A Cross-Sectional Study of Happiness and Smoking Cessation among Parents

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Abstract

Introduction—Smoking cessation among adults is associated with increased happiness. This association has not been measured in parents, a subset of adults who face uniquely stressful and challenging circumstances that can affect happiness.

Aims—To determine if parental smoking cessation is associated with increased happiness and to identify characteristics of parental quitters who experience increased happiness.

Methods—1355 parents completed a 12-month follow-up interview from a U.S. national trial, Clinical Effort Against Secondhand Smoke Exposure (CEASE). Multivariable logistic regression examined if level of happiness was independently associated with quitting smoking and identified characteristics associated with feeling happier after quitting smoking.

Results/Findings—Parents' level of happiness was independently associated with quitting smoking (aOR=1.60, 95% CI=1.42–1.79). Factors associated with increased happiness among quitters include engaging in evidence-based cessation assistance (aOR=2.69, 95% CI=1.16–6.26), and adopting strictly enforced smoke-free home (aOR=2.55, 95% CI=1.19–5.48) and car (aOR=3.85, 95% CI=1.94–7.63) policies. Additionally, parents who believed that being a smoker got in the way of being a parent (aOR=5.37, 95% CI=2.61–11.07) and who believed that thirdhand

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Conflict of Interest
None.

Ethical Standards
The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.
smoke is harmful to children (aOR=3.28, 95% CI=1.16–9.28) were more likely to report feeling happier after quitting.

**Conclusions**—Parents who quit smoking reported being happier than parents who did not quit. Though prospective studies can clarify what factors cause an increase in happiness, letting pediatricians know that most parents who smoke report being happier when quitting may facilitate communication with parents around cessation.

**Trial registration**—ClinicalTrials.gov, Identifier: NCT00664261.

**Introduction**

Research suggests that smoking cessation is associated with increased happiness (Kahler et al., 2014; Mathew et al., 2013; Shahab & West, 2009; Shahab & West, 2012; Wang, Wang, Lam, Viswanath, & Chan, 2014). This association has not yet been studied in parents, a population that generally encounters greater negative emotions, sleep disturbance, financial difficulties, and more troubled marriages compared to adults who are not parents (Nelson, Kushlev, & Lyubomirsky, 2014). A common role for pediatricians is helping parents cultivate resilience in the face of stressful life circumstances (Zand, Braddock, Baig, Deasy, & Maxim, 2013). Other health professionals such as general practitioners play a similar role in their care for families. While more than a decade of research demonstrates that efforts toward family-wide smoking cessation should be considered a fundamental aspect of pediatric practice (Winickoff et al., 2005; Winickoff et al., 2008; Winickoff et al., 2012) it is not known if parental smoking cessation is associated with increased happiness and life satisfaction.

By helping parents quit smoking, pediatricians have the potential to improve the health of all family members. Unfortunately, efforts in the pediatric setting to provide evidence-based assistance to parents who smoke are strikingly low (Nabi-Burza, et al., 2012, Winickoff, et al., 2003). In a previous study we found that the mean rate for delivering meaningful assistance for parental cigarette smoking was only 3.5% (range 0% to 8%) in the control group (Winickoff et al., 2013). An American Academy of Pediatrics (2006) Periodic Survey of Fellows highlighted barriers toward counseling of parents who smoke and found that 39% of pediatricians were unsure that pediatrician advice is one of the best ways to help parents stop smoking and only 17% of pediatricians believed parents wanted their help to stop smoking. Another survey showed that 20% of pediatricians believed delivering parental smoking cessation services would cause anger in parents (Pérez-Stable et al., 2001). These percentages underscore the clinical importance of this study as many pediatricians appear unconvinced that helping parents quit smoking has lasting positive impacts on the pediatrician/parent relationship and this apprehension likely discourages child health care clinicians from providing assistance for parental smoking.

Research on the broaden-and-build theory of positive emotions has demonstrated that positive emotions trigger responses in people that may be beneficial when quitting smoking such as discovering new ways of thinking and behaving, enhancing emotional well-being, and building psychological resilience and the ability to cope with adversity (Fredrickson, 2001; Fredrickson & Joiner, 2002). Understanding that parents derive positive emotions
from quitting smoking can lead to developing new clinical strategies that may increase the chances that parents remain smoke-free. Furthermore, the knowledge gained from this study can aid in devising more effective health promotion messages to encourage quit attempts and increase smoking parents’ perceived benefits of quitting.

This study’s first objective was to assess if quitting smoking was associated with increased parental happiness. Our second objective was to identify characteristics that were associated with increased happiness among parental quitters. According to the theory of Authentic Happiness, happiness consists of multiple elements: positive emotion, engagement, and meaning (Seligman, Parks, & Steen, 2004). Therefore we hypothesized that parental quitters would report greater happiness if they had engaged with cessation assistance such as a quitline, an online cessation assistance program, or nicotine replacement therapy while quitting than those who did not use these resources. We also hypothesized that parents who attributed greater meaning to quitting (i.e., quitting is more important to overall well-being and continuing to smoke would be more harmful to health) would be happier upon quitting. Similarly we thought parents who reported greater parent/smoker role conflict would be happier after successfully quitting smoking. We also examined if goal-setting in relation to setting smoke-free home and car policies was associated with increased happiness among quitters. Lastly, self-efficacy has been identified in a number of studies as a predictor of succeeding with quit attempts (Ockene et al., 2000; Smit, Hoving, Schelleman-Offermans, West, & de Vries, 2014), though the generalizability of these findings under different conditions remains unclear (Gwaltney, Metrik, Kahler, & Shiffman, 2009). We hypothesized that parents who had more confidence about being able to remain quit would also report more happiness after quitting smoking as previous research suggests there is an association between changes in general self-efficacy and changes in positive affect (Schutte, 2014).

**Methods**

**Design**

The data were collected as part of a larger randomized controlled trial, the Clinical Effort Against Secondhand Smoke Exposure (CEASE). This trial studied the implementation of an intervention to deliver smoking cessation services and smoke-free home and car advice to families in the outpatient pediatric office setting, and practices were randomized to an intervention or an usual care control arm (Winickoff et al., 2013). The trial was conducted in 20 pediatric offices recruited by Pediatric Research in Office Settings (PROS), a national network of pediatric practices within the practice-based research network of the American Academy of Pediatrics (Slora, Harris, Bocian, & Wasserman, 2010). The study protocol was approved by the Institutional Review Boards of the American Academy of Pediatrics, Massachusetts General Hospital and by individual practice review boards as necessary. Data were collected from 2009 to 2012.

**Recruitment**

Research assistants at each practice administered a screening questionnaire to adults exiting the pediatric office after their child’s visit, with the goal of screening all adults. Adults who accompanied a child to an office visit were eligible to participate if they were a parent or...
legal guardian of the child, over 18 years old, English speaking, and reported they had “smoked a cigarette, even a puff, in the past 7 days.” The research assistant obtained informed consent from eligible parents, administered an enrollment survey and gave $5 to each parent upon completion of the survey. The research assistant continued consecutively screening all adults leaving the office until approximately 100 parents were recruited at each practice. The enrolled parents were prospectively followed and participated in a telephone survey at 12 months.

Measures

Each parent was asked if he/she had “smoked a cigarette, even a puff, in the past 7 days” at the baseline exit interview and at a follow-up telephone survey conducted at 12 months. Parents were considered to have quit smoking at 12 months if he/she reported not smoking a cigarette, even a puff, within the past 7 days.

Parents’ level of happiness was measured at the 12-month interview using a single-item scale similar to those previously used in large-scale surveys such as the European Social Survey, the General Social Survey, the World Values Survey, and the British Household Panel Survey (Nelson et al., 2014). Measuring happiness using a single-item self-rating scale has been demonstrated to be a reliable, valid, and appropriate method to measure happiness for large-scale surveys (Abdel-Khalek, 2006). All interviewed parents were asked the following question: “On a 1 to 10 scale of general happiness, where 1 is ‘a very unhappy person’ and 10 is ‘a very happy person,’ how happy do you consider yourself?”

An additional measure of happiness reported by Shahab and West (2009) in their study of happiness and smoking cessation in adult populations was asked of parents who successfully quit smoking at 12 months. Parents were asked, “Which of the following 3 statements best applies to you:

1. I feel happier now than when I was smoking,
2. I feel about the same now as when I was smoking, or
3. I feel less happy now than when I was smoking.”

Other variables measured at 12 months included ten-level Likert scale questions with responses coded from 1 (not at all) to 10 (extremely). Parents rated the statements, “How likely is it that continuing to smoke would have harmed you?” and “How likely is it that continuing to smoke would have harmed your children?” Parents rated “How important is it for your overall well-being that you successfully quit?” as well as “How important is it for your child’s overall well-being that you successfully quit?” Additionally, parents were asked to rate “How confident are you that you can remain quit?” to assess abstinence self-efficacy.

The following variables were also measured at 12 months: whether or not the parent 1) used a form of evidence-based cessation assistance including a telephone quitline, a website/online program or a form of nicotine replacement therapy, 2) agreed with the statement, “My being a smoker got in the way of my being a parent” to assess parent/smoker role conflict (Friebely et al., 2013) and 3) agreed with the statement, “Breathing air in a room today where people smoked yesterday can harm the health of babies and children” to assess
thirdhand smoke harm belief (Social Climate of Tobacco Control, 2013). Additionally, the 12-month survey assessed if parents had a strictly enforced smoke-free home or car policy defined as having both a rule prohibiting smoking as well as reporting that no one had smoked in the home or car in the past 3 months. Parent’s age and self-reported number of cigarettes smoked per day at baseline enrollment were also collected.

**Analysis**

Multivariable logistic regression was used to examine if parents’ level of general happiness at 12 months was independently associated with self-reported quitting at 12 months. Parent sex, age, education, race and ethnicity, the self-reported number of cigarettes smoked per day at baseline, and study arm assignment to the intervention or control arm were included in the model as control variables. A t-test was also conducted to determine if there was a difference in mean level of general happiness at 12 months based on attending a practice assigned to the control or intervention group.

Parents’ responses to the Shahab & West (2009) measure of happiness for those who quit smoking were dichotomized as: 1) feeling happier or 2) feeling about the same or less happy, and t-tests were used to compare means of continuous dependent variables for the dichotomized happiness variable at 12 months following enrollment. Multivariable logistic regression models were constructed to examine the association between feeling happier compared to when smoking and each predictor variable while controlling for parent sex, age, education, race and ethnicity, and self-reported number of cigarettes smoked per day at baseline. The analysis for the car-related item was limited to parents who reported having a car. Parents with missing data were not included in the analyses. All results were evaluated using a significance level of \( p < 0.05 \). Systat 13 was used for the statistical analysis.

**Results**

Baseline exit interviews were completed with 1980 smoking parents following a pediatric office visit and 1355 parents completed the 12-month follow-up interview. The logistic regression model reveals the odds of quitting smoking at the 12-month follow-up interview increased by 60% for each single point increase on the 10-point happiness scale (95% CI: 1.42–1.79) after controlling for the other independent variables in the model. Table 1 presents the adjusted odds ratios of the independent variables included in the model for quitting smoking at 12-months. There was no difference between means for parents’ level of general happiness based on attending a practice assigned to the control or intervention arm of the study (\( t(1343)=1.74, p=0.08 \)).

Data were analyzed from a total of 209 parents who reported quitting smoking and who responded to the happiness item developed by Shahab & West (2009) on the 12-month follow-up survey; 150 (71.8%) reported they were happier, 54 (25.8%) felt about the same, and only 5 (2.4%) said they felt less happy compared to when they had been smoking. The mean number of days that elapsed between parents’ self-reported quit date and their happiness rating was 154 days (SD = 129).
Parents who reported feeling happier compared to when they were smoking had a significantly higher mean rating for believing that continuing to smoke would have harmed themselves (t(78.0) = −2.38, p = 0.02) and their children (t(70.3) = −2.54, p = 0.01) compared to parents who reported feeling the same or less happy. Similarly, parents who felt happier reported higher mean ratings that quitting smoking was more important for their overall well-being than parents who felt the same or less happy (t(78.7) = −2.16, p = 0.03). Happier parents also indicated higher mean scores about how confident they were that they would remain quit compared to parents who were the same or less happy (t(74.9) = −3.32, p < 0.01). Results are presented in Table 2.

Adjusted odds ratios displayed in Table 3 show parents who had a strictly enforced smoke-free home policy (aOR = 2.55, 95% CI = 1.19–5.48), had a strictly enforced smoke-free car policy (aOR = 3.85, 95% CI = 1.94–7.63), reported using cessation assistance such as NRT, calling a quitline or enrolling in an online program (aOR = 2.69, 95% CI = 1.16–6.26), believed that being a smoker got in the way of being a parent (aOR = 5.37, 95% CI = 2.61–11.07), and believed that thirdhand smoke is harmful to babies and children (aOR = 3.28, 95% CI = 1.16–9.28) were more likely to report feeling happier after quitting smoking.

**Discussion**

To our knowledge, this is the first study to show that happiness was associated with quitting smoking in parents. The majority (71.8%) of parents reported increased happiness after quitting and only a very small minority (2.4%) said they felt less happy. These results corroborate the findings in a previous study that determined 69.3% of adults reported increased happiness after quitting and only 3.3% were less happy (Shahab & West, 2009); the findings have important implications for clinical pediatric practice and health promotion. Letting pediatricians know that most parents who smoke report being happier when quitting may facilitate communication with parents around cessation and encourage delivery of meaningful tobacco control assistance in pediatric practice. It may also be particularly important information to communicate to parents who smoke, to strengthen their motivation to persist with quit attempts.

Smokers often hold perceptions that emphasize the benefits of smoking (West, 2009). For instance, perceptions persist that smoking helps relieve stress (McEwen, West, & McRobbie, 2008) and quitters suffer as a result of losing an effective coping mechanism (Smith & Malone, 2013), yet these commonly held beliefs propagate self-fulfilling prophecies that increase the likelihood of being unsuccessful in quitting smoking (Gilbert & Warburton, 2003). Inadequate coping often leads to a relapse of smoking (Friedman-Wheeler et al., 2008), and holding beliefs that the resumption of smoking will help restore feelings of happiness in times of stress increase a quitter’s desire to start smoking again (West, 2009; Yong & Borland, 2008). Therefore health promotion messages that combat these misperceptions regarding the happiness benefits of smoking by countering that quitting smoking is associated with increased happiness may serve to increase parents’ motivation to remain quit.
A number of studies have demonstrated that people experience decreased anxiety after quitting smoking (Cohen & Lichtenstein, 1990; Hajek, Taylor, & McRobbie, 2010; McDermott, Marteau, Hollands, Hankins, & Aveyard, 2013; West & Hajek, 1997). Even among individuals with depression, research has shown that cessation does not increase the likelihood of exacerbating depression (Shahab et al., 2014; Shahab, Andrews, & West, 2013). There is some evidence that those who try to quit and are unsuccessful may experience an increase in anxiety, though research does not support the widely held belief that smoking is effective at reducing stress (McDermott et al., 2013). Instead successful smoking cessation has been shown to be associated with mental health benefits in this study and others (Cohen & Lichtenstein, 1990; Hajek, et al., 2010; Shahab & West, 2009).

Educating both smokers and health care providers about the mental health benefits of quitting could encourage cognitive reframing away from exaggerated negative expectancies of quitting toward a more hopeful outlook for both smokers and health care providers.

The analysis also identified factors amenable to volitional control that are associated with increased feelings of happiness among parents who quit: 1) engaging in evidence-based cessation assistance, 2) attributing greater personal meaning to quitting, 3) experiencing parent/smoker role conflict, 4) having strictly enforced smoke-free home and car policies, and 5) having stronger feelings of self-efficacy about remaining quit.

The analysis revealed that parents who successfully quit smoking reported higher levels of happiness when they reported utilizing at least one form of evidence-based cessation assistance such as a quitline, an online cessation assistance program, or nicotine replacement therapy than parents who did not use any form of cessation assistance. A recent study showed that keeping people engaged with an internet-based smoking cessation intervention was positively associated with positive affect (Bränström, Penilla, Pérez-Stable, & Muñoz, 2010). These findings are consistent with a line of research in the positive psychology literature that demonstrates intentional activity-based changes that involve effort and engagement are more strongly associated with happiness than positive circumstantial changes which are more weakly associated with sustained happiness (Lyubomirsky, Sheldon, & Schkade, 2005; Sheldon & Lyubomirsky, 2006).

Several associations with happiness that are consistent with parents attributing meaning to quitting smoking were also identified. Research has demonstrated that positive affect and psychological well-being increase when people pursue goals for intrinsic purposes and perceive their goals as important (Diener, Oishi, & Lucas, 2009; Sheldon & Kasser, 1998). Parents who reported being more concerned that continuing to smoke would have harmed themselves or their children were more likely to report being happier after quitting smoking. Likewise parents who agreed that thirdhand smoke is harmful to children reported being happier after they quit compared to parents who quit and did not believe thirdhand smoke is harmful. Parents who believed more strongly that quitting smoking was important for their overall well-being were more likely to report being happier after quitting than parents who did not consider quitting smoking as important to their well-being. By helping parents associate meaning with their quit attempts, pediatricians may be able to aid in increasing the positive feelings parents derive from quitting. Research on the broaden-and-build theory of positive emotions has also demonstrated that positive meaning-finding increases people’s
resilience and ability to cope with stress (Tugade & Fredrickson, 2004). As well, parents who reported experiencing parent/smoker role conflict indicated they were happier after quitting smoking. This finding suggests that parents who were experiencing cognitive dissonance between their identity as a parent and their identity as a smoker and acted to resolve that conflict by quitting smoking felt more happiness than quitters who did not experience this role conflict.

Feelings of happiness increase when people become actively involved in making progress towards valued goals (Myers & Diener, 1995). Recent research suggests that setting specific, concrete prosocial goals similar to the smoke-free home and car policies examined in this study are associated with increased happiness (Rudd, Aaker, & Norton, 2014). The analysis demonstrated the association of striving after concrete goals and happiness by showing parents who had set strictly enforced smoke-free home and car policies and had enforced them for at least 3 months report being happier after they quit smoking than parents who did not have strictly enforced smoke-free policies for their home and car. Pursuing appropriate goals is recognized as an important component of happiness (Watson, 2002), therefore clinicians in the pediatric setting may find added benefit in assisting parents with setting meaningful self-concordant goals such as enforcing smoke-free home and car policies.

Higher abstinence self-efficacy, as measured by the question “How confident are you that you can remain quit?,” was positively associated with happiness in parents who reported they had quit. This finding is supported by a prior study that found an inverse association between abstinence self-efficacy and the expected positive effects of smoking (Gwaltney, Shiffman, Balabanis, & Paty, 2005). Parents with low confidence about remaining quit might benefit from counseling that boosts self-efficacy as it has been proposed that self-efficacy might play an important role in the broaden-and-build process (Schutte, 2014). Motivational Interviewing is one example of a counseling technique designed to increase self-efficacy that has been used by pediatric primary care providers with parents (Resnicow, et al., 2012) that could be tested to determine its influence on the happiness of parents who quit smoking.

Research on the broaden-and-build theory of positive emotions has established that positive emotions and broad-minded coping reciprocally and prospectively enhance one another (Fredrickson & Joiner, 2002). Fredrickson & Joiner (2002) refer to this process as creating upward spirals of wellbeing. Future research should not only examine the degree to which smoking cessation leads to more happiness, but also determine if increasing happiness can be used as a risk reduction strategy in smoking cessation interventions as there is mounting evidence that suggests happiness often precedes a variety of successful outcomes (Lyubomirsky, King, & Diener, 2005). Recent analyses performed on smoking cessation interventions lend support to this theory as baseline positive affect was associated with abstinence at follow-up (Doran et al., 2006) and positive affect increased persistence to quit smoking (Bränström, et al., 2010).

Limitations of this study include recognizing that the happiness ratings may have been influenced by self-justification bias. Future studies may benefit from including a baseline measure of happiness from which to compare the post-quit measure and prospectively evaluating how the modifiable parental characteristics predict increased happiness. As is
always the case with self-report data, the items analyzed in this study may not accurately reflect the true incidence of quitting and the other behaviors examined.

**Conclusion**

Happiness was shown to be independently associated with quitting smoking in a large U.S. national sample of parents. The majority of parents reported feeling happier after quitting smoking, thus challenging a barrier to quitting for those who anticipate stopping smoking will inevitably result in suffering negative affect (Gilbert & Warburton, 2003). This knowledge could increase smoking parents’ perceived benefits of quitting and may boost their motivation to quit as well as help facilitate communication between clinicians and parents around cessation and encourage delivery of meaningful tobacco control assistance in pediatric practice. Implications for clinical practice include providing cessation assistance to smokers with the understanding that most parents who quit smoking report increased levels of happiness. Health promotion activities should focus on developing new evidence-based prevention strategies that draw on happiness experienced by parents who quit smoking.

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Table 1

Adjusted odds ratios and 95% confidence intervals for quitting smoking at 12-months (N=1355).

| Variable                                | Adjusted OR (95% CI) |
|-----------------------------------------|----------------------|
| On a 1 to 10 scale of general happiness, where 1 is ‘a very unhappy person’ and 10 is ‘a very happy person,’ how happy do you consider yourself? | 1.60 (1.42, 1.79)* |
| Race (Black vs. White)                  | 0.69 (0.45, 1.08)   |
| Race (Hispanic vs. White)               | 0.81 (0.50, 1.33)   |
| Race (Other vs. White)                  | 0.67 (0.35, 1.26)   |
| Sex (Male vs. Female)                   | 0.90 (0.60, 1.34)   |
| Age                                     | 0.98 (0.96, 1.00)   |
| Education †                             | 1.28 (1.07, 1.53)*  |
| Baseline number of cigarettes smoked per day (>10 vs. ≤10) | 0.42 (0.29, 0.62)*  |
| Study arm (Intervention vs. Control)    | 1.04 (0.76, 1.41)   |

* p<0.05
† Four-level item (1 = < High school, 2 = High school graduate, 3 = Some college, 4 = College graduate)
Table 2
Differences between means of dependent variables based on parents reporting feeling happier vs. not happier after quitting smoking.

| Dependent Variable                                          | Happier (SD) (n=150) | Not happier (SD) (n=59) | p-value |
|-------------------------------------------------------------|-----------------------|--------------------------|---------|
| Parent age                                                  | 29.92(8.19)           | 28.95(7.79)              | .44     |
| Number of cigarettes smoked per day at baseline             | 7.95(7.32)            | 6.99(5.55)               | .36     |
| Continuing to smoke would have harmed you †                 | 9.71(1.34)            | 9.02(2.07)               | .02 *   |
| Continuing to smoke would have harmed your children †       | 9.63(1.33)            | 8.73(2.61)               | .01 *   |
| How important for your overall well-being that you successfully quit † | 9.91(0.70)            | 9.59(1.05)               | .03 *   |
| How important for your child’s overall well-being that you successfully quit † | 9.85(1.04)            | 9.53(1.58)               | .15     |
| How confident are you that you can remain quit †            | 9.23(1.31)            | 8.22(2.18)               | <.01 *  |

* p<0.05
† Ten-level Likert scale (1=not at all, 10=extremely)
Table 3

Adjusted odds of parents reporting they feel happier after quitting smoking (N=209).

| Predictor                                                                 | Adjusted OR (95% CI) |
|---------------------------------------------------------------------------|----------------------|
| Have a strictly enforced smoke-free home policy                           | 2.55 (1.19, 5.48) $^*$|
| Have a strictly enforced smoke-free car policy                            | 3.85 (1.94, 7.63) $^*$|
| Used cessation assistance (called a quitline or used website/online program or NRT) | 2.69 (1.16, 6.26) $^*$|
| Belief that being a smoker got in way of being parent                     | 5.37 (2.61, 11.07) $^*$|
| Belief that thirdhand smoke is harmful to babies and children            | 3.28 (1.16, 9.28) $^*$|

$p<0.05$

Note: Parents with missing data were not included in analyses. Each model included parent sex, parent age, parent education, parent race and ethnicity, and number of cigarettes smoked per day at baseline, all not significant.