Changes in Self-Reported Quality of Life and Health Status Among ENDS Users Who Were Cigarette Users

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Introduction

The FDA recommends that manufacturers evaluate the risks of new tobacco products by assessing the effects of the products on human health [1]. Recent survey research and clinical studies have identified improvements in self-reported quality of life (QOL) and health status among cigarette smokers who switch to electronic nicotine delivery systems (ENDS) [2-7]. However, limited nationally representative analyses exist on the health impacts of switching from cigarette smoking to ENDS.

Research Design & Analysis

Data gathered from the first two annual waves of the Population Assessment of Tobacco and Health (PATH) Study, which uses a nationally representative longitudinal cohort design [8], were analyzed to study differences in QOL and health status measures among wave 1 cigarette smokers who continued to smoke ("cigarette smokers"), stopped smoking cigarettes and switched to ENDS ("switched to ENDS"), or no longer reported using a tobacco product every day or some days ("no E/S use") by wave 2.

Linear regression was used to examine associations between tobacco use at wave 2 (continued smoking, switched to ENDS, or no E/S use) and wave 2 QOL and health status.

Each linear regression controlled for health status at wave 1, cigarette smoking history (in years), gender, age, and education to account for any differences that existed at wave 1. The data were adjusted using population weights with variance estimates computed using Fay's balanced repeated replication (rho=0.3). The analyses were performed using the SURVEYREG procedure in SAS 9.4 with least-squares means calculated for tobacco use groups using the LSMEANS statement [9].

Table 1. PATH Questions Analyzed to Detect Differences in Self-Reported Health Outcomes among Respondents at Wave 2

Outcome	Question Text	Valid Values
Overall Health	In general, would you say your overall health is	1 Eveellant
Quality of Life	In general, would you say your quality of life is	1 Excellent 2 Very good
Self-perception of Physical Health	In general, how would you rate your physical health?	3 Good 4 Fair
Self-perception of Mental Health	In general, how would you rate your mental health, which includes stress, depression, and problems with emotions?	5 Poor
Ability to Carry Out Everyday Activities	To what extent are you able to carry out your everyday activities such as using a telephone, paying bills, taking medications, preparing light meals, doing laundry, or going shopping?	1 Completely 2 Mostly 3 Moderately 4 A little 5 Not at all
Social Satisfaction	In general, how satisfied are you with your social activities and relationships?	1 Extremely satisfied2 Very satisfied3 Moderately satisfied4 A little satisfied5 Not at all satisfied
Internalizing Problems	When was the last time that you had significant problems with Feeling very trapped, lonely, sad, blue, depressed, or hopeless about the future? Sleep trouble, such as bad dreams, sleeping restlessly, or falling asleep during the day? Feeling very anxious, nervous, tense, scared, panicked, or like something bad was going to happen? Becoming very distressed and upset when something reminded you of the past?	1 Past month 2 2-12 months ago 3 Over a year ago 4 Never Score is a sum of the
Externalizing Problems	When was the last time that you did the following things two or more times Lied or conned to get things you wanted or to avoid having to do something? Had a hard time paying attention at school, work, or home? Had a hard time listening to instructions at school, work, or home? Were a bully or threatened other people? Started physical fights with other people? Felt restless or the need to run around or climb on things? Gave answers before the other person finished asking the question?	affirmative endorsements within the past year. For more information on the Global Appraisal of Individual Needs (GAIN-SS) internalizing and externalizing question series, see gaincc.org/instruments

Results



- Cigarette smokers who switched to ENDS at wave 2 differed significantly from cigarettes on adjusted mean scores for overall health status, QOL, self-perception of physical health, ability to carry out everyday activities, and social satisfaction.
- Cigarette smokers who switched to ENDS at wave 2 did not differ significantly from cigarette smokers who continued smoking cigarette smokers who continued smoking cigarette smokers who continued smoking cigarettes on adjusted mean scores for self-perception of mental health and internalizing and externalizing problems.
- Self-reported health outcomes were similar between cigarette smokers who reported no longer using a tobacco product every day or some days at wave 2, with the exception of a significant improvement in self-perception of mental health and a non-significant result for ability to carry out everyday activities.

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Conclusions

- Analysis of PATH data suggests cigarette smokers who stopped smoking and switched to ENDS experienced significant improvements in QOL and health status measures.
- Mental health measures were not statistically significant but were directionally favorable.
- QOL and health status in smokers who stopped smoking and switched to ENDS were comparable to individuals who reported no longer using a tobacco product every day or some days.
- This study builds upon existing research by analyzing nationally representative data to examine the potential impact on QOL and health status by switching from cigarettes to ENDS.

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