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Perceived support to stay quit: What happens after delivery?

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Abstract

Objective—To assess whether perceived changes in postpartum support were associated with postpartum return to smoking.

Study Design—This is a prospective repeated measures, mixed methods observational study. Sixty-five women who smoked prior to pregnancy were recruited at delivery and surveyed at 2, 6, 12, and 24 weeks postpartum; in-depth interviews were conducted when participants reported smoking.

Results—Fifty-two percent self identified as white, non-Hispanic. Forty-seven percent resumed smoking by 24 weeks postpartum. Women who had returned to smoking by 24 weeks had a significantly larger decrease in perceived smoking-specific support than women who remained abstinent ($p < 0.001$). By 24-week postpartum follow-up, only 24% of women reported that an obstetric clinician had discussed how to quit/stay quit. When qualitatively interviewed, more than half of women reported having no one to support them to stay quit or quit smoking.

Conclusion—Following delivery, women lack needed smoking-specific support. Decline in perceived smoking-specific support from family and friends is associated with postpartum smoking resumption.

Keywords

postpartum; relapse prevention; smoking cessation

1. INTRODUCTION

Approximately one-third of smokers quit once they learn that they are pregnant (Fingerhut, Kleinman, & Kendrick, 1990; Floyd, Rimer, Giovino, Mullen, & Sullivan, 1993; LeClere & Wilson, 1997; Severson, Andrews, Lichtenstein, Wall, & Zoref, 1995; Solomon & Quinn, 2004; Cnattingius, 2004). Women who remain tobacco abstinent after delivery experience health benefits that include protection of infants from secondhand smoke exposure, lower risk of poor pregnancy outcomes in subsequent pregnancies, and decreased risk for themselves of tobacco-related health problems (Mullen, 2004). However, up to two-thirds of women who stop smoking during pregnancy resume smoking within 6 months after delivery (Colman & Joyce, 2003; Fingerhut et al., 1990; Martin et al., 2008; McBride & Pirie, 1990; McBride, Pirie, & Curry, 1992; Ratner, Johnson, Bottorff, Dahinten, & Hall, 2000); this rate of relapse has remained static over the past two decades.

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One factor predictive of postpartum relapse is perceived low social support, which is of concern since the postpartum period is a time during which women in general might feel a lack in needed support. This is evidenced through data from the Pregnancy Risk Assessment Monitoring System (PRAMS), in which women who were 2-9 months postpartum indicated lack of needed social support as their most frequent concern (Kanoetra et al., 2007). Postpartum women's perceived dearth in support might be, in part, due to a shift in focus away from women toward their infants and a corresponding decline in women's social support. Indeed, a decline in partners' provision of emotional and smoking-specific support has been documented from pregnancy through the first year postpartum (McBride et al., 2004; Pollak, Baucom, Peterson, Stanton, & McBride, 2006; Pollak & Mullen, 1997).

Declines in women's perceived support may have negative ramifications for women who are struggling to maintain tobacco abstinence, but this has not been extensively studied. A few studies have examined the relationship between perceived partner social and smoking-specific support and postpartum relapse but have yielded somewhat differing results. Pollak and Mullen (1997) studied 72 women who quit smoking during pregnancy and found that neither perceived partner social nor smoking-specific support for quitting were associated with postpartum return to smoking (Pollak & Mullen, 1997). However, McBride and colleagues (1992) studied 106 women who quit smoking during pregnancy and found a significant negative relationship between perceived spouse support and postpartum relapse, even after controlling for the spouse's smoking status; women who perceived their spouses to be more helpful during pregnancy were more likely to relapse by 6 months postpartum compared women who had perceived their spouses to be less helpful during pregnancy (McBride et al., 1992). Pollak and colleagues (2006) examined women's perceived helpfulness with regard to quitting or cutting down on smoking and found that, compared to women who did not quit smoking during pregnancy and who had quit during and stayed quit postpartum, women who had quit smoking during pregnancy but relapsed by 12 months postpartum reported a steeper decline in perceived helpfulness. A potential explanation for these differing results is that an influential mechanism of postpartum relapse is women's perceived decrease in support postpartum. We will examine this issue in-depth in this paper, looking at women's perceived changes in both social and smoking specific support from all social networks across the 6-month postpartum period.

Also unknown is the extent to which health care professionals who see postpartum women address tobacco or provide support to remain tobacco abstinent after pregnancy. Data from the National Ambulatory Medical Care Survey (NAMCS) found that physicians caring for pregnant women identified pregnant women's smoking status at 81% of visits but provided smoking cessation counseling at only 23% of pregnant smoker visits (Moran, Thorndike, Armstrong, & Rigotti, 2003). Another study conducted in New Zealand documented that 85% of general practitioners will ask pregnant patients about their smoking status, yet only 71% of general practitioners will advise women to quit (Glover, Paynter, Bullen, & Kristensen, 2008). To date no one has examined how often clinicians caring for women postpartum identify smoking or counsel them about quitting/staying quit.

The objective of this paper is to determine whether a postpartum decline in perceived support is associated with return to smoking in the postpartum period. The overall study from which these data were collected was to examine the role of mood in relapse to smoking (Park et al., In Press). We enrolled women, immediately after delivery, who had quit smoking during pregnancy and assessed perceived support and smoking status five times over 24 weeks. We hypothesized that a decrease in perceived support during the postpartum period would be associated with an increased likelihood of smoking at 24 weeks postpartum. Using qualitative methods, we also explored how women who had returned to smoking by 24 weeks postpartum perceived their support. Our study builds on previous research by (1) assessing the influence of changes in postpartum perceived support from all social networks (family, friends,

coworkers) on postpartum smoking, (2) combining quantitative measures of perceived support with qualitative reports of support, and (3) quantifying support received from obstetric clinicians.

2. MATERIALS AND METHODS

In this repeated measures observational study approved by the Partners HealthCare Institutional Review Board, women who had quit during or just before pregnancy were enrolled at delivery and were assessed at 2, 6, 12 and 24 weeks postpartum. Women who reported that they were smoking were asked open-ended questions about their smoking experiences. Methods have been previously described (Park et al., In Press).

2.1 Study Population

Recruitment was conducted at the Brigham and Women's Hospital (BWH) Obstetrics Service in Boston, Massachusetts. Women were eligible if they were: 1) recent quitters (smoked ≥ 1 cigarette per week within six months prior to conception, but did not smoke during the last month of pregnancy), 2) had access to a telephone, 3) were at least 18 years old, and 4) spoke English. Women were excluded if they had a history of severe psychiatric illness (e.g. history of schizophrenia or major depressive disorder at delivery) or had a newborn that was under 25 weeks gestation or with a major congenital anomaly.

2.2 Patient Recruitment and Data Collection

Recruitment took place from January to October 2005. Each weekday, a research assistant (RA) screened the hospital chart and electronic medical record of all new admissions to BWH's postpartum floors to identify smoking status and obtained approval from the patient's nurse or obstetrician to approach potentially eligible patients. The RA administered the American College of Obstetricians and Gynecologists (ACOG) recommended screening smoking status question (modified for the postpartum period) (American College of Obstetricians and Gynecologists, 2002), obtained informed consent, and administered the baseline survey. Participants were reimbursed \$15 for each assessment and an additional \$10 was given to participants who had completed all 4 follow-up assessments.

2.3 Measures and data collection

Baseline data were collected on demographic factors, smoking characteristics (pre-pregnancy smoking level, desire to stay quit, partner smoking status), and perceived support. Women were asked to rate how often emotional ["Someone you can count on to listen to you when you need to talk"], informational ["Someone to give you information to help you understand a situation"], and instrumental ["Someone to help take care of your baby if you were unable to do it yourself"] support was available to them (Sherbourne & Stewart 1991). They were also asked about smoking-specific support ["How supportive of your quitting smoking/staying quit have your family, friends, and coworkers been?"]. All questions had a 5-item Likert-type response scale. At the 12 and 24 week follow-up surveys, participants responded yes or no to the question, "During any of your prenatal care visits, did a doctor, nurse, or other health care worker spend time discussing with you how to quit smoking or how to stay quit?"

Perceived support and smoking status were assessed at each follow-up telephone survey. A woman was defined as a smoker if she reported having smoked a cigarette, even a puff, in the past week. Four individuals, who were smokers at 12 weeks and missed the 24 week survey, were classified as smokers at 24 weeks. If a participant reported that she had smoked in the past week, the research assistant administered a semi-structured qualitative interview guide with questions about the relapse episode and attributions (Park et al., In Press) as well as coping and support (What do you do to cope with not smoking? What helps you to cope with not

smoking? Who helps you to not smoke? How do they help you?). Interviews lasted approximately 20 to 30 minutes.

2.4 Data Analysis

Quantitative analyses were conducted with SAS version 9.1.3 (SAS Institute, Cary, NC). We conducted univariable analysis to investigate baseline factors associated with smoking at 24 week follow-up. Because of the small sample size and non-normal distributions, Wilcoxon rank sum tests were used to compare variables between smokers and nonsmokers. We conducted longitudinal analyses with mixed-effects regression models that assessed the relationship between the slope of change in perceived support scores over time and smoking status at 24 week follow-up. To enable us to see the effect of changes in perceived support over the entire 24 weeks as well as over the initial 12 weeks, we modeled these variables in two ways: (1) using all 5 observation points (baseline to 24 weeks) and (2) using 4 observation points (baseline to 12 weeks).

Qualitative interviews were audiotaped and transcribed. Content analyses were conducted using NVIVO 7 software and an iterative multi-step process performed by two research assistants using the techniques described by Miles & Huberman (Miles & Huberman, 1984). Major and minor themes within each content area were identified. Results from each phase of the analyses were compared; discrepancies were discussed with the Principal Investigator until resolution was reached. To ensure dependability and credibility (Devers, 1999), all interviews were audiotaped, coders analyzed the data independently, and at each phase of the analyses the coders discussed their findings and compared their coding to the raw data.

3. RESULTS

During the 10-month study period, the hospital charts of 3,666 postpartum women were screened. Due to logistical reasons (e.g., patient discharged before the research assistant was able to screen), we were unable to screen 34 patients whose charts indicated they were potentially eligible. 101 eligible patients were identified and 65 patients (64% of those eligible) enrolled. The most common reasons for refusal were being overwhelmed during their post-delivery stay (44%) or anticipating that they would not have time to participate in the follow-up surveys (31%); 6% did not want to talk about their smoking history. Forty-four patients whose charts indicated they were potentially eligible were ineligible once approached: 41 were ineligible due to their smoking status (nonsmokers, long-term former smokers (quit > 6 months prior to conception), or current smokers) and 3 did not speak English. Follow-up assessments were completed with 80% of participants at 2 weeks, 82% at 6 weeks, 80% at 12 weeks, and 75% at 24 weeks.

Fifty-two percent self-identified as white, non-Hispanic, 20% as Black, and 22% as Hispanic (Table 1). Pre-pregnancy mean smoking level was 8.4 (sd=6.2) cigarettes per day. At baseline, 92% expressed a strong desire to stay quit and their perceived emotional, informational and baby support as well as smoking-specific support was high (total means 4.3-4.5 on scales of 1-5; medians = 5). Smoking rates were 10% at 2 weeks, 25% at 6 weeks, 37% at 12 weeks, and 47% at 24 weeks. The only significant differences in baseline sociodemographic and smoking characteristics between 24-week smokers versus nonsmokers were that smokers were more likely to have other children and to be unhappy or unsure about the pregnancy (data not shown).

3.1 Qualitative impressions of smoking and support among women who smoked

Twenty-five participants resumed smoking during the study period, and we report on the results of the coping and perceived support questions. When asked who helps them to not smoke, half

of the women reported that they had no one. One woman simply stated, “Nobody helps” and another said that she has “...no one to go to.” Only one mentioned a healthcare professional providing support.

Among women who responded that they had support, the majority of this support came from their partner/the baby’s father. However, many described this support as negative or not helpful. One woman said, “My boyfriend doesn’t smoke... He would break [the cigarettes] all up and he tells me all the time, *It’s not good, it’s not good...*” The most frequently mentioned positive support was general support and encouragement, noted by vague statements such as: “They talk to me” or “They encourage me.” A few women commented that being reminded of the negative health consequences of smoking for themselves or suggestions for alternative behaviors to smoking was helpful.

When asked how they coped with not smoking, many identified distraction, such as, “I try to put it out of my head and not think about it” or “I keep busy.” One woman said healthy eating and another noted that exercise helped. However, quite a few admitted “nothing,” that they did not have a means of coping without smoking. Others identified maladaptive coping mechanisms such eating. One woman acknowledged, “Eating is the other thing I do when I can’t smoke.”

3.2 Obstetric Provider assistance

At baseline, 52% of the subjects reported that any prenatal provider had discussed how to quit or stay quit during their pregnancy. At 24-week follow-up, all but 3 of the 65 women had had a postpartum medical visit. The average number of postpartum obstetric visits was 2 (median=2). However, of the women who had had any postpartum medical visit, only 24% reported that an obstetric provider had discussed with them how to quit or stay quit.

3.3 Perceived support and 24-week smoking status

Figure 1 illustrates the comparison of perceived emotional support and smoking-specific support between women who were smokers versus women who were nonsmokers at 24-weeks. For smokers, there is a visible drop in perceived smoking-specific support. Perceived emotional support at baseline was associated with 24-week quit status ($p=.02$) (Table 2). Women who were smoking by 24-weeks reported lower levels of emotional support at delivery, compared to women who were nonsmokers at 24-weeks. However, baseline smoking-specific perceived support was not associated with 24-week smoking status ($p=.61$).

Table 3 displays the relationship between the perceived change in support scores postpartum and smoking status at 24 weeks. The mean slope of perceived emotional support scores between baseline and 24 weeks postpartum decreased slightly among both women who remained abstinent (-0.003 units/week) and among women who smoked (-0.002 units/week) ($p=0.92$). Women who remained abstinent at 24 weeks had a smaller mean decrease in perceived smoking-specific support scores over 24 weeks (-0.006 units/week) compared to women who resumed smoking (-0.045 units/week, $p<0.001$). Similar patterns were seen examining the effect of the mean slope of perceived support scores from 0-12 weeks on 24-week smoking status; smokers had a significant decrease in perceived smoking support, compared to nonsmokers ($p=0.003$), but there was not a significant difference between smokers and nonsmokers in postpartum changes of other types of perceived support.

4. COMMENT

This study examined the influences of changes in postpartum perceived smoking-specific and social support in a cohort of women who had quit smoking by the end of the pregnancy. Our

findings revealed that perceived smoking-specific support decreased postpartum compared to emotional support, and this decrease in perceived smoking-specific support was associated with smoking at 24-weeks postpartum. Baseline perceived smoking-specific support was not associated with 24-week smoking status, implying that it is the perceived change in this support that affects smoking relapse.

Quantitative findings also revealed that many of these women are often not getting professional support, prenatally or postpartum, to assist them in their efforts to stay quit. The U.S. Preventive Services Task Force (U.S. Preventive Services Task Force, 2009) currently recommends that clinicians ask all pregnant women and adults about tobacco use and provide tobacco cessation interventions for all who do use. However, only half of women in our study reported discussing their smoking status with an obstetric provider during their pregnancy, and only one out of every four women discussed their smoking status postpartum.

Qualitative findings illustrated the dearth in women's personal and professional support to stay quit and also revealed a need for improvement upon the type of smoking-specific support that women receive. Previous research has documented an increase in negative smoking-specific support postpartum (McBride et al., 2004), and in our study women who relapsed described negative support to stay quit (e.g., a partner breaking up a woman's cigarettes or chastising her smoking). In contrast, women's descriptions of perceived positive smoking-specific support were vague, and they possibly need help in identifying and eliciting positive smoking-specific support.

Research has been mixed on whether a husband/partner who smokes is a risk factor for postpartum relapse (Ma, Goins, Pbert, & Ockene, 2005; McBride & Pirie, 1990; McBride et al., 1992; Mullen, Richardson, Quinn, & Ershoff, 1997; Polanska, Hanke, & Sobala, 2005), but our study did not find that partner smoking status was related to postpartum relapse (Park et al., In Press). Possible explanations for this difference in findings is that it is the interaction between partner smoking status and type of support that influences postpartum abstinence or that women's perceptions of the support is influenced by their partners' smoking status (McBride et al., 1998; Pollak & Mullen, 1997). One might expect that nonsmoking partners provide more positive smoking-specific support than smoking partners, but this may not be the case. A nonsmoking partner might not be supportive because he might have less tolerance for a woman's difficulty maintaining her quit. Similarly, it is possible that a smoking partner might be able to better empathize with a woman's struggle to stay quit since he himself had experienced challenges in trying to do so. On the other hand, a smoking partner's unwillingness to change his smoking habits could be detrimental to a woman's abstinence efforts, but a nonsmoking partner might be really dedicated to maintaining a smokefree household and so offer tremendous support.

The study findings indicate that two possible types of relapse prevention interventions are needed: a communication intervention for women and their family members and an obstetric clinician-delivered educational intervention. An intervention aimed at improving women's communication abilities with their friends and family might enhance women's capacity to identify and express what type of smoking-specific support they desire and need postpartum. One study found a disconnect between pregnant women's perceptions of smoking-specific support compared to their partners' perceptions of smoking-specific support provided (Pollak et al., 2001); women perceived their partners' support to be negative, whereas partners perceived that they provided positive support. A communication intervention could focus on helping partners and family members learn how to provide needed positive smoking-specific support postpartum. Nonsmoking partners and family members might benefit from learning how to be supportive and nonjudgmental and smoking partners and family members could be helped in their own quitting efforts.

Our findings indicate that obstetric clinicians may miss opportunities to provide smoking-specific support. Regardless of prenatal smoking status, it would be beneficial if obstetricians asked about postpartum smoking in order to identify women who may benefit from further support and referrals to quit smoking or stay quit. Brief, supportive office-based interventions in which obstetric clinicians inquire about smoking status and reinforce the importance of women staying quit for themselves as well as for the health of their infants should be delivered repeatedly throughout pregnancy and at the 6-week obstetric visit. Recent midwife and nurse-delivered home interventions have demonstrated that prenatal and postpartum support can be protective of postpartum relapse (French, Groner, Wewers, & Ahijevych, 2007; Polanska et al., 2005); interventions that combine obstetric clinic-based and home-based support could be particularly beneficial for these women.

The study's limitations should be noted. Since this was a small study, the number of participants was small, which limits the generalizability of our findings. In addition, we relied on self-report to assess smoking status and thus cannot verify that participants were truly quit late in pregnancy or had not returned to smoking postpartum.

In summary, these results suggest that many women who are able to stay quit during pregnancy experience a perceived decline in smoking-specific support postpartum, which is in turn related to postpartum relapse. Suggestions to improve rates of postpartum smoking abstinence include an increase in obstetric clinicians' support during prenatal and postpartum visits as well as communication interventions to teach women how to elicit positive smoking cessation support and teach partners and family members how to provide positive support.

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Figure 1.
Mean Support by Smoking Status at 24 Weeks.

TABLE 1

BASELINE CHARACTERISTICS (n=65)

<u>Sociodemographic Characteristics</u>	<u>N%^a</u>
Age in years (M, SD)	28.8 (6.1)
Education	
< High school	5 (7.7)
High school grad/some college	35 (53.8)
College grad or more	25 (38.5)
Insurance Type	
Private	29 (48.3)
Marital Status	
Married/living with a partner	36 (55.4)
Race/Ethnicity	
White	34 (52.3)
Black	13 (20.0)
Hispanic	14 (21.5)
Other	4 (6.2)
Nulliparous	44 (67.7)
Unhappy/not sure about pregnancy	21 (32.8)

<u>Smoking characteristics</u>	<u>N%^a</u>
Mean number of cigarettes/day before pregnancy (SD)	8.4 (6.2)
Desire to stay quit (a lot)	59 (92.2)
Spouse current smoker	25 (42.4)

^aTotal may not add up to 100% due to missing values

TABLE 2**BASELINE SUPPORT CHARACTERISTICS ASSOCIATED WITH SMOKING STATUS AT 24-WEEKS POSTPARTUM**

	Total (n=49)	Smoker (n=23)	Nonsmoker (n=26)	
Support Type	Mean (SD)	Mean (SD)	Mean (SD)	P
Emotional support ^a	4.4 (0.9)	4.1 (1.12)	4.7 (.45)	.02
Informational support ^a	4.3 (0.9)	4.1 (1.1)	4.5 (.71)	.18
Baby assistance support ^a	4.5 (0.9)	4.3 (.83)	4.7 (.63)	.08
Smoking-specific support ^b	4.5 (0.8)	4.4 (1.0)	4.6 (.64)	.61

Support scales range 1-5; higher = greater support

^a Emotional, informational, and baby support are items from the MOS Social Support Survey regarding the availability of different types of social support

^b Smoking-specific support is support from family, friends, and coworkers to quit smoking/stay quit

TABLE 3

CHANGE IN SUPPORT SCORES AND SMOKING STATUS AT 24 WEEKS POSTPARTUM: MIXED EFFECTS REGRESSION MODELS

	Smoking status at 24 week follow-up		
	Smoker (n=23)	Nonsmoker (n=26)	
Slope of Support Scores (0-24 weeks)^a	Mean (SE)	Mean (SE)	P
Emotional support	-0.002 (0.008)	-0.003 (0.010)	0.92
Informational support	-0.009 (0.007)	-0.003 (0.009)	0.54
Baby support	-0.021 (0.009)	-0.003 (0.012)	0.12
Smoking-specific support	-0.045 (0.009)	-0.006 (0.011)	<0.001

Slope of Support Scores (0-12 weeks)^a	Mean (SE)	Mean (SE)	P
Emotional support ^b	-0.005 (0.015)	0.011 (0.021)	0.42
Informational support ^b	-0.022 (0.012)	0.008 (0.017)	0.08
Baby support ^b	-0.023 (0.014)	-0.001 (0.019)	0.25
Smoking-specific support ^c	-0.066 (0.015)	-0.004 (0.021)	0.003

Note: slope unit of analysis = 1 week

^a Support scales range 1-5; higher = greater support

^b Emotional, informational, and baby support are items from the MOS Social Support Survey regarding the availability of different types of social support

^c Smoking-specific support is support from family, friends, and coworkers to quit smoking/stay quit