), and can endanger pregnancy by causing preterm labor, preterm birth, premature rupture of membranes (Fiscella, 1996; Hauth, Goldenberg, Andrews, Dubard & Copper, 1995), endometritis (Hillier et al., 1996), and chorioamnionitis (Freeman, 1995).

Treatment for BV should be administered during the last half of pregnancy in order to decrease the chance of pregnancy complications (Hauth et al., 1995). The treatment of BV has been shown to decrease the risk of preterm delivery, especially in high-risk populations (Glantz, 1997). The study by Schmitt et al. (1992) revealed that Clindamycin vaginal cream was as effective as oral metronidazole for treatment, therefore Clindamycin vaginal cream is the preferred treatment during pregnancy, especially in the first trimester (CDC, 1993). Current recommendations do not advocate routine screening of pregnant women for BV, but symptomatic women should

be treated (CDC). Most health care providers do not test for cure for BV, but women are advised to return for follow up in 1-2 weeks if the condition persists after treatment. Sexual partners usually are not treated unless the BV is recurrent, even though the responsible organisms have been isolated in the urine, semen, and urethra of male partners of infected women (Elsner & Hartmann, 1986).

### Chlamydia Trachomatis

Chlamydia (CT) is the most common bacterial STD in the United States, with gonorrhea the second most common (CDC, 1995). Although health care providers and laboratories are required to report cases to local health authorities, surveillance of CT remains incomplete because the infection is asymptomatic in many people (Kottmann, 1995; Shulman, Phair, & Sommers, 1992). In 1995, 477,638 cases of CT infections were reported to the CDC Division of STD Prevention (CDC, 1996). Researchers consistently found that variables associated with CT include adolescence and African-American or Hispanic race-ethnicity (Gershman & Barrow, 1996; Smith, Phillips, Faro, McGill, & Wait, 1988).

Chlamydia is a gram-negative, intracellular parasite that can only be isolated by laboratory cell culture (Mead & Hager, 1992). Symptoms in the female include urethritis, urinary frequency, mucopurulent cervicitis, acute pelvic inflammatory disease (PID) (Whelan, 1988), friable cervix (Lichtman & Papera, 1990), and salpingitis. A Pap smear that shows inflammation suggests additional infection testing is needed (Youngkin & Davis, 1994). The DNA probe is a commonly used diagnostic test with a reported sensitivity ranging from 66.6% to 100% and specificity ranging from 94.9% to 97.8% (Bryant et al., 1995; Biro et al., 1994; Szell et al., 1994). Other methods of testing for CT include cell culture and enzyme immunoassay, but the advantage of the DNA probe is that it is easier to perform and provides more rapid detection (Heath & Heath, 1996).

In women, CT can result in serious reproductive tract complications, such as pelvic inflammatory disease, salpingitis, preventable infertility, and ectopic pregnancy (Gunn, Hillis, Shirey, Waterman, & Greenspan, 1995; Youngkin, 1995). CT is associated with preterm labor and preterm rupture of membranes (Rimbach et al., 1993), preterm birth (Claman, Toye, Peeling, Jessamine, & Belcher, 1995), low birth weight with CT infection (Ament &

Whalen, 1996; Mead & Hager, 1992), postpartum endometritis, and post-abortion endometritis (Wendel & Wendel, 1993). During vaginal birth, the infected mother may transmit CT to the neonate, causing conjunctivitis (which develops at about 7 to 15 days of age) that can result in blindness (Lichtman & Papera, 1990), afebrile pneumonia (Whelan, 1988), and otitis media (Benoit, 1988). The CDC (1993) recommends oral erythromycin or amoxicillin as a safe treatment during pregnancy. Mercer (1994) stated that azithromycin is safe in pregnancy and has the advantage of requiring a one time only dose. ACOG (1994) guidelines recommend third trimester retesting of pregnant women for gonorrhea, CT, and syphilis. Treatment of sexual partners is essential. Because erythromycin and amoxicillin are not highly effective, women treated for CT with either of these medications should be retested 3 weeks after completion of treatment (CDC, 1993).

### BV and CT in Pregnant Hispanic Women

Despite the implications of untreated BV and CT for maternal and infant health and the burgeoning number of reproductive age Hispanic women, few studies were identified that documented CT prevalence rates for

pregnant Mexican-American or Mexican women. A study was done by Campos-Outcalt and Ryan (1995) to document the prevalence of STDs in low-income, pregnant Mexican-American women and to compare prevalence of STDs in subjects born in the United States with those born in Mexico. In the convenience sample of 347 pregnant women attending their first prenatal visit, at a clinic for low-income populations, prevalence of CT was 10.1%. There was no significant difference in the incidence of CT among Hispanic women born in the United States, which was 9.1% and the incidence of CT among women born in Mexico, which was 8.6%.

Smith et al. (1988) studied a group of sexually active indigent female adolescents ( $N = 113$ ), attending a family planning clinic, in order to establish prevalence of CT and to find associated risk factors. The convenience sample consisted of all patients who received a pelvic examination; some of the patients were pregnant (11%), some were postpartum (33%), and 73% had at least one pregnancy. Eighteen percent of the Smith et al. sample were classified as white with Spanish surname (Hispanic). Results showed a 33.3% rate of CT in Hispanic patients (the highest rate of infection by ethnic group), and 25% of the pregnant teens had CT (Smith et al., 1988).

In order to determine CT prevalence and screening criteria Gunn et al. (1995) conducted a cross-sectional prevalence survey of prenatal and family-planning clients attending five clinics in the California-Mexico border area. In the convenience sample ( $N = 2,378$ ) there was a 4.7% prevalence of CT among Hispanic prenatal clients. Prevalence of CT was similar ( $<5\%$ ) on both sides of the California-Mexico border.

#### BV and CT in Pregnant Abused Hispanic Women

As part of a larger study, testing the differential effectiveness of abuse intervention services, charts of the first 109 abused Hispanic women (primarily Mexican and Mexican-American) to enter the study were reviewed for a diagnosis of CT and BV (King, McFarlane, & Wiist, unpublished). The women ranged in age from 15 years to 37 years with a mean age of 22.59 years ( $SD = 4.27$ ); 32.4% ( $n = 36$ ) were teenagers (i.e., 19 years or less). Most of the subjects (79.3%,  $n = 88$ ) started prenatal care during the second or third trimester. All women were below the poverty line and met state guidelines for Women, Infants and Children (WIC) assistance.



Prevalence of CT was 7.31% ( $n = 8$ ) and prevalence of BV was 11.11% ( $n = 12$ ).

No significant difference in trimester of entry into prenatal care was found by King et al. (unpublished) between those women screened positive for CT and those women screened negative. The mean age for those positive for CT was 19.2 years ( $SD$  2.43) compared to 22.8 years ( $SD$  5.03) in those negative for CT. Eight subjects were randomly selected from those subjects negative for CT to obtain two groups of equal size. A  $t$  test was calculated for significant difference in age between the CT positive and the CT negative groups. The  $t$  value of .01 at alpha .05 (two-tailed) indicated no significant difference in age between those positive for CT and those negative for CT. The rate of CT was higher than the incidence reported by Gunn et al. (1995) of 4.7%, but it was lower than that reported by Campos-Outcalt and Ryan (1995) of 10.1%. The Gunn et al. (1995) prevalence of 4.7% was found in pregnant women, 50% of whom were less than 25 years old. There was a lower prevalence (2.6%) in the nonpregnant women in their sample, 40% of whom were less than 25 years old. In the King et al. sample of abused, pregnant women, the mean age was 22 years. Campos-Outcalt and Ryan

(1995) did not report the mean age of subjects who were screened positive for CT but stated that women born in Mexico were more likely to present later for prenatal care than U.S.-born Mexican-Americans and that they found no variables useful in predicting positive CT tests.

### Summary

BV and CT are infections of the genital tract that are associated with pregnancy complications. Routine screening for CT is recommended, and infected women should be rescreened 3 weeks after treatment (CDC, 1993). Pregnant women are not routinely evaluated for BV but treatment is given to symptomatic patients. Both infections can be asymptomatic, they can threaten the health of mother and infant. Although research by Smith et al. (1988) revealed Hispanics to have the highest rate of CT infection compared to other ethnic groups, few studies were found that identified CT and BV prevalence in pregnant Hispanic women.

King et al. (unpublished) reported BV prevalence of 11.11% ( $n = 12$ ) in the sample of 108 pregnant abused Hispanic women, but no similar studies were found in the literature with which to compare this number. King et al.

did not compare abused women with women who were not abused.

Background rates of BV and CT in populations of abused and nonabused pregnant women are necessary in order to determine whether there is any association between abuse and the occurrence of BV and CT.

## CHAPTER 3

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

A case-control descriptive survey in the manner described by Timmreck (1994) was completed as part of a chart audit. Cases consisted of 329 pregnant Hispanic women reporting physical or sexual abuse from their male intimate partner during the last 12 months. Controls consisted of pregnant Hispanic women beginning prenatal care the same day as each case woman but reporting no abuse. The ratio of controls to study subjects was 2:1, respectively.

#### Setting

The study was conducted at three of the seven health centers of a large urban city health department which serves 1.6 million citizens. There are over 150,000 patient visits per year to the maternal and child health services at these seven health centers. The three health centers chosen for sampling had the largest number of maternity patients and the greatest similarity of

ethnic characteristics. Ninety percent of the patients seen at these clinics were Hispanic.

### Population and Sample

The target population for the study was 329 pregnant Hispanic women using the city public health system between September 1, 1995, and August 31, 1996, who reported abuse by the intimate partner during the previous 12 months. The log book of clinic attendance was used to select the control group. For every abused woman in the study, two women were systematically selected who commenced prenatal care on the same day, yet who screened negative for abuse. A total control group of 658 was compiled. The rationale for a control group that is double the size of the study group is that when one group is increased to twice the size of the other, the power of the test is increased considerably (Hulley & Cummings, 1988). According to Pedhazur and Schmelkin (1991), unequal group size does not pose a threat to the validity of a study. To ascertain that the available sample size will be large enough to reduce the possibility of making either a Type I or a Type II error (Siegel & Castellan, 1988), calculations were performed using the

method described by Fleiss (1981) for cases of unequal sample sizes. Data for the calculations were taken from CT prevalence figures in the King, McFarlane and Wiist (unpublished) study of pregnant abused Hispanic women (7.31%) and the CT prevalence in a Hispanic female population studied by Gunn, Hillis, Shirey, Waterman, and Greenspan (1995), which was 4.7%. The proportion of abused women expected to have BV or CT (0.073) was represented as P1, and P2 represented the proportion of controls expected to have BV or CT (0.047). Based on these calculations, at alpha .05 (two-tailed), and power of .80, the minimum number of abused women required was 186 and the number of controls required was 372. Using groups of larger size is advisable in case findings indicate that the difference between the two groups is less than anticipated.

### Protection of Human Subjects

Agency and institutional review board approval was obtained prior to initiation of the proposed study (see Appendix B). Confidentiality of data was maintained by assigning an identification number to each subject. The study identification number was entered into the data base instead of the

patient's name, and no other identifiers were used. The list of corresponding subject names was kept in a locked file cabinet, and the list was destroyed at the conclusion of this study.

### Instrument

The Vaginal Infection in Pregnancy Record (VIPeR) (Appendix C) was used to collect data from the medical records. The study identification number of the subject appears at the top of the instrument which is then divided into two domains: Demographics and Vaginal Infection. The demographic domain consists of four variables: age, gestation at entry, number of visits, and marital status. All demographic data were interval level, except marital status, which was nominal level. The vaginal infection domain consisted of five questions: presence of CT infection, presence of BV infection, did the patient complain of symptoms, medication received, and was partner treated. The medication question obtained nominal level data, and all remaining questions in this domain were dichotomous, requiring a yes/no answer.

The Vaginal Infection in Pregnancy Record (VIPeR) was created for use in this particular study, and evidence of its reliability (the extent to which an instrument yields consistent observations of the same phenomenon from one time to another and from one situation to another) (Nunnally & Bernstein, 1994) was demonstrated in the chosen population by its degree of stability. Stability refers to the extent to which consistent results are obtained with repeated use of the instrument (Nunnally & Bernstein, 1994). Stability of the VIPeR was measured by quantifying the intrarater reliability on 10 subjects in every 100 (Waltz & Strickland, 1988). The percentage agreement each time was 100%.

The conventional method of calculating rater reliability is percentage agreement (Derdiarian & Lewis, 1986) which expresses reliability as the number of times the ratings agree relative to the total number of observations made. Although percentage agreement is not the strongest analysis to use, this was the appropriate statistical measure to use for quantifying reliability of the VIPeR because much of the data are dichotomous (Topf, 1986). Consistency of data collection (Brink & Wood, 1988) was also controlled by one trainer researcher collecting all data for the vaginal infection instrument.



### Procedure for Data Collection

After agency and institutional review board approvals were obtained, the director of each clinic was contacted by telephone to arrange data collection times. At each clinic the preadmission book was used to extract the names, birthdates, and medical record numbers of women who entered prenatal care on the same days as the abused women. A list of charts for the controls was compiled and sent to each clinic, together with the list of charts for the study group. At two of the clinics, charts were pulled by the medical records staff prior to being reviewed by the researcher. At the third clinic, the busiest of the three sites, it was necessary to hire a medical records clerk to collect the charts for the researcher. At one of the sites, it was discovered that charts of women who completed prenatal care in 1995 had been sent to the archives and were no longer available. All efforts to retrieve the records from the archives building proved futile. Although the final sample of abused women was therefore smaller than had been anticipated, totalling 233 women, it was still well above the minimum number required for the study.

All charts were reviewed by the researcher in a private office at each clinic site. The medical record number on each chart was checked against the

master list of abused or nonabused women and a study identification number assigned. The abused women were designated group one and the abused women comprised group two. The age of the subject was the age at the last birthday. Gestation at entry was recorded in weeks and days as per convention, and the days were later converted to decimals for data entry purposes. If the answers to questions pertaining to vaginal infection were all negative (questions 5,6,7,8), then questions 9 and 10 concerning medication received and treatment of the partner were not applicable. If the woman was diagnosed with BV, question 10, 'was partner treated' was again not applicable because it is not usual practice to treat the partner of a woman with BV.

### Treatment of Data

Data was analysed from the medical records of 701 pregnant Hispanic women who sought prenatal care at three city clinics. A description of the sample was provided, and it included frequencies, percentages, and measures of central tendency and variance. Age was reported by mean and standard deviation. Difference between the two groups on the basis of number of

visits and gestation at entry, both interval measures, were compared by means of a  $t$  test for independent groups. The  $t$  test is commonly used to determine whether the mean value of a continuous outcome variable in one group differs significantly from that in another group (Hulley & Cummings, 1988). The specific vaginal infections (nominal data) were reported for the sample in numbers and percentages.

The first research question asked: What is the prevalence of bacterial vaginosis among pregnant Hispanic women reporting abuse during the last 12 months by their male intimate partner, compared to prevalence among pregnant Hispanic women not reporting abuse during the last 12 months?

The percentage of women in the study group diagnosed with BV was calculated, and then the percentage of women in the control group diagnosed with BV was calculated. Prevalence of BV in the two groups was compared by means of the  $z$  statistic (Fleiss, 1981) which is appropriate for comparing the proportion of subjects in each of two groups where the predictor variable (abuse) and the outcome variable (infection) are both dichotomous.

The second research question asked: What is the prevalence of chlamydia trachomatis among pregnant Hispanic women reporting abuse

during the last 12 months by their male intimate partner, compared to prevalence among pregnant Hispanic women not reporting abuse during the last 12 months? The same procedure used to answer question 1 was followed to answer the second research question. Then, the  $z$  statistic was computed to answer research question 2.

## CHAPTER 4

### ANALYSIS OF DATA

The purpose of this study was to determine the prevalence of bacterial vaginosis (BV) and chlamydia trachomatis (CT) among a cohort group of abused pregnant Hispanic women who attended three prenatal clinics of the city public health system between September 1, 1995, and August 31, 1996, and to compare this figure with prevalence of BV and CT in a larger group of pregnant Hispanic women who were not abused. Demographic characteristics such as age, marital status, gestation at entry into prenatal care, and number of clinic visits were also analyzed.

#### Description of the Sample

The sample ( $N = 701$ ) for this study consisted of 233 abused women and 468 nonabused controls. The women ranged in age from 13 to 43 years, with a mean age of 24.33 years. The mean age of the women in the abused group was 23.80 years ( $SD\ 5.39$ ) and the mean age of the women in the

nonabused group was 24.59 years (SD 5.63). A t test for equality of means in independent samples on the basis of age, equal variances not assumed, resulted in a t value of 1.813 (df = 482), which was not significant at the .05 level. Marital status (see Table 1) varied from 52.4% of the abused to 58.9% of the nonabused reporting being married.

Table 1

Marital Status of Pregnant Hispanic Women at First Prenatal Visit by Abuse Status (N = 701)

Marital Status	Abused (N = 233)		Nonabused (N = 468)	
	n	%	n	%
Married	122	52.36	275	58.76
Single	94	40.34	163	34.83
Divorced	11	4.72	17	3.63
Widow	1	.43	3	.64
Marital status not specified	5	2.15	10	2.14

Some 40.3% of the abused women and 34.9% of the nonabused reported being single. Gestational age at entry into prenatal care varied from 3 to 39 weeks with a mean of 16.76 weeks (SD 6.65).

Most of the women in the study commenced care during the second trimester. By group, the mean gestational age for entry into prenatal care by the abused women was 17.30 weeks (SD 6.68). In the nonabused group, the mean gestational age for entry into prenatal care was 16.49 weeks (SD 6.63). A  $t$  test for comparison of means by abuse status on the basis of gestational age at entry into prenatal care resulted in a  $t$  value of 1.499 ( $df = 458$ ,  $p = .135$ ), indicating there was no significant difference between the two groups in gestation at entry into prenatal care.

With regard to the number of prenatal visits, some women were transferred to an Obstetric High Risk Clinic as soon as preexisting chronic conditions, such as hypertension, diabetes, and human immunodeficiency virus (HIV), were diagnosed or when pregnancy complications such as preeclampsia or gestational diabetes developed. Other clients elected to transfer to a private physician. Only those clients who did not transfer to another prenatal clinic were included in calculations concerning number of

prenatal visits by abuse status. This consisted of 596 women. The overall mean number of prenatal visits among these 596 women who remained at the health center was 7.01 (SD 3.32). In the abused group (N = 208) the mean number of prenatal visits was 6.83 (SD 3.12). In the non-abused group (N = 388) the mean number of visits was 7.10 (SD 3.42). A t test for comparison of means between independent groups on the basis of number of prenatal visits resulted in a t value of .995 (df = 457, p = 0.320, two-tailed), which was not significant.

### Findings

The first research question of this study was: What is the prevalence of bacterial vaginosis among pregnant Hispanic women reporting abuse during the last 12 months by their male intimate partner, compared to prevalence among pregnant Hispanic women not reporting abuse during the last 12 months?

The second research question was: What is the prevalence of chlamydia trachomatis among pregnant Hispanic women reporting abuse during the last 12 months by their male intimate partner, compared to



prevalence among pregnant Hispanic women not reporting abuse during the last 12 months?

The number and percentage of pregnant women with BV or CT by abuse status appears in Table 2.

Table 2

Number and Percentage of Pregnant Hispanic Women With Bacterial Vaginosis or Chlamydia Trachomatis by Abuse Status (N = 701)

Vaginal Infection	Abused (N = 233)		Nonabused (N = 468)		Total	
	n	%	n	%	n	%
Bacterial Vaginosis	44	18.88	61	13.03	105	15
Chlamydia Trachomatis	14	6.01	20	4.27	34	4.8
Total	58	24.89	81	17.30	139	19.8

A  $z$  score for two independent samples, according to the method described by Fleiss (1981) for comparison of proportions, was calculated first for BV and then CT for abused versus nonabused women. The calculated  $z$

score for BV was 1.986 ( $df = 104$ ,  $p = < .05$ ). The calculated  $z$  score for CT was .96 ( $df = 33$ ,  $p = > .05$ ). When BV and/or CT were merged and the groups compared, the  $z$  score was 2.55 ( $df = 138$ ,  $p = < .05$ ). One of the abused women and six of the nonabused women were diagnosed with both BV and CT.

The treatment mode for BV was clindamycin vaginal gel and the mode of treatment for CT was erythromycin 500 mg orally four times a day for seven days. Partners of the women with BV were not treated but all of the partners of women with CT were either notified to contact a clinic or else a prescription was given to the woman to take to her partner.

### Summary of the Findings

Among this sample of 701 pregnant Hispanic women, there was not a significant difference between abused and nonabused women based on age, gestation at entry into prenatal care, or number of prenatal visits. Most of the women were married. For the total sample, the mean percent prevalence of BV was 15% ( $n = 105$ ) and the prevalence of CT was 4.9% ( $n = 34$ ). Seven women were diagnosed with both BV and CT. In the abused group of

233 women, 18.88% ( $n = 44$ ) were diagnosed with BV and 6.01% ( $n = 14$ ) were diagnosed with CT. In the nonabused control group of 468 women, 13.03% ( $n = 61$ ) were diagnosed with BV and 4.27% ( $n = 20$ ) were diagnosed with CT.

There was no significant difference between the abused and nonabused group based on prevalence of CT. There was, however, a significant difference between the two groups based on prevalence of BV.

## CHAPTER 5

### SUMMARY OF THE STUDY

The purpose of this study was to determine the prevalence of bacterial vaginosis (BV) and chlamydia trachomatis (CT) in a cohort of pregnant Hispanic women who were abused by their male intimate partner. These findings were then compared with the prevalence of BV and CT in nonabused pregnant Hispanic women.

#### Summary

The sample of 701 women consisted of 233 abused and 468 nonabused women. Demographic comparison of the two groups revealed no significant difference at the .05 level, two-tailed, for age, pregnancy gestation at entry into prenatal care, or number of clinic visits. Comparison of the two groups on the basis of vaginal infection indicated no difference in CT infection prevalence, but the  $z$  score of 1.986 revealed a significant difference between the two groups on the basis of bacterial vaginosis. The

results of this study indicated that, in this population of pregnant Hispanic women, reported abuse was associated with a significantly higher prevalence of BV.

### Discussion of the Findings

The prevalence of CT for this sample of 701 Hispanic women was 4.9% which was slightly higher than findings of the study by Gunn, Hillis, Shirey, Waterman, and Greenspan (1995) of 4.7% and lower than the 10.1% of Campos-Outcalt and Ryan (1995). By abuse status, the prevalence of CT was calculated to be 6.01% in the abused group and 4.27% in the nonabused group. Although prevalence of CT was greater among the abused women, a calculated  $z$  score indicated that the difference was not significant.

Prevalence of CT among the abused women (6.01%) was lower than the 7.31% observed by King, McFarlane and Wiist (unpublished) among pregnant abused Hispanic women.

The prevalence of BV for the total sample of 701 was 14.99% which was higher than the 11% found by Hay et al. (1992) among pregnant subjects referred to a gynecology clinic. By abuse status, the prevalence of BV in this

study was significantly higher among the abused women (18.88%) compared to nonabused women (13.03%). The 18.88% prevalence of BV in the abused women was greater than the 11.11% observed by King et al. among pregnant abused Hispanic women. BV is associated with preterm delivery and potentially lower birth weight of the infant, therefore, these findings may contribute to explaining the lower infant birthweight recorded for women reporting abuse during pregnancy (Bullock & McFarlane, 1989; McFarlane, Parker & Soeken, 1996).

### Conclusions and Implications

Based on the findings of this study, the following conclusions were derived:

1. Abused Hispanic women may be at higher risk for BV than nonabused Hispanic women.
2. BV infection is a risk factor for preterm delivery; therefore, the abused pregnant Hispanic woman may be at increased risk for BV and associated preterm delivery.
3. Even though this study did not find a significant difference in

prevalence of CT, the clinical importance of this disease should not be minimized.

From the conclusions of this study, the following implications were determined:

1. BV should be given greater public health importance than it presently receives.
2. All pregnant women should be screened for abuse at the initial prenatal visit because early identification of abuse, and appropriate intervention, can promote better health for the mother and baby.
3. Pregnant women who screen positive for abuse and BV should be considered at risk for preterm delivery.
4. Pregnant women who screen positive for abuse and BV should be treated at the initial prenatal visit.

#### Recommendations for Future Study

Based on the findings of this study, the following recommendations are made:

1. The study should be replicated using populations from other racial

groups and at sites other than public sector clinics. Other settings would expand the populations to women of different socioeconomic status and cultures.

2. Prospective research should be conducted to determine if the presence of BV and abuse results in preterm delivery and or lower weight infants.

Such prospective research would enable the primary care physician, nurse practitioner, and/or midwife to gain a clearer perspective on the implications of abuse and BV for infant viability.



## REFERENCES

Acosta-Cazares, B., Ruiz-Maya, L., & Escobedo de la Pena, J. (1996). Prevalence and risk factors for chlamydia trachomatis infection in low-income rural and suburban populations of Mexico. Sexually Transmitted Diseases, 23, 283-288.

Ament, L. A., & Whalen, E. (1996). Sexually transmitted diseases in pregnancy: Diagnosis, impact and intervention. Journal of Obstetrics, Gynecology & Neonatal Nursing, 25, 657-666.

American College of Obstetricians & Gynecologists. (1994). Gonorrhea and chlamydial infections. ACOG Technical Bulletin, 190. Washington, DC: ACOG.

Benoit, J. A. (1988). Sexually transmitted diseases in pregnancy. Nursing Clinics of North America, 23, 937-945.

Berenson, A. B., Wiemann, C. M., Wilkinson, G. S., Jones, W. A., & Anderson, G. D. (1995). Perinatal morbidity associated with violence experienced by pregnant women. American Journal of Obstetrics & Gynecology, 170, 1760-1766.

Biro, F. M., Reising, S. F., Doughman, J. A., Kollar, L. M., & Rosenthal, S. L. (1994). A comparison of diagnostic methods in adolescent girls with and without symptoms of chlamydia urogenital infection. Pediatrics, 93, 476-480.

Brink, P. J., & Wood, M. J. (1988). Basic steps in planning nursing research: From question to proposal. Boston: Jones & Bartlett.

Brucker, M. (1997, February). Secrets and lies: STDs in pregnancy. 14th Annual Houston Perinatal Nursing Symposium, Houston, Texas.

Bryant, D. K., Fox, A. S., Spigland, I., Childers, E., Motyl, M., & Rosenfeld, W. D. (1995). Comparison of rapid diagnostic methodologies for chlamydia and gonorrhea in an urban adolescent population: A pilot study. Journal of Adolescent Health, 16, 324-327.

Bullock, L. & McFarlane, J. (1989). The birth weight/battering connection. American Journal of Nursing, 89, 1153-1155.

Byrd, T. L., Mullen, P. D., Selwyn, B. J., & Lorimor, R. (1996). Initiation of prenatal care by low-income Hispanic women in Houston. Public Health Reports, 111, 536-540.

Campbell, J. C., Poland, M. L., Waller, J. B., & Ager, J. (1992). Correlates of battering during pregnancy. Research in Nursing & Health, 15, 219-226.

Campos-Outcalt, D., & Ryan, K. (1995). Prevalence of sexually transmitted diseases in Mexican-American pregnant women by country of birth and length of time in USA. Sexually Transmitted Diseases, 22, 78-82.

Centers for Disease Control & Prevention. (1993). Sexually transmitted diseases treatment guidelines. Morbidity & Mortality Weekly Report, 42 (RR-14)

Centers for Disease Control & Prevention. (1995). Sexually transmitted disease surveillance, 1994. [On-line database].

Centers for Disease Control & Prevention. (1996). Sexually transmitted disease surveillance, 1995. [On-line database].

Centers for Disease Control & Prevention. (1998). Guidelines for treatment of sexually transmitted disease. Morbidity & Mortality Weekly Report, 47 (RR-1), 1-118.

Claman, P., Toye, B., Peeling, R.W., Jessamine, P., & Belcher, J. (1995). Serologic evidence of chlamydia trachomatis infection and risk of preterm birth. Canadian Medical Association Journal, 153, 259-262.

Derdiarian, A. K., & Lewis, S. (1986). The D-L test of agreement: A stronger measure of interrater reliability. Nursing Research, 35, 375-377.

Duffy, M. (1985). A critique of research: A feminist perspective. Health Care of Women International, 15, 341-352.

Dye, T. D., Tollivert, N. J., Lee, R. V., & Kenney, C. J. (1995). Violence, pregnancy and birth outcome in Appalachia. Paediatric & Perinatal Epidemiology, 9 (1), 35-47.

Elsner, P., & Hartmann, A. (1986). Gardnerella vaginalis in the male upper genital tract: A possible source of reinfection of the female partner. European Journal of Sexually Transmitted Diseases, 14 (2), 122-123.

Eschenbach, D. A., Hillier, S. L., Critchlow, C., Stevens, C., DeRouen, T., & Holmes, K. K. (1988). Diagnosis and clinical manifestations of bacterial vaginosis. American Journal of Obstetrics & Gynecology, 158, 819-828.

Fiscella, K. (1996). Racial disparities in preterm births: The role of urogenital infection. Public Health Reports, 111 (2), 114-115.

Fleiss, J. L. (1981). Statistical methods for rates and proportions (2nd ed.). New York: Wiley & Sons.

Freeman, S. B. (1995). Common genitourinary infections. Journal of Obstetric Gynecologic and Neonatal Nursing, 24, 735-742.

Gershman, K. A., & Barrow, J. C. (1996). A tale of two sexually transmitted diseases: Prevalences and predictors of chlamydia and gonorrhea in women attending Colorado family planning clinics. Sexually Transmitted Diseases, 23, 481-488.

Glantz, J. C. (1997). Screening and treatment of bacterial vaginosis during pregnancy: a model for determining benefit. American journal of Perinatology, 14, (8), 487-490.

Gunn, R. A., Hillis, S. D., Shirey, P., Waterman, S. H., & Greenspan, J. R. (1995). Chlamydia trachomatis infection among Hispanic women in the California-Mexico border area, 1993: Establishing screening criteria in a primary setting. Sexually Transmitted Diseases, 22, 329-334.

Hack, M., & Merkatz, I. B. (1995). Preterm delivery and low birth weight-- a dire legacy. New England Journal of Medicine, 333, 1772-1773.

Hall, J. M., & Stevens, P. E. (1991). Rigor in feminist research. Advances in Nursing Science, 13 (3), 16-29.

Hauth, J. C., Goldenberg, R. L., Andrews, W. W., Dubard, M. B., & Copper, R. L. (1995). Reduced incidence of preterm delivery with metronidazole and erythromycin in women with bacterial vaginosis. New England Journal of Medicine, 333, 1732-1736.

Hay, P. E., Lamont, R. F., Taylor-Robinson, D., Morgan, D. J., Ison, C., & Pearson, J. (1994). Abnormal bacterial colonisation of the genital tract and subsequent preterm delivery and late miscarriage. British Medical Journal, 308, 295-298.

Healthy People 2000 (DHHS Publication No. (PHS) 91-50212). (1991). Washington, DC: U.S. Government Printing Office.

Heath, C. B., & Heath, J. M. (1996). Chlamydia trachomatis infection update. American Family Physician, 53, 1085.

Heide, W. S. (1985). Feminism for the health of it. Buffalo, NY: Margaret daughters.

Helton, A. S., McFarlane, J., & Anderson, E. T. (1987). Battered and pregnant: A prevalence study. American Journal of Public Health, 77, 1337-1338.

Hillier, S. L., Nugent, R. P., & Eschenbach, D. A. (1995). Association between bacterial vaginosis and preterm delivery of a low-birth-weight infant. New England Journal of Medicine, 333, 1737-1742.

Holmes, K. K., Mardh, P., & Sparling, F. (Eds.). (1989). Sexually transmitted diseases (2nd ed.). New York: McGraw-Hill.

Holst, E., Goffeng, A. R., & Andersch, B. (1994). Bacterial vaginosis and vaginal micro-organisms in idiopathic premature labor and association with pregnancy outcome. Journal of Clinical Microbiology, 32, 176-186.

Hulley, S. B., & Cummings, S. R. (1988). Designing clinical research. Baltimore: Williams & Wilkins.

Iams, J. D., Zuspan, F. P., & Quilligan, E. J. (Eds.). (1990). Manual of obstetrics & gynecology. St. Louis: Mosby.

Joesoef, M. R., Wiknjosastro, G., Norojono, W., Sumampouw, H., Linnan, M., Hansell, M. J., Hillis, S. E., & Lewis, J. (1996). Coinfection with chlamydia and gonorrhoea among pregnant women and bacterial vaginosis. International Journal of STD & AIDS, 7, 61-64.

King, E. A., McFarlane, J., & Wiist, W. (Unpublished). Prevalence of chlamydia trachomatis in abused, pregnant, Hispanic women. Houston, TX: Texas Woman's University.

Kottmann, L. M. (1995). Pelvic inflammatory disease: Clinical overview. Journal of Obstetrics, Gynecology & Neonatal Nursing, 24, 759-767.

Kurki, T., Sivonen, A., Renkonen, O., Savia, E., & Ylikorkala, O. (1992). Bacterial vaginosis in early pregnancy and pregnancy outcome. Obstetrics & Gynecology, 80, 173-177.

Langille, D. B., & Shoveller, J. (1993). Chlamydia trachomatis infection in rural Nova Scotia. Canadian Medical Association Journal, 149, 1267-1272.

Lewis, J. F., & O'Brien, M. (1969). Incidence of haemophilus vaginalis. American Journal of Obstetrics & Gynecology, 103, 843-846.

Lichtman, R., & Papera, S. (Eds.). (1990). Gynecology: Well-woman care. Norwalk, CT: Appleton & Lange.

Lowdermilk, D. L., Perry, S. E., & Bobak, I. M. (1997). Maternity and women's health care. St. Louis: Mosby.

Luke, B., Williams, C., Minogue, J., & Keith, L. (1993). The changing pattern of infant mortality in the US: The role of prenatal factors and their obstetrical implications. International Journal of Gynaecology & Obstetrics, 40, 199-212.

McFarlane, J., Parker, B., & Soeken, K. (1996). Abuse during pregnancy: Associations with maternal health and infant birth weight. Nursing Research, 45, 37-42.

McFarlane, J., Parker, B., Soeken, K., & Bullock, L. (1992). Assessing for abuse during pregnancy: Severity and frequency of injuries and associated entry into prenatal care. Journal of the American Medical Association, 267, 3176-3178.

McGregor, J. A., French, J. I., Parker, R., Draper, D., Patterson, E., Jones, W., Thorsgard, K., & McFee, J. (1995). Prevention of premature birth by screening and treatment for common genital tract infections: Results of a prospective controlled evaluation. American Journal of Obstetrics & Gynecology, 173, 157-167.

Mead, P. B. (1993). Epidemiology of bacterial vaginosis. American Journal of Obstetrics & Gynecology, 169, 446-449.

Mead, P., & Hager, W. (Eds.). (1992). Infection protocols for obstetrics & gynecology. Montvale, NJ: Medical Economics.

Mercer, L. (1994). The diagnosis & treatment of chlamydia infections. Proceedings from Telnet, April 7.

Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric theory (3rd ed.). New York: McGraw-Hill.

Pearce, C. W., Hawking, J. W., Carver-Chase, D., Ebacher, R., Matta, S., Sullivan, A., Vawter, V. J., Vincent, C., & Windle, K. A. (1996). Comprehensive interdisciplinary care: Making a difference in pregnancy outcomes for Hispanic women. Public Health Nursing, 13, 416-424.

Pedhazur, E. J., & Schmelkin, L. P. (1991). Measurement, design, and analysis: An integrated approach. Hillsdale, NJ: Lawrence Erlbaum.

Pohl, J. M., & Boyd, C. J. (1993). Ageism within feminism. Image, 25, 199-203.

Rimbach, S., Wallwiener, D., Baier, S., Piotrowski, T., Engel, K., Naher, H., & Bastert, G. (1993). Chlamydia trachomatis: Screening within the scope of prenatal care and rapid diagnosis in threatened premature labor. Zentralblatt fur Gynakologie, 115, 478-482.

Romero, R., Mazor, M., & Wu, Y. K. (1988). Infection in the pathogenesis of preterm labor. Seminars in Perinatology, 12, 262-279.

Schmitt, C., Sobel, J. D., & Meriwether, C. (1992). Bacterial vaginosis: Treatment with clindamycin cream versus oral metronidazole. Obstetrics & Gynecology, 79, 1020-1023.

Shulman, S., Phair, J., & Sommers, H. (1992). The biological and clinical basis for infectious diseases (4th ed.). Philadelphia: Saunders.

Siegel, S., & Castellan, N. J. (1988). Nonparametric statistics for the behavioral sciences (2nd ed.). New York: McGraw-Hill.

Smith, P. B., Philips, L. E., Faro, S., McGill, L., & Wait, R. B. (1988). Predominant sexually transmitted diseases among different age and ethnic groups of indigent sexually active adolescents attending a family planning clinic. Journal of Adolescent Health Care, 9, 291-295.

Szell, A., Tisza, T., & Horvath, A. (1994). A comparative study for detection of chlamydia trachomatis and neisseria gonorrhoeae with DNA probe. Acta Microbiologica et Immunologica Hungarica, 41, 291-293.

Taggart, L., & Mattson, S. (1996). Delay in prenatal care as a result of battering in pregnancy: Cross-cultural implications. Health Care for Women International, 17, (1), 25-34.

Texas Department of Health. (1995). Texas vital statistics 1994 annual report. Austin, TX: Author.

Thomason, J. (1991). Bacterial vaginosis: Current review with indications for asymptomatic therapy. American Journal of Obstetrics & Gynecology, 165, 1210-1215.

Timmreck, T. C. (1994). A introduction to epidemiology. Boston, MA: Jones & Bartlett.



Tong, R. (1989). Feminist thought: A comprehensive introduction. San Francisco: Westview.

Topf, M. (1986). Three estimates of interrater reliability for nominal data. Nursing Research, 35, 253-255.

Verrier, M., Spears, W., Ying, J., & Kerr, G. R. (1994). Patterns of infant mortality in relation to birth weight, gestational and maternal age, parity, and prenatal care in Texas' triethnic population, 1984 through 1986. Texas Medicine, 90 (8), 50-56.

Waltz, C. F., & Strickland, O. L. (1988). Measurement of nursing outcomes (vol.1). New York: Springer.

Wendel, P., & Wendel, G. (1993). Sexually transmitted diseases in pregnancy. Seminars in Perinatology, 17, 443-451.

Whelan, M. (1988). Nursing management of the patient with chlamydia trachomatis infection. Nursing Clinics of North America, 23, 877-883.

White, J. H. (1991). Feminism, eating, and mental health. Advances in Nursing Science, 13, 68-80.

Winter, L., Goldy, S., & Baer, C. (1990). Prevalence and epidemiology correlates of chlamydia trachomatis in rural and urban populations. Sexually Transmitted Diseases, 17, 30-36.

Yllo, K., & Bograd, M. (Eds.). (1988). Feminist perspectives on wife abuse. Newbury Park: Sage.

Youngkin, E. (1995). Sexually transmitted diseases: Current and emerging concerns. Journal of Obstetrics, Gynecology & Neonatal Nursing, 24, 743-758.

Youngkin, E., & Davis, M. (Eds.). (1994). Women's health: A primary care clinical guide. Norwalk, CT: Appleton & Lange.

## APPENDIXES

## APPENDIX A

### Abuse Assessment Screen

**ABUSE ASSESSMENT SCREEN**

NAME \_\_\_\_\_

TODAY'S DATE \_\_\_\_\_

(Circle YES or NO for each question)

1. **IN THE YEAR BEFORE YOU WERE PREGNANT**, were you pushed, shoved, slapped, hit, kicked or otherwise physically hurt by someone?.....YES NO

If YES, by whom (Circle all that apply)

Husband

Ex-husband

Boyfriend

Ex-boyfriend

Total number of times \_\_\_\_\_

2. **SINCE THE PREGNANCY BEGAN** have you been pushed, shoved,

slapped, hit, kicked or otherwise physically hurt by someone?.....YES NO

If YES, by whom (Circle all that apply)

Husband

Ex-husband

Boyfriend

Ex-boyfriend

DATE OF LAST INCIDENT \_\_\_\_\_, SCORE \_\_\_\_\_ (SEE BELOW)

DATE OF WORST INCIDENT \_\_\_\_\_, SCORE \_\_\_\_\_ (SEE BELOW)

→ MARK THE AREA OF INJURY ON THE BODY MAY

SCORE THE TWO INCIDENTS according to the following scale:

1 = Threats of abuse including use of a weapon

2 = Slapping, pushing; no injuries and/or lasting pain

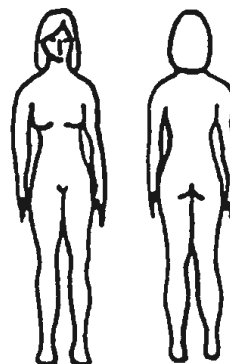
3 = Punching, kicking, bruises, cuts and/or continuing pain

4 = Beating up, severe contusions, burns, broken bones

5 = Head injury, internal injury, permanent injury

6 = Use of weapon: wound from weapon

(If any of the descriptions for the higher number apply, use the higher number)

3. **IN THE YEAR BEFORE YOU WERE PREGNANT**, did anyone force you to have sexual activities?.....YES NO

If YES, by whom (Circle all that apply)

Husband

Ex-husband

Boyfriend

Ex-boyfriend

Total number of times \_\_\_\_\_

4. **SINCE THE PREGNANCY BEGAN**, has anyone forced you to have sexual activities?.....YES NO

If YES, by whom (Circle all that apply)

Husband

Ex-husband

Boyfriend

Ex-boyfriend

Total number of times \_\_\_\_\_

Name of Person Completing Form \_\_\_\_\_

## APPENDIX B

### Agency and University Approvals

Page 1 of 4

Elizabeth A. King

Prevalence of Bacterial Vaginosis and Chlamydia

Trichomatis Among Pregnant Abused Hispanic Women

TEXAS WOMAN'S UNIVERSITY

DENTON DALLAS HOUSTON

HUMAN SUBJECTS REVIEW COMMITTEE - HOUSTON CENTER

Approved by HSRC Chair

M. J. H. H.Date 1/20/98**EXEMPT FROM HSRC REVIEW**

If it is the decision of the research committee (for student research) or the department coordinator (for faculty research) that the proposed research is exempt from expedited or full review by the Human Subjects Review Committee (HSRC), please complete the following form. Three copies of this properly signed form and the appropriate prospectus form must be submitted to the chair of the HSRC. In addition, one copy of all research instruments (ie. questionnaires, interview schedules,) must also be included.

Principal investigator: Elizabeth A. KingTitle of the Research: Prevalence of Bacterial Vaginosis and ChlamydiaTrichomatis Among Pregnant Abused Hispanic Women

1. Give a brief description of the study (use continuation pages or attachments, if necessary). Describe the subjects, i.e., are they adults, institutionalized, minors. Describe the procedure that relates to the subjects' participation, i.e., what will the subjects do or what will be done to them.

This study will be a retrospective chart review of post-partum women after they have been discharged from the hospital

(Continued on attached page....)

2. What are the potential risks to the human subjects involved in this research or investigation (use continuation pages if necessary) ?

There are no risks. Subjects will not be contacted. There will be no linking of patients with identifiers.

3. Is research being conducted for a nonuniversity sponsor? Yes \_\_\_\_\_ No X

Name of sponsor: \_\_\_\_\_

Elizabeth A. King  
Prevalence of Bacterial Vaginosis and Chlamydia  
Trachomatis Among Pregnant Abused Hispanic Women  
Page 2 of 4

Question 1 (Continued....)

The original study entitled: "Preventing Violence During Pregnancy" was approved by the Human Subjects Review Committee in September, 1994, UTHSC Human Subjects approval number HSC-0-95-009, Single Project Assurance number S-12260-01 from the Office for Protection from Research Risk. The proposed study will use data from medical charts of 329 women in the above study plus 658 controls (2 controls for each study subject). Subjects will be Hispanic women over the age of 15. Because over 90% of patients in the original study were Hispanics, only Hispanic women will be used in the proposed study. An aggregate list of the medical record numbers will be given to the hospital Medical Records Department for the purpose of obtaining the charts for review. The names will not be entered into the data base; only the identification number will be entered (see attached tool).



Elizabeth A. King  
 Prevalence of Bacterial Vaginosis and Chlamydia  
 Trachomatis Among Pregnant Abused Hispanic Women

Page 3 of 4

I certify that this research meets the requirements for being exempt from review by the HSRC as specified in the Human Subjects in Research: Institutional Review Board Policies and Procedures (Revised Fall 1994). Three committee members sign for pro-paper or thesis, and all committee members sign for the dissertation research.

Michael J. P. P. P. Chair, research committee. Date 12-15-97  
M. Christine P. P. committee member  
K. P. P. committee member  
 \_\_\_\_\_ committee member

or, in the case of faculty research

\_\_\_\_\_  
 Departmental Administrator Date  
 \_\_\_\_\_  
 Department

HSRC 1996



# CITY OF HOUSTON

**Health and Human Services Department**

8000 N. Stadium Dr. Houston, Texas 77054 713/794-9311

Lee P. Brown, Mayor

CITY COUNCIL MEMBERS: Bruce Lario, Michael J. Vardrough, Martha J. Wang, Jew Don Bone, Jr., Rob Todd, Ray F. Driscoll, Jean Kelley, Felix Fraga, John E. Castillo, Annise D. Parker, Joe Roach, Granda Sanchez, Chris Bell, Carroll G. Robinson. CITY CONTROLLER: Sylvia R. Garcia

M. deVigores-Kendrick, MD, MPH  
Director of Health and Human Services

March 24, 1998

Elizabeth King, MSN, CNS  
6310 Hickory Crest Drive  
Spring, TX 77389

Dear Mrs. King:

Your request to review medical records from the study of Prevention of Violence During Pregnancy with a follow up on Vaginal Infection in Pregnancy has been reviewed by the Committee on Human Subjects.

After consultation with Administration Managers at La Nueva Casa and Magnolia Health Centers, you may proceed to identify those records which fit your profile for the research.

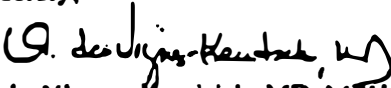
It will be your responsibility to:

- Coordinate all project activities with the Medical Records supervisors.
- Ensure all tasks related to the study are performed by you or an assistant supervised by you.
- Ensure all required paper work is at no cost to the City.
- Protect client confidentiality by removing identifiers before data analysis and/or study publication.
- Time the project work so as not to impede the regular flow of health center activities.
- Provide the Department with a summary of study results at the completion of the project.

Elizabeth King, MSN, CNS  
March 17, 1998  
Page 2

We are pleased to assist you with this study. You may direct any questions or concerns to Dr. Hardikar @ 713/794-9371 or M.T. Di Ferrante @ 713/794-9292.

Sincerely,

  
M. desVignes-Kendrick, MD, MPH  
Director  
Houston Department of Health and Human Services

MdK/MTD:slm

xc: Judy Harris, MBA  
H.S. File

## APPENDIX C

### Vaginal Infection in Pregnancy Record

Elizabeth King Tel: (281) 379 2952

Study I.D. \_\_\_\_\_

**VAGINAL INFECTION IN PREGNANCY  
RECORD**

---

Group \_\_\_\_\_

1. Age \_\_\_\_ years                      2. Gestation at Entry \_\_\_\_ weeks

3. Number of Visits \_\_\_\_

4. Marital Status M\_\_ S\_\_ D\_\_ W\_\_

---

5. Did client c/o symptoms?      Yes \_\_\_\_      No \_\_\_\_

6. Were clinical symptoms of chlamydia present? Yes \_\_\_\_      No \_\_\_\_

7. Chlamydia culture result      Pos \_\_\_\_      Neg \_\_\_\_

8. Bacterial Vaginosis      Yes \_\_\_\_      No \_\_\_\_

9. Medication received

a. for CT \_\_\_\_\_ (name)

b. for BV \_\_\_\_\_ (name)

10. Was partner treated?      Yes \_\_\_\_      No \_\_\_\_

---