Partner Violence during Pregnancy
Psychosocial Factors and Child Outcomes in Nicaragua

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ABSTRACT

The objectives of the thesis was to explore partner violence during pregnancy in Nicaragua – its prevalence and characteristics, how women perceive, understand and cope with it, its association with specific child outcomes such as low birth weight (LBW), small for gestational age (SGA) and preterm birth, and possible pathways. A cross-sectional community-based study was conducted with 478 pregnant women and for a sub-sample of 147 salivary cortisol was measured. A case-referent hospital-based study was organized including 303 mothers immediately after delivery. In-depth interviews were conducted with women survivors to increase understanding of partner violence during pregnancy.

The prevalence of emotional, physical and sexual partner abuse during pregnancy was 32.4%, 13.4% and 6.7% respectively. Seventeen percent of the victims suffered all three types of violence and in two thirds the abuse was severe and repeated. Half of the abused women had experienced punches and kicks directed to the abdomen; however, only 14% had sought health care and very few had disclosed the abuse or contacted police or authorities. Adolescent mothers, unwanted pregnancy and late registration for antenatal care or no check-ups were more likely among victims. The access to social resources facilitated the women’s ability to cope with the abuse, but the pregnancy itself was a barrier to receiving support from family, friends or society. The ability to confront abuse was determined by a complex interplay of factors such as economic independence, severity of abuse, access to social resources, implications for important others (i.e. children), socioeconomic group and a personal ability to cope with social norms.

Low social resources, high levels of emotional distress and attempted suicide were associated with violence during pregnancy. Abuse during pregnancy was also found as an independent risk factor for LBW. Sixteen percent of LBW was attributed to physical abuse by a partner during pregnancy. A significant association between abuse during the index pregnancy and SGA was found.

Partner violence during the pregnancy, low social resources and emotional distress were associated with higher levels of salivary cortisol. Pregnant women with high cortisol values were significantly more likely to give birth to SGA babies. A substantial decrease of birthweight, 142 grams, was estimated to be associated with increases in cortisol due to violence exposure.

Partner violence during pregnancy is a serious social problem that impacts the rights, health and wellbeing of both the woman and her unborn child. The studies call for prioritization of intervention programmes for prevention and detection of violence, treatment and rehabilitation of the victims and the perpetrators, and change of the structural causes producing violence in society.

Key words: abuse during pregnancy, partner violence, pregnant woman, low birth weight, small for gestational age, Nicaragua
GLOSSARY

Bias: Deviation of results or inferences from the truth, or a process leading to such deviation. Any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth.

Case-control study: A study that starts by identifying persons with the event or disease of interest, and subsequently selects suitable controls or reference persons without the event of interest, representing the population which generated the cases.

Confidence Interval (CI): A range of values for a variable of interest constructed so that this range has a specified probability of including the true value of the variable.

Confounding: A situation in which there is a mixing of effects between exposure, the disease and a third factor that is associated with the exposure and independently affects the risk of developing the disease.

Cross-sectional study: A study that examines the prevalence of characteristics as they exist in a defined population at a particular time.

Detection bias: Systematic error arising from the method of ascertainment, diagnosis or verification of cases in an epidemiological survey, study or investigation.

Epidemiology: The study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems.

External validity: A study is externally valid or generalizable if it can produce unbiased inferences regarding a target population.

Incidence rate: The rate of new cases of an event occurring in a defined population in a specified period of time.

Interaction: When two exposures combine to influence the risk of disease. If the effect is enhanced, it is often termed synergy; if it is diminished, it is termed antagonism.

Internal validity: The extent to which a measure, indicator or method of data collection has the quality of being true as far as can be judged.

Multivariate logistic regression analysis: A statistical technique used to determine the joint effect of the explanatory variables on the dependent variable and to determine the effect of one explanatory variable while adjusting for the confounding effects of the remaining factors.

Odds Ratio (OR): The ratio of two odds, with odds defined as the ratio of the probability of occurrence of an event to that of non-occurrence.
Prevalence: The proportion of a population that is affected by the disease or problem under study at a given point in time.

Qualitative methods: Any research that focuses on the quality and unique characteristics of a phenomenon. The results of qualitative data are expressed in nominal form. Qualitative research is characterized by an approach that seeks to describe and analyze the culture and behaviour of humans and their groups from the point of view of those being studied.

Qualitative research interviews: Open-ended and conversational interviews for the purpose of exploring specific themes or phenomena under study.

Quantitative methods: Any research method that results in the data being expressed in numerical form.

Risk factor: An aspect of personal behaviour or lifestyle, an environmental exposure, or inborn or inherited characteristic which, on the basis of epidemiologic evidence, is known to be associated with health-related conditions considered important for prevention.

Selection bias: Bias arising from the manner in which the study subjects were chosen from the entire population that theoretically could be studied.
“at the beginning I didn’t believe it was happening to me…I tried many ways to stop the abuse until I realized that it wasn’t me that could solve it and I started doing nothing that’s how it went, as if I was sleeping, shameful, not wanting to see anyone, not taking care of anything including my child and myself; putting on weight, looking awful, feeling miserable…”

Celeste
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BACKGROUND

Women's rights and violence towards women

Violence against women has shifted over recent decades from being considered a private or family problem to being recognized as a public health concern with serious consequences for the health and wellbeing of the victims (Krantz, 2002). Whenever the violence occurs during pregnancy, its effects go beyond the mother, affecting the child too (Campbell et al., 2004). Above all, violence against women is one of the most prevailing expressions of gender discrimination worldwide, which violates and invalidates women’s human rights and their fundamental freedoms.

For centuries women have occupied a marginal position of subordination in relation to men. Only in 1948, in the Universal Declaration of Human Rights adopted by the General Assembly of the United Nations (UN), did the human rights of all people begin to be recognized regardless of sex (gender), race, colour, language, religion or any other factor. However, despite the “Universal Declaration”, women have continued to be consigned to and discriminated against in their homes as well as in society as a whole.

In the 1970s, '80s and '90s, women of different cultures, religions and geographical areas organized to demand their rights and to improve their living conditions. Women Worldwide Conferences were held in different parts of the world (Mexico 1975, Copenhagen 1980, Nairobi 1985 and Beijing 1995) with the support of the UN organization. Historical milestones were the “Convention on the Elimination of all forms of Discrimination against Women” (CEDAW) approved in 1979 and the “Worldwide Conference of Human Rights in Vienna” along with the recognition of the human rights of women and girls as inalienable, integral and indivisible. All of these efforts have produced substantial advances, world declarations ratified by governments and commitments by those governments to prioritize the situation of women and include them in their national agendas. However, these advances have not been sufficient, nor have they been implemented equally by all countries.

Profound inequities between women and men persist and are commonly expressed in the feminization of poverty, women’s economic dependence, limited possibilities of reaching the locus of power, continued gender violence and limitations in determining their sexual and reproductive lives (UN, 1995).

It is clear in world reports that the rights of millions of women are violated daily, especially in developing countries. The World Health
Organization (WHO) in its Report 2005, “Make every mother and child count”, provides evidence of how a fundamental right, the right to health, is denied to the majority of women in the world. Women’s health includes their emotional, social and physical wellbeing and goes beyond the biological vulnerabilities to be also importantly determined by the sociocultural, political and economic context of their lives. The reproductive process places discriminated women at major risk. For example, each year worldwide there are more than half a million maternal deaths related to pregnancy and birth and more than 4 million perinatal deaths, 97% of them in developing countries (WHO, 2004). Violence against women, as a direct expression of the inequity, discrimination and permanent violation of rights (OEA, 1994), leads during pregnancy to even greater risk of adverse consequences to health, even endangering the life of the mother and/or the child (WHO, 1997).

Definitions

The definitions relating to violence against women are still a subject of debate. Broad-based definitions including “structural violence” such as poverty or unequal access to social resources are very limited and descriptive, and there is a need for research to describe clearly operational definitions with greater cross-cultural applicability.

The UN Declaration on the Elimination of Violence against Women (1993) has defined it as “any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or private life”. This definition includes the gender roots of the concept. Violence against women is associated with women’s condition of subordination in relation to men in society; therefore, it is linked to a web of attitudinal, structural and systemic inequalities that are “gender based” (Canada, 1995). The nature and span of violence against women reflect the pre-existing social, cultural and economic disparities between genders. The relationship between the victim and the perpetrator highlights clear differences of power or the fight to obtain it.

The UN declaration also defines violence against women as encompassing but not limited to three areas: psychological/emotional, physical and sexual. Psychological/emotional violence is defined by acts, or threats of acts, such as shouting, controlling, intimidating, humiliating and threatening the victim. This may include coercive tactics. Physical violence is defined as one or more intentional acts of physical aggression such as (but not limited to) pushing, slapping, throwing, hair pulling, punching, hitting, kicking or burning, perpetrated with the potential to
cause harm, injury or death. Sexual violence is defined as the use of force, coercion or psychological intimidation to force the woman to engage in a sex act against her will, whether or not it is completed.

**Domestic violence** is one of the most common forms of abuse against women. It is the violence perpetrated by persons who have or had a relationship of kinship or affection with the woman, and generally refers to the current or former male intimate partner. **Intimate partners** are the most frequent perpetrators of domestic violence against women (WHO, 1997). This includes current or former partners, legal and common law, non-marital partners such as boyfriends, girlfriends, same-sex partners and dating partners. Intimate partners may or may not be cohabiting. In this condition, the woman is often emotionally involved with and/or is economically dependent on the aggressor, which affects the dynamic of the abuse and places the woman in a position of disadvantage in being able to deal with the violent situation.

**Partner violence during pregnancy** is defined as the physical, sexual or psychological/emotional violence, or threats of physical or sexual violence, that are inflicted on a pregnant woman. Some authors use the term “violence occurring around the time of pregnancy” to include pre-pregnancy, the pregnancy and the immediate post-pregnancy period, or any combination of these (Saltzman *et al*., 2003).

### Domestic violence against women

#### Extent of domestic violence against women

Domestic violence against women is a major worldwide epidemic which has been found in practically all societies (Levinson, 1989). It affects women in many different social contexts and happens regardless of age, socioeconomic status, race, ethnicity, religion, education, occupation, sexual orientation or personality (Heise *et al*., 1999). It is, in general, part of a common pattern of conduct of domain and control over the woman more than outlying acts (Heise *et al*., 1999).

Approximately one in three women in the world have been beaten, coerced into sex or abused in some other way (Heise *et al*., 1999). In 48 population-based surveys carried out in different countries, between 10% and 69% of women reported physical assaults by an intimate male partner at some point in their lives (Krug *et al*., 2002).

The US Bureau of Justice Statistics reported in 2000 that women were victims of intimate partner violence at a rate of about five times that of males, and that domestic violence was most frequent among women aged 16 to 24 and among poorer women (Rennison, 2000).
In a study based on data from the Demographic and Health Surveys (DHS) conducted mostly after 1998 in nine developing countries, at least one incident of abuse by an intimate partner was reported by 48% of women in Zambia, 44% of women in Colombia, 19% in India and 8% in Cambodia (Kishor & Johnson, 2004). A comparable Commonwealth Fund study recorded a figure of 31% the United States (Mitchell, 2004).

Studies in Nicaragua have reported a lifetime prevalence of physical partner violence against women ranging from 28% to 52% (Ellsberg et al., 2001). The highest lifetime prevalence (52%) was from a cross-sectional community-based study on domestic violence conducted in León, Nicaragua's second largest city; 31% of the victims in the study also reported being beaten during previous pregnancies and 49% stated that their children were present during the aggressions (Ellsberg et al., 1999a). The lowest prevalence (28%) was based on data from the national Demographic and Health Survey (DHS), which included a section on Domestic Violence within a large instrument. Further, the selection and training of field workers was a serious issue due to the size of the national study, making it difficult to ensure the quality of the interviews and the validity of the results (Ellsberg et al., 2001).

Causes of domestic violence against women

The causes of domestic violence have been the subject of intense debate and have been addressed from different theoretical frameworks offering divergent explanations of the roots of violence. Among the most common have been theories focusing on personality, behaviour or psychopathological disorders that predispose individuals to violence; social learning theory holding that aggressive men learned violence in their families as children; and sociocultural theories viewing violence as a consequence of the global social structure. Relevant among the former has been the resource theory and the theory explaining violence by the gender inequities within a patriarchal model in society (Cunningham et al., 1998).

Above all, the structural and systemic gender inequities in society are at present considered the foundation for any theory of violence against women (Heise, 1998). Beside that, it is recognized that there is no single factor that can explain why some individuals behave violently and others do not, or why violence is more prevalent in some societies than others (Heise, 1998; Krug et al., 2002).

Violence against women is currently considered worldwide a multifactorial problem requiring a multifaceted explanation. During the 1970s and ‘80s, an “Ecological Conceptual Model” was applied for the
understanding of child abuse (Belsky, 1980; Garbarino & Crouter, 1978). In the late 90s, researchers applied this model to enhance the understanding of the multidimensional nature of intimate partner violence (Heise, 1998). The model describes the interaction of factors influencing behaviour leading to violence at four different levels represented by concentric circles, from inside to outside the individual, the family, the community and society. The individual level includes biological or personal aspects that could influence the behaviour of individuals, increasing the possibility of committing aggression against others or to be victims of aggression. The family level refers to explanatory factors of abuse within the proximal social relationships of the women, i.e. the relationship with the intimate partner and family members. The community level represents probable causal factors of abuse in the community context in which the social relations of the women take place (the school, workplace or neighbourhood); and finally the societal level refers to probable causal factors related to the social structure, laws, policies, cultural norms and attitudes that reinforce violence against women in society.

The ecological model integrates all the previous explanations of violence given by different theoretical disciplines, though within a frame of a multidimensional explanation of the problem. The model is coherent with the recognition of violence as a multifaceted problem that requires responses at different levels. It facilitates the understanding of the complex dynamic of violence but also the assessment of the problem, as each level in the model can be a platform for the development of intervention strategies for prevention and treatment.

**Impact of partner violence against women**

The consequences of partner abuse are devastating, impacting all the spheres of the women’s lives, their self-esteem, productivity, autonomy, capacity to care for themselves and their children, their health and wellbeing, ability to participate socially and quality of life (García-Moreno, 1999). Moreover, the effects of violence go beyond the women to impact the children, the family and the community. One of the most insidious consequences of domestic violence is that it perpetuates the violence within the family as well as in society.

Partner violence increases women’s risk of a wide range of negative health outcomes and even death. It has been linked to short and long-term health problems and the impact appears to be cumulative (Felitti et al., 1998; Koss et al., 1991). The WHO World Report of Violence and Health (2002) summarized in four groups conditions suggested by international research to be health effects of partner violence: physical,
sexual/reproductive, psychological-behavioural, and fatal health consequences.

Partner violence can lead to direct consequences of the violent act, such as trauma, or indirect consequences such as increased risk of negative behaviour, including alcohol or drug abuse, eating and sleep disorders, or future ill health. Lacerations, abrasions, bruises, welts, fractures and abdominal thoracic injuries has been cited among the physical consequences of partner violence; and pregnancy complications, STDs including HIV/AIDS, abortions, miscarriages, sexual dysfunctions and other gynaecological disorders has been evidenced among the sexual and reproductive consequences (Krug et al., 2000). Partner violence also limits the woman’s right to reproductive decisions. The sexual coercion or male control affects the woman’s choice regarding conception, frequently leading to unplanned or unwanted pregnancies.

Partner abuse against women is probably the most prevalent and emblematic gender-based cause of stress and mental distress in women. It has been associated with feelings of shame and guilt, and poor self-esteem. Violence, as pointed out by the WHO Women’s Mental Health Report in 2000, includes the three important features identified in social theories of depression – humiliation, inferior social ranking and subordination, and blocked escape or entrapment (WHO, 2000). Partner violence has been linked to female suicide: one study states that it may be its single greatest precipitant yet identified (Heise et al., 1994).

Post-traumatic stress disorder (PTSD) has also been related to abuse against women, and has been suggested by some authors as a frame to organize the mental health alterations of female victims of violence (Browne, 1993). Among fatal consequences of violence described by the WHO report, suicides, homicides, maternal mortality and AIDS-related death have been cited (Krug et al., 2000).

Partner violence against women during pregnancy

Internationally, there is an increasing number of studies on violence against women during pregnancy. However, it is even difficult to elucidate the nature and the full scope of the complex relationship between abuse and pregnancy (Jasinski, 2004).
Prevalence, characteristics and factors related to partner violence during pregnancy

Worldwide, prevalence rates of partner violence during pregnancy have been reported as ranging from 0.9% to 31.7% (Bash & Jones, 1994; Campbell et al., 2004; El-Zanaty et al., 1996; Jasinski, 2004; McFarlane et al., 1992; Sampselle et al., 1992; Stewart & Cecutti, 1993).

In 1996 in a literature review that included 13 studies conducted between 1985 and 1995, Gazmararian and colleagues reported a prevalence ranging from 0.9% to 20.1% (Gazmararian et al., 1996). A latest review of investigations conducted in North America (1996-2003) remained within these ranges (Jasinski, 2004). In contrast, Campbell and colleagues found prevalences ranging from 3.4 to 11.0% in industrialized countries outside North America and from 3.8 to 31.7% in developing countries (Campbell et al., 2004).

The majority of studies carried out with pregnant women have been clinical or hospital based (Helton et al., 1987; Schei et al., 1991; Widding Hedin, 1999); in contrast, most population-based studies have not focused on pregnant women. Other studies carried out with women of childbearing age reported retrospective information on violence in past pregnancies (Cokkinides et al., 1999; Deyessa et al., 1998).

There is still debate on the explanation of the wide rates of prevalence reported. It has been attributed either to the use of diverse terminologies and instruments detecting violence or to different methodologies used in the studies, such as the type or size of study populations and the time of contact in relation to pregnancy (Campbell et al., 2004; Petersen et al., 1997). To date, such methodological differences between studies have hampered comparability.

Coherent evidence exists showing that a history of abuse is a strong predictor of further abuse during pregnancy (Campbell, 1995; Glander et al., 1998). However, it is not possible to conclude whether pregnancy itself is a trigger of violence. Studies have suggested that pregnancy may be a time when abuse starts or escalates (Berenson et al., 1991; Campbell et al., 1992; Stewart & Cecutti, 1993; Webster et al., 1994), but most have included only the pregnant population and were not designed primarily to answer that question. In contrast, some studies of both the pregnant and non-pregnant population have found no differences in the risk of violence relating to being pregnant or not being pregnant (Gelles, 1988; Jasinski & Kantor, 2001; Kantor et al., 1994). Jasinki and Kantor attributed the apparent increased risk of violence during pregnancy to the relative young age of women becoming pregnant. A few more studies have reported a decrease in violence during the period of pregnancy compared to prior to pregnancy (CDC, 1999). The question thus
remains to be answered through the use of a more appropriate methodological design, as well as examining possible cultural differences that could lie behind these variations observed.

Jasinski and colleagues in their literature review on pregnancy-related violence summarized a series of characteristics of the mother or the pregnancy as consistent risk factors for violence in pregnancy. These were low socioeconomic status, low level of social support, first-time parenting, unexpected or unwanted pregnancy, race/ethnicity, adolescent pregnancy and alcohol use (Jasinski, 2004).

Abuse during pregnancy is significantly more frequent among teens than among adult pregnant women (Hedin et al., 1999; Parker et al., 1994; Stewart & Cecutti, 1993).

Low social support (Gazmararian et al., 1995; Goodwin et al., 2000) and low socioeconomic status (Glander et al., 1998) have been suggested as probable important factors associated with violence during pregnancy. Both have also been linked to increased stress, which assigns the couple to the highest risk group for violence as well as to an increased risk of health consequences from abuse. The pregnancy itself could be a stressor in the couple’s life, altering the family concord and stability and leading to increased violence (Jasinski, 2004). Studies have shown that being a first-time parent or having an unexpected or unwanted pregnancy are associated with increased stress as well as violence (Cokkinides et al., 1999; Goodwin et al., 2000; Jasinski & Kantor, 2001).

As shown in the above evidence, many aspects of the relationship between violence and pregnancy are not yet clear and await examination in greater depth in future investigations.

**The effects of partner violence during pregnancy on the health of the pregnant woman and her unborn child**

Partner violence during pregnancy is likely to inflict severe physical and psychological harm on the woman and her child.

Violence during pregnancy has been associated with a high risk of sustaining serious trauma. Pregnant victims are likely to be hit in areas such as the abdomen, breast or genitalia. The direct trauma can provoke general injuries such as fractures and result in injuries to the pregnant uterus such as placental damage, placental abruption, rupture of the uterus or membranes and foetal trauma (Connolly et al., 1997; Parker et al., 1994).

Violence has been also related to the production of adverse effects through indirect mechanisms such as the increase of stress and anxiety (Curry & Harvey, 1988) or more frequent negative behaviours among the victims.
such as smoking and substance abuse (Amaro et al., 1990; Campbell et al., 1992; Grimstad et al., 1998; Parker et al., 1994).

Unwanted and unintended pregnancy (Gazmararian et al., 1995), short inter-pregnancy interval, poor obstetric history, and poor pregnancy weight gained (Parker et al., 1994) have been also linked to violence, the strongest relationship being found among battered pregnant teenagers (Berenson et al., 1997).

According to international research, partner violence in pregnancy has been associated with delayed entrance into prenatal care, a circumstance linked to adverse maternal and foetal outcomes (Dietz et al., 1997; Gazmararian et al., 1995; Goodwin et al., 2000; McFarlane et al., 1992; Parker et al., 1994). Dietz et al., in a population-based survey including 27,836 women, found that women who had experienced physical violence were 1.8 times more likely to delay entry into prenatal care compared to women who had not been physically abused, while McFarlane et al. reported a figure of twice as likely (Dietz et al., 1997; McFarlane et al., 1992).

Physical abuse during pregnancy has been linked to vaginal or cervical infections (Curry & Harvey, 1988; Granja et al., 2002; Parker et al., 1994), especially in relation to forced sex, haemorrhage during the second or third trimester (Curry & Harvey, 1988; Janssen et al., 2003), miscarriage and abortion (Jacoby et al., 1999).

A study in 2002 reported a three-fold increase in the risk of attempted/completed femicide among victims of violence during pregnancy (McFarlane et al., 2002). The same year a publication from Mozambique reported that violence was found as the fourth highest cause of maternal death at Maputo Central Hospital (Granja et al., 2002). A report from Maharashtra in India, included in a literature review, showed that 16% of maternal mortality in the community and 13% in hospitals were due to non-medical causes, primarily related to domestic violence (Campbell et al., 2004)

Several studies have been carried out to assess the effects of partner abuse during pregnancy on the unborn child. The results of these studies have not been concordant, which has been attributed to problems of design, sample size, definition of cases, detection bias and control of confounding (Jasinski, 2004).

One of the most studied child outcomes of pregnancy related violence has been low birth weight, which is considered among the most important risk factors for infant morbidity and mortality (McCormick, 1985). Authors have reported that partner violence in pregnancy is associated with a decreased mean birth weight (Schei et al., 1991) or LBW (Bullock & McFarlane, 1989; Campbell et al., 1999; Curry & Harvey, 1988; Fernandez & Krueger, 1999). In a meta-analysis of 14 studies, published in
2001, the authors concluded that female victims of emotional, physical or sexual abuse during pregnancy were more likely to give birth to a LBW baby compared to non-victims (Murphy et al., 2001). Jansen and colleagues reported the association with LBW but for physical abuse (Janssen et al., 2003). In contrast, some studies have found no association between partner abuse and LBW (Berenson et al., 1994; Cokkinides et al., 1999; Grimstad et al., 1997; Jagoe et al., 2000).

The relationship between partner abuse and preterm birth has also produced contradictory findings. While some studies report that compared to non-abused women abused pregnant women have a greater risk of preterm birth, ranging from 2 to 5 times higher (Berenson et al., 1994; Shumway et al., 1999), other studies have not found any association (Cokkinides et al., 1999; Grimstad et al., 1997).

Theoretically, direct trauma to the abdomen as well as genital infections (due to forced sex) could lead to a release of arachidonic acid, the main precursor of prostaglandins responsible for uterine contractions and preterm labour (Gayton & Hall, 1996). In animal experiments it has been demonstrated that a situation of stress can activate the HPA axis and immune axis and a complex interaction between ACTH, cortisol, prostaglandin and oxytocin, implicated in the initiation of preterm labour (Istvan, 1986). The vasoconstriction produced by the sympathetic adrenal pituitary activation may also decrease the uteroplacental perfusion leading to hypoxia, growth restriction and LBW (Shepherd et al., 1992). Stress has also been linked to immunosuppressive effects that increase susceptibility to infections (Jemmott & Locke, 1984) and may therefore be a risk factor for preterm birth.

Among the damaging effects of direct trauma, miscarriage and foetal death have been cited. In a study of low income adolescents aged 13-21 at a semi-urban health care centre, Jacoby and colleagues reported that those who experienced some form of abuse during the study interval (12 months) were more likely to miscarry compared to those who had not been abused (Jacoby et al., 1999). Another study described a relationship between violence during pregnancy and placental abruption and foetal death (Bohn, 1990). A review of 476 records of pregnant patients with trauma treated in a tertiary care centre in North America found that in 22% of the patients the trauma was result of domestic violence, 14 suffered a perinatal death related to the trauma and in four it was secondary to domestic violence (Connolly et al., 1997).
Public health assessment of violence against women from a gender perspective

Violence against women has been recognized as a serious public health problem in the way that it affects vulnerable populations (by causing physical or psychological harm, injuries, disability or death), health services (by increasing demands requiring additional resources and therefore increasing costs) and communities (by its extent and consequences). International health-related organizations have recommended an approach with a public health perspective, incorporating an epidemiological method that allows assessment of the distribution of the problem, determinant factors, the interrelation between biological, social, cultural, economic and political aspects and identification of the mechanism for surveillance, intervention and control (Krug et al., 2002). The public health approach does not solely employ epidemiology: it is a multidisciplinary strategy that may include other professional competences such as psychology, sociology, criminology and economics (Mercy et al., 1993; OMS, 2002; OPS, 2002).

The assessment of violence against women should be multidisciplinary and intersectorial, structured from a gender perspective that allows us to visualize the gender differences in the behaviour of the phenomenon and the factors contributing to it. It should also include a risk assessment that make possible to know the probability or susceptibility of a person, family, community or society to suffer from violence and be able to develop intervention strategies according to specific needs. It is within the risk assessment and the development of interventions that the “Ecological Model” explained above has its application.

Rationale of the studies

Research on pregnancy-related violence has been at the stage of description, and an increasing number of studies have been published on the prevalence, characteristics and associated factors. The majority have been carried out in developed countries and in clinical settings or with a general population of women asked about abuse during past pregnancies. Published research results have not always been congruent; however, serious health effects for the mother and her child has been evidenced.

Few approaches have attempted to assess the relationship between violence and pregnancy in depth. There is certainly a need for more detailed research of abuse during pregnancy internationally, but most of all in developing countries. In Nicaragua, despite high reported rates of
lifetime prevalence of violence against women and the increased attention it has received during the last decades, there is a lack of approaches assessing violence specifically during pregnancy. In order to be able to design appropriate interventions, it is vital to increase our knowledge and understanding of pregnancy-related violence and its effects as well as the mechanism by which violence during pregnancy impacts both the woman and her infant.

In order to ensure the validity of our results, a challenge for us was to approach this frequent and adverse social factor using a prospective community-based design including a pregnant population, the use of a standardized validated instrument to detect violence, and field workers trained in how to create the conditions for respondents to open up about experiences of violence. The studies contribute to the general knowledge by presenting representative figures on the prevalence and characteristics of abuse among pregnant women and showing the neuroendocrine response to stress as part of the mechanism linking abuse to adverse child outcomes. A qualitative approach was also used in an attempt to improve the understanding of violence during pregnancy, how women perceive it and how they cope with it.
AIMS OF THE STUDIES

Overall aim
The overall aim of this research was to study the extent of partner violence, emotional distress and availability of social resources during pregnancy in Nicaragua and the related child outcomes.

Specific aims
☐ To estimate the prevalence and characteristics of partner violence during pregnancy in Nicaragua (Paper I)
☐ To assess physical partner abuse during pregnancy as a risk factor for Low Birth Weight (Paper II)
☐ To explore the experiences of women survivors of abuse during pregnancy, including perceptions, understanding and coping (Paper III)
☐ To examine the neuroendocrine response related to stress (by salivary cortisol) as a probable pathway mechanism between abuse during pregnancy and adverse child outcomes (Paper IV)
SUBJECTS AND METHODS

Study area

Nicaragua is situated in the centre of Central America and has an area of 130,244 sq. km. It shares borders with Honduras in the north and Costa Rica in the south, with extensive Pacific and Caribbean coastlines. The estimated population in 2003 was 5.5 million, 57% of them living in urban areas form which two thirds are concentrated in the Pacific Cities. Overall life expectancy at birth is 69 years, but is almost ten years lower in rural areas. The population is doubling every 25 years. The unemployment rate is 59% and half of the population is under 18 years of age. The total fertility rate was 3.7 in 2001, compared to the desired fertility rate of 2.4. Nearly 28% of pregnant women do not receive antenatal care and 39% of deliveries occur without a skilled birth attendant. Low birth weight is recorded in 12% of newborns, and 24% of children under five are stunted (INEC, 2002; PAHO, 2003).

Using an Unsatisfied Basic Need Assessment, four out of ten households live in overcrowded conditions. Almost 75% percent of Nicaraguan households had one or more unmet basic need, and 44% live in conditions of extreme poverty. Nicaragua is the second poorest and the most indebted country in Latin America (INEC, 2002).

Nicaragua is facing the 21st century at a difficult crisis point, with strong socioeconomic deterioration within the framework of neo-liberal policies, in an attempt to become part of the global economy. This has generated some positive macroeconomic signs, but has nevertheless resulted in a strong negative balance in social terms. During the last two decades, levels of poverty and unemployment have increased as the gap between rich and poor has widened (Mangas et al., 2001).

Study setting

The studies were conducted in the municipality of León. It has an estimated population of 250,000, 80% of whom live in the urban area. León City is the second largest city in the country, located 90 kilometres northwest of the capital. It is also the home of the country’s first university, founded in 1812 (INEC, 2002).

The municipality of León is, since the mid-1990s, one of the regions with the highest levels of poverty and unemployment figures in the country (Renzi & Agurto, 1997). For many years the regional economy was based on non-diversified agricultural production (cotton), which collapsed without alternatives. In addition, natural disasters and a more disastrous management of local and national government have exacerbated the situation.
Health services are provided at primary level in health centres and health posts and at secondary level at the University Regional Hospital HEODRA, the León University teaching hospital. According to official figures, approximately 60% of pregnant women in the area give birth at the hospital, which performs about 6000 deliveries per year (MINSA, 2003).

Local statistics from the Ministry of Health reported that 83% percent of pregnant women in the area are covered by antenatal care, the majority of urban women (85%) give birth in hospital or at health facilities compared to 50% of rural women (MINSA, 2003).

**General design**

The studies that make up this thesis were conducted within the frame of the Reproductive and Child Health Project (RCHP), a bilateral collaboration between Umeå University in Sweden and the National Autonomous University of León in Nicaragua.

The thesis employed a combination of quantitative and qualitative approaches as complementary methodologies in an attempt to assess the multiple dimensions of the problem under study.

**Table 1. Characteristics of the papers on which the thesis is based**

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Problem analysed</th>
<th>Study design</th>
<th>Study population</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Extent and characteristics of partner violence during pregnancy</td>
<td>Cross-sectional community-based study</td>
<td>478 pregnant women Interviewed twice during pregnancy</td>
</tr>
<tr>
<td>II</td>
<td>Physical abuse during pregnancy as a risk factor for LBW</td>
<td>Incident case-referent hospital-based study</td>
<td>101 cases 202 referents</td>
</tr>
<tr>
<td>III</td>
<td>How survivors of abuse during pregnancy experience and cope</td>
<td>Qualitative In-depth interview study</td>
<td>7 women in the year after delivery</td>
</tr>
<tr>
<td>IV</td>
<td>Neuroendocrine response to stress related to violence during pregnancy as a probable mechanism linking abuse with child outcomes</td>
<td>Cross-sectional community-based study</td>
<td>147 pregnant women</td>
</tr>
</tbody>
</table>
Study population and sampling

The cross-sectional community-based study (Papers I and IV)

The study was based on a Health and Demographic Surveillance System (HDSS) in place since 2002, including approximately 22% of the total population (10,871 households with a total of 54,065 inhabitants in 50 clusters from urban and rural areas) selected using a population-proportional random cluster sampling technique.

A sample of 483 pregnant women was identified from November 2002 to January 2004 by adding to the instrument of the surveillance system the question whether there was a pregnant or suspected pregnant woman in the household. One woman declined to participate, two were not pregnant and in two households there were two pregnant women. In this last case, due to the sensitivity of the issue, only one woman was interviewed in each of the two households, the younger pregnant woman in one and the older in the other. Overall, a total of 478 eligible pregnant women were included in the study.

Figure 1. Map of urban and rural areas with the selected clusters

For the biological quantification of cortisol, by the end of the recruitment of subjects into the survey, saliva samples were taken consecutively from 147 pregnant women.
Subjects and methods

The incident case-referent study (Paper II)

The study was conducted from July to October 1996 at León University Hospital. Cases were defined as newborns with a birth weight less than 2500 grams, and referents were newborns with a birth weight of 2500 grams or over. Based on an estimated exposure to violence in pregnancy of 15% of referents (Ellsberg et al., 2000), an estimated OR of 2.5, with 95% CI and 80% power, a sample of 90 cases and 180 controls was calculated, and 101 and 202 respectively were included in the study. Two referents were randomly selected for each case. No matching was carried out. Multiple births and stillbirths were excluded.

Gestational age at birth was assessed by the Capurro method (Capurro et al., 1978), which produced good k agreement (0.80) when correlated with the gestational age calculated from the date of the last menstrual period in those available. Low birth weight was defined as a birth weight below 2500 grams, and preterm birth as gestational age less than 37 completed weeks (WHO, 1995). Intrauterine growth was evaluated against reference curves that combined information on gestational age and birth weight (in grams). Newborns below the tenth percentile of the curves were considered Small for Gestational Age (SGA). Based on the ponderal index \( \frac{(100 \times \text{birth weight})}{(\text{crown-heel length}^3)} \), SGA babies were classified with ‘Acute Growth Restriction’ below the tenth percentile and ‘Chronic Growth Restriction’ at or over the tenth percentile (WHO, 1995).

The qualitative/in-depth interview study (Paper III)

To enhance our understanding of the complexity of pregnancy-related violence, individual semi-structured interviews were held by the year 2003 with seven women within 3 and 12 months of childbirth, from June to December 2003. The participants were victims of partner physical abuse during their previous pregnancy and were identified as possible respondents for recruitment for the in-depth interviews while pregnant, visiting hospital, in women’s “commissaries” at the police station or through community surveillance.

Methods

The cross-sectional community-based study (Papers I and IV)

Once a pregnant women was registered by community surveillance, the pregnancy confirmed and the woman had given her consent to participate, the first visit was made using the full questionnaire developed for the study including the scales to detect violence, social resources and
maternal stress, and the questions on socioeconomic status, general and reproductive health.

Subsequently, a second visit was conducted at the end of the pregnancy, on average in the 36th week, to enhance the disclosure of violence and as a follow-up of maternal and perinatal complications and outcomes. By that visit 49% of women had already delivered; for those still pregnant the perinatal outcomes were excerpted from the medical registers of the health facilities.

For the cortisol study, two saliva samples were collected per woman the same day by the same technically trained field worker, the first sample between 7 and 8 a.m. and the second between 2 and 3 p.m. The Salimetric HS-Cortisol Kit, Elisa Immunoassay (product no. 1-1102; Salimetrics LLC) was used (Raff et al., 2003). The tests were performed by a private laboratory in León City, with 30% of the sample randomly selected to be performed by the laboratory of the Microbiology Department of León University. The kit was used by the two laboratories as instructed, without modification.

**The incident case-referent study (Paper II)**

The cases were detected daily in the delivery ward. Two referents were randomly selected per case among the mothers delivering a baby with normal birth weight the same day that the case was born. The interviews were conducted in a private room within the ward for puerperal women. Two trained and standardized female field workers conducted the interviews 8–24 hours after delivery.

**The qualitative/in-depth interview study (Paper III)**

All interviews were conducted in a private setting by the main researcher trained in qualitative methodology. After each interview, it was read and analysed several times, and based on this, what, how and whom to approach in the next interview was decided. Thus, the women were strategically and successively chosen with regard to the emerging theoretical model.

**Quality control**

**The cross-sectional community-based study (Papers I and IV)**

Three female interviewers collected the data. Participatory training techniques as well as the manual developed by the WHO for the training of field workers were followed. The interviewers piloted the instrument and standardization between them was carried out. All forms were reviewed by field supervisors and inspected by the principal investigator. When
missing data or inconsistencies were found, forms were returned to the field for correction. Random control interviews were performed. One trained data clerk entered and cleaned the data. Data were stored and logical validation checks were constructed in Access 2000 databases.

Efforts were made to identify all pregnant women in the study area during the study period. Pregnant women could be more likely to protect an aggressor who is the father of her child. Therefore, in order to increase the disclosure of violence and minimize underreporting, a validated instrument, the WHO questionnaire for the multicountry study on women’s health and life events, was used. Two interviews were conducted in private and the field workers were trained to create an atmosphere of empathy and confidence within a secure environment. The reported prevalence of violence increased threefold during the second visit.

The cortisol samples were taken by the same trained field worker. The procedure was explained to the women and the samples were conveyed to the laboratory on the day of collection in a special thermos to avoid extreme changes of temperature. Statistically significant numbers of controls were assayed within the two laboratories in order to establish their own mean values and ranges to assure proper performance. Correlating results from Lab1 and Lab2, 87% of the values were in the range of ± 2 SD.

**The incident hospital-based case-referent study (Paper II)**

The field workers were trained in different aspects of gender and violence against women as well as in important issues when researching these
topics. The instrument was piloted and standardization between interviewers was carried out. The same interviewer interviewed a triplet of one case and two referents. Ten percent of the study sample were reinterviewed by the other interviewer, who was blinded for case or referent classification. The kappa agreement between both interviewers for the detection of violence was very good (κ 0.86).

The Abuse Assessment Screen was used as validated and well-known scale to increase not only the detection but also the comparability of the results. The hospital where cases and referents were recruited is the only hospital in the county and the most important in the region, with most women in the area delivering at this facility.

**The qualitative/in-depth interview study (Paper III)**

The semistructured interview guide was piloted in the field and discussed amongst the research team. The interviews were conducted in a private environment created primarily to ensure security and confidentiality but also to avoid interruptions. The interviews were tape-recorded, transcribed in the original language, read and listened to several times. Detailed observation notes were taken. The data collection was stopped when all information relating to the emerging theory had been gathered. The informants were from different social and demographic backgrounds. Finally, preliminary results and the emergent model were presented and their interpretation discussed in focus groups including researchers, some of the informants and other women survivors of abuse during pregnancy.

**Analysis**

**The cross-sectional community-based study (Papers I and IV)**

The prevalence of the different types of violence as well as the characteristics of the abuse during pregnancy were analysed. Chi squares with their respective P values were calculated at a bivariate level, followed by the construction of a multivariate model which included potential confounding or explanatory variables.

For the analysis of the cortisol results, means and standard deviations of the morning and afternoon values were calculated. Subsequently, unstandardized residuals of salivary cortisol were calculated by linear regression analysis including a.m. and p.m. salivary cortisol and gestational week at sampling in order to adjust for the former, and were used for further analysis. As the afternoon cortisol values showed the strongest association with both abuse in pregnancy and reduction of the child’s weight, it was used for the analysis. Student’s t-tests were
calculated to examine the relationship of the explanatory variables with the outcome variables. Finally, based on the theoretical explanations and the findings of the linear regressions and \( t \)-tests, a hypothetical “Path Model” was constructed to approach the predictive values of the different pathways through which abuse during pregnancy can affect the child’s weight at birth.

**The incident hospital-based case-referent study (Paper II)**

Crude ORs with 95% CIs were calculated at a bivariate level for the different background factors found to be associated with LBW, focused on physical partner violence during pregnancy and followed by a multivariate logistic regression analysis including factors considered to be confounders. The population attributable proportion \( \left( \frac{\text{OR} - 1}{\text{OR}} \right) \) was also calculated for the main risk factors associated with LBW.

**The qualitative/in-depth interview study (Paper III)**

Interviews were listened to and read several times and were transcribed in the original language.

“Grounded Theory” was used for the analysis. Open codes were assigned grounded in the data. This was followed by the development of selective codes, some of which were developed into categories and later used as dimensions of the process in the emergent model. Findings were discussed in the light of existing theories, mainly within the field of symbolic interactionism.

In order to enhance their interpretation, the results and the emergent model were discussed and negotiated between the research team as well as with some of the interviewees and other women survivors of abuse during pregnancy.

**Ethical considerations**

Permission to undertake the studies was obtained from the ethical committees of both participating universities as well as from local or community authorities.

Information on the studies was given to the women participants, including purposes and procedures, potential risk and benefits. It was explained that participation was voluntary and that confidential and private information would be protected. Informed consent was obtained from each woman participant.

The “Guidelines for Research on Human Subjects” and subsequently the “WHO Ethical and Safety Recommendations for Domestic Violence
Subjects and methods

Research” were discussed among the researchers and field workers and carefully followed during the research process.

The field workers in all the studies were women carefully selected to make the participants feel more confident about disclosing violence. They were trained in how to interview women with sensitivity, empathy and without expressing judgment in order to avoid re-victimization of the victims. Participatory techniques were firstly used to introduce interviewers to the concepts of gender and violence against women. Psychological on-going support was also made available to both interviewees and interviewers during the research process.

Interviews in all the studies were carried out only when privacy was ensured, as both the respondent and the researcher could be at risk from an aggressive partner – knowing that the woman was being interviewed or was talking about family matters could be a reason for violent behaviour. In all the studies, a private environment was created for interviewing the informant and alternative topics were prepared in case someone arrived at the place of interview.

For the community survey, visits were announced in the household as following the health of the pregnant woman, and the issue of violence was introduced only to the respondent, to obtain her informed consent. The standard manual created by the WHO for the Multi-Country Study on Women’s Health and Life Events was used for the training of the field workers. To avoid anyone else in the house knowing the topic of the interview, only one pregnant woman was interviewed per household.

In order to protect the confidentiality of the information, names or ID were not included in written questionnaires or on the tapes and these were handled carefully. Identification of an informant was only possible through numerical codes, one assigned to the household and one to the respondent.

In all the studies, a network was organized to offer medical, psychological, legal and material support to the participants. In the community survey, collaboration with the antenatal care programme at the primary health care centres in the municipality was developed for the reference of pregnant women who were not receiving this service. In parallel, other alternatives for psychological, medical and legal support were also made available to the participants and when a pregnant woman was found with some medical emergency, the field workers were provided with resources to bring them to the obstetric emergency unit at the hospital. A clinical psychologist was recruited for individual counselling of those who had attempted suicide during their current pregnancy. After two visits to the woman’s home, the psychologist enrolled those who required further treatment and wished to do so into a
programme at the Centre for Psychological Attention in León. During the research process, the field workers were also subject to a systematic session of peer debriefing and were provided with psychological support.

**Instruments used**

**Instruments used to detect violence**

1) Section on violence of the WHO questionnaire on Women’s Health and Life Events

(Cross-sectional community-based study – Papers I and IV)

Intimate partner violence in this instrument includes questions measuring all dimensions of partner violence (emotional, physical and sexual), injuries, gender identities and controlling behaviours by a current or former partner, whether cohabiting or not. The approach to physical violence in the WHO questionnaire was built on the revised Conflict Tactic Scale (CTS2) (Strauss et al., 1996), which assesses specific behavioural acts of aggression. However, it has some differences as the questions of violence are introduced as part of women’s life experiences rather than only in the context of conflicts, which was a criticism of the CTS; it also includes questions to provide context on the violent acts (García-Moreno et al., 2002).

2) Abuse Assessment Screen (AAS)

(Incident case-referent hospital-based study – Paper II)

This is an instrument designed by the US Nursing Research Consortium on Violence. It consists of questions to determine the frequency, severity, perpetrator and body site of injury that occur within a stated period of time. It was developed for use with both pregnant and non-pregnant women and was validated, showing it to be effective in detection of abuse compared to the Conflict Tactic Scale (CTS), the Index of Spouse Abuse (ISA) and the Danger Scale (DS). It has been recommended for clinical approaches that require a more straightforward and direct assessment (Soeken et al., 1991b).

3) Measurement of socioeconomic status

The Unsatisfied Basic Need Assessment (UBNA) was used to assess socioeconomic status (Pena et al., 2000; Renzi & Agurto, 1997). In Paper II, this instrument included four indicators: school enrolment of minors, housing conditions, availability of sanitary services and household income. If these indicators were not fulfilled, a value of 1 was
assigned; if they were fulfilled, a value of 0 was given. Subsequently, the scores were summarized for a possible total of 4, with a score of 2-4 considered as living in poverty.

For papers I and IV, the indicator “economic dependency” was used instead of “household income”. Economic dependency was calculated based on the dependency rate (number of all dependents/number of people working). When there were three or more dependent people for each working person in the household, the value of the indicator was 1. Where nobody was working, it was also 1. The rest of the scale was calculated as described for the second paper.

4) Measurement of social resources

Social resources were defined as the resources that an individual has at his/her disposal to deal with the demands of daily life. They were measured using a questionnaire developed by Hanson and colleagues (Hanson et al., 1997) and adapted to a pregnant population (Dejin-Karlsson, 1999). This was constructed based on social network, social support and control of daily life.

- Social network: a web of social relationships that surround an individual and the characteristics of those linkages. Structural concept defined using two subconcepts:
  1. Social anchorage: the degree to which a person belongs to and is anchored in formal and informal groups (family, associations, neighbourhood, group of friends).
  2. Social participation: participation in formal and informal groups in society.

- Social support: information leading the subject to believe that she is cared for and loved, esteemed and a member of a network of mutual obligations. Social support is a function of the individual’s interaction within the social network, and was measured through four subconcepts:
  1. Emotional support: the individual’s experience of receiving care, encouragement of value and feelings of confidence from different sources.
  2. Instrumental support: the individual’s access to advice, information and practical services.
  3. Support from the father of the child: the degree of perceived support from the child’s father.
II.4. Maternal or paternal support: the degree of support a woman received from her mother or father.

*Job support, included in the original scale, was not used as more than 90% of the women were housewives.

□ Control of daily life

5) Instrument to detect emotional distress

In paper II, perceived maternal stress was measured using the “Personal Health Scale” developed by a team of Swedish and Nicaraguan mental health experts and previously validated in the same field. It included questions to detect states of stress and anxiety. From four possible answers, a dichotomous variable was created: for never or sometimes a value of 0 was assigned, and for most of the time or always a value of 1 was given. Subsequently, the points were summarized for a total possible score of 5, with 3 or more considered to represent high emotional distress.

In papers I and IV, the Self-Reporting Questionnaire (SRQ-20) developed by the WHO and validated in a wide range of settings was used as screening tool for emotional distress. This questionnaire asks respondents whether within the four weeks prior to the interview they have experienced a series of symptoms that are associated with mental distress. The items are added for a total possible score of 20. Because of its validated use in Nicaragua, we applied a 6-point cut-off recommended currently in the country by the mental health department of the Ministry of Health (MINSA, 1998). The analysis was also done using means scores of SRQ.
RESULTS

Prevalence of violence during pregnancy and lifetime

A prevalence of 32.4% of emotional abuse, 13.4% of physical abuse and 6.7% of sexual abuse during the current pregnancy was found among the studied subjects in the community study (Table 2). Fifty-four percent (259/478) of the pregnant women surveyed reported a lifetime history of partner violence, which was significantly associated with abuse during the current pregnancy (p < 0.001). The cases showed are uniformly distributed in both urban and rural areas (Figure 3) (Paper I).

In the hospital-based case-referent study, the prevalence of physical abuse during the index pregnancy was 11% of all the women included, 22% of the case mothers and 5% of the referent mothers (Paper II).

Table 2. Prevalence of violence during the current pregnancy and lifetime. Survey of pregnant women. León, Nicaragua 2004. (Paper I)

<table>
<thead>
<tr>
<th></th>
<th>Current pregnancy (n = 478)</th>
<th>Lifetime (n = 478)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Any act of violence</strong></td>
<td>155 (32.4%)</td>
<td>259 (54.2%)</td>
</tr>
<tr>
<td><strong>Types of violence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional/psychological violence</td>
<td>155 (32.4%)</td>
<td>252 (52.7%)</td>
</tr>
<tr>
<td>Physical violence</td>
<td>64 (13.4%)</td>
<td>148 (31.0%)</td>
</tr>
<tr>
<td>Sexual violence</td>
<td>32 (6.7%)</td>
<td>72 (15.1%)</td>
</tr>
</tbody>
</table>
Figure 3. Map of urban and rural areas of León municipality, with black dots showing abused pregnant women and white dots showing those not abused. Survey of pregnant women. León, Nicaragua 2004.
Considerable overlap was found between emotional, physical and sexual violence in both the community study and the hospital study, showing the complexity of pregnancy-related violence. In both studies, all women who reported physical and/or sexual violence also reported that they had suffered humiliations, threats and verbal aggression and 6% of all included women reported that they were victims of all three types of violence during their current pregnancy (Figure 4).

![Figure 4: Overlap of types of violence during pregnancy. Survey of pregnant women. León, Nicaragua 2004. (Paper I)](image)

**Characteristics of the pregnant victims in the community survey**

Forty percent of all pregnant victims of abuse in the survey were adolescents. When analysing the specific age-group prevalence of pregnancy-related violence, the highest rate was found among pregnant women aged under 19 years (46%), compared to 27% of the 19 to 35 year olds, and 33% of the group of women over 35 years of age. The mean age of the pregnant victims of violence was $22.2 \pm 5.4$ SD, which was lower than the mean age and standard deviation of the non-abused pregnant population studied ($23.9 \pm 5.6$).

Seven percent of the women abused during their current pregnancy were illiterate; 45% had attended primary school and had a higher literacy level. The majority of the pregnant victims and non-victims of violence (92% and 86% respectively) were housewives, and about a third of both groups lived in the rural area.
Smoking, alcohol and drug consumption were rare among pregnant women in both the community survey and the hospital-based study. One percent of the abused women in the survey reported that they consumed alcohol daily, 1% weekly, 1% occasionally, with the rest stating that they did not consume alcohol. A similar pattern was observed among non-abused women. For smoking and drug use, only 1% of abused and non-abused women in the community smoked during pregnancy, and 1% and 3% respectively reported occasional drug use. In the hospital-based study, 10% of case mothers and 1% of referent mothers reported having smoked during pregnancy.

Based on the Unsatisfied Basic Need Assessment, poverty was widely distributed among the study population. Fifty-seven percent of all the pregnant women studied – 61% of the abused and 55% of the non-abused – lived in poor conditions, and 11% and 8% respectively lived in extreme poverty.

About 80% of both abused and non-abused pregnant women in the survey were living with their partner at the time of the second interview.

**Characteristics of the perpetrators of violence during pregnancy**

According to the information provided by the interviewed abused women, the perpetrators of violence in the community survey (155/478) were more frequently young adults, almost half were illiterate or had not completed primary school. A third were unemployed and almost half were labourers. The lowest literacy levels, highest unemployment rates and highest alcohol consumption were significantly more likely among perpetrators of abuse compared to male partners who did not show violent behaviour (Table 3).
Table 3. Characteristics of the perpetrators of violence during pregnancy according to the information provided by the abused women. Survey of pregnant women. León, Nicaragua 2004.

<table>
<thead>
<tr>
<th>Background variables</th>
<th>Scale</th>
<th>Perpetrators n = 155</th>
<th>Non-perpetrators n = 323</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Mean and SD</td>
<td>25.9 ± 6.9</td>
<td>27.2 ± 7.3</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>&lt; 19 y</td>
<td>15</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 19 y</td>
<td>85</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Literacy</td>
<td>Illiterate/Incomplete primary</td>
<td>44</td>
<td>13</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>Complete primary or more</td>
<td>56</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>Labourer - Unemployed</td>
<td>80</td>
<td>51</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>20</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Father of the child</td>
<td>Yes</td>
<td>96</td>
<td>98</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>Daily to weekly</td>
<td>27</td>
<td>14</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Rarely or never</td>
<td>73</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Drug use</td>
<td>Weekly</td>
<td>2</td>
<td>0</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Rarely or never</td>
<td>98</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Involved in street fights</td>
<td>Yes</td>
<td>9</td>
<td>4</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>91</td>
<td>96</td>
<td></td>
</tr>
</tbody>
</table>

Severity of pregnancy-related violence

In the survey, more than four acts of abuse during the current pregnancy were reported by 65% of the emotionally abused pregnant women, 66% of the physically abused and 69% of the sexually abused (Paper I).

Half of the pregnant victims of physical abuse (32/64) reported at least one very severe act of physical aggression during their current pregnancy. The most common aggressive acts were punches and kicks, directed towards the abdomen in 24 of 64 physically abused (Table 4) cases. The abdomen was more frequently targeted during pregnancy than at any other time in the women’s life (Paper I).
Table 4. Type of aggressive acts of violence during the current pregnancy and lifetime. Survey of pregnant women. León, Nicaragua 2004. (Paper I)

<table>
<thead>
<tr>
<th>Reported acts of physical violence: *</th>
<th>Current pregnancy</th>
<th>Lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slapped</td>
<td>35 (54.7%)</td>
<td>89 (60.1%)</td>
</tr>
<tr>
<td>Pushed</td>
<td>55 (85.9%)</td>
<td>131 (88.5%)</td>
</tr>
<tr>
<td>Beaten with fist</td>
<td>32 (50.0%)</td>
<td>90 (60.8%)</td>
</tr>
<tr>
<td>Kicked</td>
<td>14 (21.9%)</td>
<td>44 (29.7%)</td>
</tr>
<tr>
<td>Punched or kicked in the abdomen</td>
<td>24 (37.5%)</td>
<td>46 (31.1%)</td>
</tr>
<tr>
<td>Choked or burned</td>
<td>17 (26.6%)</td>
<td>46 (31.1%)</td>
</tr>
<tr>
<td>Use of weapon</td>
<td>9 (14.1%)</td>
<td>24 (16.2%)</td>
</tr>
</tbody>
</table>

Reported acts of sexual violence by a partner: *

<table>
<thead>
<tr>
<th></th>
<th>Current pregnancy</th>
<th>Lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physically forced to have sex</td>
<td>29 (90.6%)</td>
<td>69 (95.8%)</td>
</tr>
<tr>
<td>Forced to have sex by fear</td>
<td>27 (84.4%)</td>
<td>62 (86.1%)</td>
</tr>
<tr>
<td>Forced to engage in acts of sex she found degrading</td>
<td>17 (53.1%)</td>
<td>37 (51.4%)</td>
</tr>
</tbody>
</table>

* Because of multiples responses the sum of the percentages is not 100.

Fifteen percent of case mothers and 4% of controls had experienced more than three acts of physical abuse during the index pregnancy (Paper II).

For the women survivors, being abused during pregnancy by the father of their child, besides the serious physical consequences in most cases, also constituted a serious emotional burden at a crucial point of their lives. They referred to the emotional vulnerability they felt while pregnant, to feelings of hope attached to the growing new baby, but at the same time fear about the future and a need for greater emotional and material support. They described the economic limitations and the psychological and physical aggressions suffered, leading them to emotional instability. Feelings repeated several times by interviewed women survivors as linked to the experience of violence were confusion, anger, fear, self-blame, shame, humiliation, frustration, isolation, entrapment and control (Paper III).

Celeste, a dentist, for whom violence started during her first pregnancy, talked about this period in her life and the damage the abuse did to her:
“While I was pregnant he used to beat my stomach…he also made wounds on my arms (she shows two scars on her right arm)…it’s true that these attacks have left physical scars, but none are as painful as those I feel in my soul and these have been the most difficult to heal…”

In the interviews a level of abuse during pregnancy was also described that endangered the life of the victims. Jenny revealed the severity of one act of aggression when she was in her third pregnancy:

“while he was beating me, my daughter said to her father, ‘Daddy, leave mummy alone, leave mummy alone…you’re going to smash her head.’ When he heard what the girl was saying, he grabbed me here (she points to her hair) and he picked me up with both hands…the girl ran out calling her grandfather, ‘Granddad, daddy wants to smash in mummy’s head’ and at that point I thought, ‘God, if I don’t get out he’s going to kill me’ and I ran out of the room to where I thought there would be people who could help me. But he grabbed me by the head and shoved me into the bathroom wall in front of his father and instead of getting him away from me, he said ‘Calm down man, leave her alone…take a break...’”

Escarlette referred a brutal act of aggression that ended with placental abruption and the loss of her baby:

“He came home drunk and I wasn’t there. When I came home he was extremely jealous, and so I got angry and that was my big mistake…when he saw that I was angry he told me that he was going to wipe the anger off my face and started hitting me until I fell to the ground. When I was on the floor he started kicking me like he’d never done before, his face looked as if it were possessed by the devil – I often have nightmares and I can still see his face today… He picked up a log that we keep behind the door to keep it closed at night and he told me that he was going to smash my face in, so that no man would turn to look at me in the street and that he was going to rip out the bastard that I had in my belly, telling me that the baby wasn’t his…”

Injuries and seeking health care

In spite of the fact that 93% of victims of violence during pregnancy reported at least one type of injury, only 14% sought health care, the majority of whom were admitted to hospital, although only few of them revealed the real cause of the injury to health workers (Table 5).
Results


<table>
<thead>
<tr>
<th>Injuries among the physically abused:</th>
<th>Physical abuse during current pregnancy (n = 64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasions, bruises</td>
<td>60 (93.8%)</td>
</tr>
<tr>
<td>Cuts, punctures, bites</td>
<td>7 (10.9%)</td>
</tr>
<tr>
<td>Sprains, dislocations</td>
<td>2 (3.1%)</td>
</tr>
<tr>
<td>Deep cuts</td>
<td>2 (3.1%)</td>
</tr>
<tr>
<td>Fractures</td>
<td>1 (1.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>10 (15.6%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-reported unconsciousness:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30 (46.9%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health care:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sought health care</td>
<td>9 (14.1%)</td>
</tr>
<tr>
<td>Admitted to hospital</td>
<td>6 (9.4%)</td>
</tr>
<tr>
<td>Told health worker real cause of injury</td>
<td>2 (3.1%)</td>
</tr>
</tbody>
</table>

Forty-six percent of the pregnant victims in the survey reported that they had never talked to anybody about the abuse, one third had disclosed it to their parents, while only 1% had contacted the police or health workers.

Violence also affected the woman’s capacity to take decisions relating to reproduction and health care. Seventy-two percent of abused women reported they did not want the pregnancy compared to 34% of those not abused. Among abused pregnant women partner prohibition of contraception immediately before the pregnancy was more frequently reported. Two thirds of male partners did not want the pregnancy, but there was no difference between partners of abused and non-abused women (Table 6).

<table>
<thead>
<tr>
<th></th>
<th>Abused women n = 155</th>
<th>Non-abused women n = 323</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No use of contraception</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>immediately before the pregnancy due to partner prohibition</td>
<td>42%</td>
<td>19%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unwanted pregnancy:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By the woman</td>
<td>72%</td>
<td>34%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>By the male partner</td>
<td>66%</td>
<td>67%</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prenatal Care (PNC):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner prohibition of PNC</td>
<td>17%</td>
<td>1%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Attended PNC</td>
<td>83%</td>
<td>87%</td>
<td>0.26</td>
</tr>
<tr>
<td>First prenatal check-up at</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 12 weeks</td>
<td>35%</td>
<td>66%</td>
<td>---</td>
</tr>
<tr>
<td>13 – 20 weeks</td>
<td>33%</td>
<td>30%</td>
<td>0.001</td>
</tr>
<tr>
<td>21 weeks or later</td>
<td>32%</td>
<td>4%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>&lt; 3 PNC at the time of delivery</td>
<td>56%</td>
<td>31%</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

The prenatal check-ups undergone by the women during their pregnancy also proved to be significantly influenced by male control in an abusive relationship. Even if similar percentages of abused and non-abused women reported attending prenatal check-ups, for abused women their first prenatal check-up was significantly later and they had had fewer check-ups by the time of their delivery. Prohibition to attend PNC was much more common among abused pregnant women as compared to non abused (Table 6).

**The relationship between pregnancy and violence**

According to the community survey, 26% of respondents without previous violence reported that the abuse started during their current pregnancy. Among pregnant victims with a history of abuse, one third reported that the violence increased in frequency and severity during pregnancy, in one fifth the pregnancy appeared to be a period of diminishing abuse and in half the abuse was similar to before (Paper I).
Forty percent of victims included in the hospital-based study reported that physical abuse began during pregnancy; in 13% the violence started earlier but worsened during pregnancy (Paper II).

Five out of the seven interviewed survivors related the abuse to their pregnancy and five also described the abuse as so severe that they suffered serious physical injury. Pregnancy was perceived by some of the interviewed victims as a cause of increased stress in the relationship, leading to violence. Escarlette stated:

“The main problem was that I became pregnant. That was the time when he started doing terrible things to me…it was as if the pregnancy made him crazed because at the same time as was growing he became much more aggressive every day. He was beating me at least two or three times a week in such a way that I was expecting a violent outburst at any moment, I lived with that feeling of fear the whole time…”

**Situations leading to violence**

Pregnant victims of physical partner violence in the community survey were asked about the types of situations that triggered violence. Partner jealousy, defiance and refusal to have sex were the most commonly mentioned by more than one in two women. Almost half of the victims pointed to the pregnancy itself as a reason for violence and at least a third reported that their partners hit them when drunk, when meals were not ready, or when the family faced economic difficulties.

**Women’s awareness**

In spite of the serious psychological and physical consequences for the pregnant victims of abuse, the strong emotional link between victim and perpetrator as a result of the pregnancy was a significant influence on the pregnant women's consciousness about the violence.

Women survivors reported that they tried different ways to make their partners listen to reason but without success. They were unwilling to accept help because they did not recognize the violence as their problem. Celeste states:

“To start with I thought about the possibility of helping my husband; I tried to convince him several times to visit a psychologist. He never agreed; he always told me that he wasn’t crazy, that I was the one with problems…”
Factors influencing women’s awareness and coping

The influence of the cultural and social context on the women’s awareness about the abusive relationship was identified as strong during the period of pregnancy and intricately related to religious and cultural beliefs supporting the patriarchal norms of the society. Stigmatizing accompanying norms were observed prescribing the pregnant woman to be “a good mother and a good wife”, responsible for keeping the family together even under the worst circumstances. Socialized gender roles assign the power, decision making and control of finances to men, while women take care of their husbands, the children and the house. These social elements were shown to be important factors influencing the women’s decisions and coping in an abusive relationship.

Celeste states:

“When I thought about leaving him I knew that lots of people would make remarks about that. I was aware that I live in this stupid, conservative, religious hole of a town and that people would sweep the streets of Leon with me...as a woman this society restricts you...”

Carol recounts:

“I went to see my mum and dad, and told them that my husband was beating me. My father told me that I must have done something to make him angry, that marriage would teach me how to keep him happy...my mum told me it’s quite normal to have these little knocks and scrapes as a couple...that it was my duty to be loving towards him and to obey him, then he would stop hitting me...I started to understand better all the damage society does to us women, people really expect women who’ve been mistreated to just take it and give up all their rights, just because they’re a housewife.”

Women interviewed expressed how the pregnancy limited their ability to obtain support from their conservative or religious parents or relatives, who considered that they must side with the father of their child. In spite of this, the women also pointed to the relevance of having access to a social network and to individual resources in order to be able to cope with the abuse.

In our survey, the entire dimensions measured relating to social resources – social network, social support and social participation – were more likely to be low among pregnant women exposed to violence.

Celeste relates:

“The hardest blow for me was of course my parents’ reaction, although in the end my biggest problem was becoming financially independent of other people. It is a long process, but after a while there comes a point when you can’t take it any longer and you have to take a massive decision, and at this
Nevertheless, the individual’s access to social resources was not enough for pregnant women to cope with the abuse. The ability to face the abuse was not determined by a single or couple of factors, but by a complex interplay of factors where the severity of the abuse, the implications for important others (i.e. children), economic independency, availability of material and emotional resources, social class and personal ability to cope with the strong social norms were identified as playing an important role.

Martha, a permanently employed teacher, says:

“I keep on thinking I’m going to leave him, but every time we have an argument and he hits me and I leave the house I can’t make the break and I go back after a while…because when I’m out on the street I ask myself, how could I manage to live on my own?. I know very well that my salary’s enough, I even give money to mum, but the fact is deep down I feel scared, I know…I know what mum and everyone would say about a divorced woman…”

Women’s opinions of violence

When pregnant women in the community were asked about their opinion of intimate partner violence and whether a man could be justified in battering his wife under certain circumstances, no significant differences were found between abused and non-abused women. More than 80% of both groups agreed that family problems should not be discussed outside the family, and almost 45% agreed that outsiders should not intervene and that in general a woman must obey her husband even if she disagrees with him. Despite the fact that most of them even consider violence against women to be a private issue, when we mentioned some specific reasons for a man to batter his wife, more than 80% of both abused and non-abused women did not accept any reason justifying violence, 18% considered that a man could batter his partner if he suspected she was unfaithful, and 9% accepted that male abuse was justified when the woman disobeyed her husband.

The women were also asked about circumstances under which it would be acceptable for a married woman to refuse to have sex with her husband. In this aspect similarly, there were no significant differences between abused and non-abused pregnant women. In general, more than 80% of both groups agreed that a married woman had the right to refuse to have sex with her husband if he was drunk, if she was sick, if he was forcing her or if she did not want to.
Women’s perception: abuse during pregnancy as a process

From the interviews, it emerged that women survivors perceived the abusive relationship as a progressive and cumulative process with rather well-defined stages. They described the stages through their feelings, reflections and ways of coping, aspects that were intercorrelated with reciprocal influences between them. Our interpretation of the process closely followed the interviewees’ descriptions. We labelled the stages introduction, establishment, accommodation and crossroads phases. In the description of each stage, feelings, reflections and coping strategies expressed by the participants were addressed (Table 7).

The introduction phase

The beginning of abuse within a relationship makes the woman feel disoriented. She has difficulties interpreting the abuse, commonly starting by blaming herself, usually keeping the first abusive acts secret. From this initial stage, the victims recognize an increase in stress and emotional susceptibility.
Table 7. Stages in the abusive relationship process. Qualitative in-depth interviews of women survivors of partner violence during pregnancy. León, Nicaragua, 2003. (Paper III)

<table>
<thead>
<tr>
<th>STAGE</th>
<th>FEELINGS*</th>
<th>REFLECTIONS*</th>
<th>COPING*</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. The introduction stage</td>
<td>Disoriented</td>
<td>Was her fault</td>
<td>Self-defence</td>
</tr>
<tr>
<td></td>
<td>Losing confidence</td>
<td>He was tired</td>
<td>Change her own</td>
</tr>
<tr>
<td></td>
<td>Keeping it secret</td>
<td>Aggression a one-off</td>
<td>attitudes and/or</td>
</tr>
<tr>
<td></td>
<td>Self-blame</td>
<td>This is normal male</td>
<td>behaviour</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>Behaviour</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II. The establishment stage</td>
<td>Confusion</td>
<td>Was his fault</td>
<td>Try to see the situation</td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td>He was abused as a child</td>
<td>as it is</td>
</tr>
<tr>
<td></td>
<td>Anguish</td>
<td>The “machismo” norm</td>
<td>Looking for support</td>
</tr>
<tr>
<td></td>
<td>Fear</td>
<td>He wanted to control her</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humiliation</td>
<td>Jealousy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III. The accommodation stage</td>
<td>Withdrawal</td>
<td>Jointly responsible</td>
<td>Passive attitude</td>
</tr>
<tr>
<td></td>
<td>Shame</td>
<td>Must be something wrong</td>
<td>Unable to cope</td>
</tr>
<tr>
<td></td>
<td>Trapped</td>
<td>in society:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hopelessness</td>
<td>Gender inequalities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV. The crossroads stage</td>
<td>Feelings of</td>
<td>Holistic view of the</td>
<td>Looking for external</td>
</tr>
<tr>
<td></td>
<td>systematic</td>
<td>perceived causes: him,</td>
<td>support</td>
</tr>
<tr>
<td></td>
<td>degradation</td>
<td>her and society</td>
<td>Outcome: if access to</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>Protect the child</td>
<td>social resources,</td>
</tr>
<tr>
<td></td>
<td>Problems sleeping</td>
<td>Realize that they are not</td>
<td>possibilities of leaving</td>
</tr>
<tr>
<td></td>
<td>Somatic symptoms</td>
<td>alone in this abusive</td>
<td>the relationship and</td>
</tr>
<tr>
<td></td>
<td>What’s the meaning</td>
<td>situation</td>
<td>recovering</td>
</tr>
<tr>
<td></td>
<td>of life?</td>
<td></td>
<td>If no resources, will</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>reflect on other ways</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of escape, such as</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>suicide</td>
</tr>
</tbody>
</table>

* The examples are directly grounded in information from the women.

Carol, describing the initial stage of the aggression, said:

“He started beating me when I was three months pregnant; he started treating me as if I were his worst enemy. It was horrible, I felt completely confused, my dreams started to shatter, where was my dream man? All the trust I had in him started to break down…”

Commonly women excuse the abuser at this stage, thinking that he was tired or that the aggression was a one-off. Women described how they coped with the abuse in this phase by using self-defence or by trying to change personal attitudes and behaviours. Jenny notes:
The abuse started when I was four months pregnant with my first daughter. To start with I thought it was a one-off, that he was going to change and that it wasn’t going to happen again. But as time went by and it got worse, I looked for answers but there weren’t any. Sometimes I tried defending myself as well as I could, scratching, biting, whatever… it only got worse…”

The dominant pattern during this stage is defensive: 47% of the physically abused pregnant women in the community survey reported that they had fought back as an act of self-defence. The common outcome was that the abuse increased and the problem is transferred to the second stage of the abusive relationship process.

**The establishment phase**

The women understood that the physical aggression was not random and that self-defence only increased the severity of the violent acts. Growing feelings of confusion, anxiety, anguish or fear and humiliation are described in this stage, as Jenny recounts:

“I hit him with anything I could lay my hands on… now I know that that’s worse for me, because it makes him more aggressive, hitting or kicking me harder… now I don’t do it, he terrifies me…”

Women recognize that they are not guilty, that it is their partner’s fault. They explain the violence as socially learned, i.e. the man was a victim of abuse during childhood or that he battered her because of the socially dominant “machismo” culture. Extreme jealousy or prohibiting visits to family or friends, study or simply attending prenatal care are common in this stage. This increases the woman’s consciousness of the control and isolation the abuser is imposing on her. Monica states:

“For example, he stopped me from speaking to my friends, women or men. Even if I only said ‘goodbye’ when we were walking down the street, that was enough to make him mad and for him to start beating me when we got home… and he always threatened that if I left him he’d kill me…”

The women suffered from ambivalent feelings. They felt the need to hold their family together for the sake of the new baby and socially to be a good mother and wife; but they also felt the need to protect the baby from abuse. This was the first time in the process where our respondents rationally confronted the abuse and sought external support. Nevertheless, most of them considered it difficult to end the relationship while pregnant.

Twenty-one percent of the surveyed women in the community referred to having left home on one or more occasions to escape from severe physical abuse during their pregnancy, with 98% returning home after a
few hours, explaining it as extremely difficult to cope with life outside the relationship during pregnancy, for emotional and material reasons:

“…but he had made me pregnant, he was my son’s father… I often tried to imagine how the future would be for my son without him, but as you well know women like us are always being reminded to look after our man and our kids…” Carol

The pattern discovered at this stage is an increase of consciousness. If the women had had access to resources in their social environment, they would have had a greater chance of escaping the abusive relationship. Normally, this was not the case and the outcome was a move to the next stage of the process.

**The accommodation phase**

Once the abuse was established and the women had decided to stay, they felt jointly responsible with their partner. They expressed shame and they did not want to see family or friends, they reinforced the isolation imposed on them by the aggressor and started to have a passive attitude to avoid severe aggression. The continuous psychological and physical aggression altered the women’s perception of reality; they felt trapped and unable to escape, believing they could not handle abuse. They felt hopeless.

At this moment women explained the abuse beyond the individual to a more societal level, being more conscious of the power imbalances linked to gender inequities. In spite of their unconscious transition from emotions to cognitions, the learned helplessness and passive attitude was the most common way of coping at this stage.

“At the same rate as the abuse was getting worse every day, I felt my self-confidence, what I thought was important, myself drain away… After my second pregnancy, I understood nothing was going to change, he wasn’t going to stop hitting me and whatever I did on my own wouldn’t change the attacks. By that time I wasn’t even defending myself; sometimes all I did was run or go out so he wouldn’t hit me… but as I couldn’t stop him, it came to the point that one day I decided to do nothing, I avoided seeing people, I preferred to be on my own.” Monica

During this stage the women’s consciousness normally increases, but paradoxically they are now even more unable to manage the situation. They are trapped.

**The crossroads phase**

Respondents who reached this stage recognized they had been exposed to a systematic psychological degradation. They reported problems sleeping, deeper depressions and somatic symptoms. They were emotionally drained. They knew that the child would not affect the pattern of abuse.
Instead, they became new victims. At this stage, women were more rational in protecting the children and themselves from the abuse. They confronted this phase by seeking support in police stations, shelters, with family, friends or neighbours. Those who received it had possibilities to escape the abusive relationship and recover, but those who did not looked for more extreme and fatal coping strategies such as suicide or escape through drugs.

Jenny, who was living with the abuser when interviewed, had attempted suicide three times:

“I just got tired of the physical abuse, but also of the humiliation and lies, and once I’d persuaded myself that this cross was my own to bear I tried to kill myself three times… I didn’t want to know anything, I was so affected I didn’t even want to breathe…”

Celeste recounted:

“After the first violent episodes, the violence increased and at the same time my self-esteem decreased. One punch after another drained away my energy, my spirit and left me without almost no light in my life. It was like going into a downward spiral, spinning round and round, unless you could put a stop to it – and that isn’t easy, as you know, when you haven’t got any support or possibilities…”

**Measurement of salivary cortisol**

The mean of the salivary cortisol values measured was 10.1 ± 1.9 SD in the morning and 3.0 ± 2.8 SD in the afternoon. A trend of increasing salivary cortisol related to increasing gestational age was found (Figure 5). Among the 147 subjects providing salivary cortisol samples, acts of partner violence during the index pregnancy were reported by 44%, physical abuse by 17% and sexual aggression by 8%. Forty-three percent were positive on a scale measuring emotional distress, 34.6% had low social resources and 6.8% had attempted suicide during the index pregnancy.
Forty percent of pregnant women in this sample were primiparous and 33% were adolescents. Seventy-one percent had low socioeconomic circumstances and 61% lived in rural areas.

Thirteen percent of the 147 pregnant women included in the analysis gave birth to a LBW baby (6.1% were small for gestational age only, 4.1% preterm only, and 2.7% both small for gestational age and preterm).

**Factors associated with violence during pregnancy**

A history of previous abuse was significantly correlated with abuse during pregnancy in the community study.

According to the survey, abused pregnant women more frequently reported low availability of social resources (46%) than non-victims (31%). The same trend was observed for perceived emotional distress, pregnant women who were abused were significantly more likely to report high levels of emotional distress (56%) than those who were not abused (32%). This association was found either if SRQ was use as means scores or with cut off.

In the hospital study, high perceived stress was also significantly associated with violence during pregnancy.

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**Figure 5.** A.m. and p.m. values of salivary cortisol by gestational week among a subsample of the pregnant population (n = 147). Survey of pregnant women. León Nicaragua, 2004. (Paper IV).
Unwanted pregnancies and delayed entry into antenatal care or fewer than three check-ups by the end of the index pregnancy were also significantly more common among women abused during pregnancy in both the hospital and the community surveys. No association was found between educational level, marital status, socioeconomic group and parity with abuse during pregnancy in those settings.

Pregnant women abused were significantly more likely to report poor health than non-abused. Twenty out of 478 pregnant women included in the survey (4%) had attempted suicide during the index pregnancy, 68% of these within the four weeks prior to our visit. Fifty-three percent of those who had attempted suicide were victims of physical and/or sexual violence during the index pregnancy.

Based on the community results, adolescent pregnancies, high levels of emotional distress and low availability of social resources were significantly associated with violence during pregnancy in both the bivariate and the adjusted multivariate model.

**Child outcomes related to violence during pregnancy**

*The incident hospital-based case control study (Paper II)*

Mothers who experienced some form of physical violence during pregnancy gave birth more frequently to LBW infants. Potential confounding factors were evaluated, and if they were associated with physical violence as well as with the outcome (LBW), they were included in the multivariate analysis. The association between physical violence and LBW remained significant even after adjustment for parity, socioeconomic status, mother’s age and smoking habits (OR 3.98; 95% CI 1.7, 9.31). This association was also analyzed for subgroups of LBW according to the type of growth restriction and gestational age at birth. Physical abuse during pregnancy was consistently associated with a significant increase in LBW in all subgroups (Table 8).
**Table 8.** Physical violence during pregnancy and the risk of delivering a LBW infant. (Paper II)

<table>
<thead>
<tr>
<th>Outcome category</th>
<th>No. of cases</th>
<th>Adjusted OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>All LBW</td>
<td>101</td>
<td>3.98</td>
<td>(1.70 - 9.31)</td>
</tr>
<tr>
<td>LBW, all preterm</td>
<td>40</td>
<td>2.88</td>
<td>(0.92 - 9.06)</td>
</tr>
<tr>
<td>LBW, term, GR</td>
<td>60</td>
<td>2.82</td>
<td>(1.24 - 6.42)</td>
</tr>
<tr>
<td>LBW, all AGR</td>
<td>32</td>
<td>3.52</td>
<td>(1.68 - 16.61)</td>
</tr>
<tr>
<td>LBW, all CGR</td>
<td>44</td>
<td>3.59</td>
<td>(1.22 - 10.43)</td>
</tr>
</tbody>
</table>

GR= growth restriction, AGR= acute growth restriction, CGR= chronic growth restriction

When evaluating the public health impact of partner abuse in relation to LBW, the risk assessment can be combined with the information on the prevalence of the violence. Given a causal interpretation of the association between violence and LBW, 16% of the LBW in the study population could be attributed to physical partner abuse in pregnancy. As shown in Table 9, physical violence appears as the third most important population-attributable factor for LBW, after mother’s age and poverty. Pre-eclampsia and bleeding during the third trimester, well known risk factors for LBW, accounted for significantly smaller proportions of LBW than physical abuse.

**Table 9.** Population-attributable proportion of factors associated with LBW.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Adjusted OR</th>
<th>95% CL</th>
<th>Proportion exposed among cases</th>
<th>Population-attributable proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s age</td>
<td>2.53</td>
<td>1.36 – 4.69</td>
<td>53</td>
<td>32%</td>
</tr>
<tr>
<td>Parity</td>
<td>1.07</td>
<td>0.58 – 1.98</td>
<td>55</td>
<td>4%</td>
</tr>
<tr>
<td>Poverty</td>
<td>2.29</td>
<td>1.32 - 3.96</td>
<td>47</td>
<td>26%</td>
</tr>
<tr>
<td>Smoking</td>
<td>8.66</td>
<td>2.14 – 35.1</td>
<td>7</td>
<td>6%</td>
</tr>
<tr>
<td>Physical viol.</td>
<td>3.98</td>
<td>1.70 – 9.31</td>
<td>22</td>
<td>16%</td>
</tr>
</tbody>
</table>
The neuroendocrine response to stress (Paper IV)

Violence in pregnancy was associated with increased unstandardized residuals of the p.m. values of salivary cortisol (p < 0.001), LBW babies (p 0.001) and SGA (p < 0.001), but no significant association was found with preterm newborns (p 0.3).

Increased unstandardized residuals of the afternoon levels of salivary cortisol were also significantly associated with LBW (p < 0.001) and SGA infants (p < 0.001), but were not significantly associated with preterm newborns (Figure 6).

Figure 6. Relationship between child’s weight and gestational age at birth with unstandardized residuals of p.m. cortisol, showing the linear regression line and confidence intervals. Survey of pregnant women. León, Nicaragua 2004.

Low social resources and high emotional distress during the current pregnancy were statistically related to the increase of the unstandardized residuals of salivary p.m. cortisol. In contrast, mother’s age, parity, place of residence and poverty did not show any relationship.

Low social resources were also significantly associated with LBW and SGA; this was therefore included with violence during pregnancy in a logistic regression model including smoking and women’s age. Both violence during pregnancy and variables remained significantly associated
Results

with LBW and SGA even after the adjustment (p 0.03 and 0.01 respectively).

An estimation of the “Structural Equation” in a “Path Model” relating violence during pregnancy to the birth weight of the child was carried out (Figure 7). Three hypothesized paths were included: the increased cortisol leading to growth restriction accounted for 91 grams of the birth reduction explained by violence during pregnancy (at a significant level); the increased cortisol leading to the decrease in the gestational weeks at birth accounted for 50 grams of the reduction of the birth weight produced by violence during pregnancy (at a significant level); and preterm birth provoked by the direct trauma accounted for 72 grams of the reduction of the birth weight explained by violence during pregnancy (but not at significance level) (Figure 7, Table 10).

If it is cumulative, we can conclude that the increase of cortisol in response to the stress provoked by abuse during pregnancy produced a significant reduction of birth weight of 141 grams. (Figure 7, Table 10).

![Figure 7. Path coefficients for the model. León, Nicaragua 2004.](image)

To assess the goodness of fit of the model the measure of the chi square ($X^2 / df$) was done, giving a value of 0.047 and its p-value of 0.829. Thus, this large p-value indicates a good fit because the null hypothesis that the model fit the data (p < 0.05) can not be reject it.

<table>
<thead>
<tr>
<th>Combination</th>
<th>Estimate</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual p.m. cortisol &lt;--- Violence in pregnancy</td>
<td>2.085</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gestational age at birth &lt;--- Residual p.m. cortisol</td>
<td>-0.147</td>
<td>0.003</td>
</tr>
<tr>
<td>Gestational age at birth &lt;--- Violence in pregnancy</td>
<td>-0.443</td>
<td>0.096</td>
</tr>
<tr>
<td>Child's weight at birth &lt;--- Residual p.m. cortisol</td>
<td>-43.628</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Child's weight at birth &lt;--- Gestational age at birth</td>
<td>163.437</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
DISCUSSION

Based on the results of the community survey, one third of Nicaraguan pregnant women experienced violence during the index pregnancy; with almost one in six physically abused and one in fourteen sexually abused, evidencing the high prevalence of the problem in the country. These are high figures compared to results from community studies in the US (CDC, 1999; Goodwin et al., 2000), but they do correspond to some results from developing countries (Deyessa et al., 1998; Nasir & Hyder, 2003). When comparing prevalence rates, the type of population included in the studies must be considered. Results may vary depending on whether the sample is clinical or community based; whether the study looks for violence during a current, recent or past pregnancy; and whether it measures violence among all women or only among women of childbearing age. There are other aspects that can also influence the rate of detection of abuse, such as the instrument used (number and type of questions, a study specifically on violence or a large survey with a small section of violence etc.), the training and skill of the field workers, and the environment where the interviews take place. We made efforts to allow for these aspects to present representative figures of prevalence.

Assessing Trustworthiness

The cross-sectional community-based study (Papers I and IV)

The population-based prospective design including all pregnant women found in 50 clusters statistically representative of the community made selection bias less likely in these studies. Recall bias is also unlikely as we were asking pregnant women about abuse during the index pregnancy. Violence is a sensitive issue that tends to be underreported due to its stigmatization as a socially unacceptable problem, the victimization and the fear of reprisal (Ellsberg et al., 1999b; Gazmararian et al., 1995). Pregnant women could be also more likely to protect the father of their child. In order to improve the detection of violence and to minimize underreporting, a standardized instrument was used, two interviews were conducted with each participant, and skilled female field workers were carefully chosen and trained. The second visit at the end of pregnancy increased the reported prevalence of violence threefold: this resulted not only from violent acts committed between the two visits, but also from the confidence created and the further opportunity to disclose these experiences. Another circumstance that could affect women’s willingness to disclose violence is a threat to confidentiality due to a lack of privacy; therefore, in all the studies the women were interviewed in private.
For logistical reasons, saliva samples for cortisol measurement were not taken from the whole population, but successively at the end of the survey from 147 women.

Examining the background characteristics of the population included in the subsample, the only aspect in which this differed from the whole population in the community survey was residence, as rural areas were more represented in the subsample. As residence was not associated with violence in pregnancy, we consider there is no case to consider differential classification. For the saliva samples, standardization and quality control were carried out in both the sampling and the laboratory procedures in order to minimize incorrect results. Samples of cortisol were handled in a special thermos to avoid large temperatures changes and were sent to the laboratory on the same day they were taken. Repeated assay measures of cortisol were carried out within the laboratories for the internal validation of the results. Thirty percent of the tests were randomly selected and performed by a second laboratory for external validation.

**The incident hospital-based case-referent study (Paper II)**

The clinical design could have been a source of selection bias. However, in this study this was less likely, firstly because the majority of deliveries in the county of Leon took place at the hospital where cases and controls were recruited. Secondly, if there is some differential classification as a result of mothers of potential LBW infants being more likely to be referred to the hospital or attend the hospital for delivery, this was contrasted by the fact that abused women are more often restricted from accessing health care or institutional assistance. Thus, such selection bias, if present, would result in an underestimate of the exposure to violence of the potential LBW-delivering mothers in the community and a subsequent underestimate of the OR. To reduce underdetection, the Abuse Assessment Screen was used, this is a well-known instrument for detecting violence and has been tested and validated with pregnant populations (Soeken et al., 1991a). Furthermore, two trained standardized field workers collected and crosschecked the information for internal validation of the data. The repeated masked interviews showed good agreement. Thus, there were no indications of differential misclassification of exposure in the study.

**The qualitative/in-depth interview study (Paper III)**

For interviews, prolonged engagement enhances the credibility of the findings. This is the researcher’s investment of sufficient time to find and understand the reality under study and to build trust (Lincoln & Guba,
I have been involved in the clinical care of pregnant victims of violence for a decade as well as in qualitative data collection on the topic of violence for other purposes. Further, the recorded tapes were listened to and the transcriptions read several times in order to engage with the findings. The experience in the topic and methodology enabled me to create a secure environment in the interviews to stimulate the participant to disclose the violent events, and my long work with pregnant victims allowed me to more easily understand the reality found.

An insider conducting the in-depth interviews may affect the information collected. As all participants were survivors of violence in pregnancy, there was no possibility of underclassification of abuse in this regard, but my own pre-understanding may have affected the analytical process of the findings. For this reason, I made earnest efforts to set my pre-understanding in brackets particularly during the early analysis (the coding process).

Another strategy used to achieve credibility in the results was to integrate peer debriefers in the data analysis phase of the research (Lincoln & Guba, 1985). In order to improve the interpretation of the findings and the emergent model, discussions and negotiations of the findings and model were conducted with half of the interviewees as well as with other victims of abuse not included in the study and members of the research team.

Transferability, used to judge the extent to which a finding can be applied to other contexts (Lincoln & Guba, 1985), was assessed by including thick descriptions and purposive sampling. An effort was made to provide the reader with sufficient information to judge the theme, codes, categories, properties and dimensions of the emergent model. In order to represent the multiple realities that can influence the relationship between violence and pregnancy, the informants were drawn from different social and demographic backgrounds so that each woman included was expected to contribute to the theory under development. The collection of data stopped when the researchers considered that they had reached the saturation point regarding the emergent theory.

The probability is low that women do not remember the violent experiences, as violence during pregnancy proved to be a highly significant event, the interviews took place shortly after childbirth and half of the interviewees were still living in the violent relationship.

Since the early open codification of the data, we followed the information provided by the participants very closely. The different stages in the analysis and the emergent model were developed grounded in the data.
General discussion

Consistent with other research, the type of physical acts reported in the survey, the frequency and injuries sustained, as well as the histories of the women interviewed very much pointed to the severity of partner abuse against pregnant women, the extreme stress they were exposed to and the detrimental consequences to the woman and child to the point of being a threat to life (Cokkinides et al., 1999; Curry & Harvey, 1988). As previously reported (Stewart & Cecutti, 1993), the abdomen was a very common target for the physical aggression during the pregnancy, sometimes with fatal consequences. It has been linked by authors to aggression directed at the unborn child (J. C. Campbell et al., 1993).

According to previous results (Kernic et al., 2000), pregnant victims of violence in these studies rarely sought healthcare due to their partner’s restriction, and those who did so were extreme cases with severe injuries. Moreover, pregnant women referred to a lack of screening for abuse when attending health institutions. The Nicaraguan Ministry of Health has established “norms for the attention of domestic violence”, but there is a lack of trained field workers to implement this.

One aspect, quite original and unexpected, arising from our interviews was that women survivors perceive pregnancy to be the reason for receiving less support from relatives or surrounding society. Culturally conservative beliefs were observed that pressurize women to remain with the father of the child when pregnant and to hold the family together for the sake of the baby, even under the worst circumstances.

Previous abuse was a strong predictor of abuse during pregnancy, coherent with international reports (Stewart & Cecutti, 1993). Even if our design did not allow for an appropriate analysis of pregnancy as a trigger of violence, it should be noted that according to the survey in one third of pregnant women without a previous history of abuse the violence started in pregnancy and half of the abused pregnant women considered the pregnancy itself to be a major background factor for the abuse. This issue has been referred to internationally as controversial (Jasinski, 2004), as some studies pointed to the pregnancy as a time of decrease of previous abuse (CDC, 1999; Schei et al., 1991; Widding Hedin, 1999) while others claim the contrary (J. C. Campbell et al., 1992; Stewart & Cecutti, 1993). I consider this is more an observed variation rather than a controversy due to cultural meanings attached to pregnancy in some regions that could be protecting or exposing pregnant women to violence.

No significant association was found between women’s education or place of residence and experienced violence during pregnancy, agreeing with previous findings (M. C. Ellsberg et al., 1999b; L. Heise et al.,
A previous study of domestic violence towards women in the same setting suggested that it was more likely among women with low socioeconomic status (Ellsberg et al., 1999b). However, we did not find this association, which may be due to the relative homogeneity of the widespread poverty found in the community, to the observed deepened poverty compared to the level described in the previous study in 1996, or to differences in the violent behaviour against women during the period of pregnancy. If so, the economic factor may contribute to the stressors in pregnancy but remain undetected as an associated factor behind violence during the period of pregnancy.

In agreement with previous studies, low access to social resources and high levels of emotional distress among female victims of violence were found in both the survey and the hospital study (Ellsberg et al., 1999a; Ellsberg et al., 1999b; Glander et al., 1998; Pena et al., 1999). The availability of social resources has been linked to benefits for a wide range of health states and health-related behaviours among pregnant women (Heins et al., 1987). Our interviews showed how social resources make easier for pregnant victims of partner violence to find solutions to the violent relationship that may decrease the impact of the abuse on the outcome of the reproductive process. Conversely, our results showed how low social resources acted as an additional stressor in the life of the pregnant women studied, being related to increased levels of perceived maternal stress and therefore to greater probabilities of major impact on maternal and child health.

Physical partner violence in pregnancy was independently associated with LBW in the hospital-based study, as described previously by researchers (Campbell et al., 1999; Fernandez & Krueger, 1999). Although some studies of the effect of violence during pregnancy on birth weight have presented inconclusive results (Austin & Leader, 2000; Berenson et al., 1994; Goodwin et al., 2000; Newberger et al., 1992), some were carried out in high-income countries with a relatively high prevalence of smoking or other substance abuse – well-known risk factors for LBW – but without controlling for those potential confounders. There are other studies that report a crude association between violence during pregnancy and LBW but did not show any independent effect when adjusting for smoking, alcohol or other substance use (Goodwin et al., 2000; Grimstad et al., 1997). In our hospital-based study, we made efforts to control for confounding in the analysis. Smoking was uncommon, but women who did smoke during pregnancy showed seven times the risk of LBW; therefore even though it was uncommon, we still accounted for it in the adjusted analysis. Socioeconomic status represented other confounding factor that was socially stratified.
The hospital findings also showed how physical violence in pregnancy accounted for more LBW than pre-eclampsia, bleeding or infections during pregnancy; only overcome by widespread distributed conditions like poverty and adolescent pregnancy. This is important in a public health perspective, since most resources in the country are allocated to the treatment of the clinical conditions, which is in the long run more expensive than developing strategies to prevent more prevalent factors of LBW.

Three-quarters of the LBW infants in the case-referent study were SGA, most of them with chronic growth restriction. High frequency when it is compared to the SGA rates in developed countries, for example Sweden where according to national statistics only one third of all LBW live births are SGA. The large differences in intrauterine growth between countries and regions of the world are obvious, which can reflect differences in the contributory causes and must be considered when interpreting earlier inconclusive results (Goodwin et al., 2000; Grimstad et al., 1997; Newberger et al., 1992). Intrauterine growth restriction has a different aetiology than preterm delivery. Either chronic growth restriction, that reflects retardation initiated early on in pregnancy, presumably have different causes than acute growth restriction with a late onset. In a low income country such as Nicaragua, we showed the prevalence of many other contributing causal factors that can interact with physical violence in pregnancy to result in intrauterine growth restriction.

Animal studies have already suggested an association between stress and intrauterine growth (Henry et al., 1994; Takahashi et al., 1998). In both the hospital sample and the community sub-sample (the cortisol study) our finding pointed to a causal link between violence during pregnancy and intrauterine growth restriction. Physical abuse during pregnancy was strongly associated with perceived maternal stress, suggesting as a plausible causal pathway the activation of the neuroendocrine HPA axis in response to stress.

In the community sub-sample, the levels of salivary cortisol showed an increased trend over the gestational weeks, as physiologically expected (Vining et al., 1983). Therefore, as the cortisol samples were taken at different gestational age, unstandardized residuals of cortisol after adjustment for gestational age at sampling were used for the analysis.

Violence during pregnancy and low social resources were related to significant increases in the residuals of cortisol, and were most strongly correlated with the birth of LBW and SGA babies. A multivariate
analysis showed that both variables, low social resources and violence during pregnancy, are independent factors associated with SGA. Through a structural equation modelling, our results indicate that maternal stress measured as increased cortisol should be an important mechanism through which violence during pregnancy decreased the child’s weight at birth. The reduction of the birth weight provoked by violence during pregnancy is, according to the model, almost comparable to the reduction of birth weight (two thirds) produced by smoking (Wang et al., 2002).

However, the association between violence during pregnancy, high cortisol values and birth outcomes is complex and may depend on the time of occurrence, the number of stressors and their nature (Wadhwa et al., 1996).

Abused pregnant women with high-emotional distress were significantly more likely to have attempted suicide during the index pregnancy and were significantly associated with increased unstandardized residuals of salivary cortisol, probably representing the group most emotionally affected by stress.

Gender inequities and women’s perceptions of violence during pregnancy
The most common situations pointed to as leading to violence (jealousy, disobeying male authority and female refusal to have sex) and the consideration by most pregnant women in the survey of partner violence as a family or personal matter in which outsiders should not intervene reflects the gender inequity dominating Nicaraguan society, prescribing to women a position of subordination, docility and respect of male dominance. Even though these aspects have been analysed by previous studies in the setting (Ellsberg et al., 2000), they were shown to be more prevalent among pregnant women. This reflects how the “generalized others” – the system of attitudes and society’s representation in the individuals that internalize the norms and values of the culture into their own self (Denzin, 1970) – can have greater influence on women during pregnancy, a period when there are greater expectations from families and society for a woman to act as a “good mother” and a “good wife”. As pointed out by Burr (Burr, 1995), the interviews showed how those norms and values can be as social constructions prescribing to the pregnant women how to behave in different situations, but they also construct discourses of relevance for abusive relationships, for instance gendered differences. For the abused pregnant women, the generalized other prescribed how much she was supposed to tolerate from the abuser as well as from the members of her family or neighbourhood that refused
to support her. It was obvious that male abuse of pregnant women indicated some damage to the links between norms and behaviour, i.e. in the socialization process.

Women survivors interviewed expressed to perceive the abusive relationship as a process with well-defined stages characterized by transitions and turning points, by changed emotions, reflection and ways of coping. Three types of transitions with reciprocal influences appeared very frequently among the survivors. Firstly, transitions between emotions: feelings of shame and humiliation were sometimes followed by a decrease in self-esteem and depression, but sometimes also the opposite, to feelings of consciousness and pride; secondly, transitions between emotions and cognitions; and thirdly transitions from emotion and cognition to coping. These transitions reflected the general tendency in grounded theory analysis, the coding process proceeding from concrete terms to more abstract concepts (Dahlgren et al., 2004). At each stage in the abusive process coping strategies were identified, grounded in emotions and cognitions respectively. As well as this, there were also indications of passivity and escape.

Different paths in the abusive relationship process were found. Some ended in disaster and some were simply ongoing. We did not find any favourable transitions of relationships within the histories of the women survivors; we did find men empowered by a society characterized by gender inequity and female subordination, unwilling to recognize their acts or the need for help. Thus, the only situations in which women have succeeded in improving their lives was by leaving the abusive partner.

Some conditions related to variations at different levels of the process were found among the women survivors. There were structuring material circumstances, above all poverty and low social resources that placed limits on what the abused pregnant woman did about her situation. There were also structural conditions of normative nature that allowed gender relations of an oppressive character. Both conditions were part of the culture and were partially invisible for the women as causes of the abusive relationship.

According to Clark’s perspective male abuse of women can be understood as a fight about “place” that has gone astray (Clark, 1990). In that struggle different means were culturally available. At this level, concrete group affiliation for example proved to be as important as social capital, and the women’s access to such capital was crucial for their ability to cope. This social psychological level set the scene for the abused women’s possibilities to cope with their situation, i.e. to act in a way that worked in their own interest.
The crucial crossroads found in the abusive relationship process concerned the women’s reflections at each different stage. The awareness of the informants tended to increase, and among some of the women their consciousness increased considerably during the process. Some were also able to use this consciousness when coping with their situation. Others were not so well off and their situations seemed to make it almost impossible to solve their problems. Their increased consciousness seemed to generate frustration rather than problem solving. Self-esteem was a central concept in connection with the analysis of the victim, as the self-esteem of the abused pregnant women proved to be strongly influenced by the abusive relationship.

Emergent stages in the abusive relationship process, not fixed by structural conditions, were found. The relations could change or end up at different stages and the outcomes will differ considerably. We found a tendency that pregnant women with less access to resources were less aware of the real circumstances behind the abuse. They tended to be trapped in the first stages described in the abusive relationship process. Pregnant women with access to more social capital, on the other hand, tended to show more consciousness and, as a consequence, more problem-oriented coping. This did not mean that they succeeded in changing the abusive relationship or to get rid of the abuser, but their chances to do so were better compared to the others. At the same time, they were at risk of being even more frustrated than the others because of the gap between their consciousness and their actual situation if they should fail to cope with it.
CONCLUSIONS

The studies evidenced partner violence during pregnancy as a devastating condition with adverse consequences for both the mother and the unborn child. The prevalence of partner violence during pregnancy is high in Nicaragua, and it is often severe and repeated, even endangering the life of the woman and her child.

These studies are intended to contribute to knowledge on the subject by presenting, firstly, prevalence rates from a community-based design including all pregnant women detected in a study area and interviewed twice during pregnancy, which increased the detection of violence threefold; secondly, by measuring cortisol as a biological marker of stress in order to get closer to the mechanism through which abuse in pregnancy impacts on health; and finally by presenting a qualitative approach of the perception of the women on violence during pregnancy and the more common ways they use to cope with the violence.

Pregnant victims of violence in Nicaragua were significantly more likely to be adolescents, having low access to social resources, high levels of emotional distress, delayed entrance into antenatal care or fewer than three check-ups at the time of delivery, and were more likely to attempt suicide during the current pregnancy. They were rarely assisted by the health services and even more rarely reported the abuse to health authorities or police.

Violence during pregnancy was perceived by women survivors as a process with rather well-defined stages characterized by transitions and turning points, by changed emotions, reflections and ways of coping. Violence was identified as having strong emotional and physical implications during pregnancy. The social and cultural context had an important influence on the pregnant women’s decisions and coping with the abuse. Access to material and emotional resources made it easier for women to cope with the abuse, but in reality the pregnancy acted as a limitation to obtaining support from family, friends or society.

The ability of the pregnant women to confront the abuse was determined by a complex interplay of factors such as economic independency, severity of the abuse, access to resources, implications for important others (i.e. children), social class and personal ability to cope with the social norms.

Violence during pregnancy was significantly associated with LBW and SGA newborns. Victims of violence during pregnancy and/or having low availability of social resources showed the significantly highest values of salivary cortisol, and were most strongly correlated with SGA and preterm babies. This evidences the neuroendocrine response to stress
affecting the HPA axis as the mechanism through which violence during pregnancy and psychosocial factors impact on fetal growth.

Clinical and public health implications of the studies

The studies show how violence during pregnancy imposes a heavy burden of health implications on the women and their children. We found violence behind poor women’s health, adolescent pregnancies, maternal stress and anxiety, poor antenatal care, attempted suicides, preterm birth, LBW infants or behind serious injuries leading in some cases to permanent physical consequences for the woman or to the death of her child. At the same time, violence also generated a burden for the systems that many countries are not prepared to face. The studies revealed how the Nicaraguan system is not prepared to address such a situation: few of the surveyed women were screened for violence at health facilities, and almost none had access to the support they needed. Finally, the families and society are also impacted by the violence toward women, not only due to the increased burden of emotional and physical illness and disability but also because violence reproduces more violence.

These studies point to urgent needs for intervention strategies at different levels:

- Women’s rights and the elimination of violence towards women must be part of the political agenda of governments as demonstrated by national and international laws. However, this should be a day-to-day compromise which implies not just the ratification of international agreements, prescribing norms or reports but their application and accomplishment. Governments must assume their responsibility in the organization and maintenance of a system to ensure the prevention, treatment, rehabilitation and social reinsertion of abused women and the perpetrators.

- The provision of well-funded shelters, medical, psychological and other counselling services such as free or low-cost legal aid and access to the mechanisms of justice as provided for by national legislation, for just and effective remedies for the harm they have suffered.

- Health care providers must be trained in the screening, attention and follow up of female victims of abuse. They must know how to approach the topic, how to treat and counsel the victims, and they should work jointly within a network of services to refer the women for other types of support.

- All women attending health care should be screened for violence. In this sense, pregnancy brings to the system (for antenatal care) many women from an age group that usually seeks medical attention only
Conclusions

rarely, but which is a high risk group for violence. Therefore, programmes such as “Antenatal Care” must be used for the permanent development of sentinel surveillance of violence.

• The medical register must be improved to be more useful for legal proceedings.

• Intervention programmes aimed at changing the structural determinants that encourage the male dominance that perpetuates the violence in society must be run permanently, i.e. education campaigns, inclusion of the gender perspective in formal education from primary to higher education and the development of a social platform for permanent discussion of the problem.

• Programs targeting perpetrators should be expanded and rigorously evaluated to improve the quality of interventions in this field.

• The issues of violence against women and gender must be formally included in the academic content of careers such as medicine, nursery, psychology, sociology and law.

Further research

We are still far from the complete understanding of all the scopes of pregnancy related violence. It will be mentioned only some areas we considered more relevant to conduct studies in the close future.

There is the need of further research on the dynamic of abuse during pregnancy. Qualitative approaches and the inclusion of interdisciplinary research teams are necessary to provide a more holistic view of the problem.

Further studies of pregnancy related violence must be public health oriented; and include interventions at different levels in order to decrease their impact on the morbidity and mortality of the women and the children. Intervention studies should include the areas of prevention, treatment and rehabilitation of victims and perpetrators, the unification of validated criteria for construction of attention’s models and protocols based on the evidence, and its inclusion in the academic programmes of all the related-carriers as well as in specific training programmes organised over the world.

Finally and very importantly, the intricacies of the mental health consequences of violence among women at different periods of their life require further deep exploration, as well as the deeper exploration on the neuroendocrine mechanism in the relationship between violence and women’s health.
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