

Original Investigation

Tobacco Use and Exposure to Secondhand Smoke Among Pregnant Women in the Dominican Republic: An Exploratory Look into Attitudes, Beliefs, Perceptions, and Practices

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Abstract

Introduction: The purpose of this study is to assess the attitudes, beliefs, perceptions, and practices regarding tobacco use and exposure among pregnant women in the Dominican Republic.

Methods: The survey was conducted in two public health hospitals in Santiago, Dominican Republic, and was administered to a convenience sample of 192 women during prenatal care visits. Analyses examined pregnant women's tobacco use, secondhand smoke exposure (SHS), knowledge about risks of smoking and benefits of quitting, and attitudes toward women's tobacco use. All data were collected between April and August 2009.

Results: Respondents' age ranged from 18 to 41 years, with a mean age of 25 years ($SD = 4.59$), a high literacy level (82%), low educational levels (48% less than high school education), and a high unemployment rate (65%). Levels of ever having experimented with cigarettes were 14%, and 5% had ever been a regular smoker. Among all respondents, 3% of women reported being current smokers. When respondents were asked if they would try smoking next year, 7% responded yes, maybe, or don't know. Rates of self-reported SHS among pregnant women were 16%, and 14% reported their young children being exposed to secondhand smoke. More than half of the pregnant women in this study allowed smoking in their home (76%).

Conclusions: This study provides a preliminary understanding of tobacco use and exposure among pregnant women and its potential impact on the Dominican Republic's public health efforts that include improving maternal and child health.

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Introduction

Approximately 250 million women smoke globally, accounting for about 12% of all women (Greaves, Jategaonkar, and Sanchez, 2006; Guindon and Boisclair, 2003; Shafey, Eriksen, Ross, and MacKay, 2009; World Health Organization [WHO], 2002). By 2025, the percentage of women who smoke is expected to almost double to 20% worldwide (Brundtland, 2001; Greaves et al., 2006; WHO, 2008). Pregnant women represent an important subpopulation at particularly high risk. Smoking during pregnancy increases health risks of the unborn child as well as the mother (Andrews and Heath, 2003). With respect to pregnancy outcomes, women who smoke are at higher risk of premature rupture of membranes, placental abruption, placenta previa, and preterm delivery (Samet and Yoon, 2001; U.S. Department of Health and Human Services [U.S. DHHS], 2001). Infants of mothers who smoke have an average birth weight of 200–250 g lower than infants of nonsmoking mothers (Cornelius and Day, 2001; Ernster, 2001; Lassen and Oei, 1998; Wilcox, 1993). There is also an increased risk of stillbirth, neonatal death, sudden infant death syndrome, and respiratory infections (Hellström-Lindahl and Nordberg, 2002; Slotkin, 1998; U.S. DHHS, 2001). In addition, breastfeeding is less common or of shorter duration, and prolactin levels are lower among women who smoke when compared with their nonsmoking counterparts (Samet and Yoon, 2001; U.S. DHHS, 2001). Though numerous studies have identified factors that influence tobacco use during pregnancy, most studies have been conducted in high-income countries, and there is still a need to understand this problem from a global perspective.

Smoking prevalence in Latin American and the Caribbean (LAC) varies greatly both within and between countries (Bianco,

Champgne, and Barnoya, 2006). Smoking prevalence for women in LAC has been estimated at 22% (Jha, Ranson, Nguyen, and Yach, 2002). A recent study by Bloch et al. (2008) was the first to examine pregnant women's tobacco use, secondhand smoke exposure (SHS), and attitudes toward women's tobacco use in Latin America (Argentina, Brazil, Ecuador, Guatemala, and Uruguay), Asia (Pakistan and two states in India), and Africa (Democratic Republic of the Congo and Zambia). This study reported that cigarette smoking among pregnant women ranges from 0.8% in Ecuador to 18.3% in Uruguay. Current use of other types of tobacco products ranges from 4.9% in Karnataka, India, to 33.5% in Orissa, India (Bloch et al., 2008). Smoking prevalence data for adult women from other Spanish speaking Caribbean countries and Haiti are limited, and estimates are more than 10 years old (Shafey, Dolwick, and Guindon, 2003). Smoking prevalence rates are estimated at 26% for Cuban women (1995 data), 10% for Puerto Rican women (2000 data), and 9% for Haitian women (1990 data; Shafey et al., 2003).

The Dominican Republic is an important country to study because it is a tobacco-producing country in the LAC region, with high levels of poverty and no coordinated surveillance systems or infrastructures in place to monitor tobacco use and tobacco-related disease, disabilities, and deaths (Ossip-Klein et al., 2008). Early data from the Dominican Republic indicated that 17% of women smoke (1993 data) and approximately 65% of women who had ever been pregnant smoked during most of their pregnancies (1989 estimate; Ozawa, Bello, Ito, and Saito, 1997; Pan American Health Organization, 1992; Shafey et al., 2003). More recent data for smoking prevalence among women in the Dominican Republic range from 7% (2007 data; Centro de Estudios Sociales y Demográficos [CESDEM] and Macro International Inc., 2008) to 11% (2006 data; Shafey et al., 2009). The observed difference between these two reported prevalence rates may reflect true change over time or may at least partly reflect methodological differences between studies and limitations of self-reported data. However, such a discrepancy points to the need for a comprehensive and standardized approach to understanding the tobacco epidemic in the Dominican Republic. Data for tobacco use among pregnant women are even more limited, and available estimates were available from the 2007 Encuesta Demográfica y de Salud survey. Among smokers, an estimated 3% reported smoking during pregnancy and 4% reported smoking while nursing (CESDEM and Macro International Inc., 2008).

Although recent national prevalence rates exist for cigarette and tobacco use among men and women, these data are demographic and do not provide information on other important sociocultural variables, exposure to secondhand smoking, or beliefs and attitudes regarding tobacco use and exposure. This study provides a first look into the landscape of tobacco use and SHS among pregnant women in the Dominican Republic. The primary purpose of this study was to begin to understand and characterize tobacco use and SHS among pregnant women in the Dominican Republic. More specifically, an exploratory survey (adapted from Bloch et al., 2008) was used to assess pregnant women's knowledge, attitudes, and behaviors regarding tobacco use and SHS. Due to limited data on pregnancy and tobacco use on a global scale, understanding results from this study on a broader context is also important. Therefore, a sec-

ondary aim was to compare data from this study to data from other Latin American countries (Argentina, Brazil, Ecuador, Guatemala, and Uruguay) included in the study of Bloch et al.

Methods

Study Sample, Inclusion Criteria, and Informed Consent

The survey was conducted in two public health teaching hospitals associated with the medical school of Pontificia Universidad Católica Madre y Maestra (PUCMM; in-country research collaborators) in Santiago, Dominican Republic. The survey was administered to a convenience sample of 192 women during prenatal care visits that were approached in the maternity ward waiting rooms of the two public health clinics over a period of 4 months and invited them to participate. Eligibility criteria, adapted from the study of Bloch et al. (2008), included being 18–46 years old and being in the second or third trimester of pregnancy. Verbal consent was obtained from all willing, eligible, and able respondents. The verbal consent process consisted of an information letter being read aloud in Spanish and provided to all respondents by the interviewer. Consent was then given in the form of verbal willingness to be interviewed and was documented on the screening sheet of each questionnaire. Respondents did not receive any incentives or forms of payment to participate, and the interviews did not interfere with any scheduled medical visits or services.

Questionnaire Design

The questionnaire implemented was adapted from a study by Bloch et al. (2008) to assess pregnant women's use of tobacco products, knowledge of health hazards, perception of the social acceptability of tobacco use by women, exposure to advertising both for and against tobacco, and pregnant women's and children's SHS. The implemented questionnaire also included items from the study of Ossip-Klein et al. (2008) to assess demographic information, parental tobacco use history, health care provider questions, and exposure to tobacco use and marketing. The questionnaire was administered in interview format in order to include women who were of low literacy or illiterate.

Questionnaire development was implemented in three iterative stages to assure creation of a culturally appropriate instrument. The first stage used the Brislin Back Translation Method, in which the English version of the survey was translated into Spanish and then back to English, and any discrepancies in context of translated questions were discussed and adjusted among the research team (Brislin, 1970). The second stage consisted of pretesting the survey (in both English and Spanish), which involved receiving feedback from colleagues on content, formatting, structure, and cultural appropriateness to create a final draft for the pilot testing phase. Pilot testing involved a real-life administration of all study procedures (e.g., recruitment, verbal consent, screening questions, and survey administration) with a small convenience sample of pregnant women very similar to the target population (Ossip-Klein et al., 2008). The results from all three development phases resulted in a final survey instrument that was culturally specific to the Dominican Republic. Data were collected by the Dominican

Republic-based team of medical students between April 2009 and August 2009. A response rate of 100% was obtained, possibly due to the local sociocultural perception of physicians as respected authority figures.

Determination of Tobacco Use and Exposure Variables

The following variables were adapted from Bloch et al. (2008) for direct comparison to the Latin American countries, Argentina, Uruguay, Ecuador, Brazil, and Guatemala included in that study and from Ossip-Klein et al. (2008).

Cigarette Smoking Status

For consistency with items and definitions used by Bloch et al. (2008), respondents were asked, “Have you ever tried cigarette smoking, even 1 or 2 puffs?” and those who responded “yes” were considered to have ever experimented with cigarettes. Respondents who experimented with cigarettes were then asked “Have you smoked cigarette at least 100 times in your life?” and “Have you ever smoked cigarettes daily, that is, everyday?”; those who responded yes to either question were considered to have ever been a regular smoker. Respondents who replied yes to ever experimenting with cigarettes or ever being a regular smoker were then asked about their current smoking status and those who self-reported as currently smoking were considered “current smokers.”

Exposure to Secondhand Smoke

All respondents were asked “Which of the following options best describes tobacco use in your home?” and those who responded smoking as allowed in the home, allowed in the home by some people, and allowed in some parts of the home were classified as smoking allowed in the home (Ossip-Klein et al., 2008). Respondents were also asked “How often are you indoors and around people who are smoking cigarettes or other types of tobacco products?” and “How often are your children indoors and around people who are smoking cigarettes or other types of tobacco products?” Responses included rarely or never, sometimes, frequently, and always. Those who responded “frequently” and “always” were considered to be exposed to secondhand smoke (Bloch et al., 2008).

Knowledge About Risks of Tobacco Use and Benefits of Quitting

To determine pregnant women’s knowledge about risks of tobacco use, all respondents were asked “What specific human

health effects or disease, if any, can you think of that can be caused by smoking cigarettes/tobacco?; Do you think that a woman who smokes use harms her own health or not?; If a mother smokes during her pregnancy, do you think her smoking can harm her unborn baby’s health or not?; and What specific human health effects or diseases, if any, can you think of that can be caused by breathing the smoke from other people’s cigarettes/tobacco?” Regarding benefits of quitting, respondents were asked “What do you think are the benefits of quitting?” The options for these questions were adapted from both the studies of Bloch et al. (2008) and Ossip-Klein et al. (2008).

Data Collection and Quality Control

In a collaborative effort to continue developing the tobacco control research infrastructure in the Dominican Republic, this study collaborated with faculty and medical students from PUCMM’s Medical School in Santiago, Dominican Republic. Training was provided on-site by the Principal Investigator/author and included review of study protocol, survey implementation (e.g., verbal consent and screening procedures), and data collection procedures consistent with the study of Bloch et al. (2008). A data management system was developed using a password protected Microsoft Excel (2003) database for in-country data entry and management. Two medical student researchers completed all data entry, and the in-country study coordinator selected a 10% sample of completed questionnaires for visual verification of data entry (Ossip-Klein et al., 2008).

Data Analyses

Descriptive data (frequencies, percentages, and means) were calculated for the sample, excluding missing data from the analyses. Next, exploratory bivariate analyses (χ^2) and a multivariate analysis (logistic regression) were conducted for comparison among respondents who reported being exposed and not exposed to secondhand smoke. Comparison data for Latin American countries (Argentina, Brazil, Ecuador, Guatemala, and Uruguay) from the study of Bloch et al. (2008) are included where available.

Results

Sociodemographic Characteristics

Table 1 presents sociodemographic characteristics of the current project, along with comparison data for five Latin American countries in the study of Bloch et al. (2008). For the Dominican Republic,

Table 1. Sociodemographic Characteristics of Pregnant Women

	Dominican Republic	Argentina	Uruguay	Ecuador	Brazil	Guatemala
Total no.	192	796	716	746	749	752
Age, mean (range)	24.9 (18–41)	26.9 (18–46)	26.9 (18–46)	26.6 (18–45)	26.1 (18–45)	24.4 (18–43)
Literate, no. (%)	158 (82.3)	785 (98.9)	712 (99.6)	732 (98.4)	719 (96.0)	715 (95.1)
Married, no. (%)	24 (12.5)	192 (24.2)	228 (31.8)	442 (59.3)	244 (32.6)	314 (41.8)
Common law marriage ^a no. (%)	145 (75.5)	495 (62.3)	342 (47.8)	222 (29.8)	301 (40.2)	343 (45.6)
Paid employment, no. (%)	66 (34.6)	219 (27.5)	107 (15.0)	245 (33.9)	199 (26.6)	117 (15.6)

Note. Data from Argentina, Uruguay, Ecuador, Brazil, and Guatemala are from the study of Bloch et al. (2008) “Table 1—Sociodemographic Characteristics of Pregnant Women in 9 Developing Countries: Survey on Tobacco Use, 2004–2005” (p. 2).

^aCommon law marriage (culturally appropriate term in the Dominican Republic) is referred to as “Member of an unmarried couple” in the study of Bloch et al. 2008, p. 2).

age ranged from 18 to 41 years, with a mean age of 25 years ($SD = 4.59$), a high literacy level (82%), and low educational levels (48% less than high school education). Most respondents reported being married/in a common law marriage (88%), and 35% reported having paid employment. These characteristics were similar when compared with other Latin American countries, where the mean age of respondents was between 25 and 27 years, and the majority of respondents reported being married or in a common law marriage. Literacy rates were high for all respondents, with the Dominican Republic's literacy rate being the lowest (82.3% vs. 95.1%–99.6%). Paid employment rates were relatively low for all countries, ranging from 15% to 35%, with the Dominican Republic having the highest paid employment rate at 35%.

Cigarette Use Behaviors

Cigarette use behavior data are presented in Table 2. Levels of reporting ever having experimented with cigarettes were 14% in the Dominican Republic, which is considerably lower than Argentina (75%) and Uruguay (78%) that reported the highest rates among respondents and Guatemala (35%) and Brazil (45%) that reported the lowest rates. Experimentation with cigarettes began at an early age, with more than half (54%) of the respondents starting between the ages of 7 and 12 years. Among respondents in the Dominican Republic, 5% had ever been a regular smoker, which is similar to Ecuador (4%) and lower than other countries (10.4%–53.0%). Among those who reported ever having experimented with cigarettes, 38% had transitioned into ever regular smokers, compared with Uruguay which had the highest rate of 68% and Ecuador which had the lowest rate at 7%. In the Dominican Republic, 3% of women reported being current smokers, which is more similar to Ecuador (0.8%) and Guatemala (0.8%) and lower than other countries (6.1%–18.3%). When respondents in the Dominican Republic were asked if they would try smoking next year, 7% responded

yes, maybe, or don't know. Acceptability of cigarette use for women was 3% for the Dominican Republic, compared with 5% in Ecuador, 12% in Guatemala, 19% in Brazil, 33% in Uruguay, and 35% in Argentina.

Secondhand Smoke Exposure

Self-reported SHS in the home and for both pregnant women and their young children are presented in Table 3. Smoking allowed in homes was 76% in the Dominican Republic, which was considerably higher relative to the other Latin American countries. Self-reported exposure to secondhand smoke ranged from 13% in Guatemala and Ecuador to 55% in Argentina with the Dominican Republic at 16%. SHS of the respondents' young children was reported at 14% in the Dominican Republic, which is similar to Argentina (14%) and Uruguay (18%; range 5.2%–20.9%).

Bivariate analyses yielded two significant variables. Higher rates of exposure to secondhand smoke were reported by women who allowed smoking in their home compared with those who did not allow smoking in their home, $\chi^2(1) = 5.40, p < .05$, though 71% ($n = 94$) of women who stated they were not exposed to secondhand smoke ($n = 131$) allowed smoking in their household. Belief that exposure to secondhand smoke could cause general illness was higher among respondents who reported being exposed to secondhand smoke compared with those who reported not being exposed to secondhand smoke, $\chi^2(1) = 3.78, p < .05$. The multivariate analyses did not yield any statistically significant variables that could characterize differences between these groups.

Knowledge About Risks of Tobacco Use and Benefits of Quitting

Comparison data were not available for this domain. Among respondents in the Dominican Republic, 97% believed women who smoke can harm their health and 98% believed pregnant

Table 2. Cigarette Use Behaviors of Pregnant Women

	Dominican Republic	Argentina	Uruguay	Ecuador	Brazil	Guatemala
Total no.	192	796	716	746	749	752
Ever tried cigarettes, no. (%) ^a	26 (13.5)	599 (75.3)	560 (78.3)	430 (57.6)	336 (44.9)	263 (35.0)
Age first tried smoking						
7–12 y/o, no. (%)	14 (53.8)	–	–	–	–	–
13–18 y/o, no. (%)	9 (34.6)	–	–	–	–	–
≥19 y/o, no. (%)	3 (11.5)	–	–	–	–	–
Ever a regular smoker ^b						
Total no.	10	353	379	32	154	78
Among women who had ever tried smoking (%)	38.5	58.9	67.7	7.4	45.8	29.7
Among all women (%)	5.2	44.3	53.0	4.3	20.6	10.4
Current smokers ^c , no. (%)	5 (2.6)	82 (10.3)	131 (18.3)	6 (0.8)	46 (6.1)	6 (0.8)
Will try smoking anytime during the next year ^d , no. (%)	13 (6.7)	–	–	–	–	–
Think cigarette use is acceptable for women, no. (%)	5 (2.6)	277 (34.8)	237 (33.2)	38 (5.1)	143 (19.1)	912 (12.2)

Note. Data from Argentina, Uruguay, Ecuador, Brazil, and Guatemala are from the study of Bloch et al. (2008) "TABLE 2—Cigarette Smoking Behaviors of Pregnant Women in 9 Developing Countries: Survey on Tobacco Use, 2004–2005" (p. 4). y/o = years old.

^aIncludes pregnant women who responded yes when asked, "Have you ever tried smoking, even one or two puffs?"

^bIncludes pregnant women who have ever tried smoking, who reported ever smoking 100 or more cigarettes/tobacco in their lifetime.

^cIncludes all pregnant women who reported currently smoking.

^dIncludes women who responded definitely yes, maybe, or don't know when asked "Do you think you will try smoking anytime during the next year?"

Table 3. Secondhand Smoke Exposure Reported by Pregnant Women for Themselves and Their Young Children

	Dominican Republic	Argentina	Uruguay	Ecuador	Brazil	Guatemala
Total no.	192	796	716	746	749	752
Smoking allowed in the home, no. (%) ^a	146 (76.0)	440 (55.3)	389 (54.4)	199 (26.9)	271 (36.2)	131 (17.4)
Respondent exposed to secondhand smoke, no. (%) ^b	29 (15.1)	244 (30.7)	189 (26.5)	96 (12.9)	222 (29.6)	99 (13.2)
Respondents' young child(ren) exposed to secondhand smoke, no. (%) ^c	6 (13.6)	45 (13.6)	56 (18.2)	16 (5.2)	65 (20.9)	20 (5.9)

Note. Data from Argentina, Uruguay, Ecuador, Brazil, and Guatemala are from Bloch et al. (2008) "TABLE 4—Secondhand Smoke Exposure Reported by Pregnant Women for Themselves and Their Young Children in 9 Developing Countries: Survey on Tobacco Use, 2004–2005" (p. 5).

^aIncludes pregnant women who responded that smoking was allowed in the home (anywhere or certain areas) and/or by certain people.

^bIncludes pregnant women who responded always or frequently when asked, "How often are you indoors and around people who are smoking?"

^cIncludes pregnant women who responded always or frequently when asked, "How often are your children, aged 5 years or younger, indoors and around people who are smoking?"

women who smoke can harm their unborn baby's health (Table 4). However, only 33% believed tobacco use could cause general illness, 15% believed it could cause cancer, and 1% believed it can lead to death. When respondents were asked if they believe other people's cigarette/tobacco smoke is harmful to nonsmokers, 98% believed it was harmful but only 23% believed exposure to secondhand smoke could cause general illness among nonsmokers and 2% believed it could cause illness in children (Table 4). Just over half of respondents said quitting could improve overall health (53%), though few specific benefits were identified. When asked whether respondents believe it is difficult for someone who started smoking to quit, 68% believed it would be difficult to quit.

Conclusion

The Dominican Republic is a country where tobacco control activities have been nearly nonexistent, and countrywide public health surveillance on tobacco use prevalence, trends, and tobacco-related diseases are not currently part of the national public health agenda. A major strength of this study is that it provides the first look into understanding beliefs, attitudes, and exposure to tobacco use and secondhand smoke among pregnant women in the Dominican Republic. It also provides further suggestive evidence that tobacco use and SHS among pregnant women are a current or emergent public health problem in some countries of the Latin America and Caribbean region.

This study further provides a comparison between the Dominican Republic and Argentina, Uruguay, Ecuador, Brazil, and Guatemala regarding cigarette smoking prevalence among pregnant women to help characterize regional differences in tobacco use. Overall, 3% of respondents from the Dominican Republic reported being a current smoker, which is higher than Ecuador (0.8%) and Guatemala (0.8%) and lower than Argentina (10%), Uruguay (18%), and Brazil (6%). These rates are lower than the overall estimated smoking prevalence rates among adult women in Dominican Republic (11%), Argentina (24%), Uruguay (29%), Ecuador (6%), Guatemala (4%), and Brazil (12%; Shafey et al., 2009). Differences in cigarette smoking prevalence among adult women and pregnant women may be attributed to different epidemiological stages of the tobacco

epidemic each country is experiencing and the lack of comprehensive tobacco control measures that still remains in many LAC countries (Bianco et al., 2006). It is important to note that increased attention by policy makers has been given to the tobacco epidemic via the WHO's Framework Convention on Tobacco Control, which includes key provisions for evidence-based tobacco control (Bianco et al., 2006). Among the comparison countries included in this study, Argentina and Ecuador have signed the treaty and Brazil, Guatemala, and Uruguay have ratified the treaty. The Dominican Republic has neither signed nor ratified this treaty and has lagged behind these countries in developing comprehensive tobacco control policies.

Although the Dominican Republic had fewer women who ever tried smoking when compared with other Latin American countries, the majority of women who reported experimenting with smoking started at a very young age. Research shows that most women who become regular smokers as adults started experimenting with tobacco at an early age (U.S. DHHS, 2001). Data from the Global Youth Tobacco Survey (GYTS) indicate that historical gender differences in smoking uptake and prevalence among girls (aged 13–15 years) are changing, with girls smoking just as much and sometimes more than boys in many parts of the world (GYTS Collaborating Group, 2003). Postpartum smoking relapse, although not a specific aim of this study, is an important area of concern since review of existing research has shown postpartum smoking relapse rates to range from 70% to 85% among women who smoke but quit sometime during pregnancy (Fang et al., 2004). Approximately 7% of respondents in this study reported intent to begin or resume smoking after pregnancy, representing an area for further research.

Data from this study also suggest that SHS is a public health concern in the Dominican Republic, with 76% of households allowing smoking and both women and children experiencing considerable levels of SHS. Compared with other Latin American countries in the study of Bloch et al. (2008), participants from the Dominican Republic had the highest rates of smoking allowed in households. This is in marked contrast to the low percentage of Dominican respondents who reported SHS for themselves (16%) and their young children (14%), which could indicate underreporting or lack of awareness by respondents. Ossip-Klein et al. (2008) found that 76% of households allowed smoking in their

Table 4. Pregnant Women's Knowledge About Risks of Tobacco Use, Secondhand Smoke Exposure (SHS), and Benefits of Quitting

Total no.	192
Believe women who smoke can harm their own health, no. (%)	187 (97.4)
Specific disease/condition that can be named ^a	
General illnesses, no. (%)	64 (33.3)
Cancer (general), no. (%)	29 (15.1)
Lung cancer, no. (%)	51 (26.6)
Asthma, no. (%)	11 (5.7)
Respiratory or pulmonary illness, no. (%)	44 (22.9)
Death, no. (%)	2 (1.0)
Ear infection in children younger than 5 y/o, no. (%)	12 (6.3)
Believe smoking during pregnancy can harm the unborn baby's health, no. (%)	188 (97.9)
Believe secondhand smoke is harmful, no. (%) ^b	188 (98.4)
Specific disease/condition that can be named	
General illness to nonsmokers, no. (%) ^c	44 (22.9)
Lung cancer, no. (%)	19 (9.9)
Illness to children, no. (%)	3 (1.6)
Don't know, no. (%)	22 (11.5)
Believe it is difficult to quit, No. (%)	131 (68.2)
Benefits of quitting ^d	
Improve health, no. (%)	102 (53.1)
Save money, no. (%)	14 (7.3)

Note. ^a Includes pregnant women who answered yes when asked, "What illness or health effects, if any, can result from smoking cigarettes/tobacco?" y/o = years old.

^b Includes pregnant women who responded yes when asked, "Do you think SHS from cigarettes and tobacco can be harmful to other people?"

^c Includes pregnant women who responded yes when asked, "What illness or effects, if any, do you think can be caused by SHS from cigarettes and/or tobacco?"

^d Includes pregnant women who answered the question, "What do you think are the benefits, if any, from quitting?"

home across six underprivileged Dominican Republic communities. Wipfli et al. (2008) examined SHS among women and children in 31 countries and found that hair nicotine concentration was nearly twice as high in children younger than 5 years living with smokers compared with those older than 5 years living with smokers. Households that allowed smoking had a 12.9 increase in air nicotine concentration compared with smoke-free homes (Wipfli et al., 2008). Research has also found that women and children are most often exposed to tobacco in the home, given its key location for smoking, as they carry out their daily lives (Andrews and Heath, 2003). Consequently, many women and children cannot avoid being victims of SHS.

A difference emerged between the concepts of harm and illness in regards to tobacco use and SHS. The majority of respondents from this study believe that smoking can cause harm to both the smoker and unborn child, but only a third believe smoking can lead to illness. Similarly, the majority of respondents believe exposure to secondhand smoke is harmful to nonsmokers, but only 23% believe exposure to secondhand smoke could cause general illness. The difference between "harm" and

"illness" is an important one because of the potential cultural connotations that define these concepts. According to Kleinman, Eisenberg, and Good (1978), harm is culturally shaped by the way it is perceived, experienced, and the way disease is coped with and is based on cultural specific explanations of sickness, which are culturally based systems of meaning (p. 141). On the other hand, illness is based on a biomedical viewpoint in which the recognition and treatment of disease is the primary influence, and the cultural and social factors that shape the concept of harm as a legitimate clinical concern in treating disease are dismissed (Kleinman et al., 1978). These data suggest a clear need for a national effort to educate women on the actual health risks of tobacco use and SHS and the benefits of quitting as part of a comprehensive public health effort to thwart the tobacco epidemic in the Dominican Republic.

Limitations for this study include the low number of smokers in the study sample, the use of self-report data from participants (e.g., current smoking status) due to the inability to verify accuracy and reliability of such self-reports (e.g., biological verification of smoking status, which is often used in tobacco control research data, was not feasible), the overall small sample size, the use of only two urban settings, and the use of a convenience sample so that it is not known whether these results would be generalizable to other settings. In addition, this study did not allow for an in-depth examination of the sociodemographic and social-cultural factors that contribute to tobacco use and secondhand exposure during pregnancy but serves as a preliminary indication of the problem. Although the survey assessed cessation efforts among women who quit during pregnancy, no quitters were identified. Similar to the limitations in the study of Bloch et al. (2008), smoking during pregnancy is socially stigmatized; therefore, underreporting is expected and could have led to the underestimation of the scope of this public health issue in the Dominican Republic. The use of medical personnel as data collectors may have further increased the likelihood of underreporting. Anecdotal evidence of underreporting was provided by data collectors who stated that after interviews, some of the respondents who self-reported as nonsmokers were later observed smoking outside of the public health hospitals. Finally, there was a 4-year gap between the current study and that of Bloch et al., which may limit comparisons, though the lack of tobacco control activities in the Dominican Republic over this time period may mitigate these temporal concerns.

Results can help further the understanding of the maternal and child health aspect of this complex global tobacco epidemic and its potential effects on low- and middle-income countries such as the Dominican Republic. In addition, it provides a starting point for including tobacco use and SHS reduction as part of the Dominican Republic's public health efforts that include improving maternal and child health.

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Declaration of Interests

None declared.

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