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Perceptions of emerging tobacco products and nicotine replacement therapy among pregnant women and women planning a pregnancy☆

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ABSTRACT

The increasing availability of emerging non-combusted tobacco products (snus, dissolvables, and electronic nicotine delivery systems or ENDS) may have implications for pregnant women and women of reproductive age. We conducted 15 focus groups to explore how women perceive emerging non-combusted tobacco products and nicotine replacement therapy (NRT) in general, and during pregnancy. Sessions were held in 2013 in four U.S. cities. Participants were 18–40 years old and were pregnant smokers, pregnant quitters, or smokers planning a pregnancy. Responses were coded and analyzed to identify key themes using NVivo 10.0 qualitative software (QSR). Several themes emerged from focus groups. Participants generally found snus unappealing, but viewed dissolvables as a discreet and stigma-free way to use tobacco during pregnancy. Participants perceived NRT as ineffective and having undesired side effects. ENDS were thought to offer advantages over cigarettes, including use in smoke-free areas, lower cost, appealing flavors, and fewer health effects, and were seen by some as a potential quit aid. Some participants, however, worried that the lack of natural stopping point could lead to excessive use. Many participants felt that the use of any tobacco or NRT product is harmful during pregnancy.

Women seeking to reduce health risks or stigma related to smoking during pregnancy may perceive advantages of using some emerging products over cigarettes. These findings can inform future public health efforts to reduce risks associated with tobacco product use among women of reproductive age.

1. Introduction

Smoking during pregnancy remains a major preventable cause of maternal and infant morbidity and mortality and is causally associated with ectopic pregnancy, preterm delivery, placental abruption, placenta previa, and perinatal mortality (U.S. Department of Health and Human Services, 2014). An estimated 10% of pregnant women in the U.S. smoke cigarettes, exposing over 400,000 fetuses annually to nicotine and other toxicants (U.S. Department of Health and Human Services, 2014; Tong et al., 2013). Nicotine is a reproductive toxicant (State of California Environmental Protection Agency, 2016), and has adverse effects on pregnancy outcomes and fetal brain and lung development (U.S. Department of Health and Human Services, 2014). Because nicotine use during pregnancy in any form has health risks, nicotine replacement therapy (NRT) should only be considered if behavioral approaches fail and after discussion between a woman and her health care provider regarding the potential risks and benefits (Food and Drug Administration, 2016; American College of Obstetricians and Gynecologists, 2011).

The tobacco landscape has changed dramatically in recent years with the introduction and promotion of non-combusted products such as snus (moist snuff packaged in pouches that resemble small tea bags), dissolvable tobacco products (finely milled tobacco pressed into tablets, strips, or sticks), and electronic nicotine delivery systems (ENDS) (devices that utilize a heating element that vaporizes a liquid solution such as propylene glycol combined with nicotine and flavorings) including electronic cigarettes. Public health concerns related to the increased availability of non-combusted products include that they might appeal to individuals who otherwise would not have used tobacco products or to smokers who otherwise would have quit tobacco products entirely (U.S. Department of Health and Human Services, 2014). Furthermore, messages implying that non-combusted products are safe (often without discussing the health risks) appear frequently

Abbreviations: ENDS, electronic nicotine delivery systems; NRT, nicotine replacement therapy; FDA, Food and Drug Administration.

☆ Disclaimer: the findings and conclusions in this report are those of the authors and do not necessarily represent FDA or CDC positions or policies.

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in the media (Electronic Cigarette–ecigarette: Featured on The Doctors TV Show, 2010; International Vape Group, 2016; Vapour Art, 2016; RJ Reynolds, 2016; Daily Mail, 2013; British American Tobacco, 2016) and could influence consumers' tobacco use behaviors.

Pregnant smokers are generally aware that smoking causes fetal harm and are motivated to quit smoking or reduce their exposure to harmful chemicals (Tong et al., 2008, 2013; Polen et al., 2105). Therefore, pregnant women and those planning a pregnancy may be particularly susceptible to messages regarding the health effects non-combusted products. Limited data suggest this is the case; in a 2015 survey of a convenience sample of pregnant women, 43% of the entire sample reported that electronic cigarettes are less harmful to a fetus than conventional cigarettes and 74% of ever-electronic cigarette users reported that reducing harm was a reason for past use (Mark et al., 2015).

In the current study, we assessed women's perceptions toward emerging non-combusted tobacco and NRT products. Specifically, we conducted qualitative research among pregnant smokers, pregnant quitters, and female smokers planning a pregnancy to address two research questions: 1) How do women perceive emerging non-combusted tobacco products and NRT use in general and during pregnancy? and 2) How do women perceive the health risks associated with these products?

2. Methods

The authors developed a screening questionnaire and facilitator's guide and tested it in two pilot focus groups conducted in Atlanta, Georgia. Screening questionnaires were designed to collect basic demographic information and to ensure participants met inclusion criteria (age 18–40 years, currently smoking and pregnant or planning to become pregnant in the next year; pregnant and had quit smoking and remained abstinent for at least 30 days). Topics in the facilitator's guide included tobacco use history, familiarity with emerging tobacco products (snus, dissolvables, electronic cigarettes or ENDS) and NRT, general perceptions of emerging products and NRT, perceptions of emerging products and NRT when used during pregnancy, and health effects of emerging products and NRT in general and during pregnancy. Pilot study findings were used to refine the two instruments. Fifteen focus groups were conducted between September and November 2013 in Memphis, Tennessee; Philadelphia, Pennsylvania; Oklahoma City, Oklahoma; and Billings, Montana (Table 1). City selection was based on the prevalence of smoking among pregnant women. Two of the 15 groups were conducted in Spanish; the remaining groups were conducted in English. Committees for the Protection of Human Subjects from CDC and RTI International reviewed and approved the study protocol. Prior to participating in the focus group discussion, each participant signed an informed consent form agreeing to participate in the study and to have discussions observed and audio and video recorded.

Professional market research facilities recruited participants using their proprietary databases. All respondents were screened for eligibility by telephone. Because we relied on a convenience sample, data were not collected for nonparticipants. A total of 102 women were recruited, with an average of 7 women per group (groups ranged from 5 to 9 participants; one informant interview was conducted with a single participant). Except for the two groups conducted with Spanish-speaking Hispanic women, groups were not segmented by race or ethnicity. An experienced female moderator conducted the focus groups, which were held at the market research facilities and lasted approximately 90 min. Study staff observed the groups *via* the video stream or from the facilities' observation room. Women were shown specific products at the time the product category was introduced into the discussion (Table 2). Products were introduced in rotating order to minimize order bias. At the conclusion of the groups, participants were given a brochure describing the health effects of smoking during pregnancy and resources for quitting or staying quit (including the National Quitline number 1-800-QUIT-NOW and online resources), and monetary compensation of $75.

Researchers followed established procedures to analyze data (Krueger and Casey, 2000; Southwell et al., 2005). Audio tapes were transcribed and uploaded into a qualitative software program (QSR NVivo 10.0). Data were segmented into three groups: pregnant smokers, pregnant quitters, and smokers planning a pregnancy. The research team coded the responses according to a set of codes developed *a priori* that represented key constructs, including general perceptions related to non-combusted products and NRT and perceptions of health risks associated with non-combusted products and NRT. Emergent codes were developed for responses that did not fit with *a priori* codes. The research team identified key themes. To determine intercoder reliability, three analysts independently coded segments from a transcript. We calculated Krippendorff's alpha (Hayes and Krippendorff, 2007) for each category and found adequate agreement with alpha exceeding 0.70 for all categories. The research team then organized the key themes around the two research questions. The goal of this formative study was to identify the range of perceptions surrounding the use of emerging tobacco products and NRT, and not to quantify the frequency of responses or consensus of opinion. Throughout the report, quotes from participants are used to illustrate the themes.

3. Results

Participant characteristics are described in Table 3. Forty-two percent of participants were smokers planning to become pregnant, 31% were pregnant smokers, and 26% were pregnant quitters. Nearly half (49%) were non-Hispanic white, 24% were non-Hispanic African American, and 22% were Hispanic. Almost two thirds (61%) had at least some college education. One third (33%) had tried or were currently using products other than traditional cigarettes, including snus, chewing tobacco, hookah, and electronic cigarettes. Demographic characteristics varied by pregnancy/smoking status (Table 3).

3.1. Prior experiences with tobacco and NRT

Most current smokers had tried in the past to quit; methods included NRT, electronic cigarettes, and “cold turkey.” Women often cited stress as the reason for subsequent relapse. Motivations for quitting during the current pregnancy included a desire to protect the health of their babies and a decreased desire to smoke, often related to nausea.

Many current smokers reported that they had tried to quit in preparation for or after becoming pregnant, or had cut down on the number of cigarettes smoked per day.

Table 1
Location and segmentation of focus groups, U.S., 2013.

Billings, MT		Oklahoma City, OK		Memphis, TN		Philadelphia, PA	
Pregnant	Planning	Pregnant	Planning	Pregnant	Planning	Pregnant	Planning
Smokers children Smokers no children Quitters no children	Smokers children	Smokers no children[a] Quitters children Quitters children	Smokers children Smokers no children[a]	Smokers no children Quitters children	Smokers children Smokers no children	Quitters children	Smokers no children

[a] Spanish speaking.