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RAPID ABSTRACTS

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POSTER SESSION 5

POS5-1

DEVELOPMENT OF A MEASURE FOR AFFECT DURING CIGARETTE SMOKING ANTICIPATION

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Anticipatory affect is the emotional states that individuals' experience while expecting a significant event. In the context of substance use, individuals often experience a range of emotional states each with specific valence and salience when expecting to use a particular substance. Such affective experiences are likely to have trait and state components, and might play an important role in initiating, maintaining, and extinguishing substance use. The aim of this study was to conduct an initial investigation into the development of a measure of positive, high activation (e.g. excitement) trait anticipatory affect for cigarette smokers. An iterative process was used to modify the Positive and Negative Affect Schedule to develop the Behavioral Anticipatory Affect Measure (BAAM). Past-month cigarette smokers were recruited through Amazon Mechanical Turk, an online worker platform. Respondents were asked to rate levels of affect while expecting to smoke a cigarette. Affect levels ranged in both valence and saliency. Respondents were re-administered the questionnaire after 1 week to examine test-retest reliability. Analyses examined variability, internal consistency, discriminant validity for positive, high activation affect, and test-re-test reliability. Participants (n=197; n=97 men, n=100 women) were primarily white (86%); 81% completed both administrations. Variability covered the full range of the scale (1-5; higher scores = stronger affect), with a slightly right-skewed distribution. The initial administration showed high internal consistency (alpha = 0.92) and high discriminant validity in relation to negative affect and low-activation. Results were confirmed after 1 week (alpha = 0.90); Test-retest reliability was good (alpha = 0.80). Our initial examination of the BAAM demonstrated sound statistical and psycho-metric properties among cigarette smokers. Further analyses will explore concurrent/discriminant validity in relation to other cigarette-smoking variables, and predictive validity in relation to change in smoking behavior over time.

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POS5-2

TOBACCO TREATMENT COMMUNICATIONS ON MENTAL ILLNESS, TOBACCO USE AND CESSATION

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High prevalence of cigarette smoking among those with mental illness causes significant disparities in health and raises potential challenges to treatment. We aimed to characterize the discourse of tobacco treatment professionals regarding smoking and psychiatric comorbidities. The data source was electronic communications on the ATTUD interprofessional listserv sent between April 2011 and June 2016. Of 10,486 emails, 968 (9.2%) included one or more of 17 keyword stems related to mental illness. In the identified subset, the most common keywords were "psych" (48.2%), "mental" (42.4%), "depress" (19.3%), "behavioral health" (14.4%), "anxiety" (10%), "schizo" (5.6%), and "suicid" (4.8%). The listserv participants represented in these communications were treatment specialists (25%), psychologists/researchers with doctoral degrees (17%), staff administrators or coordinators (15.9%), psychiatrists (10.7%), other physicians (9.7%), nurses (7.3%), social workers (1.3%), and pharmacists (0.8%), with 12.3% profession unstated. Across professions, 37% identified as having tobacco treatment certification. We coded the emails for content themes and mapped to a socioecological framework, allowing for coding in multiple levels due to the length of the email communications. The proportions were: intrapersonal (54.2%), interpersonal (28.2%), organizational (45.1%), community (54.3%), and public policy (28.5%). By profession, treatment specialists were represented highly across all levels with psychologists also highly represented in the "intrapersonal" and "interpersonal" levels, and staff administrators or coordinators represented highly in the "organizational", "community", and "public policy" levels. Most communications were characterized as knowledge-sharing (82%), with 18% knowledge-seeking (e.g., clinical consultations, requests for curricula, articles, or treatment materials). To better understand acuity concerns, we ran a frequency word count with the 47 listserv emails containing the keyword stem "suicid". The most frequent word in conversations referencing suicide was Chantix (varenicline). With tobacco treatment professionals dispersed across the US and globally, the ATTUD network and listserv is fostering interprofessional exchange. Analysis of the ATTUD listserv provided insight into what tobacco treatment professionals, across a variety of disciplines, are discussing, sharing, and seeking in their work to address smoking among individuals with mental illness.

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POS5-3

STUDY ON THE RELATIONSHIP BETWEEN ANXIETY SENSITIVITY AND TOBACCO ABSTINENCE SYMPTOMS, SMOKING ABSTINENCE EXPECTANCIES, CIGARETTE DEPENDENCE

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BACKGROUND: Anxiety sensitivity (AS) is an amplifier of physiological and psychological states that increases the cognitive tendency to catastrophize somatic-affective symptoms. It seems to amplify the effects of experimentally manipulated acute abstinence on subjective nicotine withdrawal symptoms. And, in a sample of treatment-seeking smokers, AS has been associated with reinforcement-related smoking variables as well as nicotine dependence (weak correlation). In this framework, we investigated the relationship between AS and abstinence-related problems, smoking abstinence expectancies, tobacco dependence. METHODS: AS was assessed in 366 smokers of general population. Anxiety sensitivity (Anxiety Sensitivity Index 3 - ASI-3), tobacco abstinence symptoms (Minnesota Nicotine Withdrawal Scale-Revised - MNWS-R, Smoker Complaint Scale - SCS), expected consequences of short-term nicotine abstinence (Smoking Abstinence Expectancies Questionnaire - SAEQ), cigarette dependence (Fagerström Test for Cigarette Dependence – FTCD, Heaviness of Smoking Index - HSI), Negative Affect (NA) (Positive and Negative Affect Schedule - PANAS) were measured. Linear regression analyses, adjusted for age and NA, were run. RESULTS: AS Cognitive concerns were strongly associated with self-perceived tobacco withdrawal symptoms with an Odds Ratio (OR) of 0.87 ($p = 0.001$) for MNWS-R and of 0.90 ($p = 0.001$) for SCS. AS Physical Concerns were moderately associated with withdrawal symptoms (OR = 0.49, $p = 0.001$ for MNWS-R; OR = 0.39, $p = 0.01$ for SCS) as well as with consequences of negative mood and lack of control (OR = 0.53, $p = 0.001$). AS Social concerns were related only with MNWS-R scores (OR = 0.50, $p = 0.001$). Not statistically significant results were found for AS and cigarette dependence. DISCUSSION: AS-related cognitive distortions have a strong influence on the perception of tobacco withdrawal symptoms whereas AS Physical Concerns have a moderate influence on perception of tobacco withdrawal as well as on expectancies of negative mood and loss of control. AS does not correlate with the level of cigarette dependence.

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POS5-4

THE USE OF ELECTRONIC CIGARETTES: A NARRATIVE SYSTEMATIC LITERATURE REVIEW OF PREVALENCE AND DETERMINANTS

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OBJECTIVE. To inform public health communication, we explore prevalence and determinants of electronic cigarettes use for both adults and adolescents. DATA SOURCES. The search was conducted using OvidMedline and Scopus for articles published up to the 10th of February 2016 that contained variations of 'electronic cigarette', 'motivation', 'perception', and 'attitude'. Restrictions included English

and Dutch language and human subjects. STUDY SELECTION. Two reviewers screened all the titles and abstracts independently, blinded to authors and journal titles. Of the 904 articles identified, articles that were included revolved around prevalence and subjective reports related to e-cigarette use. DATA EXTRACTION. Two authors independently screened a random sample of publications to reach agreement (Cohen's Kappa = 0.83). All titles and abstracts were screened, blinded to authors and journal titles. Data on prevalence and determinants were extracted. DATA SYNTHESIS. 111 articles met the inclusion criteria. Prevalence is rising globally for both adults and adolescents. The main reasons for e-cigarette use differ between adults, adolescents, e-cigarette users, smokers, and non-users. For example, adolescents experiment with e-cigarettes out of curiosity, while adults mostly use e-cigarettes for smoking cessation purposes. Overall, knowledge about e-cigarettes is low. Nevertheless, electronic cigarettes are believed to be less harmful than tobacco cigarettes, but not harmless. In addition, e-cigarettes are viewed as socially acceptable. CONCLUSIONS. Prevalence of e-cigarettes is rising globally and reasons for using e-cigarettes differ between adults, adolescents, e-cigarette users, smokers, and non-users. To target these differences in public health communication, it is important to create clear information that is personally relevant for both adult e-cigarette users and smokers and adolescent non-smokers.

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POS5-5

A QUALITATIVE ASSESSMENT OF DETERMINANTS OF E-CIGARETTE USE IN THE NETHERLANDS

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Prevalence of e-cigarettes is rising globally, however, insight in why individuals use e-cigarettes is lacking. This qualitative study assessed knowledge, determinants of use, and the information needs regarding e-cigarettes in the Netherlands, in order to inform health communication. In June and July 2016, twelve focus groups were conducted across the Netherlands with non-users (i.e. 13 - 17 years old) (n=20), smokers (i.e. 18 years or older) (n=17), and e-cigarette users (i.e. 18 years or older) (n=26); thematic analysis of the data was conducted using Atlas.ti. Independently, two researchers coded the transcripts for distinct themes. Knowledge concerning harmfulness and components is lacking among smokers and non-users. For example, non-users and smokers believed e-cigarettes to be equally harmful or more harmful than tobacco cigarettes. In addition, both smokers and non-users believed e-liquids to contain only water. Although, non-users viewed e-cigarettes as a smoking cessation tool, smokers did not. Overall, adolescent non-users were not interested in the use of e-cigarettes with nicotine. However, due to accessibility and flavor variability, interest in e-cigarettes without nicotine is high. Determinants of use differ between e-cigarettes users, smokers and non-users. For example, e-cigarette users and smokers initiate e-cigarette use as a smoking cessation tool, while non-users initiate (nicotine free) e-cigarettes to be cool. Participants found the information available to be vague, and lacking in understandable examples, and miss personally relevant information (i.e. relevant for user status). In addition, trust is lacking in information provided by governmental organizations among all participants, although, trust in governmental organizations is lower among e-cigarette users. Motives of e-cigarette use go beyond smoking cessation. Due to availability and attractiveness, (nicotine free) e-cigarettes, are increasingly popular among adolescents. Information regarding e-cigarettes needs to focus on increasing knowledge, by providing information tailored to individual needs, and using clear and understandable examples.

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POS5-6

RACIAL/ETHNIC DISCRIMINATION, MARKETING, AND SUBSTANCE USE AMONG YOUNG ADULTS

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Experiences of discrimination have been linked to negative health outcomes including tobacco, alcohol, and marijuana use across various racial/ethnic groups. Tobacco and alcohol marketing exposure have also been linked with substance use. Young adults may be susceptible to these effects as they have the highest rates of use compared to other ages. This study examined the independent and interacting effects of experiences of discrimination and exposure to marketing on substance use among a multi-ethnic sample of young adults. Online survey responses (September 2016) were from 505 young adults recruited from US metropolitan areas. Topics included substance use, exposure to marketing, and experiences of lifetime discrimination. Adjusted logistic regression assessed main and interactive effects of experiences of discrimination and substance-specific marketing on alcohol problems and past 30-day cigarette and marijuana use. Racial/ethnic minorities reported higher levels of discrimination. Discrimination and marketing exposure were independently associated with higher odds of all three outcomes controlling for demographics and perceived stress (AOR from 2.1 to 3.4 for discrimination; AOR from 1.4 to 13.8 for marketing). Models showed a significant interaction of discrimination and tobacco marketing on past 30-day cigarette use (Wald Test χ^2= 5.5; p=0.02), but not in the expected direction. Individuals with high levels of tobacco marketing exposure were likely to report high past 30-day cigarette use regardless of level of discrimination, while those with low exposure were only at increased risk of reporting cigarette use at higher levels of discrimination. Both discrimination and marketing exposure play a role in substance use behaviors. Notably, discrimination and tobacco marketing exposure interact as potential risk factors for young adult smoking. Interventions or policies should focus on reducing exposure to tobacco marketing, but this approach may not reduce the risk of tobacco use among populations experiencing high levels of discrimination. Tobacco control interventions should additionally consider discrimination as an important risk factor for tobacco use.

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POS5-7

COMPUTATIONAL MODELING AS A METHOD FOR ESTIMATING THE EXPOSURE OF USERS AND NON-USERS TO CONSTITUENTS FROM E-CIGARETTE AEROSOLS

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Accurate estimates of potential exposure of both users and non-users to constituents of electronic nicotine delivery systems (ENDS) aerosols are instrumental for reliable risk assessment, in support of Premarket Tobacco Product Application (PMTA) and/or Modified Risk Tobacco Product Application (MRTPA). Quantification of exposure levels is a critical step in overall health risk assessment. To quantify the potential exposure levels of users and non-users, we need tools that are capable of tracking the flow path and the amount of aerosol and its chemical constituents, from its point of formation to its ultimate destination during inhalation, exhalation and distribution in an indoor space. The sources of variability along these paths, among others can include: variations in device designs, difference in usage patterns (e.g. vaping topography and frequency of use), space setting, size and ventilation and number of ENDS users in the space. It is impractical to characterize the various combinations of exposure conditions exclusively through experiments. We have therefore developed and validated a series of computational models, which can complement limited experimental data and predict exposure levels under conditions, where no reliable data are available. Three computational models will be presented, which characterize the formation and delivery of aerosol in an ENDS device, its dynamics and deposition in the respiratory tract during inhalation/exhalation and the distribution of exhaled aerosol in an indoor space. The models are verified and validated with experimental data.

1. *ENDS Product Characterization Model:* This model can be used to predict key performance properties such as aerosol and coil temperature, aerosol mass delivery under various operating (e.g. voltage/

wattage settings, e-liquid availability) and device usage (e.g. puff duration and volume) conditions.

2. *Respiratory Tract Deposition Model:* This model is used to predict the amount of regional deposition of aerosol constituents in both vapor and particulate forms on the respiratory tract walls.
3. *Secondhand Exposure Model:* This model can be used to estimate the secondhand exposure of non-users in an indoor space over time and at different locations due to ENDS aerosol, exhaled by users within that space.

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POS5-8

DEVELOPMENT AND INITIAL TESTING OF A SCALE FOR SMOKING CURIOSITY AMONG ADOLESCENTS

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BACKGROUND: More than 20% of American adolescents have smoked at least one cigarette, and their use of new and emerging nicotine and tobacco products has increased. Such outcomes may be attributable to adolescents' smoking curiosity. To date, smoking curiosity has been inspected as a single item asking adolescents how curious they are to smoke a cigarette. While such a measure has shown promise in predicting smoking initiation, the development and validation of a full scale for smoking curiosity is warranted. The current study aims to (1) test the reliability of a newly developed scale for smoking curiosity and (2) test the predictive validity of the scale among adolescents. METHODS: Seven survey items on curiosity to smoke cigarettes, cigars, and/or hookah were developed and presented to a randomly selected sample of adolescents in the Houston area. Ninety adolescents completed the survey. Exploratory factor analysis was conducted to examine factor structure. Cronbach's alpha was calculated to test the internal reliability. Multiple logistic regression analyses were conducted to test for predictive validity. RESULTS: The smoking curiosity scale (SCS) exhibited a single-factor structure, explaining 96.31% of the variance. SCS showed good internal reliability with a Cronbach's alpha of 0.836. Smoking curiosity as measured with SCS predicted susceptibility to smoke cigarettes [OR=4.10, *P*<0.01, 95% Confidence interval (CI): 1.78-9.44], cigars [OR=8.35, *P*<0.001, CI: 2.94-23.65], and hookah [OR=5.14, *P*<0.001, CI: 2.18-12.18]. Curiosity also predicted lower knowledge about smoking effects and temptation to smoke. Number of friends who smoke, depressive symptoms, and sensation seeking predicted smoking curiosity. DISCUSSION: SCS is a reliable scale with a single-factor structure that explains most of the variance. The results also show that SCS is a valid measure of smoking curiosity, predicting several common antecedents of smoking. Future research may further test the scale for validity. Researchers and smoking prevention practitioners can make use of SCS to assess smoking curiosity among adolescents in the community and the clinic.

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POS5-9

POSITIVE AND NEGATIVE SOCIAL INFLUENCE AS PREDICTORS OF INTENTION TO SMOKE AMONG ADOLESCENTS

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BACKGROUND: Social influence is a key predictor of adolescent smoking. While social influence may have a negative effect on adolescents, it may also allow the diffusion of pro-health messages. Smoking prevention interventions have not yet considered applying positive social influence in their interventions. For instance, in a web-based smoking prevention program called ASPIRE, adolescents receive health information through human-computer interaction. While successful, ASPIRE lacks peer-to-peer interaction. This study examined the role of positive and negative social influence on intention to smoke (ITS), while controlling for ASPIRE's effect. METHODS: In a randomized controlled trial, 101 adolescents (aged 12-18) were randomized to receive ASPIRE or a control condition. Baseline measures included number of friends who smoke and tendency to receive positive or negative influence from friends. ITS was measured at baseline and immediate follow-up. Adolescents with at least one friend who smokes (n=80) were considered in this study. RESULTS: Positive influence was related to lower ITS (p<0.01). Having higher positive influence did not strengthen the effect of ASPIRE on ITS (group-by-time-by-positive influence effect, p=0.365). Number of friends who smoke strengthened the effect of positive influence on ITS over time (positive influence-by-number of friends who smoke, p<0.05). Negative influence was related to higher ITS (p<0.001). Having higher negative influence weakened the effect of ASPIRE on ITS (group-by-time-by-negative influence, p<0.01). Number of friends who smoke did not moderate the effect of negative influence on ITS (negative influence-by-number of friends who smoke, p=0.52). When both predictors were included in the model, only negative influence was related to higher ITS (p<0.001). CONCLUSION: Positive social influence can play a role in decreasing adolescents' ITS. Also, ASPIRE content may be tailored based on the number of friends who smoke. Future work may introduce features of positive social influence (e.g., peer-to-peer interaction) to boost intervention success.

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POS5-10

TOBACCO USE AND INTEREST IN QUITTING AMONG PATIENTS HOSPITALIZED IN MUMBAI, INDIA

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BACKGROUND: India has a large burden of tobacco-related illness (1 million tobacco-attributable deaths/year). Hospitalization is an opportune time to address tobacco but little is known about hospitalized tobacco users in India. This study aims to measure the patterns of tobacco use and interest in quitting among patients hospitalized in Mumbai. METHODS: Cross-sectional in-person survey of patients aged 15 and older at a Mumbai hospital. From 11/2015-10/2016 all 7,889 admitted patients were screened, 5,038 were eligible, 2,894 were approached and 2,764 participated. Surveys were conducted in Hindi, Marathi, or English. Sociodemographic measures and health beliefs were compared by type of tobacco. RESULTS: Overall, 6.5% (N=179) reported current smoking and 10.2% (N=284) reported current smokeless tobacco (SLT) use (N=37 were dual users). The mean number of different products used was 2 (SD 1). Most smokers were daily users (81.7%), smoking a mean of 13 times/day (SD 12). Nearly all SLT users reported daily use (94.3%), using an average of 7 times/day (SD 8). Compared to smokers, SLT users were older (52 vs 48 years, p=0.002), more often female (37% vs 1%, p<0.001), illiterate (14% vs 6%, p=0.01), and less often employed (52% vs 75%, p<0.001). SLT users less often reported planning to quit after discharge (42% vs 54%, p=0.04) and a quit attempt in the past 12 months (39% vs 54%, p=0.004). There were no differences in importance of quitting, confidence, motivation or receipt of advice to quit. Prior use of evidence-based treatments was rare (3%). Compared to smokers, SLT users less often agreed that tobacco has harmed them (57% vs 70%, p=0.01), that tobacco is a cause for their hospitalization (44% vs 62%, p=0.001) and that quitting would improve their health (77% vs 86%, p=0.04). CONCLUSIONS: A large proportion of hospitalized tobacco users had a recent quit attempt and planned to try to stay quit after discharge, but very few used evidence-based treatment. There is a clear need to connect hospitalized tobacco users in India with cessation treatment. SLT users may be especially challenging to engage in treatment because SLT is less often viewed as harmful.

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POS5-11

DEVELOPMENT AND VALIDATION OF THE QUESTIONNAIRE OF VAPING CRAVING (QVC)

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SIGNIFICANCE: Electronic cigarette use is increasingly common, with approximately 6.8% of the adult U.S. population reporting vaping within the past 30 days. Despite the rapidly growing prevalence of e-cigarette use, there has been little research on the motivational processes supporting this use. Craving, which is a highly salient experience for tobacco users, is thought to represent a core motivational process in tobacco dependence. Currently, there is no psychometrically evaluated measure designed specifically to assess e-cigarette craving. METHODS: We administered a broad set of items designed to capture multiple facets of e-cigarette craving to 209 frequent e-cigarette users (≥ 4 times per week; *M* age = 32.9, *SD* = 8.61) recruited from Amazon Mechanical Turk. Responses to 42 candidate-craving items were entered into an exploratory factor analysis to develop a brief assessment of e-cigarette craving. We examined item loadings on the first principal factor with the hypothesis that a strong general craving factor would emerge. RESULTS: The first un-rotated principal factor accounted for 77% of the common factor variance. The 10 strongest loading items on the first factor (range = .815 - .867) were included in the final Questionnaire of Vaping Craving (QVC). The content of these items focused primarily on desire and intent to vape e-cigarettes. The estimated reliability (Cronbach's α) for this general craving score was 0.96. Pearson correlations indicated that higher e-cigarette craving was significantly related to time since last e-cigarette use (*r*=-.22), amount vaped each day (*r*=.22), confidence in ability to quit vaping (*r*=-.36), and the Penn State Electronic Cigarette Dependence Index (*r*=.42), *p*s < .01. Among those who also smoked tobacco cigarettes, the QVC was significantly correlated with the Nicotine Addiction Taxon Scale (*r*=.18) and the Penn State Tobacco Cigarette Dependence Index (*r*=.25), *p*s<.02. CONCLUSIONS: Findings demonstrate reliability and preliminary concurrent validity of the QVC. This study is the first to develop and provide initial validation of a brief, practical, multi-item measure to assess e-cigarette craving.

FUNDING: No Funding

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POS5-12

OFFERING CHOICES ENGAGES MORE SMOKELESS TOBACCO USERS IN QUITLINES

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In 2014, ClearWay Minnesota[SM] launched a new suite of QUITPLAN® Services - a set of Individual Services to choose from (2 week NRT starter kit, email program, text messaging, and printed quit guide), and the Helpline (phone counseling plus NRT, integrated email, integrated text messaging, and materials). Tobacco users in Minnesota can enroll in these services online or by phone. The quitplan.com website was extensively redesigned and a new advertising campaign was launched to encourage smokers to try the new services. Enrollments substantially increased from 5,900 in 2013 to 15,861 in the year after new services were launched. In addition, the mix of tobacco users signing up for services changed. We designed an observational study to understand changes in the pattern of enrollments among tobacco users, specifically users of smokeless tobacco (ST). In addition, we analyzed data from the Wisconsin Tobacco Quitline for the same period to provide a neighboring state control that had no change in cessation services. We examined four years of service utilization data – 20 months before and 28 months after the change in QUITPLAN Services. Participants were grouped as an ST only user, a dual user (ST plus another tobacco product), or smoker (pipe, cigar, cigarette). In Minnesota, participants reporting any ST use (only ST or dual) increased by 56% - (5.0% before changing services vs. 7.9% after, p<.001), with no variation by age. In Wisconsin, no change was observed in Quitline participants' reporting any ST use (2.5% before and 2.4% after; p=0.40). Among the ST users enrolling in QUITPLAN Services after the changes, the majority (93.4%) enrolled into Individual Services. Among Helpline participants, there was no significant change in any ST use before vs after the change in services (3.6% vs 4.2%, p=.12). In other words, the change observed in this analysis was driven by increased use of Individual Services by those reporting any ST use, particularly NRT starter kits. These data suggest that offering service choices through a state quitline as well as online enrollment has the potential to increase utilization by ST users and dual users across age groups.

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POS5-13

ELECTRONIC CIGARETTES IN AUSTRALIA: KNOWLEDGE, ATTITUDES AND POTENTIAL APPLICATIONS IN THE PERIOPERATIVE PERIOD OF CARDIOTHORACIC SURGERY

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BACKGROUND: Tobacco consumption is associated with significant complications after cardiothoracic surgery and general anaesthesia. Stopping smoking is advised in the perioperative period, but some patients cannot or will not quit. Electronic cigarettes (e-cigarettes) may offer an alternative means of cessation for such patients. This study analysed the awareness and opinions about tobacco use, cessation methods and possible role of e-cigarettes during this period in a cohort of clinicians and patients awaiting cardiothoracic surgery in Sydney, Australia. Data obtained from interviews with cardiothoracic medical, nursing and allied health professionals is presented. METHODS: 15 consultant cardiothoracic surgeons, 15 consultant anaesthetists, 11 physiotherapists and 11 preadmission clinic and clinical nurse specialists in six Sydney teaching hospitals participated in semi-structured interviews. Verbatim transcripts were examined using thematic framework analysis and NVivo software. RESULTS: All clinicians reported strong support for cessation advice to reduce postoperative morbidity, and a willingness to provide guidance. There was a consensus that e-cigarettes may not be an effective quitting aid as their use failed to break the 'hand to mouth' habit and to progress the patient toward giving up smoking altogether, therefore cold turkey and other methods of NRT were considered preferable. Possible detrimental effects of nicotine and other components of e-cigarette liquid were a key concern of all clinicians. Anaesthetists and surgeons acknowledged the potential of e-cigarettes as a means of cessation especially in tobacco dependant patients, but felt further research was needed before they would recommend them. CONCLUSION: Clinicians recognised the perioperative period as an important opportunity for providing cessation advice, despite minimal formal education. Reasons for not recommending e-cigarettes for cessation ranged from limited general awareness of them among clinicians, to a need for more information on potential health effects. Further research is needed into the potential efficacy of e-cigarettes in perioperative cessation.

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POS5-14

CHEMICAL ANALYSIS AND HEALTH ASSESSMENT OF AN ALTERNATIVE TOBACCO PRODUCT (DOKHA)

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Dokha is known to be one of the spreading alternative tobacco products (ATPs). It is composed of leaves, herbs, nicotine as well as other added spices and is smoked using a pipe known as Midwakh. There is no scientific research published on the chemical composition of dokha and only very little was done to investigate its impact on human health. In this study, three different types of dokha were used: cold, mild, and hot. The trace metals content in the raw dokha samples were analyzed using Inductively-Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) and Energy-dispersive X-ray Spectroscopy-Scanning Electron Microscope (SEM/EDS). Quantitative analysis of the trace metal components in the three types of dokha samples revealed the presence of toxic metals in concentrations similar or even greater to those reported for cigarettes. In addition, other metals like iron and manganese were detected in noticeable amounts. Dokha smoke was generated using IREADYCo device that simulate human smoking puffing. The smoke

samples were collected on Tenax and activated carbon adsorbent tubes followed by chemical analysis using Thermal Desorption-Gas Chromatography-Mass Spectrometry (TD-GC-MS). Overall, based on the available clinical data, the presence of several potentially harmful and even toxic compounds in dokha smoke were identified. These included 22 irritants, 3 known carcinogens, and 3 compounds with miscellaneous effects. Also, 6 central nervous system (CNS) depressants were identified. Many of the identified compounds in the dokha smoke lacked clinical data on their potential health impacts which reveals the urgent need to conduct more research on this merging alternative tobacco product.

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POS5-15

HOST AGENT VECTOR ENVIRONMENT MEASURES IN E-CIGARETTE RESEARCH

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Measuring the spectrum of factors that influence use of new tobacco products is needed to inform tobacco control policy. The purpose of this study is to describe the focus and comprehensiveness of domains measured in e-cigarette research. We conducted a portfolio analysis of NIH e-cigarette research grants funded between 2007 and 2015. We used the Host-Agent-Vector-Environment (HAVE) model as a framework to characterize the measures proposed in these studies. Eighty-one e-cigarette projects met our criteria for inclusion. A majority (75%) of the research including e-cigarettes is funded by the FDA Center for Tobacco Products. Eighty-four percent of grants address more than one tobacco regulatory research domain, with KAB most prevalent and economics and policy research least prevalent. While all studies in the analysis include mention of research on e-cigarettes, most (N=52; 64%) do not specify the type of e-cigarette device or liquid solution under study. The primary HAVE focus most commonly found is Host (73%), followed by Agent (21%), Vector (6%), and Environment (0%). Intrapersonal measures and use trajectories are the most common measures in studies that include Host measures (N=59 and N=51 respectively). Product composition is the most common area of measurement in Agent studies (N=24), while Marketing (N=21) was the most common (N=21) area of Vector measurement. When measures of Environment are in included as secondary measures in studies, they primarily focus on measuring Peer, Occupation and Social Networks (N=18). This study describes the focus and breadth of HAVE measures in NIH grants pertaining to e-cigarettes from 2007-2015. The analysis reveals a heavy focus on Host measures (73%) and a lack of focus on measures of the Environment. While the dearth of measures of the Environment may reflect the relative infancy of the field, the predominant focus on Host measures may have the unintended effect of limiting the evidence base for tobacco control and regulatory science. The analysis also reveals a lack of specificity about the e-cigarette product under study, which makes it difficult to compare results across studies.

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POS5-16

FACTORS RELATED TO CIGARETTE SMOKING AND MOTIVATION TO QUIT AMONG ADOLESCENT INPATIENTS WITH PSYCHIATRIC AND SUBSTANCE USE DISORDERS

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Adolescent cigarette smoking is associated with both substance use and psychiatric disorders. Less is known about risk factors for smoking and motivation to quit among adolescents with comorbid psychiatric and substance use disorders. The current study examined relationships between smoking and self-reported substance use and psychiatric symptomatology as well as intent to quit among adolescents with comorbid psychiatric and substance use disorders receiving psychiatric inpatient care. Of 151 inpatients age 13-17 years, 39 (25.8%) were nonsmokers, and 112 (74.2%) were smokers. Of smokers, 63 (56.3%) were occasional smokers (≤1 cig/day), 63 (56.3%) smoked 1-15 cigs/day, 29 (25.9%) smoked 16-25 cigs/day, and 6 (5.4%) smoked ≥ 26 cigs/day. No differences in gender or age between smokers and nonsmokers were found while smokers were significantly more likely to be white. There were no differences in days (per month) of alcohol, marijuana, or any substance use between smokers and nonsmokers. On the other hand, smokers reported significantly greater occurrences of negative consequences from alcohol use, drug use, and total substance use (alcohol and drug) than nonsmokers, controlling for gender and race. Separate analyses revealed a linear relationship between levels of smoking and alcohol/drug/total consequences such that heavier smokers reported greater number of negative consequences from substance use. Similarly, while no difference in externalizing or internalizing symptoms was observed across smokers vs. nonsmokers, heavier smokers reported significantly more severe externalizing symptoms, but not internalizing symptoms. Of smokers, 59 (52.7%) expressed intent to quit smoking within 3 months, and 33 (29.5%) reported that they intended to quit smoking completely after leaving the hospital. These motivation variables did not vary as a function of internalizing symptoms, externalizing symptoms, or substance use. While psychiatric and substance use problems are associated with smoking, adolescent psychiatric inpatient smokers are motivated to quit smoking regardless of symptom severity. These findings suggest that integrating smoking cessation treatment in adolescent inpatient settings may improve quit success among this high-risk population.

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POS5-17

"BUILDING STRENGTH IN COMING TOGETHER": A MIXED METHODS STUDY USING THE ARTS TO TRAIN HEALTH STAFF TO EXPLORE TOBACCO SMOKING WITHIN INDIGENOUS COMMUNITIES

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SIGNIFICANCE: Tobacco is a major risk factor contributing to Indigenous health disparities. Developing appropriate health messages and images accounting for the diversity of Indigenous target groups can be challenging. Nonetheless, images are important way to convey health messages and for knowledge translation. METHOD: The study aimed to introduce creative arts to Indigenous and non-Indigenous health staff, working in Indigenous tobacco control, and reflect on emergent themes for tobacco smoking. Participants were led through an experiential and reflective process to create individual artworks. The study was quantitative and qualitative: surveys before and after a 2-hour workshop collected demographic details, and composite scales measured "understandings" about how the arts can be used in tobacco control, and future "likelihood" of using arts. Post-survey included a satisfaction scale. Scales were tested for internal consistency. Pre- to post-workshops changes were analyzed using Wilcoxon signed-ranks tests. Three pairs of Indigenous and non-Indigenous researchers analyzed the artworks, using the Four Frames (New South Wales Board of Studies, Australia) and explored emergent themes from the artworks. RESULTS: Nineteen participants completed pre- and post-surveys, and 17 artworks were analyzed. Scales had acceptable to high consistency. There were significant pre- to post-workshop increases in "understanding" the use of arts ($p<0.00001$), and "likelihood" of use in the next six months ($p<0.004$). Satisfaction was high. Vibrant artworks demonstrated important themes of optimism, the strength of family and culture, smoking as a barrier, resilience, recovery and urgency. The artistic images will be presented and discussed. CONCLUSION: Participants attending an interactive workshop demonstrated an increased understanding and likelihood of using the arts for tobacco control. Artworks revealed contemporary challenges impacting on equity, yet health staff expressed the positives of being engaged in this work, and an appreciation of learning a new skill.

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POS5-18

THE EXPERIMENTAL TOBACCO MARKETPLACE: SUBSTITUTABILITY AS A FUNCTION OF E-LIQUID STRENGTH AND PRICE OF PREFERRED, CONVENTIONAL CIGARETTES

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BACKGROUND: Recent years have been accompanied by exponential growth in the number of available tobacco products for commercial sale, most notably, e-Liquid/Cigarettes. The next step in identifying the behavioral economics of e-Liquid purchasing to inform nicotine and tobacco policy is to determine if, and the degree to which, e-Liquid/Cigarettes serve and a behavioral economic substitute for conventional cigarettes. METHOD: To answer these questions, we recruited smokers to report to the lab twice per week for four weeks to complete two types of Sessions: Sampling and Experimental Tobacco Marketplace (ETM) Purchase sessions. The ETM is an Amazon-type store that sells different nicotine products at different prices and different strengths in order to measure the behavioral economic profile of real nicotine purchasing. During the first Sampling Session, participants were provided with an e-liquid smoking device, taught how to properly refill and use the device, and chose their most preferred flavor of e-Liquid. Participants were then endowed with an account balance credit based off their past nicotine purchasing to be used during ETM purchase sessions. At the end of each of the four Sampling Sessions, smokers were provided with a two-day supply of one of four e-Liquid strengths: 0mg/mL, 6 mg/mL, 12 mg/mL, or 24 mg/mL. Two-days following each Sampling Session, smokers made potentially real purchases by selecting among six different nicotine products in the ETM. Participants made purchases at five different conventional cigarette prices, while the price of e-Liquid and all other products always remained fixed. RESULTS: Conventional cigarette purchasing decreased as a function of cigarette price. E-Liquid was a strong substitute for conventional cigarettes, with degree of purchasing increasing linearly as a function of both cigarette price and strength. CONCLUSIONS: The ETM seems to provide a practical assay that mimics real-world marketplaces and can be used to measure nicotine product purchasing under a variety of conditions.

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POS5-19

PHARMACODYNAMIC AND PHARMACOKINETIC ASSESSMENT OF ENDS, COMBUSTIBLE CIGARETTES, AND NICOTINE GUM: IMPLICATIONS FOR ABUSE LIABILITY

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Evaluation of the abuse liability (AL) of electronic nicotine delivery systems (ENDS) was specified in the 2016 FDA Center for Tobacco Products Draft Guidance "Premarket Tobacco Product Applications for [ENDS]." However, to date, limited investigation has occurred for this category of tobacco products. We studied three ENDS products (VUSE Solo 14 mg, 29 mg, 36 mg nicotine) relative to two comparator products: subjects' usual brand (UB) cigarette (high AL) and 4 mg nicotine gum (low AL). Endpoints to assess AL included subjective measures, nicotine pharmacokinetics (PK), and physiological/vital sign assessments. The study was a single-center, randomized, crossover design conducted in the US. Subjects included 45 generally healthy, male and female adult smokers, naïve to use of ENDS. Subjects were assigned a different test product each week for five consecutive weeks. They were free to use UB throughout the study except for a 12-hour, overnight tobacco/nicotine abstention prior to test visits. In each weekly test visit, subjective measures (Product Liking [PL], Intent to Use Again [IUA], Product Effects [PE]) were collected at planned time points. Throughout the six-hour session, timed blood samples (18) were collected for measurement of nicotine concentration; pulse rate and blood pressure were also measured. Drug liking in pharmaceutical AL studies is a frequently used and reliable indicator of product adoption. Use of each ENDS consistently resulted in statistically significantly different PL and IUA scores that were between those of UB and nicotine gum. A few significant differences in PE-related subjective effects were also detected. Those findings were consistent with PK results, in which nicotine uptake was highest and fastest with UB cigarettes. Overall nicotine uptake ($AUC_{0\text{-}360}$) was lower with use of ENDS compared to gum, but early uptake ($AUC_{0\text{-}15}$) was significantly higher with ENDS. Maximum physiological changes with product use generally showed few, small differences between ENDS and comparators. Collectively, these findings suggest that the AL of the test products is lower than combustible cigarettes and somewhat greater than nicotine gum.

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POS5-20

DOES ELECTRONIC CIGARETTE PROPYLENE GLYCOL AND VEGETABLE GLYCERIN RATIO INFLUENCE NICOTINE DELIVERY, SUBJECTIVE EFFECTS, AND PUFF TOPOGRAPHY?

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BACKGROUND: Propylene glycol (PG) and vegetable glycerin (VG), two liquid solvents used commonly in electronic cigarette (ECIG) solutions, can affect toxicant emissions such that greater amounts of PG produce higher yields of nicotine and carbonyl compounds. However, the extent that ECIG liquid PG:VG ratio influences the acute effects of ECIG use is unknown. This clinical lab study examined the effect of ECIG liquid PG:VG ratio on nicotine delivery, subjective effects, and user puff topography. METHODS: Thirteen ECIG-experienced ≥12-hour nicotine-abstinent participants used a 3.3 V "eGo" ECIG with a dual-coil cartridge (1.5 Ω) and 18 mg/ml nicotine liquid in four sessions differing only by liquid PG:VG ratio (2:98, 20:80, 55:45, 100:0). Blood was sampled and subjective effects were measured before and after 2, 10-puff ECIG-use bouts (30s interpuff-interval); puff topography was measured during each bout. RESULTS: After bout 1, mean (SD) plasma nicotine concentration, in ng/ml, was 9.1 (6.8) in the 2PG:98VG condition, 9.5 (8.9) in the 20:80 condition, 11.6 (11.9) in the 55:45 condition, and 11.2 (7.5) in the 100:0 condition. Nicotine delivery was significantly greater in the 100:0 and 55:45 conditions relative to the 20:80 and 2:98 conditions ($p<.05$). Scores for subjective items from the Hughes-Hatsukami withdrawal scale assessing "anxious", "craving", "concentration", "drowsy", "impatient", and "urge" were reduced after ECIG use but did not differ across PG:VG ratio. "Throat hit" from the General Labeled Magnitude scale was significantly higher in the 100:0 and 55:45 conditions relative to the 20:80 and 2:98 conditions. Participants took significantly longer puffs in the 2:98 condition (5.58s) relative to all other conditions ($ps<.05$). CONCLUSIONS: PG:VG ratio influenced nicotine delivery, user puff topography, and one ECIG-sensory experience measure. ECIG-induced suppression of nicotine abstinence effects did not differ by PG:VG ratio. Learning more about liquid solvent ratios and other factors that influence ECIG acute effects can help predict abuse liability, understand toxicant exposure, and inform product standards and other regulatory action.

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POS5-21

THE NICOTINE CONTENT OF A RANDOM SAMPLE OF E-CIGARETTE LIQUID MANUFACTURED IN THE UNITED STATES

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BACKGROUND: Use of electronic cigarettes (EC) has dramatically increased in the United States over the past few years with yearly growth expected to be 37% until 2019. There is little research on e-liquid nicotine concentration from domestic manufacturers. However, limited research outside of the U.S. found wide incon-

sistencies between the labeled concentration of nicotine in e-liquid and the actual nicotine concentration of the product. METHODS: Ten e-liquid samples of the five most popular flavors from each manufacturer were purchased in nicotine concentrations of 0 mg/ml and 18 mg/ml. Of the total samples purchased (n=70), all were labeled as produced in the United States of America (USA). The researchers anonymized the samples before sending them to an independent university lab for testing. RESULTS: The 35 e-liquid samples labeled 18 mg/ml measured between 11.6 and 27.4 mg/ml (M=18.7 SD=3.3). The labeled 18 mg/ml samples measured as little as 35% less nicotine and as much as 52% greater nicotine. In the 35 samples labeled 0 mg/ml, nicotine was detected (>0.01 mg/ml) in 91.4% of the samples (Range = 0 to 23.9 mg/ml; M=2.9; SD=7.2). Two vendors labeled as 0 mg/ml were found to contain nicotine in amounts ranging from 5.7 mg/ml to 23.9 mg/ml. CONCLUSION: This study demonstrates the nicotine labelling inaccuracies present in current e-liquid solutions produced in the U.S. This poses a significant risk to consumers and supports the recent regulation changes enacted by the FDA. Additional routine testing of nicotine concentrations should be conducted to evaluate the effectiveness of these regulations on future e-liquid production.

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POS5-22

SUBJECTIVE EFFECTS AND SIMULATED DEMAND FOR ELECTRONIC CIGARETTES: EFFECTS OF NICOTINE LEVEL

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Satisfaction, craving reduction and the rewarding properties of tobacco cigarettes increase with nicotine content, but few studies have examined whether similar results are obtained with e-cigarettes. Our objective was to explore how subjective effects and simulated demand for e-cigarettes varied with nicotine level. Forty-six adult smokers sampled 0, 6, 12 and 18mg e-cigarettes ("Vype ePen") *ad-lib* for 5 minutes in a randomised, blinded order, followed by one-hour rest periods. Subjective effects measures (modified Cigarette Evaluation Questionnaire and adverse effects visual analogue scales) and simulated demand tasks (Cigarette Purchase Task and Cross Price Task) were completed following each sampling period. Nicotine trends were monotonic for subjective effects; as nicotine increased, reward [linear trend, p=.04], craving reduction [p=.002] and aversion [p=.001] increased, while taste/enjoyment properties decreased [p=.05]. However, nicotine trends were non-monotonic for several demand measures: Essential value and maximum amount of money spent per day were highest for 6mg and lowest for 12mg, with 0 and 18mg falling in between [cubic trends, p=.0001 for both]. Cross price elasticity estimates were significantly positive [p<.05] and there was no effect of nicotine [p=.83], indicating that both nicotine and non-nicotine e-cigarettes were partially substitutable for regular cigarettes. Simulated demand results suggest that smokers balance sensory enjoyment components and nicotine content in e-cigarettes. Although preference was for nicotine-containing e-cigarettes compared to placebo, smokers generally indicated they would choose a lower nicotine content e-cigarette. If these results correspond with actual behaviour, switching to e-cigarettes could lower smokers' nicotine intake and thus dependence, which may reduce their chances of relapse to smoking.

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POS5-23

ASSOCIATIONS BETWEEN ANTI-TOBACCO MASS-MEDIA CAMPAIGN EXPENDITURE AND SMOKING PREVALENCE AND QUITTING IN ENGLAND: A TIME SERIES ANALYSIS

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BACKGROUND: It has been established that mass-media campaigns can increase smoking cessation rates, but there is little direct evidence estimating associations between government expenditure on anti-tobacco mass-media campaigns and smoking cessation. This study assessed the association over 8 years between mass-media expenditure in England and quit attempts, smoking cessation and smoking prevalence. METHODS: Autoregressive integrated moving average modelling with exogenous variables (ARIMAX) was applied to monthly estimates from the Smoking Toolkit Study (STS) between June 2008 and February 2016. We assessed the association between the trends in mass-media expenditure and i) quit attempts in the last two months, ii) quit success among those who attempted to quit, and iii) smoking prevalence. Analyses were adjusted for trends in weekly spending on tobacco by smokers, tobacco control policies, and the use of established aids to cessation. RESULTS: Monthly spending on mass-media campaigns ranged from nothing to £2.4 million, with a mean of £465,054. A 10% increase in mass-media expenditure above the monthly average was associated with a 0.51 percent increase in success rates of quit attempts (95%CI 0.10% to 0.91%, p=0.014). No clear association was detected between changes in mass-media expenditure and changes in quit attempt prevalence (β -0.03, 95%CI -2.05% to 2.00%, p=0.979), or smoking prevalence (β -0.03, 95%CI -0.09% to 0.03%, p=0.299). CONCLUSION: Between 2008 and 2016, higher monthly expenditure on anti-smoking mass-media campaigns in England was associated with higher quit success rates.

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POS5-24

TECHNOLOGY BASED INTERVENTION PREFERENCES FOR SMOKING CESSATION AMONG ADULTS WITH OPIOID AND ALCOHOL USE DISORDER

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BACKGROUND: Smoking remains a major public health burden among persons with opioid and/or alcohol use disorder (OUD-AUD). Adopting technology based smoking cessation interventions can improve cessation outcomes among detoxification patients with OUD-AUD. METHODS: Inpatients with OUD-AUD who smoke (n=206) were recruited in a publicly-funded, tertiary hospital in New York City. Technology use patterns and preferences were assessed using a 44-item survey covering: 1) demographic and clinical characteristics; 2) technology use patterns; 3) privacy concerns pertaining to electronic communication; 4) and acceptability of potential technology platforms to reduce smoking. RESULTS: Participants were mostly male (91%), unemployed or dependent on public assistance (68%), and admitted for detoxification for alcohol (47%), heroin (31%), or both alcohol and heroin (22%). Past 30-day smoking was reported by 78% of the sample, and 60% reported at least one quit attempt in the past year. Mobile phone ownership was common (89%); however there was an average turnover of 4 mobile phones and 3 phone numbers in the last year. Computer ownership was low (28%) and one third of respondents reported daily internet use (34%). Forty percent expressed concern regarding the privacy of electronic communication with their healthcare pro-

vider. Preferences for adopting technology based smoking cessation interventions included telephone-based counseling (41%), text messages (40%), smart phone applications (20%), email (19%), web-based modules (17%), social media (15%), and online forums (27%). Nearly half of participants (42%) were interested in enrolling in the National Cancer Institute text message intervention to reduce smoking. CONCLUSIONS: Despite concurrent AUD-OUD, most had attempted to quit smoking in the last year and preferred telephone- and text message-based interventions to facilitate smoking cessation. However, high turnover of mobile phones, phone numbers, and limited access to computers pose barriers to dissemination of technology based smoking cessation interventions in this vulnerable population. Future research on intervention modalities overcoming such barriers is needed.

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POS5-25

TESTING RECIPROCAL ASSOCIATIONS BETWEEN SMOKING AND DEPRESSION FROM LATE ADOLESCENCE TO YOUNG ADULTHOOD

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SIGNIFICANCE: To understand the long-term relationship between adolescent cigarette smoking and later depressive symptoms, longitudinal research is necessary. We examined both the association of adolescent cigarette smoking with depressive symptoms in young adulthood and the reverse association between adolescent depression and subsequent smoking. METHODS: We analyzed prospective longitudinal data from twins participating in adolescent (mean age 17.5) and young adult (mean age 22) surveys within the FinnTwin12 study (n=2921-2925 depending on the smoking variable). Both surveys assessed both smoking patterns and depressive symptoms. The 10-item version of the General Behavior Inventory (GBI) assessed depressive symptoms, in which the sum score ranged from 0 to 30. We used negative binomial regression and multi-nominal regression analysis, which were further adjusted for multiple confounders. RESULTS: Cigarette smoking during adolescence predicted depressive symptoms in later life. The Incidence Rate Ratio (IRR) estimates, when adjusted with all confounders, including baseline depressive symptoms, were higher among those who had smoked >100 cigarettes (IRR=1.15, 95% CI 1.02-1.30), and among daily smokers (IRR=1.17, 95% CI 1.02- 1.34) compared to never smokers. While testing the reverse association among individuals who were never smokers at baseline, having higher depression scores slightly and almost significantly increased the likelihood of becoming a daily smoker (RRR 1.08, 95% CI 1.00-1.17), however, did not predicted occasional smoking. CONCLUSION: Cigarette smoking during adolescence is a significant predictor for depressive symptoms later in life. Additionally, depressive symptoms during adolescence may slightly increase the likelihood of becoming a daily smoker later.

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POS5-26

RELATIONSHIP BETWEEN INCOME AND CIGARETTE PURCHASING PATTERNS AMONG HOMELESS ADULTS

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Increased taxation has been used as a tobacco control strategy, particularly for low income smokers. Despite being one of the lowest income groups, little is known about homeless smokers' cigarette purchasing patterns. This study explored the relationship between income and cigarette purchasing patterns among homeless smokers. Participants were from multiple homeless-serving agencies in the OK City area (N=390, M_{age}=42.8+11.9, 57.9% white, 63.8% male). Participants self-reported demographics, monthly income, dependence (Heaviness of Smoking Index) and cigarette purchasing patterns (location of recent cigarette acquisition, average amount spent on cigarettes weekly, and quantity of cigarettes most recently purchased). Associations between income and cigarette purchasing patterns were examined in 3 logistic regressions, each controlling for race, age, sex, and dependence. Participants reported no income (40.8%), earning between $1 and $500 (29.7%), or earning >$500 in the prior month (29.5%). Income was significantly associated with location of recent cigarette acquisition and average amount spent on cigarettes each week, but not number of cigarettes purchased. Further, as income increased, the likelihood of purchasing cigarettes from a store vs. from another source (eg, a friend) increased, as did the likelihood of respondents spending >$20 (vs. <$20) on cigarettes per week. Most participants (~86%) in each income category most recently purchased > a pack (vs. loosies). In sum, homeless smokers with some income were more likely than those without income to acquire cigarettes from a store and, perhaps consequentially, spend more money on cigarettes. However, most homeless smokers without income were still acquiring cigarettes, and in the same quantities as their counterparts with incomes. Given consumption equivalence, results may suggest distinct practices among income groups (eg, lower income groups using roll-your-owns). Results indicate that at the current price point, OK City homeless smokers with and without incomes are able to procure cigarettes, calling into question price sensitivity as a mechanism for tobacco control for this disadvantaged population.

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POS5-27

CONCURRENT NICOTINE AND TOBACCO PRODUCT USE AMONG HOMELESS SMOKERS AND ASSOCIATIONS WITH CIGARETTE DEPENDENCE AND OTHER FACTORS RELATED TO QUITTING

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The prevalence of cigarette smoking among homeless adults is high (>70%), and past-30 day concurrent tobacco or other nicotine product use (CU) may also be high among homeless cigarette smokers. Little is known about how non-CUs compare to CUs on use motives and factors associated with quitting. In this sample of homeless daily smokers (N=398, mean age=42.9+11.8, 64.8% male, 65.1% white) from six homeless-serving agencies in Oklahoma, the prevalence of CU was 68.5% (45.1% use 1 CU product; 54.9% use >2 CU products). The most frequently endorsed motives for CU were: 'It is cheaper than smoking cigarettes' (54.1%) and 'To help me cut down on smoking cigarettes' (32.9%). Differences between non-CUs and CUs on cigarette dependence, expired CO, readiness to quit smoking, perceived risk of smoking, past-year quit attempts, and other factors associated with quitting were examined using t-tests and Chi-Square tests. Results indicated that non-CUs and CUs did not differ regarding years smoked, cigarettes per day, time to first cigarette of the day, expired CO, or readiness to quit smoking. However, CUs had more past-year quit attempts than non-CUs (2.0 vs 1.3; p=.003), were more likely to have been diagnosed with a non-tobacco substance abuse disorder (45.9% vs 34.6%; p=.03), and were more likely to endorse increased likelihood of developing at least one smoking relating disease if they did not quit for good (p=.037). Only 4.1% of CUs and 2.3% of non-CUs (p>.05) reported receiving cessation services at local shelters over the previous 3 months. In conclusion, the rates of CU of other tobacco/nicotine products among homeless cigarette smokers is high, and accessible cessation treatment services at shelters are sorely needed. CUs may be particularly receptive to intervention given their greater perception of risk associated with not quitting, more frequent quit attempts, and motives for CU as associated with cutting down or quitting smoking. Concur-

rent non-nicotine substance abuse should be assessed and addressed as a risk factor for smoking lapse/relapse during a smoking quit attempt, which might be particularly relevant among CUs.

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POS5-28

PERCEIVED BENEFICIAL AND ADVERSE HEALTH EFFECTS OF VAPING: A SURVEY OF HUNGARIAN E-CIGARETTE USERS

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INTRODUCTION: Despite increasing use of electronic cigarettes (e-cigarettes), current knowledge about health effects of their use is limited. This study explores perceived health effects of e-cigarette use among Hungarian adult former and current smokers who use e-cigarettes. METHODS: A cross-sectional, web-based survey was conducted among Hungarian vapers (n=1455; 86.7% male; mean age 37.9 [SD=11.29] years) in 2015. Participants were asked whether they experienced 14 adverse effects (e.g., cough, headache, gingivitis) and changes in ten physiological conditions since they started using e-cigarettes. Multivariable logistic regression analyses were used to assess the association between improvements in each physiological condition and being an e-cigarette-only or dual user, controlling for age, gender, education, cigarettes smoked per day before initiated vaping, time since started using e-cigarette, vaping frequency and nicotine concentration of e-liquid. RESULTS: Compared to dual users (19.2%), e-cigarette-only users were more likely to be male, started using e-cigarettes more than two years prior to the survey, and smoked more than 20 cigarettes per day before initiating e-cigarettes. Any adverse health effects of vaping was reported significantly more by dual vs. e-cigarette-only users (33.2% vs. 18.0%, $p<0.001$), with the most common being cough for the former and sore/dry mouth and throat for the latter. The majority of the sample reported better breathing (89.9%), olfactory (86.3%) and gustatory (83.6%) senses after e-cigarette initiation, while improvement in appetite, sexual performance and memory were mentioned less frequently (40.8%, 36.3% and 27.3%, respectively). The odds of positive changes since initiating e-cigarette use were significantly higher among e-cigarette-only users compared to dual users for almost all physiological conditions except appetite and memory. CONCLUSIONS: E-cigarette-only users experienced more beneficial and less adverse health effects of vaping than dual users. Efforts to validate self-reported data with medical records on the health effects of vaping among former and current smokers are needed.

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POS5-29

THE IMPACT OF THE TPD II ON THE CALL VOLUME OF THE AUSTRIAN´S QUITLINE "RAUCHFREI TELEFON"

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Since 20th of May 2016 the tobacco products directive (TPD II), has to be brought to national law in the countries of the European Union. One of various aspects of the TPD II is the regulated appearance of tobacco product packages. European cigarette packages must now show a combination of pictorial warnings, text warnings and the telephone number of a tobacco cessation service. The aims of this intervention are to inform smokers on the health risks of smoking and the associated deseases as well as cessation options in a direct and easy understandable way. Smokers who are ambivalent in their smoking behaviours should be strengthened in their wish to quit, young people should be discouraged to start smoking at all. In Austria the telefone number and the website of the austrian quitline "Rauchfrei Telefon" are now mandatory on every package. The law must be complied till May 2017. Most of the companies adapted their products to the TPD II already. As expected from international experiences the call volume at the quitline has increased. After a peak in July and August 2016, with a tenfold increased call volume, the numbers of calls evened out at a much higher level than before the implementation of the TPD II. All services of the quitline (e.g. telephone counselling, use of the website, dispatch of materials, app use) are frequented significantly more. Another effect of the TPD II is visible in the different profile of callers: e.g. the average of age is lower and more men are calling. More Information on the law and on the quitline´s service is requested. The bigger part (more than 80%) of the new callers have found the telephone number on the cigarette package. To manage the higher frequency parts of the service and the counselling procedure had to be adapted. CONCLUSION: From the point of view of the quitline the targets of the new law have been reached. The pictures arouse emotionality in smokers and non/exsmokers and force a discussion on the topic, often followed by specific steps to seek help for quitting smoking. The information on the packages is rising awareness for and questions about the consequences of smoking. More people are calling the quitline, are getting information and start the cessation process supported by professional services.

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POS5-30

PREDICTING TRAJECTORIES OF SMOKING REDUCTION AMONG SMOKERS WHO FAIL TO QUIT SMOKING USING A PIECEWISE MIXED EFFECTS GROWTH MODEL

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Many smokers who attempt to quit fail to do so, however many may reduce the amount they smoke. Substantial smoking reduction can be an important outcome for failed quitters. Reduction increases the likelihood of subsequent cessation and confers some health benefits. Little is known about the stability of CPD (cigarettes per day) reductions among failed quitters or what factors account for inter-individual differences in rates of change in CPD post-reduction. The present study describes inter-individual differences in rates of change in CPD during the post-intervention follow-up, and determines the predictors of inter-individual differences in CPD trajectories. Predictors were derived from the smoking reduction literature. The sample included 384 participants from the Connect2Quit smoking cessation RCT for rural smokers, which had good follow-up (83%, 86%, and 88% in months 3, 6, 12 respectively). This analysis excluded participants who were persistently quit during follow-up or who did not evidence CPD reduction between baseline and post-intervention at month three (M3). On average, CPD was reduced by 58% by the end of the intervention (M3). CPD increased by 6.5% for each follow-up visit (exp(beta) = 1.065, 95% CI [1.002 – 1.132]), but this effect did not remain significant when including interactions. The random slope for the follow-up period (M3-12) was significant (chi-square(2) = 48.20, $p < .001$). Predictors of inter-individual differences in post-intervention CPD trajectories included perceived competence to quit smoking (PCSC) and living with a smoker. Simple-slopes analyses showed that individuals with PCSC one SD above the mean changed little from their M3 levels during the follow-up compared to individuals one SD below the mean. Living with at least one smoker was associated with greater CPD use at M3, M6, and M12 and this difference became larger over time. This study found that individuals differed in their ability to maintain smoking reductions achieved during intervention. Living with at least one smoker and having lower perceived competence to quit negatively influenced individuals' abilities to sustain smoking reductions gained during intervention.

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POS5-31

ELECTRONIC CIGARETTE NICOTINE DELIVERY AND ABSTINENCE SYMPTOM SUPPRESSION IN EXPERIENCED USERS AND ECIG-NAIVE SMOKERS: EFFECTS OF LIQUID NICOTINE CONCENTRATION

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BACKGROUND: Electronic cigarettes (ECIGs) aerosolize a liquid that often contains nicotine. The extent to which liquid nicotine concentration influences plasma nicotine concentration and abstinence symptoms in ECIG-experienced users and ECIG-naïve cigarette smokers has not been explored systematically. METHODS: Eighteen ECIG-experienced users and 21 ECIG-naïve cigarette smokers used an "eGo" ECIG battery (3.3 V) with dual-coil cartomizer (1.5 Ω) loaded with tobacco or menthol flavored liquid (70% propylene glycol/30% vegetable glycerin) in 4 independent sessions that differed by nicotine concentration (0, 8, 18, or 36 mg/ml). In each session, participants completed two, 10-puff ECIG use bouts (30 sec inter-puff interval) separated by 60 min. RESULTS: After bout 1, for ECIG-experienced individuals, mean plasma nicotine concentration was lower in the 0 mg/ml condition relative to all active conditions and for ECIG-naïve smokers 0 mg/ml was lower relative to 18 and 36 mg/ml (*p*s<.05). Also, relative to ECIG-naïve smokers, mean (SD) plasma nicotine concentration (ng/ml) was greater for ECIG-experienced users in all active conditions: 8 mg/ml, 5.7 (3.9) for ECIG-naïve vs. 8.9 (6.1) for ECIG-experienced; 18 mg/ml, 7.2 (6.3) for ECIG-naïve vs. 13.2 (8.2) for ECIG-experienced; 36 mg/ml, 9.6 (6.9) for ECIG-naïve vs. 16.8 (14.8) for ECIG-experienced (*p*s<.05). Overall ECIG-experienced users took longer duration puffs relative to ECIG-naïve smokers in all conditions. Groups also differed on several subjective measures including "pleasant," "satisfy," and "urge." For example, after bout 1, for the 18 mg/ml condition mean (SD) score for "I have an urge for a cigarette/ECIG" was 67.0 (30.2) for ECIG-naïve users but 35.4 (25.4) for ECIG-experienced and for the 36 mg/ml the score was 49.0 (36.8) for naïve but 25.6 (24.6) for experienced. CONCLUSIONS: ECIG nicotine delivery and abstinence symptom suppression depends on liquid nicotine concentration and user experience. Regulation aimed at constraining ECIG nicotine delivery will need to take into account these factors as well as others known to influence plasma nicotine concentration (e.g., puff topography, device power).

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POS5-32

EFFECTS OF TEXTUAL AND IMAGERY TYPES ON NEGATIVE EMOTIONAL RESPONSES, MESSAGE CREDIBILITY, AND PERCEIVED EFFECTIVENESS OF HEALTH WARNING LABELS FOR INDONESIA'S CIGARETTE PACKS

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BACKGROUND: Pictorial health warning labels (PHWL) research is lacking in low- and middle-income countries (LMICs). We assessed which PHWL text and image types are most likely to reduce tobacco use among Indonesian smokers and adolescents. METHODS: This study used both between- (i.e., text type) and within-subject (i.e., image type) designs, collecting data from adolescents aged 15-18 years (n=280 smokers; n=313 nonsmokers) and adult smokers (n=584) in Jakarta city and Bogor district. The main independent variables were warning type [text-only vs. text+images (PHWL)], image type (graphic vs. suffering vs. symbolic), and text type (didactic vs. testimonial). Participants rated each warning for negative emotional responses, message credibility, and perceived effectiveness. To adjust for correlated data due to repeated measures, linear mixed effect models were estimated separately for each outcome, regressing them on warning characteristics and adjustment variables. RESULTS: PHWLs were rated higher than text-only warnings for negative emotional responses (b=1.99, *p*<0.001), message credibility (b=1.16, *p*<0.001) and perceived effectiveness (b=1.26, *p*<0.001). Within the PHWLs, symbolic were rated lower than suffering images for all outcomes (b=-0.52, *p*<0.001; b=-0.55, *p*<0.001; b=-0.38, *p*<0.001, respectively), while graphic images were rated higher than suffering images for all outcomes (b=1.29, *p*<0.001; b=0.75, *p*<0.001; b=0.84, *p*<0.001, respectively). Testimonial PHWLs were not significantly different than didactic PHWLs on any outcome. However, significant interactions between text type and age were observed for models of credibility (b=0.51, *p*=0.008) and perceived effectiveness (b=0.37, *p*=0.048). Stratified models by age group showed that didactic PHWLs were perceived as more credible and effective than testimonial PHWLs among adolescents but not among adults. CONCLUSION: PHWLs produced a similar pattern of responses applies to LMICs, which adds further support for the FCTC recommendations to adopt PHWLs in all countries. PHWLs with didactic text and graphic images are likely to have the greatest impact among Indonesian adolescents and adult smokers.

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POS5-33

E-CIGARETTE INDUSTRY WATCH: AN INSIDE LOOK AT THE CHINESE DOMESTIC MARKET AND IMPLICATIONS FOR THE REST OF THE WORLD

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Currently most e-cigarettes in the world are manufactured by domestic e-cigarette companies in China. However, not much is known about the Chinese domestic market, and regulations on e-cigarettes remain absent in China. This study aimed to examine how domestic industry insiders view the product they sell and how potential future regulations of the domestic market could also affect the entire industry. Combined with document review, semi-structured interviews with executives from domestic e-cigarette companies and with e-cigarette retailers were conducted. Our results highlight the complexity of the market, as most companies act as Original Equipment Manufacturer and ship products to the international markets, while domestic market expansion has been slow. Market expansion in China is heavily influenced by pressure from China Tobacco/State Tobacco Monopoly Administration (STMA), a powerful government agency that manufactures and regulates tobacco products. Company executives often held contradicting views regarding the use, health impact, and safety of e-cigarettes. Some view future government regulation of the market as a positive force that will help market expansion, while others fear that takeover by China Tobacco would ensue, eventually making China Tobacco the largest supplier of e-cigarettes to the rest of the world. Recent moves by China Tobacco/STMA do signal market entry. Uncertainty about future regulations and fierce domestic competition have pushed some companies to move away from the e-cigarette business. Our findings reveal contradictory views held by e-cigarette industry insiders regarding the use and health impact of e-cigarettes, which have significant and often concerning impact on how the product is marketed and how consumers behave. As e-cigarette companies try to expand sales in the Chinese domestic market, now would be the most opportune time for public health advocates to intervene to limit e-cigarette use in China. Future market regulation depends heavily on the STMA, and the steps they take will likely cause seismic shifts in the entire e-cigarette industry.

FUNDING: International Union Against Tuberculosis and Lung Disease

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POS5-34

SUCCESS: PHASE V TRIAL OF AN INTENSIVE CESSATION INTERVENTION WITH HARD TO REACH POPULATIONS IN NW ONTARIO, CANADA

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OBJECTIVE: This Phase V generalisability trial of an intensive smoking cessation behavioural intervention was initially designed for inpatients in the American private healthcare system; it has evidenced among the highest quit rates reported. It was tested here in a publicly-funded universal healthcare system with inpatients and outpatients in NW Ontario, Canada, which has among the highest provincial and federal smoking rates and medical comorbidities along with low SES. Reaching smokers is challenging in this sparsely-populated (N=224,000) vast landmass (larger than Spain) which includes communities without road access and limited phone/internet. METHODS: This 8-week/8-session intervention with 1-year follow-up is grounded in behavioural theory (self-regulation, self-efficacy, relapse prevention, operant conditioning). It was offered in 2 inpatient hospitals and 4 ambulatory settings (community clinic, maternity centre, cancer centre, hospital outpatient programs). Delivered by a cessation nurse for inpatients and clinic practitioners for outpatients, Session 1 was in-person, the rest were by phone. Pharmacotherapy was not provided. RESULTS: Reach was 6% of estimated smokers in the clinics' catchments (687/11,585) or 2.5% of all NW Ontario smokers estimated to receive medical care including communities not covered by the intervention. Enrolment was from 73 communities: 49% from the 1 NW urban city, the rest from 36 rural and 36 First Nations communities. Demographics showed: 59% female, 44% Indigenous, 54% completed high school, 35% employed, 41% unemployed or disabled, 68% had a chronic disease (45% respiratory, 28% CVD, 23% diabetes [provincial M=5%], 9% cancer), 47% mental illness, 27% used illicit drugs, 11% pregnant, and 54% were 18-50 yr. old. Six month outcomes were 36% self-reported quit, 47% not reached, and 17% self-reported smoking among whom amount decreased from 18 to 10 cigarettes/day. CONCLUSIONS: The intervention generalised to this high risk, low SES, hard to reach population. By implementing the intervention into clinics and hospitals, the population impact was great (high reach x high effectiveness). Smokers who might not otherwise seek cessation aid enrolled and achieved among the highest quit rate reported for non-cardiac populations. These results are notable given the high NW smoking rate and numerous challenges reaching high risk smokers across a vast, sparsely-populated landmass coupled with research that shows <1% of smokers will seek cessation aid on their own and self-quit rates are <5%.

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POS5-35

NEIGHBOURHOOD DEPRIVATION, SMOKING, AND RACE IN SOUTH AFRICA

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BACKGROUND: Neighbourhood environments contribute to smoking disparities in high-income nations, but little is known about the relationship between neighbourhood deprivation and smoking in low- and middle-income nations. In South Africa, where deprivation is strongly tied to race, smoking disparities persist: 40.1% of Coloured people (mixed ethnic origin) smoke compared to 15.1% among Blacks and 15.3% among Whites. Understanding how community-level factors affect smoking disparities can inform interventions. METHODS: We used data from the South African National Income Dynamics Study (NIDS) 2008 to test the hypothesis that higher neighbourhood deprivation is associated with more smoking, regardless of race. Levels of neighborhood deprivation were determined using the validated South African Index of Multiple Deprivation (SAIMD). Models use general estimating equations and control for individual-level (age, gender, education) and household-level (urbanicity, income) risk factors linked to smoking. Due to the history of apartheid, race and deprivation are inextricable. Thus, subgroup analyses for racial categories Black (n=12,036) and Coloured (n=2,148) were performed. Whites and Asians were excluded due to their lack of deprivation. RESULTS: After controlling for confounders, we found that neighbourhood deprivation had a non-linear association with smoking status among both Black and Coloured populations: the highest proportion of smokers were in the middle range for deprivation, and not in the most or least deprived neighbourhoods. This association was more marked among Blacks; it did not reach statistical significance for Coloured individuals. CONCLUSIONS: This study is the first to examine the relationship between neighbourhood deprivation and smoking in sub-Saharan Africa. In South Africa, the relationship exhibits differences by race group and may be non-linear. Our results provide insight into the role of neighbourhood influences on smoking and can be used to inform the implementation of tobacco control measures in settings like South Africa. Future research can explore potential causal mechanisms by which deprivation influences smoking behaviors.

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POS5-36

SMOKING STATUS AND SELF-REPORTED HAPPINESS

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Dangers of smoking and beneficial effects of smoking cessation are well established, however little is known about the relationships between self-reported well-being and smoking cessation (Shabab & West, 2009). In Italy 11.5 million adults are currently smokers, 22% of the adult population (OssFAD, 2016). Smokers often claim that quitting smoking can lead to a deterioration in their quality of life, believe that quitting would mean to give up an important source of enjoyment and happiness (Shahab & West, 2012). Aim of the study is to assess the association between smoking status (ex-smokers/relapsers) and both self-reported happiness and smoking enjoyment in subjects enrolled in a long-term smoking cessation program held in Policlinico Umberto I, from 2010 to 2014. Participants were 242 smokers (median age 57 yrs, range 21-83, 65% females) that had completed a 12 months' group program for smoking cessation, during which they were allowed to add pharmacological therapies (Varenicline or NRT) to the counselling and accepted to be available for further phone interviews. The program consisted of a baseline group session 1 week before the quitting day, 5 consecutive days of group counselling right after the quitting day, 4 consecutive weekly sessions and follow-up meetings after 3, 6, 12 months. Smokers were evaluated upon socio-demographics, clinical and psychological characteristics and on the basis of their smoking history, nicotine dependence and self-reported happiness/smoking enjoyment. Among the ex-smokers (n=125), 90% claimed to feel happier as compared when they were smoking, 8% did not noticed any difference and 2% felt less happy than before. Among current smokers, i.e. the relapsers after 1 year cessation (n=117), 86% were less happy as compared when they were not smoking, 5% felt like before, and 9% were happier than when not smoking. Our data demonstrate that ex-smokers after a year cessation or more are happier than current smokers. Knowledge concerning improved long-term life satisfaction after smoking cessation, could offer to clinician useful information for dealing with smokers worried about the effects of quitting.

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POS5-37

AFFECT, RISK PERCEPTION, AND THE USE OF CIGARETTES AND E-CIGARETTES: A POPULATION STUDY OF U.S. ADULTS

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BACKGROUND: Tobacco companies argue that the decision to smoke is made by well-informed rational adults who have considered all the risks and benefits of smoking. Yet in promoting their products, they frequently rely on affect, portraying them as part of a desirable lifestyle. Research examining the roles of affect and perceived risks in smoking has been scant and non-existent for novel tobacco products. This study aimed to evaluate direct and risk perception-mediated relationships between affect and tobacco use (cigarettes and e-cigarettes) among U.S. adults. METHODS: Cross-sectional survey of a nationally representative sample of 5,398 non-institutionalized U.S. adults, aged 18+ years who were aware of e-cigarettes. Structural equation modeling (SEM) was used to estimate the parameters of the hypothesized mediation model of the effect of affect on tobacco

product use (cigarettes and e-cigarettes) via perceived risk of the products, while adjusting for covariates. RESULTS: Participants held various affective associations with tobacco products, and affect towards cigarettes (mean valence= -0.83, measured on a 5-point scale ranging from -2 to 2) was more negative than that towards e-cigarettes (mean valence= -0.24). More positive affect (one standard deviation (SD) difference) towards cigarettes and e-cigarettes was associated with 0.23 and 0.29 significant SD decrease in risk perception for cigarettes and e-cigarettes, respectively, which in turn was associated with 20% and 16% significantly higher odds of being a current cigarette user and e-cigarette user, respectively, than being a never user. Additionally, more positive affect (1 SD difference) towards cigarettes and e-cigarettes was directly associated with 91% and 62% significantly higher odds of being a current cigarette and e-cigarette user, respectively, than being a never user. CONCLUSIONS: The results suggest the need to also consider affect in addition to reason-based predictors in developing models explaining tobacco use behavior or in creating anti-tobacco messages. Educational efforts aimed at further smoking reductions should highlight and reinforce negative images and associations with tobacco.

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POS5-38

VALIDATION OF A MODIFIED FAGERSTROM TOLERANCE QUESTIONNAIRE IN A SMOKING CESSATION PROGRAM FOR THAI YOUTH

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BACKGROUND: The Fagerstrom Tolerance Questionnaire (FTQ) is widely used to measure nicotine dependence. Its psychometric nature is well known, but its utility is best confirmed through validation with self-reported behaviors and biomarkers in populations such as youth from different countries and cultures. METHOD: A modified FTQ (mFTQ) of 7 items in a school-based smoking cessation program (Project EX) was administered in four high-schools, two in Bangkok and two in Nakhon Pathom. A total of 185 youth smokers (179 males and 6 females) between 12 and 19 years of age were surveyed at baseline. In addition, self-reported smoking behavior including frequency of cigarettes smoked on the day of the survey and in the past month and saliva cotinine biomarker levels were assessed. Spearman's rank correlations were computed to validate the mFTQ with the self-reported and biomarker findings. RESULTS: The mFTQ score had mean and standard deviation of 3.24±1.76 (range = 0-9); 40.0% reported no dependence (0-2), 46.5% stated moderate (3-5), and 13.5% indicated substantial (6-9). The total mFTQ score was significantly associated with self-reported smoking behaviors (average cigarette/day, r_r = .379, p<.001, frequency of smoking/month, r_r = .305, p<.001) and saliva test nicotine level (r_r = .269, p < .001). Significant association between mFTQ items and all validation variables was found. CONCLUSION: Findings confirm that the mFTQ is a valid measure for assessing nicotine dependence in Thai youth smokers. More detailed analysis of the relationship of mFTQ items, behavioral and biomarker results would provide insight for improved smoking cessation programs for Thai youth.

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POS5-39

THE FACTOR STRUCTURE OF THE CIGARETTE PURCHASE TASK AMONG TREATMENT-SEEKING SMOKERS

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The Cigarette Purchase Task (CPT) assesses reinforcing efficacy via hypothetical purchases. The CPT yields five parameters: intensity (number of cigarettes 'purchased' when free), elasticity (the consumption-price function), Omax (maximum expenditure), Pmax (price at maximum expenditure), and breakpoint (the price that suppresses consumption). Prior work suggests that these parameters reflect two factors, one representing insensitivity to rising prices (i.e. persistence, composed of all parameters except intensity) and one representing absolute consumption levels (i.e. amplitude, composed of intensity and Omax). The primary study objective examined the CPT factor structure among treatment-seeking smokers. A secondary objective evaluated the range of purchase prices. Typically, a maximum price of $1120/cigarette is used, though recent studies have narrowed the range to practical prices (e.g., $10 maximum/cigarette). In the present study, adult smokers (10+ CPD) enrolled in a cessation trial were randomly assigned to complete a standard CPT (*n* = 63; price range $0-$1120 per cigarette) or truncated CPT (*n* = 64; price range $0-$5 per cigarette). Data were examined using Principal Factor Analysis with a varimax rotation. The two-factor solution was generally replicated in the standard CPT; elasticity, breakpoint, Omax, and Pmax loaded strongly on the persistence factor (range =.68-.99), whereas only intensity loaded strongly on the amplitude factor (.97). The proportion of shared variance accounted for by persistence and amplitude was 67% and 21%, respectively. The two-factor solution fit the truncated CPT relatively well with a similar pattern of factor loadings. However, both factors accounted for less variance (persistence = 47%; amplitude = 18%). The observed reduction may be due to a ceiling effect in the truncated CPT; for 56.25% of participants, the maximum price of $5/cigarette failed to completely eliminate consumption (i.e., breakpoint). The present data call attention to the need to determine an optimal price range for the CPT. Future analyses in this dataset will examine the utility of CPT variables in predicting smoking behavior and treatment outcomes.

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POS5-40

SMOKERS WHO SWITCH TO VAPE PRODUCTS: SHORT TERM OUTCOMES

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BACKGROUND: Many of those who use ENDS (Electronic Nicotine Delivery System) products report doing so in order to quit smoking, but the process and outcomes of switching to ENDS remains uncertain, particularly because few clinical studies have been conducted and the products have changed rapidly. This observational study was designed to provide clinical outcomes on adult smokers who switched to recent generation ENDS products in an open-label observational study. METHOD: 19 participants who smoked at least 10 cigarettes a day and who intended to purchase an ENDS product from a vape shop within the next 4 days with the intent of switching completely from cigarettes to the ENDS in the next 30 days were enrolled in the study. Eligible participants provided biological samples (e.g., breath CO and urine for cotinine), completed questionnaires regarding smoking (e.g., urge to smoke, MMWS, etc), and were offered $100 reimbursement after they purchased the ENDS product of their choice (primarily 2nd generation). They returned for regular visits to assess smoking status, ENDS and cigarette use, etc. RESULTS: At week 6, cotinine levels were reduced by 27% and breath CO was reduced 59% for the group as a whole – but there was considerable variability. At the end of 12 weeks, 7-day point prevalence abstinence was 26% (N=5), while an additional 4 participants smoked <1 per cigarette per day. Breath CO was reduced by about 50% for the group as a whole. Use of ENDS liquid flavor was as follows: (1) 68% (N=13) used tobacco-flavored liquid at baseline, 26% (N=5) used menthol, and 5% (N=1) used fruit flavor; (2) of the 13 who began with tobacco flavor, 7 continued with the tobacco flavor and 6 switched to fruit or dessert flavor. Of the 5 who started with menthol flavor, 3 switched to some other flavor (eg fruit).

Weight did not change over time. 47% of the ENDS devices malfunctioned requiring repair or replacement, including 3 that leaked liquid. DISCUSSION: Additional participants will be assessed in this study, but interim results suggest that, similar to early studies of NRT products, controlled trials to assess the effectiveness of ENDS for smoking cessation are warranted but device malfunction or difficulty mastering their use is a significant challenge to new users.

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POS5-41

A COMPREHENSIVE EXAMINATION OF TOBACCO USE AMONG YOUTH EXITING FOSTER CARE

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Rates of tobacco use remain high among underserved and vulnerable populations, including sexual minorities, individuals with mental illness or physical disabilities, and those experiencing homelessness. Youth exiting the foster care system can also be counted among those facing tobacco-related health disparities. While myriad studies have focused on negative outcomes such as unemployment, homelessness, and physical health issues among this population, few studies have examined cigarette use in this population and none have reported on use of other forms of tobacco. The aim of the current study was to determine the prevalence of lifetime and current tobacco use in a sample of youth exiting foster care, and to compare obtained rates to national surveillance data. Among the first 26 participants, nearly three-quarters (73%) of respondents have smoked cigarettes in their lifetime, almost twice the U.S. national rate of 38%. Thirty-eight percent identified as current smokers, with 70% of those young people smoking daily. With regard to other forms of tobacco, 48% were lifetime e-cigarette users, 27% had smoked cigars in their lifetime, 56% had smoked hookah, and 16% had used smokeless tobacco; other forms (e.g., bidis, snus, pipe) were less prevalent. Twelve percent of participants were current e-cigarette users; similar rates were reported for cigars and hookah. Half of participants were currently living with a cigarette smoker. Of current cigarette smokers, 70% reported having their first cigarette within an hour of waking. Only 10% of current smokers had been advised by a physician or nurse to quit within the last year. These tobacco use prevalence data paint a concerning picture for these youths' transition into adulthood, as substantial rates of tobacco dependence and disproportional burden of tobacco-related disease looms likely. In addition to presenting these data, we also will present survey results on foster youth preferences for tobacco cessation programs. Matching foster youth needs to available or possible treatments will be important, as these young people face a number of population-specific barriers to health care.

FUNDING: CVS Health Grant

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POS5-42

A SCHOOL BASED TOBACCO AND ARECA NUT CESSATION INTERVENTION FOR STUDENTS FROM SLUMS IN MUMBAI, INDIA

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BACKGROUND: According to the Global Youth Tobacco Survey, India (2009), the prevalence of tobacco use among children between 13 to 15 years in India is 14.6%. Areca nut ("supari") is an easily available carcinogenic, addictive substance widely used among school children from the lower socioeconomic class. This usually acts as a gateway product to tobacco use. OBJECTIVE: LifeFirst school cessation programme was implemented in six schools catering to lower socioeconomic population in slum areas of Mumbai in the academic year 2015-2016 for helping students quit their tobacco and supari use. METHODS: After due permissions from school authorities, orientation sessions about harmful effects of tobacco and areca nut were conducted using audio-visual aids for 969 students of the 7th, 8th and 9th grades. At the end of the session students were informed about the availability of a cessation service within the school and encouraged to register for the same. The students who voluntarily joined the cessation service were divided into groups of 10-15 students each and six group sessions involving videos, games, role plays and activities were conducted over six months. The sessions were theme based; covering topics like rapport building, ill-effects of tobacco, coping mechanisms, refusal skills etc. The self-reported status of tobacco use was discussed and recorded individually during each session. RESULTS: 325 students (86% boys, 14% girls) joined the programme. 87% of these were only areca nut users, 3% only smokeless tobacco users, 1% only smokers and 9% used supari as well as a tobacco product. 61% were daily users. The average age of initiation was 11.7 years and 73% were introduced to the product by their peers. 64% were aware that it is detrimental to health and 41% had made a past quit attempt. The 7-day point prevalence of abstinence among all registered students increased steadily over successive sessions from 29% at the first follow-up session to 55% at the 6th month follow-up using intention to treat analysis. CONCLUSION: Providing cessation services including improving awareness, refusal skills and positive peer influence facilitated by trained counselors encourages and aides tobacco as well as areca nut users to be free from their habit.

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POS5-43

EFFECTIVENESS OF 5A VS 3A TOBACCO CESSATION COUNSELING IN PRIMARY CARE SETTINGS IN INDIA

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BACKGROUND: The detrimental health effects of tobacco are well known, and many tobacco users wish to quit. It is the responsibility of healthcare professionals, as a preventative measure, to offer assistance to patients in achieving this goal. There are a gamut of tobacco cessation models used in different parts of the world but for a low middle income country like India, need for a cost-effective model is paramount. We conducted a study to determine the effectiveness of physician delivered (Ask, Advise, Assess, Assist, and Arrange) versus 3 A's (Ask, Advise, Assess) tobacco cessation counselling in primary care settings of India. METHOD: A quasi-experimental study was conducted in two states of India between Februarys to November 2016. Fourteen primary care centres in the two states were selected to provide either a structured brief advice based on the 5 A's model or 3A's model followed as the usual care. Participants were 535 patients currently using tobacco daily (394 in the 5A group and 132 in usual care), of which 94% were retained at follow-up, three months after enrolment. Study outcome was self-reported abstinence. Descriptive statistics on the study population are presented as proportions for categorical variables and as mean values for continuous variables. When comparing two groups, differences between proportions were assessed by chi-square test. The association between intervention condition and outcomes was analyzed using logistic regression models. RESULTS: The mean age of the patients in both 5A and 3A intervention group was 45 years respectively. Majority of the tobacco users were males (94%) in both the groups. More than half of the tobacco users (55%) in the study consumed smokeless tobacco. Chi-square test showed that there was significant association between type of intervention and quit rate. Quit rate in the 5A (31%) intervention group were higher than those in 3A (21%) group. The odds of quitting was 1.7 (95% CI 1.1, 2.7; $P < 0.05$) times higher in the 5A intervention group compared to the 3A group. CONCLUSION: This research provided evidence that physician delivered 5A cessation counselling may achieve significant reduction of tobacco consumption as compared to usual care. The intervention is not resource heavy and may act as a viable option to be included in the routine care practices in primary care settings of India. More large scale studies and studies on the cost-effectiveness of the intervention should also be taken up in future.

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POS5-44

DOES EXPOSURE AND RECEPTIVITY TO E-CIGARETTE ADVERTISEMENTS RELATE TO E-CIGARETTE AND CONVENTIONAL CIGARETTE USE BEHAVIORS AMONG YOUTH? RESULTS FROM WAVE 1 OF THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH STUDY

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BACKGROUND: E-cigarettes (EC) are the most commonly used tobacco product among middle and high school students. Additionally, youth EC users are progressing to smoking conventional cigarettes (CC). Although known to target youth, there are no current restrictions in the US on EC marketing, including advertising. The purpose of this study is to evaluate the relationship between EC advertisements (ads) and youth EC and CC use behaviors. METHODS: This study analyzed data from youth (12-17 years) who were aware of EC in Wave 1 (2013-2014) of the Population Assessment of Tobacco and Health (PATH) study (n=12,199). Weighted logistic regression models were used to assess whether exposure and receptivity to any of five randomized EC ads (two TV and three print) were associated with the EC and CC behaviors of ever use, current use (past 30 days), and susceptibility to future use. Additional analyses were conducted to determine whether the associations between EC advertising exposure and EC and CC behaviors were moderated by receptivity to EC ads. All models adjusted for sociodemographics and use of other combustible tobacco products. RESULTS: Exposure to EC ads was significantly associated to ever (AOR=1.39, p<0.01) and current (AOR=1.38, p<0.01) EC use as well as susceptibility to both EC (AOR=1.44, p<0.01) and CC (AOR=1.35, p<0.01). EC ad exposure was not significantly related to ever or current use of CC. Receptivity to EC ads was significantly associated with ever and current use and susceptibility in both EC and CC (AOR=1.66-2.85, p<0.01). Importantly, the association between exposure to EC ads and ever use of EC and CC and susceptibility to EC was significantly larger among youth were receptive to these ads (p<0.01). CONCLUSION: Using a large national sample of youth, these findings demonstrate exposure to EC ads are associated with EC use as well as susceptibility to future use of EC and CC. Youth who are receptive to EC ads appear particularly vulnerable. Further studies should focus on the role of receptivity to EC ads among youth in order to support regulatory policy targeting EC advertising.

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POS5-45

VAPING STATUS AND TOBACCO EXPOSURE BIOMARKERS AMONG A COHORT OF AMERICAN INDIAN SMOKERS

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RATIONALE: Electronic cigarettes (e-cigs) are increasingly popular among adults who smoke, and are often used to reduce or quit cigarette smoking. American Indians (AI) have a high prevalence of cigarette use and are disproportionately affected by tobacco-related diseases, but their concurrent use of cigarettes and e-cigs is unknown. Further, the question of whether concurrent use reduces exposure to tobacco constituents remains unknown. METHODS: We collected baseline survey and smoking biomarker data in a cohort of 375 adult AI smokers recruited from a Cherokee Nation healthcare facility in Oklahoma. We used multivariate logistic and linear regression analyses to determine the association between vaping status (never, past, or current (past 30 days) use) and any smoking quit attempt, cigarette packs smoked per day (< 1 or ≥ 1), and salivary cotinine levels, adjusted for socio-demographics, general health, selected medical history, depression, and other tobacco use. RESULTS: Overall, 37% of the cohort never used e-cigs, 47% were past users, and 16% were current users. Compared to never users, current users (OR = 3.5 95%CI = 1.5-8.5) and past users (OR = 1.9 95%CI = 1.1-3.3) were more likely to report any lifetime quit attempt. There were no statistically significant associations between vaping status and cigarette packs smoked per day or salivary cotinine level. CONCLUSIONS: Current and past e-cig users were more likely than never users to have any lifetime smoking quit attempt, but cigarette pack consumption and cotinine levels were similar across e-cig groups. This suggests that in this population of AI who smoke, use of e-cigs may be associated with intentions to quit but may have limited effect on reducing cigarette consumption.

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POS5-46

TRANSITIONS IN CARE: DO OUTPATIENT PHYSICIANS FOLLOW UP ON INPATIENT TOBACCO TREATMENT?

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Hospitalization is a “teachable moment” for initiating tobacco treatment. Effective inpatient treatment begins during hospitalization and continues for at least one month post-discharge. Most patients require outpatient follow-up visits after their hospitalization and these follow-up visits provide excellent opportunities for post-discharge tobacco treatment. Little is known regarding transitions in care for tobacco treatment between hospitalization and outpatient care. The aim of this study was to describe how often and how well tobacco was addressed in outpatient visits among smokers who received tobacco treatment during a recent hospitalization. Participants were smokers enrolled in an inpatient smoking cessation clinical trial; the intervention consisted of inpatient treatment, referral to quitline, and documentation of the intervention in the electronic health record (EHR). Eligible participants had to be willing to try to stay quit post-discharge. These analyses include all trial participants (232) who had at least one outpatient visit at the same hospital medical center within six weeks of discharge. Among these participants, we identified 406 unique provider visits. Discussion of tobacco use was documented in 35.7% of these follow-up visits. Prescriptions for smoking cessation medications were provided in 8% of visits. In this motivated population of very ill smokers, little more than 1 in 3 received follow-up discussion with their outpatient provider regarding quitting smoking. Very few received concrete assistance in the form of a prescription for medication. These missed opportunities for cessation treatment during hospital follow-up visits suggest the need for improvements in clinical systems for facilitating transitions in care.

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POS5-47

SMOKING CONTEXT AS A MEDIATOR OF THE RELATIONSHIP BETWEEN SES AND SMOKING

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INTRODUCTION: There is a well-established socioeconomic gradient in smoking behaviour with those from lower socioeconomic backgrounds engaging in higher rates of smoking. However, much less is known about the underlying pathways. This study takes a social-ecological perspective by examining whether socioeconomic status affects smoking behaviour by differential access of smoking-friendly environments, in particular places where smoking is allowed. Exposure to smoking restrictions was assessed via Ecological Momentary Assessment. METHOD: 194 daily smokers recorded their smoking and information about situational and contextual factors for three weeks using an electronic diary. We tested whether a smoker’s momentary context (within-subject) mediated the relationship between socioeconomic status (educational attainment; between-subject) and cigarettes smoked per day (CPD; within-subject). Momentary context was operationalized as the proportion of random assessments where smoking was allowed versus where smoking was not allowed. Data were analysed using random effects regression with a lower level mediation model (2-1-1 mediation) with random intercepts. RESULTS: Although no significant direct effect of SES on CPD were observed, there was a significant indirect effect of SES on CPD via the momentary context

(Coefficient Estimate = -0.73, *p-value* < .05). Compared to participants with higher education, lower educated participants were more likely to encounter places where smoking was allowed, and this translated into a higher number of CPD. IMPLICATIONS: These findings suggest that SES is associated with smoking at least partially via differential exposure to smoking-friendly environments, with smokers from lower SES backgrounds accessing more places where smoking is allowed.

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POS5-48

REPORTS OF SUICIDAL IDEATION AND BEHAVIOR WITH THE COLUMBIA - SUICIDE SEVERITY RATING SCALE IN THE EAGLES TRIAL

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EAGLES study (N=8058) found no significant effect of smoking cessation medications on a composite endpoint including moderate and severe suicidal ideation and/or behavior (SIB) among other neuropsychiatric adverse events. The Columbia - Suicide Severity Rating Scale (C-SSRS) was administered at screening and all clinic visits to augment SIB data collection. We examined the C-SSRS data to determine the extent to which a past history of SIB influenced SIB rates during smoking cessation treatment. Percentages of subjects with positive C-SSRS responses for SIB were calculated by history of psychiatric diagnosis (psychiatric cohort [PC]) and non-psychiatric cohort [NPC]), treatment (varenicline, bupropion, nicotine patch [NRT] and placebo), and lifetime history of SIB (yes/no). At screening, a lifetime history of SIB was reported by 4.9% (194/3984) of subjects in the NPC vs 34.7% (1413/4074) in the PC. During treatment, the incidence of SIB in the NPC was low overall (0.7%; 27/3962) and in each treatment arm: varenicline, 0.9% (9/988); bupropion, 1.5% (5/983); NRT, 0.5% (5/996); placebo, 0.8% (8/995). In the PC, the incidence of SIB was higher (2.4%; 99/4041) than in the NPC, with similar or lower rates for each active treatment compared with placebo: varenicline, 2.9% (30/1026); bupropion, 1.7% (17/1017); NRT, 2.4% (24/1016); placebo, 2.8% (28/1015). SIB including only ideation with intent or plan or behavior during treatment was lower than 0.2% in NPC and lower than 0.4% in PC. In both cohorts, the rate of SIB during treatment was greater in subjects with a lifetime history (overall NPC, 6.2%; PC, 5.5%) than in subjects without a lifetime history of SIB (overall NPC, 0.4%; PC, 0.8%), regardless of treatment. Conclusions drawn from C-SSRS data were consistent with the findings based on the neuropsychiatric adverse event endpoint, revealing a higher incidence of SIB during treatment in the PC than in the NPC and no notable differences across treatment arms. Smokers with a lifetime history of SIB reported more occurrences of SIB than smokers without a lifetime history of SIB regardless of treatment and history of psychiatric diagnosis.

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POS5-49

SIMULTANEOUS VS SEQUENTIAL TREATMENT FOR SMOKING AND WEIGHT CONTROL IN A TOBACCO QUITLINE: 6-MONTH OUTCOMES FROM A RANDOMIZED TRIAL

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BACKGROUND: Smoking cessation results in weight gain which discourages many smokers from quitting and can increase health risks. Treatments to reduce cessation related weight gain have been tested in highly controlled trials of in-person treatment, but such treatment is not widely available. METHODS: The Best Quit Study is a replication and "real world" translation to telephone quitline delivery of a prior efficacy trial (Spring et al, 2004). Quitline callers (n=2528) were randomized to the standard 5-call quitline intervention or quitline plus simultaneous or sequential weight management. Regression analyses tested effectiveness of treatments at 6-months on smoking abstinence and weight change. RESULTS: Participants were 66% female; 68% white; 23% Medicaid; 76% overweight/obese. Survey response was lower in the simultaneous group (p=.04). While a completers analysis of 30-day point prevalence abstinence detected no difference across groups (50%; p=.18), analysis imputing missing as smoking showed quit rate differences: 24.4%, 23.8%, 19.2% for control, sequential and simultaneous groups (p=.02). No differences were found for change in weight (p=.47). Mean (sd) change in weight (pounds) at 6-months was 0.24 (11.9), 1.32 (13.2), 0.41 (12.2) for control, sequential and simultaneous groups and ranged from -40 to +45 pounds. Weight change was greater among abstainers than continuing smokers but did not reach significance (p=.32). The sequential group completed fewer counseling calls (p=.04) and call completion predicted 30 day abstinence (OR=1.31 [1.29-1.35], p<0.001), but not change in weight. Unadjusted, adjusted and multiple imputation analyses confirmed these findings. DISCUSSION: Simultaneous (vs. sequential) delivery of phone/web weight management with cessation treatment in the quitline setting may adversely affect treatment engagement and short term quit rate but cessation related weight gain was similar and modest across groups. This study highlights the feasibility of translating intensive face to face behavioral interventions into more scalable real-world dissemination channels.

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POS5-50

INTERACTIVE EFFECTS OF SMOKING STATUS AND RACE ON WEIGHT DURING PREGNANCY

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SIGNIFICANCE: Substantial research has related smoking status and race to body mass index (BMI) among women. For example, smokers tend to have lower BMI than non-smokers and minority women generally have higher BMI relative to white women. However, less is known about the relationship between smoking status and race on weight gain during pregnancy. The present study sought to examine these relationships among pregnant women with overweight and obesity. METHODS: Two hundred pregnant women (*M* age=28.20 years) participated in a prenatal assessment at 12-20 weeks gestation (*M*=15.63 weeks). Participants completed demographic and smoking history questionnaires. Pre-pregnancy BMI and early gestational weight gain (GWG) were calculated via self-reported pre-pregnancy weight, and stadiometer and scale measurements during pregnancy. Planned contrasts compared current to former and never smokers, separately. RESULTS: Participants were never (*n*=88), former (*n*=78), and current (*n*=34) smokers. Smoking status did not predict early GWG (*p*=.81). However, there was a marginal effect of race on early GWG (adjusted for gestational age; $F(199)=3.33$, $p=.07$, $\eta^2_p=0.02$) such that minority women had higher GWG than white women. In addition, race moderated the effect of smoking status on pre-pregnancy BMI (adjusted for age, education, and income; $F(2,197)=4.31$, $p=.01$, $\eta^2_p=0.04$). Among minority women, current smokers had *higher* pre-pregnancy BMIs than former smokers ($t(197)=2.90$, $p=.004$). In contrast, white current smokers had *lower* pre-pregnancy BMIs than white former smokers ($t(197)=2.34$, $p=.02$). CONCLUSIONS: The relationship between smoking status and pre-pregnancy BMI varied by race. As expected, white current smokers weighed less prior to pregnancy than white former smokers. Interestingly, minority current smokers began pregnancy at higher BMI than minority former smokers. Results underscore the importance of considering race in the context of smoking during pregnancy. Although smoking status did not predict GWG, this should be interpreted with caution as participants were at the beginning of their second trimester of pregnancy and the time frame does not reflect total gestation.

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POS5-51

SOCIOECONOMIC VARIATIONS IN NICOTINE DEPENDENCE AMONG PATIENTS VISITING PRIMARY HEALTH CARE FACILITIES OF INDIA

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BACKGROUND: Some studies have shown that lower socioeconomic status (SES) groups have higher rates of tobacco use, are less likely to successfully quit, and may also be less likely to intend or attempt to quit. However, these results are inconsistent for some outcomes, and little is known about how socioeconomic disparities affect nicotine dependence across states in India. METHODS: This study examined the associations between SES and nicotine dependence among representative samples of tobacco users in two states of India. Data was collected from tobacco users (smoking and smokeless) visiting primary care facilities in two districts of the selected states. Nicotine dependence was calculated separately for the smoking and smokeless tobacco users. The Fagerstrom Test for Nicotine Dependence (FTND) was applied to assess nicotine dependence. Logistic regression was used to determine the association between socioeconomic status and the dichotomous outcome measures of FTND (moderate to high dependence and low dependence). RESULTS: The analysis generated some interesting results. The mean age of the tobacco users in the study was 44 years. There were differences seen in the variables associated with nicotine dependence in both groups. Educational status, place of residence and FTND score showed significant association with smoking and smokeless tobacco respectively. Smokers who were educated below secondary level were 1.5 times more likely to have moderate to high dependence (OR-1.6; CI-1.07-2.43; P< 0.05). The odds of nicotine dependence was 1.7 (95% CI 1.3, 2.3; P< 0.05) times higher among smokeless tobacco users residing in urban area. Also the odds of nicotine dependence was 1.8 (95% CI 1.1, 3.2; P< 0.05) times higher in smoking tobacco users above the poverty line. CONCLUSION: The results suggest that there are differences in socio-economic status and nicotine dependence. These difference should be considered while devising as well as implementing cessation interventions. This should include access to the widest possible range of evidence based counselling and support complemented with pharmacotherapy.

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POS5-52

PREPAREDNESS FOR A TOBACCO FREE WORKPLACE POLICY: A SITUATIONAL ANALYSIS AMONG THREE WORKPLACES IN MAHARASHTRA, INDIA

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BACKGROUND: 35% adults in India use tobacco in some form: 21% use only smokeless tobacco (SLT), 9% only smoke and 5% use both. The benefits of smoke-free workplace policies are established. However, with such a high burden of SLT use which is very easily available, affordable and can be used very discretely; implementation of a "tobacco-free policy" is very challenging in India. Very few workplaces in India have documented policies being implemented. Before implementing such a policy, it is important to assess readiness of employees. OBJECTIVE: A situational analysis survey was conducted among employees of three organisations to know their readiness about having a policy that prohibits tobacco use in their workplace, their self-reported tobacco use and the need of counselling support to quit tobacco. METHODS: A structured questionnaire was administered online to 300 management staff (MS) while face-to-face interviews were conducted among 281 workers (W) across 3 companies during August to November 2016. RESULTS: More MS (62%) were aware of the existing rules related to tobacco than W (54%). However, among these, a higher proportion of W was satisfied with existing rules (93% vs 89%). Majority of MS as well as W agreed that the organisation should have a tobacco free policy and that it will have an impact on the employees' health. 91% MW and 79% W felt some action has to be taken against violation of the upcoming policy, monetary fine and written warning being suggested by majority from both groups. 56% of W and 27% of MS self-reported ever using some form of tobacco while 38% and 8% respectively reported current tobacco use (last 30 days). Of these, 54% MS were smokers while 95% W were using SLT products. While most of the MS (96%) and W (99%) wanted to quit tobacco use, fewer MS were open to seek counselling support at the workplace (70% vs 98%). CONCLUSION: Though the need for a tobacco free workplace policy was expressed by most of the employees, there are differences among management staff and workers in their attitudes towards the policy and their tobacco use behaviour which have to be considered while implementing the policy and offering cessation services.

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POS5-53

MOVING TOWARDS A TOBACCO FREE WORKPLACE AT A CEMENT MANUFACTURING PLANT IN CHANDRAPUR, MAHARASHTRA

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BACKGROUND: 48% Indian men over 15 years are current tobacco users (50% smokers, 69% smokeless tobacco users, 19% dual users). Smoking is banned in India in public places including indoor workplaces under the Cigarettes and Other Tobacco Products Act (COTPA). However, there are no regulations for smokeless tobacco use, the most prevalent form. Workplaces offer a unique opportunity to address employees' health and influence their tobacco use behaviour. Tobacco-free workplaces help in increased productivity as employees take fewer breaks, are more active, have lower risk of machine-related accidents and have lower health-related absenteeism. OBJECTIVE: LifeFirst tobacco cessation service was provided at a cement plant with about 2000 employees in Chandrapur, Maharashtra from May 2014 to July 2016 with the objective of promoting and aiding quit attempts of tobacco users. METHODS AND RESULTS: An awareness talk about tobacco and its ill effects and benefits of quitting was provided in groups to 1530 employees (all males). 556 employees voluntarily joined the cessation service announced at the end of the awareness talk. This included a detailed face to face counseling session followed by four follow up sessions over six months. 527(95%) of these were smokeless tobacco users, majority (71%) of them using the local tobacco product "kharra" (mixture of tobacco and areca nut). 64% of them had made a past quit attempt. 480(86%) attended the follow up session at 6 months and 374(67%) of all registered users reported not using any form of tobacco, 46(8%) had reduced use, 56(10%) had made a quit attempt but relapsed. Trainings for "Anti-tobacco champions" among the employees were conducted for sustaining the initiative which has been incorporated into the company's Occupational Health activities. An announcement was made by the plant head in October 2016 to make the plant tobacco free within a year. CONCLUSION: By providing and promoting tobacco cessation activities within a workplace, employees using smokeless tobacco as well as smoking can be helped to quit their tobacco habit and create an environment conducive to a tobacco free workplace.

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POS5-54

GENDER DIFFERENTIAL COHORT EFFECT IN EVER SMOKING PREVALENCE AMONG KOREAN ADOLESCENTS

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BACKGROUND: The declining patterns in Korean youth ever smoking prevalence varied by gender during last 10 years (boys: inverted U shaped, girls: continuous downward trend). This gender differential pattern may be due to differential level of under-reporting between genders due to social perception of female cigarette smoking. The purpose of this study was to investigate the reason for gender differential trend in ever smoking prevalence among Korean Adolescents from the viewpoint of under-reporting. METHODS: This study using nationally representative repeated cross-sectional survey was conducted on the assumption that ever smoking prevalence in school entry cohort cannot decrease with increasing grades. We utilized the 2005-2015 Korea Youth Risk Behavior Web-based Survey enrolling grades 7 to 12. Using year of survey and year of entry to middle

school, we classified 448,308 students with ever-smoker into 6 age groups, 11 periods, and 6 cohorts. Using hierarchical age-period-cohort model, age, period, and school entry cohort effect in ever smoking prevalence were analyzed according to gender. RESULTS: Age effects of ever smoking prevalence among boys increased with increasing grades (highest in 12th grade: 42.3%), but those among girls peaked in 10th grade (20.3%) and then decreased in 11-12th grades (20.0%, 18.6%). Although there were some differences in significant period effects between genders, differential patterns of period curve between genders was not observed due to little difference in the magnitude and direction for each period effects. School entry cohort effects in boys were not observed over all cohorts, while significant negative cohort effects (downward trend) in girls were observed (estimate: -1.2 %, p trend<0.001). CONCLUSION: Strong cohort effects have been driving the decrease in ever smoking prevalence only in Korea girls over the past 10 years. In other words, recent girls' school entry cohorts were likely to under-report experience of cigarette smoking regardless of age or survey year. This gender differential cohort effect influenced gender difference in trends in ever smoking prevalence, and can be also expected to affect trends in current smoking prevalence.

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POS5-55

SMOKERS' AND DRINKERS' CHOICE OF SMARTPHONE APPLICATIONS AND THEIR EXPECTATIONS OF ENGAGEMENT: A THINK ALOUD AND INTERVIEW STUDY

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BACKGROUND: Public health organisations such as the National Health Service in the United Kingdom and the National Institutes of Health in the United States provide access to online libraries of publicly endorsed smartphone applications (apps); however, there is little evidence that users rely on this guidance. Rather, one of the most common methods of finding new apps is to search an online store. As hundreds of smoking cessation and alcohol-related apps are currently available on the market, smokers and drinkers must actively choose which app to download prior to engaging with it. The influences on this selection process are yet to be identified. This study aimed to investigate 1) design features that shape users' choice of smoking cessation or alcohol reduction apps, and 2) design features judged to be important for engagement. METHODS: Adult smokers (n = 10) and drinkers (n = 10) interested in using an app to quit/cut down were asked to search an online store to identify and explore a smoking cessation or alcohol reduction app of their choice whilst thinking aloud. Semi-structured interview techniques were used to allow participants to elaborate on their statements. An interpretivist theoretical framework informed the analysis. Verbal reports were audio recorded, transcribed verbatim and analysed using inductive thematic analysis. RESULTS: Participants chose apps based on their immediate look and feel, quality as judged by others' ratings and brand recognition ('social proof'), and titles judged to be realistic and relevant. Monitoring and feedback, goal setting, rewards and prompts were identified as important for engagement, fostering motivation and autonomy. Tailoring of content, a non-judgmental communication style, privacy and accuracy were viewed as important for engagement, fostering a sense of personal relevance and trust. Sharing progress on social media and the use of craving management techniques in social settings were judged not to be engaging due to concerns about others' negative reactions. CONCLUSIONS: Choice of a smoking cessation or alcohol reduction app may be influenced by its immediate look and feel, social proof, and titles that appear realistic. Design features that enhance motivation, autonomy, personal relevance and credibility may be important for engagement.

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POS5-56

BEHAVIOUR CHANGE TECHNIQUES THAT CAN BE EFFECTIVE IN CHANGING UNHEALTHY AND ADDICTIVE BEHAVIOURS IN PREGNANCY

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BACKGROUND: Around 11% of women in England smoke during pregnancy, which remains a major Public Health concern. In the UK, free of charge, stop smoking services are available for pregnant women which offer behavioural support for smoking cessation. As part of a project to make such support more specific to pregnancy, we systematically reviewed the literature to identify behaviour change techniques (BCTs) that had been successfully used to help pregnant women change unhealthy and addictive behaviours other than smoking. OBJECTIVES: To identify BCTs, used with pregnant women, which have been effective in changing their alcohol consumption, illicit drug use or excessive weight gain. METHODS: Systematic searches of MEDLINE, CINAHL, PsycINFO, Cochrane Library (CENTRAL) and EMBASE databases till January 2016 identified RCTs of behavioural support interventions for the three behaviours. The interventions used in each trial were analysed to identify all BCTs contained within them. BCT effectiveness was indicated through comparing the frequency they appeared in effective trials against non-effective trials. RESULTS: We identified ten RCTs which tested interventions against drinking alcohol in pregnancy, seven against illicit drug use and forty against excessive gestational weight gain. Four interventions were effective in reducing alcohol consumption, none were effective in achieving illicit drug abstinence and thirteen were effective in preventing excessive gestational weight gain. In total, seven BCTs were found to show effectiveness; these fall into the categories of goal setting, planning, self-monitoring, self-belief, repeated practice of changed behaviour, prompts and cues. UTILISATION OF FINDINGS: In the next stage of the project we will use consensus-building methods to investigate how smoking cessation advisors and pregnant smokers believe the BCTs identified in this review could be incorporated into routinely-delivered smoking cessation support for pregnant smokers.

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POS5-57

PREDICTORS OF SERIOUS NEUROPSYCHIATRIC ADVERSE EVENTS FOLLOWING TREATMENT WITH SMOKING CESSATION MEDICATIONS IN THE EAGLES TRIAL

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BACKGROUND: The Evaluating Adverse Events in a Global Smoking Cessation Study (EAGLES) found that about 4% of smokers experienced a serious neuropsychiatric (NPS) adverse event (AE) during a quit attempt regardless of the medication used, with incidence across treatments not significantly different from placebo. Little is known about patient-level characteristics that predict which smokers are more likely to experience NPSAEs when trying to quit. We examined potential predictors of NPSAEs in participants from EAGLES. METHODS: Associations among covariates and the composite NPSAE endpoint were analyzed using general linear regression for binary data. The model, estimated in the non-psychiatric (NPC) and psychiatric (PC) cohorts separately, included treatment (nicotine patch, bupropion, varenicline, and placebo), region, covariates, and treatment by covariate interactions. RESULTS: In the NPC, past suicidal ideation/behavior (SIB) was significantly associated with a 4.8% increase in NPSAEs, Caucasian race with 1.8%, and elevated baseline Hospital Anxiety & Depression Scale (HADS) with 1% for each 5.7 point increase in total score. In the PC, history of SIB was associated with 5.8% increase of NPSAEs, history of substance use disorders with 3.7%,

comorbid psychiatric disorders with 3.2%, Caucasian race with 2.5%, and female gender with 2.1%. Also, younger age (1% decrease per 8.7 years older), duration of smoking (1% decrease per 9.6 years smoked), nicotine dependence severity (1% increase per 2.7 greater scale units) and baseline HADS (1% per 5.3 increase in total score) were all significantly associated with NPSAEs. There were no significant medication by covariate interactions. CONCLUSIONS: Smokers with more complex psychiatric histories, past history of SIB, and current symptoms of depression and anxiety were more likely to experience serious NPSAEs when they tried to quit regardless of medication used. Demographic factors and nicotine dependence also predicted greater NPSAE risk. Although the incidence of NPSAEs is low and unrelated to any specific medication, screening for these preexisting factors is prudent as they might signal heightened NPSAE risk.

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POS5-58

PREDICTORS OF SMOKING ABSTINENCE AND FACTORS ASSOCIATED WITH THE EFFICACY OF TREATMENTS IN THE EAGLES TRIAL

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BACKGROUND: The EAGLES trial found varenicline (V), nicotine replacement therapy (NRT) and bupropion (B) to be more effective than placebo in aiding smoking cessation, and V to be more effective than B and NRT. The unprecedented size of a trial comparing three active treatments and placebo provided a unique opportunity to assess predictors of success at stopping and whether and how far different treatment effects are influenced by smoker characteristics. METHODS: We undertook an exploratory analysis to assess predictors of abstinence and interactions between study drug and baseline variables on biochemically verified smoking abstinence from 9-24 weeks after treatment initiation. The baseline covariates examined were: US vs non-US study site, sex, age, body mass index (BMI), race, psychiatric history, lifetime suicidal ideation or behavior, anxiety, depression, and aggression scores, concomitant psychotropic medication, cigarette dependence, prior use of study medicines, and age of smoking onset. A stepwise logistic regression method including treatments, covariates and treatment by covariate interactions was used to develop a parsimonious statistical model. RESULTS: The stepwise model including covariates indicated that, overall, abstinence was positively and independently associated with non-US study site, higher age, being overweight or obese, white versus black, not having a history of affective, anxiety or psychotic disorder, not taking psychotropic medication, lower cigarette dependence, not previously having used NRT, and higher age of smoking onset. No treatment by covariate interactions significantly improved the fit of the stepwise model. CONCLUSION: Success at stopping smoking in the EAGLES trial was associated with a wide range of smoker characteristics, including BMI, psychiatric history, use of psychotropic medication and past use of NRT, but none of these was clearly linked to the effectiveness of the medications studied. Importantly, for none of the study medications did prior use predict lower effectiveness.

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POS5-59

IS THE USE OF VARENICLINE DURING AN ATTEMPT TO QUIT SMOKING ASSOCIATED WITH REDUCED ALCOHOL CONSUMPTION IN HEAVY DRINKERS? FINDINGS FROM A LONGITUDINAL POPULATION SURVEY

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BACKGROUND: Clinical studies support the use of varenicline to reduce alcohol consumption but it is not currently approved as a treatment for this purpose. The use of varenicline by smokers attempting to stop is relatively widespread in England and heavy drinking, especially among smokers, is prevalent. The result is a large naturally-occurring population of heavy drinkers who are incidentally using varenicline. AIM: To assess in real-world settings whether the use of varenicline by smokers attempting to quit is associated with lower alcohol consumption. METHODS: Baseline data collected using household surveys of adults in England with monthly waves between March 2014 and April 2016. Respondents identified as higher risk drinkers were followed-up at 6 months. The sample consisted of respondents who reported at baseline past-year smoking, an attempt to stop and higher risk drinking (osf.io/ch7kr). Associations between indices of alcohol consumption and varenicline use in a recent quit attempt were examined by a series of unadjusted regression models and adjusted models including baseline socio-demographic and smoking variables. RESULTS: A total of 43,702 adults completed the baseline survey between March 2014 and April 2016, of whom 1,041 reported smoking in the last year, attempting to stop at least once and were classified as higher-risk drinkers. There was evidence of no baseline differences between respondents using varenicline (n=60) compared with those who did not (n=960) in alcohol consumption (Badj=-1.5, 95%CI=-5.5 to 2.6, Bayes factor = 0.4), frequency of heavy drinking (Badj=0.1, 95%CI=-0.1 to 0.4, Bayes factor = 0.1) and AUDIT score (Badj= -0.6, 95%CI=-1.8 to 0.7, Bayes factor = 0.5). At follow-up, a total of 208 were recontacted (varenicline, n=21) and there was modest evidence of less frequent heavy drinking among those using varenicline (B=-0.5, 95%CI=-1.0 to 0.0, $p<0.05$, Bayes factor = 4.4 and Badj=-0.4, 95%CI=-0.9 to 0.1, Bayes factor = 2). Data were fairly insensitive at follow-up as to whether there was a difference in consumption (Badj=-4.4, 95%CI=-12.2 to 3.5, Bayes factor = 1.1) but supported there being no difference in AUDIT score (Badj=-0.5, 95%CI=-2.8 to 1.9, Bayes factor = 0.5). CONCLUSION: In real-world settings, the use of varenicline by smokers attempting to quit is not cross-sectionally associated with alcohol consumption, frequency of heavy drinking or overall alcohol use. There is modest evidence that use of varenicline is prospectively associated with less frequent heavy drinking reported six months later.

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POS5-60

SUSCEPTIBILITY TO CIGARETTE SMOKING AMONG MIDDLE AND HIGH SCHOOL E-CIGARETTE USERS IN CANADA

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BACKGROUND: While the use of electronic cigarettes (e-cigarettes) is rapidly increasing, there is a growing concern that the historic reductions in tobacco consumption witnessed in the past decades may be undermined by this new product. This study examined the association between e-cigarette use and future inten-

tion to smoke cigarettes among middle and high school students who had never smoked cigarettes. METHODS: Data were drawn from the 2014-2015 Canadian Student Tobacco, Alcohol and Drugs Survey (n = 25,637). A multivariable logistic regression model was used to examine the association between e-cigarette use and susceptibility to cigarette smoking. In addition, an inverse probability of treatment weighted regression adjustment method (doubly robust estimator), which models both the susceptibility to smoking and the probability of e-cigarette use, was conducted. RESULTS: About 10% of the students had ever tried an e-cigarette. There were higher rates of ever e-cigarette use among students in grades 10-12 (12.5%) than those in grades 7-9 (7.3%). Students who had ever tried an e-cigarette had higher odds of susceptibility to cigarette smoking (adjusted odds ratio = 2.16, 95% confidence interval = 1.80–2.58) compared to those that had never tried an e-cigarette. Current use of an e-cigarette was associated with higher odds of smoking susceptibility (adjusted odds ratio = 2.02, 95% confidence interval = 1.43–2.84). Similar results were obtained from the doubly robust estimation. CONCLUSIONS: Among students who had never-tried cigarette smoking, e-cigarette use increases the susceptibility to cigarette smoking and may increase the risk of future cigarette use. IMPLICATIONS: Youth are uniquely vulnerable to smoking initiation and adolescents' use of e-cigarettes is increasing rapidly; however, a limited number of studies have examined whether this novel product is a risk factor for susceptibility to future cigarette smoking. Non-smoking adolescents who have ever tried an e-cigarette are nearly twice as likely to be susceptible to future cigarette use. Findings suggest that a potential increase in cigarette use may follow as e-cigarette use continues to rise among adolescents.

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POS5-61

CHARACTERISING THE NICOTINE METABOLITE RATIO AND ITS ASSOCIATION WITH TREATMENT CHOICE: A CROSS SECTIONAL ANALYSIS OF STOP SMOKING SERVICES IN ENGLAND

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OBJECTIVES: Previous research has suggested that smoking cessation treatment allocation based on the nicotine metabolite ratio (trans-3'-hydroxycotinine/cotinine; NMR) may enhance smoking cessation rates. To investigate this further, factors associated with NMR variability as well as the association between NMR and cessation treatment choice, need to be explored. DESIGN: A cross-sectional analysis using data of smokers using NHS Stop Smoking Services (SSS). METHODS: Data were obtained from 1,899 participants attending SSS between 03/2012 and 03/2013. Age, ethnicity, sex, social economic status (SES), psychological wellbeing, physical health, nicotine dependency, determination to quit, and pharmacological/behavioural support choice were assessed using questionnaire measures. NMR was derived from saliva samples and participants were characterised as slow (NMR<0.31) or normal/fast (NMR≥0.31) metabolisers, based on previous research. RESULTS: In adjusted analyses, normal/fast metabolisers were more likely to be older (Odds Ratio (OR)=1.48, 95%Confidence Interval (CI)=1.31–1.67) but NMR was not associated with any other sociodemographic, smoking, or health-related characteristics. Adjusting for participant characteristics and SSS location, NMR was not associated with pharmacotherapy choice, but normal/fast metabolisers were less likely to use group behavioural support (OR=0.65, 95%CI=0.49–0.86). CONCLUSIONS: NMR appears to be largely independent from socio-demographic, smoking, or health-related characteristics. Given its impact on pharmacotherapy efficacy, the lack of association between NMR and pharmacotherapy choice suggests that there may be scope to improve treatment using personalised medicine. Additional studies are needed to explore the relationship between NMR and behavioural support choice.

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POS5-62

CHANGE IN ANXIETY AND DEPRESSION SYMPTOMS AS MEASURED BY THE HOSPITAL ANXIETY AND DEPRESSION SCALE IN A STUDY OF VARENICLINE, BUPROPION AND NICOTINE PATCH IN NON-PSYCHIATRIC AND PSYCHIATRIC COHORTS (EAGLES STUDY)

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BACKGROUND AND METHODS: The EAGLES study (n=8058) found no effect of smoking cessation medication on the incidence of a composite neuropsychiatric adverse event endpoint that included, among others, severe anxiety and depressive adverse events. The Hospital Anxiety and Depression Scale (HADS), a validated self-rating scale, was administered at each study visit. HADS includes 7-item subscales for anxiety and depression, with score ranges of 0-21, categorized as: 0-7=normal, 8-10=suggestive, 11-21=probable anxiety or depression diagnosis. Here we report 1) average weekly HADS anxiety and depression scores for the entire study population; and 2) the subset of subjects whose symptom scores indicated a categorical worsening, i.e. from normal to suggestive or probable or from suggestive to probable, at any time from baseline through 12 weeks of treatment plus 30 days. Results are presented by treatment (varenicline, bupropion, nicotine patch and placebo) and cohort (psychiatric [PC] and non-psychiatric [NPC]). RESULTS: Average weekly HADS anxiety and depression subscale scores decreased (improved) from baseline to end of treatment + 30 days similarly across all 4 treatments in both cohorts. In the NPC, the proportion of subjects reporting any categorical worsening in anxiety or depression scores from baseline through treatment + 30 days were 5.3% and 6.3 % (anxiety and depression respectively) for varenicline, 7.3% and 5.3% for bupropion, 7.5% and 4.4% for NRT, and 7.3% and 5.6% for placebo. In the PC, the rates of any categorical worsening in anxiety or depression scores were 14.1% and 15.7 % respectively for varenicline, 17.9% and 15.6% for bupropion, 15.8% and 17.3% for NRT, and 15.7% and 15.9% for placebo. CONCLUSION: During this smoking cessation treatment trial, average severity ratings of anxiety and depressive symptoms improved in all treatment arms in both cohorts. The subset of subjects reporting categorical worsening was 2-3 times larger in the psychiatric cohort than the non-psychiatric cohort, regardless of treatment, and the difference in the rate of categorical worsening between any active treatment and placebo was within 2.2%.

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POS5-63

EFFECT OF REAL TIME, REAL WORLD PERCEIVED DISCRIMINATION ON SMOKING LAPSE AMONG LATINOS

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Perceived discrimination is associated with poor physical and mental health, increased negative affect and stress, and low self-efficacy. Both the everyday experience of discrimination and the occurrence of major lifetime discriminatory events have been associated with a decreased ability to quit smoking. As such, perceived discrimination may lead to greater difficulty quitting through mechanisms such as increased negative emotions. Among a sample of Latinos, the current study examined: 1) whether momentary experiences of discrimination (collected via ecological momentary assessment [EMA]) increased the likelihood of a smoking lapse during a quit attempt, and 2) if specific emotions (i.e., enthusiastic, happy, relaxed, bored, sad, angry, anxious, restless, stressed, hostile) and smoking urge mediated the relationship between perceived discrimination and lapse. Participants were 159 Spanish-speaking smokers of Mexican origin (36.48% female) who were making a smoking quit attempt. Participants were randomly prompted with 4 EMAs daily for 3 weeks post-quit attempt. Results indicated that during the 3-week post-quit period, experiencing an episode of discrimination during the time period between EMAs increased the odds of lapse by more than 5 fold within the next 4 hours (β=1.81, OR=6.13, p=.030). Single mediator models revealed that the following variables mediated the relationship between perceived discrimination and lapse:

increased urge, restlessness, and anxiety, and decreased relaxation. When the 3 significant emotion variables (restless, anxiety, and relaxation [reverse scored]) were combined as a composite negative affect variable and entered into a multiple mediator model with urge, both the composite NA variable and urge were significant mediators for the effect of discrimination on lapse risk. These findings suggest that perceived discrimination leads to increased restlessness/anxiety/low relaxation, which in turn, results in a higher likelihood of smoking lapse. Future research should consider the development of cessation interventions that target these emotional states, in order to increase the likelihood of cessation among Latinos attempting to quit.

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POS5-64

A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY EXAMINING THE SELECTIVE KAPPA ANTAGONIST, CERC-501, IN A HUMAN LABORATORY MODEL OF SMOKING BEHAVIOR

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BACKGROUND: Animal data indicate that selective kappa opioid receptor antagonists produce antidepressant and anxiolytic effects, decrease drug self-administration and escalation, and reduce behaviors and signs of withdrawal from nicotine and other drugs (e.g., alcohol, cocaine, heroin). Kappa opiate receptors and their endogenous ligand, dynorphin, are often upregulated during chronic exposure to drugs of abuse – these changes are thought to mediate some of the negative affective states associated with drug withdrawal and contribute to stress-induced reinstatement of drug seeking behavior. In humans, CERC-501 is a well-tolerated, orally active, highly selective kappa antagonist. The aim of the current study was to determine if treatment with CERC-501 could alleviate nicotine withdrawal, craving and the urge to smoke after a period of abstinence and mitigate the mood alterations that are associated with nicotine withdrawal (e.g., irritability, anxiety). METHODS: Otherwise healthy, non-treatment seeking adult cigarette smokers (smoking ≥15 cigarettes/day; first cigarette within 5 mins of waking; baseline Fagerstrom scores ≥5) were enrolled into this multi-site, within-subject, randomized, double-blind, placebo-controlled crossover study. Participants completed two randomized treatment blocks, CERC-501 (15 mg, p.o, once daily) and matched placebo, each administered on an outpatient basis for 7 days, with blocks separated by a 7-10 day wash-out period. On the 7th day of dosing in each block, participants were admitted as inpatients for an 18-hr cigarette abstinence period followed by a smoking session in the laboratory. The primary outcome measures were 1) performance on the McKee Smoking Lapse test (i.e., ability to resist smoking following the 18hr deprivation period) and 2) the number of cigarettes self-administered during a 60-min *ad lib* period that immediately followed the lapse test. Secondary outcomes included measures of cigarette craving (Tiffany Questionnaire of Smoking Urges – Brief), mood (Circumplex Scale), anxiety (Clinically Useful Depression Outcome Scale – Anxiety Subscale), nicotine withdrawal (Minnesota Nicotine Withdrawal Scale), and subjective cigarette ratings (Modified Cigarette Evaluation Questionnaire). RESULTS: A total of 71 participants were enrolled (38 F, 33 M) and reported smoking a mean of approximately 23 cigarettes per day prior to randomization. A total of 56 participants completed both treatment blocks. CERC-501 was well tolerated – no serious adverse events or study drug discontinuations occurred in the active treatment block. CERC-501 did not significantly alter the latency to start smoking after deprivation (CERC-501: 15.5 mins; placebo: 18.8 mins) or the number of cigarettes self-administered during the 60-min ad lib period (CERC-501: 3.3 cigarettes; placebo: 3.1 cigarettes) ($p>0.05$). There were no significant effects of CERC-501 compared to placebo on measures of cigarette craving, mood, anxiety, nicotine withdrawal or subjective effects of cigarette smoking relative to placebo ($p>0.05$). CONCLUSIONS: This study did not detect any signal for CERC-501, a selective kappa antagonist, to change smoking behavior or measures of nicotine withdrawal and craving or mood during a period of smoking abstinence in smokers not seeking treatment. These data are not consistent with preclinical studies and do not support a role for CERC-501 in the treatment of acute nicotine withdrawal.

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POS5-65

EFFECT OF THE IMMINENT POSSIBILITY OF SMOKING ON BRAIN RESPONSES TO SMOKING-RELATED STIMULI

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Smoking relapse is often precipitated by exposure to smoking cues. Functional magnetic resonance imaging (fMRI) studies have demonstrated that smokers have larger brain responses to smoking cues than to neutral cues, suggesting that smoking cues are motivationally significant. Prior fMRI research has only addressed smokers' responses to cues when smoking was not imminently possible. The goal of this study was to determine the extent to which brain responses to smoking cues change when smoking is imminently possible inside the scanner, a condition that more closely resembles relapse. Nicotine-deprived smokers (n = 33) completed a single fMRI session during which they viewed a series of cigarette-related and neutral pictures, each surrounded by a colored frame indicating whether or not smoking was possible inside the scanner on any given trial. When participants smoked, it was through a previously-validated fMRI-compatible smoking device. Whole-brain, within-subjects ANOVA with picture category (cigarette vs. neutral), smoking possibility (possible vs. not possible), and block (before vs. after the first cigarette was smoked in the scanner) as factors found significant main effects of picture category (cigarette > neutral) in the middle temporal gyrus (MTG), the insula, and the dorsal anterior cingulate cortex (ps < .005). In the right MTG, this cue reactivity effect was moderated by smoking possibility: When smoking was possible, brain responses to neutral cues increased and cigarette-related cues decreased (smoking possibility x cue type interaction: $p < .005$). Based on the involvement of MTG in the perception of highly arousing stimuli, our results suggest that cigarette availability influences the motivational significance of smoking-related cues.

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POS5-66

BUZZ AND BAKE: REPRESENTATIONS AND RATIONALES FOR DUAL USE OF MARIJUANA AND TOBACCO ON YOUTUBE

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SIGNIFICANCE: Increasing normalization of marijuana (cannabis) has coincided with denormalization of tobacco (nicotine) use. Practices promoting dual use of these substances may increase risks for uptake and maintenance of both. YouTube, a social network site to which users may post, view, interact with, and share videos, claims over 1 billion users and is the most popular social network site among teens. To understand risks for exposure to pro-dual use messages, we qualitatively assessed a purposive sample of YouTube videos. METHODS: We obtained a sample of 130 videos related marijuana and tobacco using the YouTube Application Program Interface. Through an iterative analytic process we identified 8 content-based genres; selected 6-7 of the most-viewed videos per genre (English-language only); developed a list of rationales related to use of dual use; and coded entire videos (n=51) by rationale (using non-exclusive category coding). We compared the occurrence of rationales within video genres and across dual use modes, video formats, and presenter appeals. RESULTS: Blunt use (marijuana smoked in a little cigar or cigarillo, or wrapper) was the most common dual use mode. Entertainment videos (e.g., music videos, challenge videos, home movies) demonstrated blunt smoking as an acceptable mode of marijuana use with few overt rationales. Didactic videos (e.g., instructional, testimonial) included more overt rationales, with video presenters weighing efficiency of use and costs against health risks, tastes, and smells, and expressing competing views on how nicotine effects ("buzz") contributed to cannabis effects ("bake"). Presenters generally

expressed a non-judgmental orientation toward dual use, even when stating personal opposition to tobacco. CONCLUSION: Across a range of videos, no overtly pro- or con-message concerning dual use consistently emerged. However, many videos demonstrated acceptability of blunt smoking as a viable or preferred mode of marijuana consumption. YouTube may represent an important social environment within which young people may broadcast and receive messages promoting dual use of marijuana and tobacco products.

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POS5-67

SMOKERS' USE OF ELECTRONIC CIGARETTES IN THE MONTH BEFORE AND AFTER HOSPITALIZATION. FINDINGS FROM HELPING HAND 2 STUDY

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SIGNIFICANCE: Hospitalization is a critical period in which smokers may be supported to quit conventional cigarette (CC) use. Use of electronic cigarettes (e-cigs) may affect cessation behavior and outcomes, but little is known about cigarette smokers' frequency and patterns of e-cig use before, during, and after a hospitalization. METHODS: Analysis of data from a multi-site randomized Helping HAND 2 study (NCT01714323) that enrolled 1357 hospitalized smokers planning to quit, offered two intensities of conventional cessation treatment at discharge, and reached 1100 participants at one month post-discharge. We assessed patterns of e-cig use before, during and after hospitalization, reasons for use, factors associated with use, and dual use with CCs. RESULTS: E-cigs were used by 21.4% of smokers in the month before hospitalization but use was occasional (median=4/30 days). E-cigs were used by 3.1% of smokers in the hospital and by 18.3% in the month after discharge, primarily as quit aids. At follow-up 10.6% reported past 7-day e-cig use (median=4/7 days), including 4.6% with exclusive e-cig use and 6.1% who also smoked CCs. In logistic regression, the adjusted odds (AOR) of e-cig use after discharge were greater among females (AOR=1.16,95%CI:1.01-1.33), those with higher education (AOR=1.57,95%CI:1.03-2.40), those who used e-cigs before hospitalization (AOR=5.07,95%CI:3.36-7.66), those who relapsed to CC within one week of discharge (AOR=1.57,95%CI:1.04-2.36); and lower in Sustained Care vs. Standard Care arm (AOR=0.62;95%CI:0.41-0.94) and non-Hispanic blacks (AOR=0.21,95%CI:0.08-0.61). CONCLUSION: Substantial minorities of smokers who plan to quit use ecigs before, during, and after a hospitalization, primarily to aid quitting. However, use is intermittent and dual use with CCs is common. Despite receiving conventional cessation support, 11% of hospitalized smokers used e-cigs one month post-discharge. E-cig use was more common among smokers who relapsed soon after discharge and those receiving less intensive cessation help, suggesting that smokers seeking to quit may use ecigs when they do not quit with conventional treatments.

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POS5-68

AN ANALYSIS OF THE DIFFERENCES BETWEEN PREGNANT SMOKERS WHO CONTINUE TO SMOKE AND PREGNANT SMOKERS WHO QUIT

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Smoking during pregnancy can cause significant adverse events for both the mother and infant. Studies have shown between 20-40% of pregnant women quit smoking during pregnancy, with the majority quitting in early pregnancy. Amongst women who quit smoking during pregnancy, more than half relapse within 6 months, and up to 90% relapse within one year. This study explores the differences between pregnant quitters and pregnant smokers in terms of demographics and smoking characteristics. Two groups of pregnant women from a pregnant and postpartum parent study were enrolled: group 1 (pregnant quitters) consisted of pregnant smokers who independently quit smoking during pregnancy, were abstinent at enrollment at 36 weeks' gestation, remained abstinent through childbirth and were followed for 12 weeks postpartum for relapse. Group 2 (pregnant smokers) were pregnant smokers enrolled during their second (12-22 weeks) or third (32-37 weeks) trimester for a study on nicotine response following acute abstinence and were smoking ≥5 cigarettes per day. Data regarding demographics and smoking characteristics were collected by self-report at screening visits. This data was then compared between pregnant smokers and pregnant quitters using t-tests and chi-square tests, adjusting for covariates as needed. Compared to pregnant smokers, pregnant quitters were more educated ($p<0.01$), more likely to be married (20% vs. 8%, $p=0.02$), smoked fewer cigarettes per day before pregnancy or quitting (10.1 vs. 16.4; $p<0.01$), started smoking at an older age (17.4 vs. 15.8, $p=0.03$), had made more quit attempts (4.3 vs. 2.8, $p<0.01$), and were less likely to have a smoking partner (42% vs. 76%, $p<0.01$). After adjusting for age, quitters had fewer pregnancies (2.1 vs. 3.1; $p<0.01$) and fewer children (0.7 vs. 1.5; $p<0.01$). No other statistically significant differences were found. Several demographics and smoking behaviors were significantly different between pregnant quitters and pregnant smokers. These differences should inform focused interventions for those at high risk of continued smoking during pregnancy. More research is needed to explore these observations.

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POS5-69

CHARACTERISATION OF A NOVEL TOBACCO HEATING PRODUCT: INDOOR AIR QUALITY

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Tobacco-heating products (THPs), which heat but do not burn tobacco, have the potential to significantly reduce levels of combustion-derived toxicants in the aerosol compared with cigarette smoke, and thereby to reduce harm to both users and bystanders. The levels of mainstream emissions, and by implication exhaled aerosol emissions, are significantly reduced. Furthermore, owing to its heat not burn design, the novel THP does not produce so-called "sidestream emissions" between puffs. In this study an environmentally controlled room of 37.8 m^3 volume was used to simulate ventilation conditions corresponding to residential and hospitality environments. Indoor air quality (IAQ) was compared for the novel THP and conventional cigarettes over 4 hours, with room occupied and unoccupied blank exposures. In an analysis of known tobacco smoke markers, the following was observed. Volatile Organic Compounds (VOCs) measured in air sampled around the novel THP did not exceed those measured in background (occupied) room samples for Total VOCs (TVOC) and 7 specific VOCs; isoprene, benzene and toluene which were quantifiable, and 1,3-butadiene, acrylonitrile, acrylamide and propylene glycol which were below levels of detection. For carbonyls, formaldehyde and acetaldehyde were greater than background but significantly lower (> 95 %) than equivalent cigarette data; acrolein and crotonaldehyde were not raised over background levels. Analyses for 15 polyaromatic hydrocarbons (PAHs) and 4 tobacco specific nitrosamines (NNK, NNN, NAT and NAB) were below levels of detection for both the THP and cigarette products; this was also the case for glycerol and carbon monoxide. Nicotine was measured for the cigarette exposure but below levels of detection for the novel THP. Particle metrics confirmed that all were sub-micron with geometric mean diameters from 180-225 nm for both. Concentrations were significantly reduced for THP versus cigarette for both particle number concentration (> 95 %) and mass (> 95 %). In conclusion, these data show that the novel THP has the potential to considerably reduce the risk of harm caused by environmental "second-hand" tobacco smoke.

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POS5-70

A MIXED METHOD PROCESS EVALUATION OF ASSIST A PEER-LED SMOKING PREVENTION PROGRAMME IN SECONDARY SCHOOLS

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BACKGROUND: ASSSIT (A Stop Smoking in Schools Trial) is a peer led smoking prevention programme that encourages the dissemination of non-smoking norms. Students (aged 11-13) are nominated by their peers to become peer supporters. They receive training and support to have informal conversations with other students about the risks of smoking and the benefits of being smoke-free. ASSIST is an evidence based programme with results from a large cluster randomised trial showing a reduction in smoking prevalence. However, these findings are now 12 years out of date and adolescent smoking prevalence has continued to decline. In 2013 the Scottish Government's Tobacco control Strategy made a commitment to pilot ASSIST in Scotland and commissioned a process elevation of its delivery. This presentation will present key findings from the Scottish evaluation and reflect on delivery of ASSIST since the 2004 RCT, offering points for consideration for the future delivery of ASSIST and further research areas. METHOD: Mixed method study with a range of stakeholders (school staff, trainers, students, policy and commissioning leads n=101) via in-depth interviews, paired interviews, mini focus groups, observation and a before and after student survey (n=2166, at follow-up). RESULTS: Three different delivery models were piloted. This did not impact on fidelity or acceptability which was rated highly. Partnership working, from the onset, was viewed as being key to successful delivery and securing school participation. Feedback was overwhelmingly positive regarding the wider benefits of taking part in ASSIST for peer supporters (i.e. personal and communication skills) but also for the school and communities. There was less certainty regarding the extent of message diffusion and the impact this may have an adolescence smoking prevalence. Student survey results showed no significant change in self-reported smoking prevalence between baseline (2.5%) and follow-up (3%) and conversation recall with a peer supporter was low at 9%. CONCLUSIONS: ASSIST is a well delivered, popular programme with additional benefit for students, their wider social network, school and community. Yet, there is uncertainty regarding the extent of message diffusion within the school year which raises questions around the continued contribution of the programme to lowering the adolescent smoking prevalence rate. Further research is needed to update the existing evidence base.

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POS5-71

ABUSE POTENTIAL OF ELECTRONIC CIGARETTES IN EXPERIENCED ELECTRONIC CIGARETTE USERS

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INTRODUCTION: Electronic cigarettes (ECIGs) produce an aerosol by heating a liquid that often contains nicotine. ECIG use rates are increasing, but their abuse potential remains unknown. This study's purpose is to determine the abuse potential of users' own ECIGs vs. other tobacco/nicotine products. METHODS: Twelve male ECIG users (11 white/1 black) attended four lab sessions that were preceded by 12 hours of overnight ECIG abstinence, separated by at least 48 hours and differed by product used: EGO_0, a 3.3V battery with a 1.5 Ohm, dual-coil cartomizer with 0 mg/ml nicotine liquid in participants' preferred flavors; EGO_highest, with liquid of the highest nicotine concentration available in participants' preferred flavor; OWN, participants' own ECIG device with liquid in their preferred flavor and nicotine concentration; and INHALE, 4mg nicotine inhaler. During each session, participants used the session product then completed the multiple choice procedure (MCP) in which they chose between 10 additional puffs of the product or gradually increasing amounts of money. The MCP yields a monetary crossover value: the higher this value, the greater the reinforcing efficacy of the product. Venous blood was sampled before and after product use to determine nicotine delivery. RESULTS: Significant differences in crossover points were observed across conditions. The highest mean crossover value (SD) was observed for OWN at $1.56 (0.83), which was significantly higher than EGO_0 at $0.88 (0.65), EGO_highest, at $0.87 (0.87), and INHALE at $0.87 (0.89). Mean boost in plasma nicotine concentration (SD) was highest for EGO_highest at 7.9 (6.0) ng/ml and OWN at 7.2 (6.0) ng/ml, and significantly lower for INHALE at 1.4 (1.5) ng/ml and EGO_0 at 0.8 (1.8) ng/ml (all *p*s <.05). CONCLUSION: Similar plasma nicotine boosts in the OWN and EGO_highest conditions, but different crossover values, suggest that other factors beyond nicotine delivery may influence ECIG abuse potential. As the FDA now has the authority to regulate ECIGs, this type of experimentally generated data can inform future device regulations that could impact abuse potential.

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POS5-72

CIGARETTE USE VS DUAL ECIG AND CIGARETTE USE AMONG PREGNANT WOMEN IN THEIR FIRST TRIMESTER

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INTRODUCTION: The U.S. has the fastest growing market for electronic cigarettes (ECIGs), and usage among women of childbearing age, including pregnant women, is alarming. Little data is available on ECIG use among pregnant women and outcomes such as cigarettes per day (CPD) and carbon monoxide (CO) levels, which are known to harm a fetus. The purpose of the project is to compare cigarette use rates and CO levels among pregnant cigarette smokers and dual cigarette/ECIG users in their first trimester. METHODS: Preliminary analysis of an ongoing, prospective study using quota sampling was conducted. Pregnant women in their first trimester, ages 18-44, who currently used ECIGs, cigarettes, or both were included. Data on cigarettes per day, ECIG use in the past 30 days, and CO levels were collected. RESULTS: To date, 70 pregnant women have been enrolled in this study (53 cigarette smokers, 14 dual ECIG/cigarette users, and 3 ECIG-only users). Overall, few women reported ECIG-only use. Thus, comparisons were conducted between dual cigarette/ECIG users and cigarette smokers. Dual users reported smoking an average of 17.5 CPD (SD= 12.4), and 13/14 had used an ECIG in the past 30 days. Cigarette smokers reported smoking an average of 10.7 CPD (SD = 6.6). No significant differences in the number of CPD were observed between groups. In addition, no significant differences in carbon monoxide levels were observed between dual cigarette/ECIG users (6.9 ppm; 6.0) and cigarette smokers (7.4 ppm; 5.0). CONCLUSION: In this sample, few women have reported using only ECIGs during the first trimester of pregnancy, which matches population-level data in the general public showing that most ECIG users are dual ECIG/cigarette users. In addition, results show that pregnant women engaged in dual ECIG/cigarette use may smoke no fewer CPD and have no lower CO levels than those who use cigarettes only, suggesting similar fetal CO exposure. Until more data about the effects of ECIGs on cigarette use, CO levels, nicotine delivery, and other effects is available, ECIGs should not be used in pregnancy.

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POS5-73

SEX DIFFERENCES IN BRAIN RESPONSES TO CIGARETTE-RELATED AND EMOTIONAL VISUAL STIMULI IN SMOKERS

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BACKGROUND: Studies have shown that sex differences play an important role in addictive behaviors, including smoking. Compulsive smoking and relapse are often triggered by the presence of cigarette-related cues. Studies involving both humans and animals suggest that drug-related cues trigger drug seeking more

in males than females. To better understand how both sexes respond to cigarette-related cues, we used event-related potentials (ERPs) to directly measure brain reactivity to cigarette-related and emotional images. METHOD: Participants were 223 smokers motivated to quit (54% males). Before any smoking cessation treatment, we collected ERPs while participants watched a slideshow that included 6 categories covering high and low emotionally arousing pleasant and unpleasant content, in addition to cigarette-related and neutral images. We used the amplitude of the Late Positive Potential (LPP) recorded from 10 centroparietal sites between 400 and 800 ms post-picture onset as an index of motivational relevance. ANALYSES: We analyzed LPPs using ANOVA, with sex as a between-subjects factor and image category (cigarette-related, erotic, romantic, food-related, neutral, sad, violence, mutilations) as a within-subjects factor. RESULTS: Both sexes showed similar patterns of brain reactivity across all image categories (Sex X Content interaction p >.50). For both males and females, the amplitude of the LPP increased as a function of emotional arousal for pleasant and unpleasant content (quadratic trend ps <.001). In both groups, cigarette-related images evoked larger LPPs than neutral content (ps < .05), but significantly lower LPPs than high arousing emotional images (p < .001). After adjusting for covariates, cigarette-related images prompted LPPs that were somewhat larger in males than females, but the difference did not reach statistical significance (p > .50). CONCLUSION: While men had the tendency to react more than females to cigarette-related images, this difference did not reach statistical significance. This suggests that sex differences may not influence neurophysiological responses to cigarette-related cues when measured using the LPP.

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POS5-74

NICOTINE REPLACEMENT THERAPY FOR SMOKING CESSATION DURING PREGNANCY: AN EXAMPLE OF TRIAL SEQUENTIAL ANALYSIS

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BACKGROUND: Smoking during pregnancy is associated with negative pregnancy and birth outcomes and smoking cessation can reverse them. A Cochrane systematic review has shown that for non-pregnant smokers, nicotine replacement therapy (NRT) is 60% more effective than usual care (RR 1.60; CI 1.53-1.68), however another Cochrane review found only a borderline effect for NRT used by pregnant smokers (RR 1.41; CI 1.03-1.93). With traditional meta-analysis methods, it's not possible to tell whether the 'pregnant smokers' review result is a false positive due to repeated significance testing or whether the meta-analysis sample size was too small to permit a firm conclusion. We used a relatively new technique, trial sequential analysis, to investigate the extent to which findings from the 'pregnant smokers' review could be considered definitive or whether further trial data are required. OBJECTIVE: To use Trial Sequential Analysis (TSA) to determine whether there is sufficient evidence to firmly conclude that NRT is effective for smoking cessation in pregnancy. METHODS: All randomised controlled trials evaluating the efficacy of NRT in pregnant women from the most recent Cochrane review were included and updated with a search of databases using Cochrane's Pregnancy and Childbirth Group's search methods from July 2015 onwards, references of retrieved studies were checked and authors were contacted. *Post hoc* retrospective TSA was used to analyse the primary outcome of smoking cessation at the end of pregnancy. A TSA calculates the required number of participants in a meta-analysis (information size) and this should be at minimum the number needed for an adequately powered single trial. RESULTS: Ten trials were included in this review and data of 2275 participants were analysed. Information size was estimated using a 12.6% incidence in the control arm based on results from a Cochrane review on psychosocial interventions for smoking cessation during pregnancy, and Relative Risk Reductions of 23.68% based on results from the placebo controlled trials. TSA analysis found that although the z-curves crossed p=0.05 indicating a significant result for NRT, they did not cross TSA monitoring boundaries, demonstrating early potentially spurious P<0.05 values. For a firm conclusion to be made, an information size of 9,853 is required. CONCLUSIONS: In this example of TSA, using predetermined parameters, NRT may not aid smoking cessation in pregnancy and further trials with around 7,500 participants are needed to come to a firm conclusion.

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POS5-75

ABUSE POTENTIAL OF ELECTRONIC CIGARETTES IN TOBACCO CIGARETTE SMOKERS

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Electronic cigarettes (ECIGs) aerosolize flavored nicotine liquid and are capable of delivering the drug to users, but few studies have assessed ECIG abuse potential. The purpose of this study was to compare the reinforcing efficacy of ECIGs with placebo or active nicotine liquid with two other products that deliver nicotine: the pharmaceutical nicotine inhaler and the combustible cigarette. Eleven cigarette smokers (9 male, 7 white, 15 cigs/day) participated in 4 sessions that differed by product used: an eGo ECIG with a 3.3V battery attached to a 1.5 Ohm dual-coil cartomizer loaded with 0 mg/ml nicotine liquid (ECIG_0); an eGo ECIG loaded with 36 mg/ml nicotine liquid (ECIG_36); a 4 mg nicotine inhaler (IN); and own brand cigarettes (OB). During each session participants completed 2, 10-puff bouts (30 sec interpuff interval), followed by the multiple choice procedure (MCP), where they chose between 10 puffs of the product and gradually increasing amounts of money. The MCP yields a monetary crossover value: the higher this value, the greater the reinforcing efficacy of the product. Blood was sampled before and after product use to determine nicotine delivery. Significant differences in crossover values were observed between study products. Participants' OB had a mean (SD) crossover value of $1.69 (1.4), significantly higher than the ECIG_0 crossover value of $0.89 (0.9) and the IN crossover value of $0.61 (1.0). No significant differences between OB and the ECIG_36 crossover value of $1.57 (0.5) were observed. Significant differences in plasma nicotine boost levels were observed across study products. Mean plasma nicotine boost (SD) for OB after bout 1 was 16.8 (11.5) ng/ml, higher than ECIG_36 at 5.7 (6.2) ng/ml, IN at 1.3 (3.1) ng/ml and ECIG_0 at -0.28 (2.17) ng/ml. Participants valued their own brand cigarettes significantly higher than the 0 mg/ml ECIG and the nicotine inhaler, but not the 36_mg/ml ECIG, suggesting that, in cigarette smokers, ECIGs that deliver nicotine may have abuse potential that does not differ from cigarettes. Continuing to assess the reinforcing efficacy of ECIGs will help inform policy decisions regarding ECIG labeling and advertising.

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POS5-76

THE ASSOCIATION OF MINDFULNESS WITH VULNERABILITY TO RELAPSE AMONGST SMOKERS ATTEMPTING TO QUIT: RESULTS FROM A PILOT INTERVENTION

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OBJECTIVES: Self-efficacy, negative emotions, and nicotine cravings have been shown to be predictive of relapse in smokers' quit attempts. Preliminary evidence shows that mindfulness interventions may reduce cravings and negative affect and increase self-efficacy in smokers. This study aimed to identify the relationships between mindfulness and self-efficacy, nicotine cravings, and mood, and to identify the effect of an online mindfulness intervention on these variables. METHODS: Participants were adult UK smokers. This study presents baseline and follow-up data from an online mindfulness intervention study (N=322) in which participants were randomised to receive either access to a 30-day app-based mindfulness intervention or a waitlist control condition. At 30 days, 16% (N=52) of participants were successfully followed up. Baseline and follow-up questionnaires assessed self-efficacy to stop smoking, through self-reported ease and confidence in quitting; mindfulness, measured using the Mindfulness Attention Awareness Scale; as

well as mood and urges to smoke, measured with the Mood and Physical Symptoms Scale. The MPSS values were dichotomised for the purpose of analysis into 'not at all - somewhat' vs. 'very – extremely'. Data were analysed with independent sample t-tests and chi squared test. RESULTS: Higher baseline mindfulness scores were related to lower rates of all mood states measured (ps<.001) and lower rates, (p=.01) and strength (p=.002), of urges to smoke in the past 24 hours. Baseline mindfulness was not associated with self-efficacy. Participants in the mindfulness training condition reported significantly fewer (p=.02), and weaker (p=.04), urges to smoke than the control at follow-up. No differences in mood or self-efficacy were found between groups at follow-up. CONCLUSIONS: Including mindfulness in smoking cessation programs may help to reduce nicotine cravings and negative mood states, and thus reduce relapse rates.

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POS5-77

PREVALENCE OF ELECTRONIC CIGARETTE USE AMONG PENNSYLVANIA HIGH SCHOOL STUDENTS, 2014-2015

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BACKGROUND: Tobacco use among youth is unsafe and leads to long term use, dependence, and premature death. Overall, tobacco use among youth in Pennsylvania (PA) has declined with cigarette smoking being the primary form of tobacco used. However, use of electronic cigarettes (e-cigarettes) has gained popularity among youth and PA's age-of-sale laws do not include e-cigarettes as tobacco products in the current definition. PA's recent tax on e-cigarettes may limit youth access. PURPOSE: We examined data from the 2014-2015 PA Youth Tobacco Survey (YTS) to determine the prevalence of ever use of electronic vaping products and ever/current use (use ≥1 day in the past 30) of e-cigarettes among high school students. We also examined the prevalence of current dual use of cigarettes and e-cigarettes. This was the first time questions about electronic vaping products were asked on this survey. METHODS: The PA YTS is a cross-sectional, 84-question, paper-and-pencil survey of public high school students (n=2,017; grades 9-12) with topics on tobacco use, cessation, and other tobacco-related policy issues. Schools were systematically selected to participate through a two-stage cluster sample design to produce a representative sample of students in high schools. The sampling frame consisted of 63 eligible high schools. The overall response rate was 64.7%. RESULTS: Among high school students, the prevalence of ever use of an electronic vaping product was 37%. The prevalence of ever use of an e-cigarette was 20%. The prevalence of current e-cigarette use was 9.8%, which was slightly lower than the prevalence of current cigarette use, 10.3%. The prevalence of current dual use of cigarettes and e-cigarettes was 5%. Among only current cigarette smokers, the prevalence of current dual use with e-cigarettes was 49.5%. CONCLUSION: Over 1/3 of high school students have used an electronic vaping product. Among current cigarette smokers, almost half also use e-cigarettes. Frequency of e-cigarette use and characteristics of e-cigarette liquid is not included in the PA YTS. Future data collection should include this information. Regulation of e-cigarettes is needed to limit youth access.

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POS5-78

SMOKER WILLINGNESS TO FOLLOW NICOTINE METABOLISM-INFORMED CARE AND SHORT TERM CESSATION: RESULTS OF A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: The nicotine metabolite ratio (NMR), a biomarker of nicotine metabolism, predicts cessation with pharmacotherapy. Among "normal" metabolizers, 6 month quit rates with varenicline are ~2X higher than with nicotine replacement therapy (NRT). "Slow" metabolizers have equal quit rates with varenicline and NRT, yet experience more side effects with varenicline. Metabolism informed care (MIC), i.e., prescribing varenicline or bupropion for normal metabolizers and NRT for slow metabolizers, could optimize treatment by maximizing efficacy and minimizing side effects. Success of MIC hinges on smokers' willingness to follow NMR-guided therapy, which has not been studied. METHODS: Daily smokers (N=81) were enrolled in a smoking cessation trial at Vanderbilt University Medical Center and underwent NMR testing. Participants were randomized to MIC or guideline-based care (GBC) and received counseling. MIC participants were recommended NMR-informed pharmacotherapy, but could choose another medication. GBC participants co-selected medication with the counselor. Concordance of study medication with nicotine metabolism was assessed at 1-month, as were medication use, side effects, and abstinence. RESULTS: Participants were median age 53 years, 46% female, 28% black; 63 (78%) completed 1-month follow up. Study medication was concordant with nicotine metabolism in 36/43 (84%) in MIC vs. 21/36 (58%) in GBC (p=0.02). Varenicline was prescribed in 52% of MIC vs. 60% of GBC participants, NRT in 41% of MIC vs. 24% of GBC participants, and bupropion in 4.5% of MIC vs 14% of GBC participants. Two participants declined medications. At 1-month, overall medication use (78%) and incidence of moderate or severe side effects (14%) were similar for each arm. Overall 7-day point prevalence abstinence was 19% and also comparable between groups, with a trend toward higher same-day abstinence in MIC (33%) vs. GBC (26%) (p=0.72). CONCLUSIONS: Most MIC participants followed NMR-guided medication selection, resulting in successful biological tailoring of medication. Large-scale trials of MIC vs. GBC are needed to determine effectiveness of a metabolism-informed approach in clinical practice.

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POS5-79

SALES OF FLAVORED CIGARS WITH CHARACTERISTICS SIMILAR TO CIGARETTES – UNITED STATES, 2015

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BACKGROUND: On December 9, 2016, the United States Food and Drug Administration (FDA) Center for Tobacco Products (CTP) issued warning letters to four manufacturers concerning the sale of flavored tobacco products labeled as cigars that meet the definition of cigarettes. Cigar varieties cited by FDA as functionally equivalent to flavored cigarettes are not exhaustive of all similar products for sale. We evaluate U.S. cigar sales with characteristics similar to those noted by the FDA. METHODS: We identified the Universal Product Code (UPC) descriptions of the four products cited in the FDA warning letters: Cheyenne 100's wild cherry cigars; Prime Time strawberry little cigars; Criss-Cross 100's cherry filtered cigars; and Swisher Sweet grape little cigars. We analyzed the sales and prices of these products and all other filtered cigars sold in packs of 20, like cigarettes. RESULTS: At least 92 unique cigar brand and characterizing-flavor combinations had features similar to flavored cigarettes. Over 56.7 million packs of flavored and unflavored cigars equivalent to cigarettes were sold in U.S. convenience and other retail stores in 2015, 15.3% of which had a characterizing flavor. Sales of these flavored cigars amounted to 8.7 million packs (3.6 packs/100 U.S. adults), and the four products cited in the FDA warning letters totaled 4.4 million packs (1.8 packs/100

U.S. adults) or 50.2% of flavored cigar sales. We identified 16 flavors (e.g., peach, raspberry) of cigars equivalent to cigarettes beyond the four cited in the letters. Flavored cigars with characteristics similar to cigarettes averaged $3.47 per pack, considerably lower than the $6.05 average U.S. pack price of cigarettes. CONCLUSIONS: Flavored tobacco products labeled and packaged as cigarettes could weaken the FDA ban on flavored cigarettes and, with lower relative prices, could result in product substitution instead of reduced consumption. States would benefit from a ban on all flavored tobacco products, which are more appealing to young people and from applying the cigarette tax to all tobacco products intended to be sold or bought as cigarettes to reduce product substitution and consumption.

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POS5-80

A COMPARISON OF AGONIST AND ANTAGONIST ACTIVITIES OF A4B2 NACHR PARTIAL AGONISTS SHOWS THAT CLINICAL DOSES OF VARENICLINE EXHIBIT POTENT ANTAGONIST ACTIVITY

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The main rationale for a4b2 nAChR partial agonists as smoking cessation aids is that partial agonists may be more efficacious by acting both as an agonist (when quitting) and as an antagonist (during a relapse). In this case 'antagonist' does not refer to nAChR antagonism, but to 'nicotine antagonism', i.e. preventing nicotine's reinforcing effect by blocking access to the nAChR. Theoretically, all partial agonists can have such a dual action, but whether agonism and antagonism will both occur in vivo after clinical doses, depends on the drug's brain exposure, binding affinity and functional activity at a4b2 nAChRs. This study examined the hypothesis that NRT-like agonist activity is sufficient for a clinical effect, but that the combination with significant antagonist activity will further increase smoking cessation efficacy. Agonist and antagonist activities of marketed and discontinued a4b2 nAChR partial agonists (varenicline, cytisine, dianicline, CP-601932, CP-601927) were quantified based on their in vitro interaction with a4b2 nAChRs at concentrations reached after clinical doses. Agonist activity was expressed as percentage nAChR activation-inactivation in the absence of nicotine, antagonist activity as percentage decrease in nAChR occupation by nicotine from smoking in the presence of a partial agonist. The results show that at clinical doses the partial agonists are expected to have significant agonist activity, except dianicline that has poor affinity for a4b2 nAChRs and modest brain exposure. Varenicline is the only drug that is predicted to also exhibit robust antagonist activity after clinical doses, causing >85% decrease in nicotine receptor occupation. The other partial agonists cannot effectively compete with nicotine from smoking, due to lower brain concentrations and/or lower a4b2 nAChR affinities than varenicline, and therefore cause only small reductions in nicotine receptor occupation, ranging from 5% (cytisine) to 25% (CP-601927). These data support the view that varenicline is more efficacious than other partial agonists, since its potent antagonist activity will reduce the reinforcement by inhaled nicotine and help to prevent a relapse.

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POS5-81

EXAMINING THE EFFECTS OF NATURAL AMERICAN SPIRIT ADVERTISING ON CURRENT AND FORMER SMOKERS' PERCEPTIONS AND INTENTIONS

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In 2015, the U.S. Food and Drug Administration issued a warning letter to Santa Fe Natural Tobacco Company for the use of words such as "natural" and "additive-free" in Natural American Spirit (NAS) advertisements. Research by Moran et al. (2016) about language and imagery implying reduced harm in NAS advertising has raised concern among public health advocates, in part because preliminary research suggests that youth and adults may perceive NAS cigarettes as less harmful than other cigarette brands (Byron, Baig, Moracco, & Brewer, 2015). The study we report here is the first to link exposure to NAS advertising with beliefs and attitudes that precede product use. This study examined the effects of publicly available NAS advertising materials on current and former smokers' beliefs, attitudes, and intentions to use NAS cigarettes. In this online experiment, 1,128 participants (412 daily smokers, 238 intermittent, 478 former) were randomly assigned to view one of five sets of NAS advertising materials or a no-advertisement control; the five experimental conditions comprised of existing NAS advertisements or text-based arguments from the advertisements. Following exposure, participants reported beliefs, attitudes, and intentions toward NAS. One-way ANOVA with planned comparisons revealed that participants exposed to text-based arguments from NAS advertisements or to certain types of NAS advertisements reported more favorable beliefs about NAS along five dimensions (chemical composition, health, harm, taste, environmental sustainability), more favorable attitudes toward NAS, and greater intentions to use NAS, as compared to the no-exposure control group. Results were similar for current and former smokers, but differences will be reported separately. Multiple regression analysis indicated that beliefs about NAS as a healthier alternative to traditional cigarettes were the strongest predictors of positive attitudes toward NAS, which also predicted intentions to try NAS. These results provide empirical evidence supporting concerns about implicit (and potentially misleading) claims made in NAS advertising, which raises implications for tobacco advertising regulation.

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POS5-82

LIFETIME HISTORY OF SMOKING, CESSATION AND THE RISK OF LUNG CANCER: PROSPECTIVE RESULTS FROM THE FRAMINGHAM HEART STUDY (FHS) ORIGINAL AND OFFSPRING COHORTS

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BACKGROUND: Whether former smokers can achieve the lung cancer risk of never smokers is unclear given the lack of prospective studies relating individuals' lifetime smoking patterns to lung cancer risk. Present lung cancer screening guidelines exclude smokers who are abstinent more than 15 years. METHODS: We included 3766 Original and 4943 Offspring cohort participants who attended their fourth (1954-1958) and first (1971-1975) exams, respectively, and were free of cancer. Participants were followed through 2013 for lung cancer incidence. All variables were updated every two (Original) and four (Offspring) years. We analyzed the two cohorts separately and jointly. Using multivariable Cox proportional hazards regression models with time-updated covariates (age, sex, education, exam decade, and alcohol) we compared lung cancer risk in current, former, and never smokers. RESULTS: Compared to the Offspring cohort, the Original cohort was older (50 vs. 37), consisted of more women (60% vs. 52%), and had more pack-years (23 vs. 20). On follow-up, 384 lung cancers occurred: 227 in current smokers over 69,669 person-years (PY); 126 in former smokers over 74,105 PY; and 31 in never smokers over 94,590 PY. We restricted models to current and former smokers with pack-years greater than the median of 21.3 since 86 percent of events occurred in this group. Former smokers experienced a 43% lung cancer risk reduction compared to current smokers in less than 10 years after quitting. Lung cancer risk steadily decreased with years since quitting (YSQ) in former compared to never smokers: <10 YSQ (Hazard ratio, HR=9.93 [6.31, 15.62]); 10-14 YSQ (HR=7.14 [3.77, 13.52]); 15-24 YSQ (HR=5.44 [3.05, 9.71]); 25+ YSQ (HR=3.65 [1.74, 7.67]) but did not reach that of never smokers even after 25 years of cessation. Moreover, forty percent of lung cancers in former smokers were diagnosed at least 15 years post-quitting. CONCLUSIONS: Former heavier smokers remain at elevated lung cancer risk compared to never smokers even after 25 years quit and a substantial number develop lung cancer after 15 years of cessation. These findings are important in light of current lung cancer screening guidelines.

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POS5-83

TEMPORAL DYNAMICS OF THE FLAVOR, STORAGE CONDITION, AND MICROBIOTA TRIAD IN HOOKAH TOBACCO

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Over the past two decades, hookah use has increased in the United States, particularly among young adults. This is, in part, due to the marketing of flavored tobacco, the prevalence of hookah cafés, and the misconception that hookah is a safe alternative to cigarettes. In fact, hookah smoke contains high levels of toxic/carcinogenic compounds and studies have also highlighted potential exposure to pathogenic bacterial agents present on the mouthpiece and within the water bowl. Despite this, there has been no comprehensive study aimed at characterizing the bacterial constituents of hookah tobacco. Therefore, we conducted time series experiments with two commercially-available brands of hookah tobacco, Fumari and Al-Fakher, and three popular flavors within each brand: "white gummi bear", "ambrosia", and "mint chocolate chill" (Fumari), and "watermelon", "two apples", and "mint" (Al-Fakher). Each product was incubated for two weeks under three different temperatures and relative humidities to mimic different storage conditions (pocket, refrigerator and room). Subsamples were taken at days 0, 5, 9 and 14, total DNA was extracted, the 16S rRNA gene PCR-amplified (V3V4 region), and sequenced using Illumina HiSeq for a total of 432 samples. Beta-diversity analyses comparing the two brands of hookah tobacco revealed significant differences in overall bacterial composition between flavors, as well as, clustering by time point within each flavor. Despite these brand- and flavor-specific differences, a core set of operational taxonomic units (OTUs), composed of *Halomonas*, *Achromobacter*, *Pseudomonas*, and *Shewanella,* could be identified as present across all samples. Additionally, the relative abundance of *Pseudomonas*, the dominant bacteria in both brands, was affected by time and flavor additive. In the Al-Fakher tobaccos, *Pseudomonas* levels were increased significantly by day 14 in the mint flavor at all storage conditions and in the watermelon flavor at pocket and room conditions. These data suggest that the microbiota of hookah tobacco is influenced by storage conditions and flavor additive, making it a potentially dynamic source of bacterial exposure among users.

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POS5-84

SIX-MONTH OUTCOMES FROM CLICKOTINE: A DIGITAL THERAPEUTIC PROGRAM FOR SMOKING CESSATION

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BACKGROUND: Tobacco smoking is the leading cause of preventable death in the US, with the economic burden attributable to smoking exceeding $300 billion annually. Obstacles to smoking cessation include limited access and adherence to effective cessation interventions. Technology can help overcome these obstacles; smartphone apps have been developed to provide smoking cessation interventions, but few conform to the US Clinical Practice Guidelines or have been rigorously tested in clinical trials. Clickotine is a novel, science-based mobile program for smoking cessation, designed to deliver essential features of the US guidelines through cognitive-behavioral mechanisms of action, and engineered to engage smokers through personalized and contextualized smoking cessation interventions. These include messaging, craving monitoring and digital diversions personalized for users' identity, readiness to quit, motivations and other factors. OBJECTIVE: To assess the efficacy of Clickotine in a single-arm study with a focus on 30-day, self-reported point prevalence abstinence at 24-weeks post-enrollment. METHODS: US residents between 18-65 years of age who owned an iPhone and smoked 5 or more cigarettes daily were recruited via online advertising. Respondents were pre-screened for eligibility by telephone, and directed to a web portal to complete informed consent, confirm eligibility, and download the Clickotine app. Participants completed study assessments via the web portal at baseline, 8-weeks and 24-weeks after enrollment. RESULTS: 416 participants downloaded the app and constituted the intention-to-treat (ITT) sample. ITT analysis demonstrated that 35% of participants (n= 147) achieved 30-day self-reported abstinence at 24-weeks post-enrollment, an increase from 26% of ITT respondents (n=109) that had achieved 30-day abstinence at 8-weeks post-enrollment. CONCLUSION: In this single-arm trial, Clickotine demonstrated an impressive 30-day abstinence rate at 6 months post-enrollment. Clickotine users remain engaged and the program continues to exert an effect over time, evidenced by the increase in 30-day abstinence observed between the 8-week and 24-week time points.

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POS5-85

TOBACCO PRODUCT USE AND MENTAL HEALTH STATUS AMONG YOUNG ADULTS

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BACKGROUND: Individuals with mental health conditions represent a priority population for the FDA, which now regulates tobacco products. This population smokes cigarettes at disproportionately higher rates, but less is known about the relationship with non-cigarette tobacco products. We examined whether tobacco use was associated with mental health status among young adults. METHOD: 2,500 young adults originally recruited from 11 colleges in North Carolina and Virginia completed an online survey on tobacco use. We used logistic regression to assess the association between past 6-month self-reported mental health diagnosis and past 6-month cigarette, e-cigarette, waterpipe, cigar, smokeless, or other tobacco use including bidi, kretek, and gutkha. We used linear regression to compare past 30-day depression and stress scale scores to past 30-day tobacco use. Models were adjusted for age, gender, race, and mother's education. RESULTS: 207 (8.8%) students reported a mental health diagnosis, most commonly depression (5.4%), ADHD/ADD (4.2%), and anxiety (0.9%). Those who reported using e-cigarettes (AOR=2.15; 95% CI=1.55,2.98) or cigarettes (AOR=1.81; 95% CI=1.13,2.90) had greater odds of a mental health diagnosis. Mean depression score was 7.2 of possible 33. Past 30-day e-cigarette (β=1.67, p<.001), waterpipe (β=1.01, p=.010), and cigarette (β=1.07, p=.003) use were associated with higher depression scale scores. Mean stress score was 15.9 of possible 40. Past 30-day e-cigarette (β=1.68, p=.002), waterpipe (β=1.12, p=.007), and cigarette (β=.74, p=.024) use were associated with higher stress scale scores. CONCLUSION: We found tobacco use was related to mental health status. E-cigarettes and cigarettes were more likely to be used by young adults reporting a mental health diagnosis. E-cigarettes, waterpipe, and cigarettes were used by those with higher stress or depression scale scores. Tobacco product use could be due to self-medication by young adults with mental health conditions. Additional monitoring, including longitudinal studies, is needed regarding tobacco product use among young adults with mental health conditions.

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POS5-86

RELATIONSHIP BETWEEN NICOTINE INTAKE AND BRAIN REWARD FUNCTION IN A SHORT AND LONG-ACCESS PARADIGM IN RATS

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Nicotine addiction is a chronic brain disorder that is characterized by dysphoria upon smoking cessation and relapse after periods of abstinence. There is evidence that the positive reinforcing properties of nicotine play a role in the initiation of smoking while the negative mood state associated with smoking cessation contributes to the maintenance of smoking. Animal models have been developed to study the rewarding effects of nicotine and nicotine withdrawal. However, in most of these preclinical studies nicotine was administered non-contingently (e.g., minipumps or injections) or self-administered for only brief amounts of time (1 h/day). In order to study the role of mood states in high levels of human smoking, we investigated the effects of prolonged (23 h/day) nicotine self-administration on brain reward function in rats. Male Wistar rats were prepared with intracranial self-stimulation (ICSS) electrodes in the medial forebrain bundle to investigate to effects of nicotine intake on brain reward function. After the brain reward thresholds were stable, the rats were prepared with intravenous catheters. After food training, the rats were allowed to self-administer nicotine for 10 days on a short-access (1 h/day, 5 days/week) FR5-TO20s schedule for 2 weeks. The rats were then switched to an intermittent extended access (23 h/day, 2 days/week) FR5-TO20s schedule and stayed on it for 5 weeks. Brain reward thresholds were assessed immediately before and after all the nicotine self-administration sessions and also 24 h after the 23 h self-administration sessions. The study showed that during the short-access period, there was a negative correlation between nicotine intake and changes in reward thresholds (before vs. after nicotine self-administration). Thus, a high level of nicotine intake was more rewarding than a low level of nicotine intake. Switching rats from the short to the long-access paradigm led to a dramatic increase in nicotine intake (0.2 vs 1.2 mg/kg/session). Long-access to nicotine did not lead to changes in ICSS thresholds over the 5-week period. However, after 5 weeks of long-access, administration of the nicotinic acetylcholine receptor antagonist mecamylamine led to a dose-dependent increase in ICSS thresholds. This indicates that long-access to nicotine leads to the development of dependence. In conclusion, this study shows that brief (1 h) periods of nicotine self-administration potentiate brain reward function and that intermittent extended access (23 h) to nicotine leads to the development of dependence.

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POS5-87

ASSOCIATIONS BETWEEN PAIN INTENSITY AND URGE TO SMOKE: TESTING THE ROLE OF NEGATIVE AFFECT AND PAIN CATASTROPHIZING

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Urge to smoke tobacco is a critical aspect of nicotine dependence, and there is evidence of covariation between pain intensity and self-reported urge to smoke. However, direct tests of this association have relied almost exclusively on clinical pain samples, and it is unclear if this relationship is relevant to smokers not seeking pain treatment. The goal of the current study was to test the hypothesis that current pain intensity would be positively associated with self-reported urge to smoke among a sample of daily cigarette smokers who were recruited from the local community and excluded if they endorsed current chronic pain. We also sought to examine the role of negative affect and conduct the first test of pain catastrophizing in relations between pain intensity and urge to smoke tobacco. Participants (N = 229, 42.4% Female, Mcpd = 21.9) were recruited for a larger experimental study of pain and smoking, and the current secondary analyses use data collected at the baseline session. Consistent with expectation, current pain intensity was positively associated with current total urge to smoke (ΔR^2 = .02; 95% CI: 0.18, 11.49), and urge to smoke for the relief of negative affect (ΔR^2 = .02; 95% CI: 0.97, 6.93). We further observed an indirect association via state negative affect, such that pain intensity was positively associated with negative affect, which in turn was associated with greater total urge to smoke (b = 3.53; SE = 1.33; 95% CI: 1.35, 6.65) and urge to smoke for the relief of negative affect (b = 2.23; SE = 0.71; 95% CI: 1.08, 3.89). Pain catastrophizing was found to be a significant moderator, such that positive associations between pain intensity and both total urge to smoke and urge to smoke for the relief of negative affect were only evident among smokers who endorsed lower levels of catastrophizing (95% CIs > 0). These findings contribute to an emerging literature indicating that pain and related constructs are relevant to the maintenance of tobacco smoking. Future research should continue to examine how pain-relevant cognitive-affective factors may influence associations between the experience of pain and motivation to smoke tobacco cigarettes.

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POS5-88

EVALUATING QUIT ATTEMPTS AND QUITTING FOLLOWING A STATE TOBACCO TAX INCREASE

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OBJECTIVES: In 2008, the World Health Organization introduced the MPOWER measures to assist countries in implementing the Framework Convention. Raising taxes on tobacco is considered a key measure that encourages population level quitting. In 2013, Minnesota increased the tax on cigarettes by $1.75. Nationally, tobacco taxes were increased in 2009. In this study, we consider these tax changes using the 2010 and 2014 Minnesota Adult Tobacco Surveys. METHODS: The data were examined in two parts, first a bi-variate analysis examined how non-cigarette tobacco products, traditional cessation assistance (i.e., NRT, prescriptions, counseling), and smoker perceptions of the tax increase varied between 2010 and 2014. Next, weighted regression analyses examined the impact of demographics, dependence, e-cigarette use, other tobacco products, cessation aides, and the state-wide tax increase on quit attempts and successful quits among past year smokers in 2014. RESULTS: Compared to 2010, significantly more smokers who attempted to quit reported e-cigarette use (3.1% vs 30.6%) and fewer reported use of cessation aides in 2014 (49% vs 33.2%). A significantly greater proportion of past 12-month quitters reported that a tax increase helped them think about quitting, cut down, make a quit attempt, and maintain a quit in 2014 compared to 2010. Using data from 2014, regression models were built to examine both quit attempts and quits. Reporting a quit attempt was predicted by the perception of the tax (AOR=8.6) after controlling for dependence (AOR=2.4) and 6+ days/month e-cigarette use (AOR=0.5). The tax increase was also the strongest predictor of past year quitting (AOR=10.6) when entered into the model after education (completing college AOR= 2.9), non-cigarette tobacco use (AOR=0.5), and use of any cessation aids (AOR=2.2). Too few e-cigarette users had quit to include this variable in the quit model. CONCLUSIONS: The single most effective factor in supporting quitting in these models was the effects of the increase in the cigarette tax. Surprisingly, we found no effect on quit attempts or quitting from the use of e-cigarettes in this statewide population study.

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POS5-89

DIFFERENCES BETWEEN EXCLUSIVE AND POLY-TOBACCO ADOLESCENT AND YOUNG ADULT E-CIGARETTE USERS

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BACKGROUND: Electronic nicotine delivery system (ENDS) use is increasing among US adolescents and young adults. Poly tobacco use is also common and leads to increased risk for nicotine dependence and potential health effects. Less is known about patterns of ENDS and other tobacco product use and whether characteristics differ between exclusive and poly users. This study compared sociodemographic characteristics of adolescent and young adult exclusive and poly tobacco ENDS users. METHOD: In spring 2016, we surveyed a nationally representative sample of 3,517 adolescents (ages 13-17) and young adults (ages 18-25). Those who reported using only ENDS within the past 30-days were cat-

egorized as exclusive ENDS users. Those who reported using ENDS and any other tobacco product were categorized as poly ENDS users. We estimated the proportion of past 30-day exclusive and poly users and used univariate and multivariable analyses to determine which variables were associated with ENDS group status. RESULTS: 4.5% of adolescents and 10.0% of young adults reported past 30-day ENDS use. Among ENDS users, 46.6% were female, 60.1% were white, and 20.6% were Hispanic. Over half (55.5%) reported poly use, most commonly with cigarettes (29.9%), cigarillos (23.8%), or waterpipe (20.6%). In multivariable analyses, those who were 13-17 (AOR=4.5, p=.03) were more likely to be exclusive ENDS users, while those who perceived no friends as ENDS users (AOR=0.12, p=.003) were less likely to report exclusive use. Those who reported first tobacco product used as cigarettes (AOR=0.34, p=.002) or smokeless tobacco (AOR=0.05, p=.002) were less likely to report exclusive ENDS use. There were no differences in race, education, geographic region, sexual orientation, or sensation seeking between groups. CONCLUSION: The majority of ENDS users in our sample also used other tobacco products, most often cigarettes, cigarillos, and waterpipe. Given the high rates of poly use, prevention efforts should consider focusing on ENDS alongside traditional tobacco products. Additionally, there may be a need for targeted strategies for exclusive ENDS users compared to multiple product ENDS users.

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POS5-90

RECALL OF E-CIGARETTE ADVERTISEMENT WARNING LABELS AND CLAIMS: AN EXPERIMENTAL STUDY OF YOUNG ADULTS

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The presence and content of warning labels and health claims on e-cigarette advertisements (ads) may affect product perceptions and use. This experimental study examined attention to and recall of warning labels and a claim on an e-cigarette ad in an online convenience sample of 598 young adults aged 18-30. Participants were randomized to view one of six modified versions of a MarkTen e-cigarette magazine ad in a 3 (warning label: none, short, long) x 2 (ad claim: present, absent) between-subjects design. The long warning label was taken from existing MarkTen ads. The short warning stated “Nicotine is addictive.” The ad claim stated “No ash. No tar. No smoke.” While viewing the ad, participants completed a task asking them to self-report up to five ad elements that captured their attention. A priori regions of interest (ROIs) were constructed around the claim and warning labels for analyses. Post-exposure measures assessed recall of the claim and/or warning label content, demographics, and past 30-day cigarette and e-cigarette use. The sample was half female (50.3%) and primarily (67.9%) older young adults (aged 25-30), White, non-Hispanic (71.7%), and had completed at least some college education (72.1%); a-third reported past 30-use of cigarettes and 17.9% reported past 30-day use of e-cigarettes. Among those exposed to the claim, 78.0% correctly recalled the text of the claim. Sixty percent of those exposed to the short warning label correctly recalled the text of the label and 54.3% of those exposed to the long warning label correctly recalled the text of the label. Compared to those who did not attend to the ROI, recall was higher among those who did for the claim (98.3% vs. 65.4%, p<0.001), short warning label (94.1% vs. 53.7%, p<0.001), and long warning label (85.2% vs. 49.4%, p<0.01). The majority of young adults recalled warning labels and claims on the e-cigarette ad, however recall varied as a function of warning label length. Future studies can build from these preliminary findings by identifying how young adults attend to a variety of warning labels and claims in e-cigarette ads and ways in which warning labels can better serve an educational function on these products.

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POS5-91

THE IMPACT OF ELECTRONIC CIGARETTE AND DUAL USE ON PERINATAL IMMUNE RESPONSE IN FIRST TRIMESTER

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INTRODUCTION: Use of electronic cigarettes (e-cigs) has rapidly increased as the U.S. has become the largest and fastest growing market for the devices. Despite the unknown health implications and unregulated device contents, rates of e-cig use among women of childbearing age, including pregnant women, are alarming. Previous research confirms maternal tobacco use alters perinatal immune function, yet no data exist regarding the influence of e-cigs or dual use (e-cigs plus conventional cigarettes) on the maternal immune response. The purpose of this project is to compare first trimester immune response of e-cig use among pregnant women. METHODS: Preliminary analysis of an ongoing, prospective study using quota sampling was conducted. Pregnant women in their first trimester, ages 18-44, who currently used e-cigs, conventional cigarettes, or both (dual use) were included. Tobacco use was validated by preset urine cotinine limits. Serum cytokines (Interleukin (IL)-1b, IL-2, IL-6, IL-8, IL-10, TNFα) were measured using a multiplex electrochemiluminescent plate assay on a MSD Sector 2400. RESULTS: Forty-three pregnant women (31 conventional only, 3 e-cig only, and 9 dual users) provided serum samples. Due to the limited sample size of e-cig only users, comparisons were conducted between conventional only users and dual users. Overall, there were higher levels of cytokines in women engaged in dual use. The greatest differences existed in serum IL-10 (median =0.458 versus 0.292; p=0.073), and IL-2 (median 0.28 versus 0.16; p=0.102). CONCLUSION: Prenatal tobacco use has been previously associated with a systemic inflammatory response during pregnancy. This study demonstrates pregnant women engaged in dual tobacco use appear to exhibit a heightened inflammatory milieu. Until more data about the effects of nicotine, via e-cigs and dual use, on perinatal immune response and birth outcomes are available, e-cigs should not be used in pregnancy.

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POS5-92

E-CIGARETTE AND CIGARETTE DUAL-USE AND ASSOCIATIONS WITH MEDICAL CONDITIONS IN THE HEALTH EHEART STUDY

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INTRODUCTION: E-cigarettes are promoted as a healthier alternative to conventional cigarettes and as an effective smoking cessation tool. However, many cigarette smokers continue to use both products (dual use). The health effects of dual use remain unknown. METHODS: The Health eHeart Study is an ongoing internet-based longitudinal cardiovascular cohort study that includes surveys on cigarette and e-cigarette use and medical symptoms and conditions. All English-speaking individuals ≥ 18 years of age with an email address were eligible, resulting in recruitment from all 50 states and more than 50 countries. Baseline data as of December 8, 2016 were analyzed to compare number of cigarettes per day and cardiovascular and pulmonary symptoms and conditions by product use: (i) e-cigarettes only, (ii) cigarettes only, and (iii) dual use. Wilcoxon Mann-Whitney tests were performed to compare number of cigarettes smoked per day between cigarettes only and dual users. ANCOVA models compared frequency of “yes” responses to ever or currently having a symptom or condition between cigarettes only and dual users. Separate models were fitted for chest pain, difficulty breathing, palpitations, lost consciousness or syncope, high blood pressure, high cholesterol, diabetes, coronary artery disease, heart attack, blocked arteries in the legs, blood clots, congestive heart failure, stroke, enlarged heart, atrial fibrillation, arrhythmia, sleep apnea, COPD, asthma, and cardiac arrest. All models were adjusted for age, sex, race/ethnicity, education, physical activity, mood, and anxiety, and Bonferroni-corrected multiple comparisons. RESULTS: Among 34,135 participants, 491 (1.3%) used e-cigarettes only, 1491 (4.1%) smoked cigarettes only, and 464 (1.3%) reported dual use. Dual users reported greater median (IQR) cigarettes per day compared to cigarettes only users, 10.0 (15.0) vs. 9.0 (12.0) (p < .0001). Dual use was only significantly associated with a higher frequency of congestive heart failure, 14.6% higher compared to cigarettes only users (p=.02).

CONCLUSIONS: These data did not suggest that e-cigarettes help to reduce cigarette smoking or improve health.

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POS5-93

IMPACT OF CONSUMER KNOWLEDGE OF SMOKELESS TOBACCO CONSTITUENT LEVELS

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INTRODUCTION: This study explores whether providing consumers information on the variation of harmful tobacco constituents across smokeless tobacco (SLT) brands is perceived as useful and impacts brand choice. METHOD: Smokeless tobacco users (n=142) of SLT products with NNK plus NNN levels greater than 2 µg/g wet weight were recruited for a study switching them to a brand with lower levels of NNK plus NNN and varying nicotine levels. At the end of the study, subjects were presented with information on NNN plus NNK levels in their preferred brand and for a number of SLT brands that contained lower levels. Subjects were then asked if they had been aware that toxin levels varied across products, how important it is for consumers to be informed of these levels and how likely it is that this new information would prompt them to switch to a lower toxin level brand. Change from the preferred brand of SLT purchased at baseline was assessed 1 and 12 weeks after the information was presented. RESULTS: Subjects used an average of 4.4 (SD: 1.9) tins per week for 10.8 (SD: 9.5) years, were mostly male (94%), white (97%) and were 31.7 (SD: 12.1) years old. Of this group, 77.5% were unaware that toxicant levels varied by brand and 81% believed that this information was very or somewhat important for the consumer to know. Using a VAS scale (0-100), subjects were asked their likelihood of switching to another brand based on “toxins in the product.” While 48.6% were strongly motivated (75+) to switch to brands with lower harmful constituent levels, 23.2% were not motivated to switch (<25). At weeks 1 and 12 follow-up, 39.6% and 32.8% of subjects reported switching to a lower toxicant brand, respectively. CONCLUSIONS: Providing the varying constituent levels across products was believed to be important for the consumer. While nearly 1/3 found the new information motivating enough to change their purchasing behavior, knowledge alone was not enough to facilitate a behavior change for a majority of users. Implementing standards for constituent levels may have a broader public health impact.

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POS5-94

INFORMATION SEEKING BY ENDS USERS: A QUALITATIVE ANALYSIS

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BACKGROUND: Although many studies have analysed how ENDS are marketed to potential users and the varied promotional claims made to encourage uptake, fewer have examined the information potential users seek. Given ENDS are novel devices that continue to evolve rapidly, it is important to review what details people considering ENDS use seek and how successful their searches are. Identifying gaps between what is sought and retrieved could inform future research questions and policies regarding mandatory information. METHODS: We explored potential ENDS users’ information needs using in-depth interviews with 15 New Zealand smokers and recent quitters, all of whom had used or were currently using ENDS. Among other topics, the interview guide probed the information participants sought, the sources they searched, and differences between the information they sought and the data they could locate. We analysed the data using a thematic analysis approach. RESULTS: Participants were primarily interested in obtaining data on the health effects of using ENDS. They were unsure of e-liquid ingredients and the risks these posed compared with smoked tobacco, uncertain about the effects of long-term ENDS use, particularly if they continued to smoke, and concerned they would replace the risks of smoking with comparable risks. Most sought product information about ENDS and e-liquids so they could select an appropriate device and identify a nicotine level equivalent to their smoked tobacco use. Few participants reported finding information that addressed all their questions and most felt uncertain about the quality of advice they located in their searches. CONCLUSIONS: Regulators could require ENDS products to provide more specific details including guidance that potential users should transition completely from smoking to vaping, and then quit vaping, if they are to minimise the risks they face. E-liquid manufacturing should be regulated to ensure product quality, and ingredients, together with known risks, should be disclosed. As long-term product risk profiles develop, ENDS should also feature specific risks and provide access to official sites with current information.

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POS5-95

REAL-WORLD QUITBIT USER EXPERIENCE FOR CIGARETTE TRACKING, REDUCTION, AND CESSATION

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INTRODUCTION: Quitbit is a digital cigarette lighter that pairs with a smartphone application to track real-time smoking behavior. Smokers can use the lighter to count cigarettes and, on their smartphones, view daily summaries across time. Additionally, researchers can collect user data via an API connection. The Quitbit was developed to aid in smoking cessation treatment and research, but little is known about its impact on cigarette reduction and cessation. METHODS: Quitbit customers were invited via email to participate in a user experience study. Data were collected and analyzed with mixed methods: (i) an online survey and (ii) in-depth telephone interviews. The brief 12-item survey included Likert-type response questions that asked about device quality, use, and ability to help reduce and/or quit smoking. Interviews were semi-structured with open-ended questions about using the Quitbit lighter and mobile app. All interviews were recorded, transcribed, coded, and reduced for analysis. RESULTS: A total of 60 participants were included in the survey analysis and five participants in the qualitative analysis. About half of survey respondents reported using the Quitbit for 2+ months (52%). On a 1-10 scale, from “not at all” to “extremely” likely, users were “very” likely to recommend the Quitbit (Net Promoter Score=7.4; SD=2.7). The vast majority reported using both the lighter and mobile app (82%), although some users reported leaving the house without their Quitbit lighters “some of the time,” “most of the time,” or “always” (42%). Smokers reported using the Quitbit primarily to “track smoking” (35%), “reduce smoking” (43%), and “quit smoking” (22%). Many users “agree[d]” or “strongly agree[d]” the Quitbit *lighter* can help reduce smoking (62%), and less confident it can help them quit (42%). Approximately half reported the *mobile app* can help reduce (47%), and again, less confident it can help them quit (32%). Average call duration for individual interviews was 20 minutes and ranged from 14-35 minutes. Major themes that emerged from the analysis were using the Quitbit to track, reduce, or quit smoking; other cessation aids; nicotine withdrawal; and feedback on specific features on the lighter and app. The feature with the greatest influence on smoking behavior was the “time since last” cigarette display, which helped smokers pace their cigarette intake throughout the day. Another helpful feature was the community page - given there was active participation between users. A major limitation to influence reduction or cessation was nicotine withdrawal. Overall, results were mixed with respect to use duration and frequency, with or without other quit aids, and smoking outcomes. CONCLUSIONS: These early findings among real-world Quitbit users suggest that the device could be a promising aid to track and influence smoking behavior. A major barrier to reduction and cessation was nicotine withdrawal. It is recommended that Quitbit users are provided resources to other cessation aids and/or strategies to manage withdrawal symptoms. Studies are needed to elucidate how best to fully optimize the utility of this novel technology for cessation research and treatment.

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POS5-96

VARIATIONS IN THE RELATIONSHIP BETWEEN SMOKING AND DRINKING BEHAVIORS AMONG YOUTH IN THE MAURITIAN JOINT CHILD HEALTH PROJECT

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The purpose of this study was to examine relationships among smoking and drinking behaviors in a sample of adolescents and young adults in Mauritius, an east African island nation. The four main religions in Mauritius (Catholicism, Islam, Hinduism, and Tamil within Hinduism) promote different norms for the appropriate use of tobacco and alcohol. In addition, broader societal norms typically discourage substance use among females, but acceptability may be changing in younger Mauritian cohorts. Based on this, we hypothesized varying patterns of consumption and differential associations between smoking and drinking behaviors would be found across religious and gender groups. We conducted analyses on data collected between 2012-2016 on 1,594 biological offspring of the original 1969-1970 birth cohort of the Joint Child Health Project (age range 8-24 years, from 1,054 of the 1,795 original JCHP families, with data collection ongoing). As part of a larger battery, participants reported on smoking and drinking lifetime behaviors and completed a Time-Line Follow-Back calendar to assess cigarette and alcohol use on each day of the past month. Smoking and drinking rates were higher in males than females for all age groups and within each religion, but with substantial variability in drinking in females by mid-adolescence. Adolescent males were found to be experimenting with both cigarettes and alcohol, but patterns of use in Mauritian males by early adulthood diverged in a manner that was consistent with religious influences parsing these behaviors after adolescent-limited use. Stronger links between smoking and binge drinking were found in religious groups where drinking and heavy drinking are discouraged (Hindus > Muslims > Catholics). Our results supported a moderated risk model rather than a substitution model for dual substance use, with both developmentally-specific and unique subgroup variations in the relationships between smoking and drinking behaviors.

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POS5-97

CHANGING TRENDS IN INDIGENOUS DAILY SMOKING PREVALENCE 2004-2014, AUSTRALIA

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BACKGROUND: The burden of disease is estimated to be 2.3 times higher for Indigenous Australians compared to non-Indigenous Australians. Tobacco smoking is the single leading contributor to the burden of disease among Indigenous Australians, estimated to account for 12.3% of the burden through its association with respiratory diseases, cancer, and cardiovascular diseases. Reducing the prevalence of tobacco smoking among this population is a public health priority. OBJECTIVE: To examine Indigenous Australian daily tobacco smoking prevalence over the last decade for changes in trends nationally, by region, by gender and by age groups. DESIGN: Multiple cross sectional analysis of Australia's national Aboriginal and Torres Strait Islander health and social surveys from 2004, 2008, 2012 and 2014. PARTICIPANTS: Aboriginal and Torres Strait Islander peoples of Australia aged over 15 years (in 2004) and over 18 years from 2008. RESULTS: Although the prevalence of smoking remains high nationally (38.9%), there has been a significant 11% decrease in prevalence of daily smoking over the past decade. This decrease is larger than the decrease observed in the non-Indigenous population of 8.5% over the same period. Particular success in reduced daily tobacco smoking prevalence has occurred in urban areas, down 6.3 % (42.9 CI 40.6-45.1 in 2004 to 36.6 CI 34.5-38.7 in 2014) , among women, down 13% (49% in 2004 to 36% in 2014) and among young people aged 15-24, down 9% (39.2 CI 36.1-42.4 in 2008 to 30.6% CI 27.31-34). CONCLUSIONS: Progress has been made in reducing daily tobacco smoking prevalence among the Indigenous population in Australia. These changes will have substantial health implications over the long-term. Success in the young age group is particularly encouraging.

FUNDING: No funding.

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POS5-98

SOCIAL INEQUALITIES IN EXPOSURE TO ANTI-TOBACCO MESSAGE

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BACKGROUND: As with other health issues, social inequalities exist in smoking prevalence, and reducing social gap in smoking prevalence is an important mission of public health. Anti-tobacco message is one of the major tobacco control polices, and equal opportunity for exposure to this need to be provided. The purpose of this study was to evaluate social inequalities in exposure to anti-tobacco message. METHODS: Data from the 2015 Korea Youth Risk Behavior Web-based Survey (nationally representative cross-sectional study) of 68,043 students in grades 7-12 were analyzed using multiple logistic regression considering complex survey sample design. Exposure to anti-tobacco message was evaluated according to sociodemographic factors having differential smoking prevalence including gender, grade, location of residence, perceived economic status, and perceived academic performance. RESULTS: Current smoking prevalence among students who were boys, upper- grades, rural residents or, lower level of economic status or academic performance was relatively higher than each comparison group. Of all the sociodemographic characteristics, vulnerable groups with high smoking prevalence, except low economic status, were less likely to exposure to anti-tobacco message. CONCLUSION: In terms of exposure to anti-tobacco message, socio-demographically vulnerable adolescents were underprivileged. Anti-tobacco advertising strategies for targeting vulnerable adolescents need to be developed.

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POS5-99

THE IMPACT OF HEALTH WARNING SEVERITY, LOCATION AND IMMEDIACY ON VISUAL ATTENTION AND SELF-REPORTED AVOIDANCE

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BACKGROUND: We have previously shown, using eye-tracking technology, that daily smokers avoid health warning labels (HWLs). Given HWLs' importance in communicating risk, reducing HWL avoidance is an important area of research. In three eye-tracking studies, we examined the impact of HWL risk severity (Study 1), immediacy (Study 2) and location (Study 3) on visual attention. METHOD: Study 1 participants were non-smokers (n=27), weekly smokers (n=26) and daily smokers (n=26) and the HWLs used presented moderate or high severity risks. Study 2 participants were non-smokers (n=25), weekly smokers (n=25) and daily smokers (n=35); the HWLs depicted short-term or long-term consequences of smoking. Study 3 participants were daily smokers only (n=36) and HWLs were presented on the upper or lower half of the pack. All studies used unfamiliar HWLs and the number of fixations to the HWL as compared with the branding was the primary outcome measure. RESULTS: Study 1 found greater visual attention towards moderate as compared with high severity HWLs only among weekly smokers (mean visual attention to moderate severity HWL vs branding=2.29 [SD=1.37], mean high severity HWL=4.17 [SD=4.17]). Self-reported avoidance of high severity HWLs was greater than for moderate severity HWLs ($F_{(1,72)}$=36.6,p=0.01, η_p^2=0.33). In Study 2, we observed greater visual attention to the long-term as compared with short-term HWLs ($F_{(1,72)}$=5.0,p=0.03, η_p^2=0.06), although self-reported avoidance was greater for long-term HWLs ($F_{(1,72)}$=127.8,p<0.001, η_p^2=0.60). In Study 3, visual attention to HWLs was greater when these appeared on the upper as compared with the lower half of the pack ($F_{(1,35)}$=47.7,p<0.001, η_p^2=0.6). CONCLUSION: Our results suggest that HWL content and placement are important in determining visual attention to HWLs. Visual attention to HWLs was greater when HWLs presented moderate severe rather than high severity risks, focussed on long-term rather than short-term consequences of smoking, and appeared on the upper half

of the pack. This research has implications for the development of government mandated HWLs.

FUNDING: Cancer Research UK

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POS5-100

EARLY WEIGHT GAIN AFTER STOPPING: PREDICTOR OF OVERALL LARGE WEIGHT GAIN?

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BACKGROUND: Most people gain weight on stopping smoking but the extent of weight gain varies Interventions aimed at all quitters to prevent weight gain on cessation have proven unpopular. Targeting interventions at people with the greatest risk may improve-uptake and cost-effectiveness. OBJECTIVE: To examine whether early large post-cessation weight gain predicts overall large weight gain following smoking cessation. METHODS: The population comprised 1050 CO-validated continuous abstainers treated at the Centre for Tobacco-Dependent in Prague, Czech Republic, between 2005 and 2013. The population comprised 511 women (48.7%) and 511 (51.3%) men, with the mean age of 46 (± 14.4) years. Weight was measured prior to stopping smoking and at each visit after smoking cessation. RESULTS: The mean weight gain in the first month (N=763) was 0.79% (±2.03%), in the second month (N=646) was 1.49 % (±2.58%), for the third month (N=566) 2.33% (±3.44%) and 4.1% (±5.31%) after one-year follow-up (N=1050), P<0.001 for all above mentioned changes. There was no significant association between higher early weight gain and subsequent weight gain, with a regression coefficient per 1% rise in the first three months of +0.13% (95% confidence interval -0.04% to 0.30%). A receiver operating curve analysis showed that patients gaining more than 2.35% of their baseline weight during first three months had a sensitivity of 0.426 and specificity of 0.725 for gaining 7% or more weight by 12 months. CONCLUSION: People who stop smoking and gain a larger amount of weight early after quitting are not more likely to gain excessively at one year.

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POS5-101

NICOTINE DEPENDENCE AMONG FOSTER CARE RESIDENTS

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INTRODUCTION: Nicotine addiction is a serious problem throughout the world, especially in low- and middle-income countries where almost 80% of the world's smokers live. Prior research indicates that 1 in 4 adult smokers in Eastern Europe are highly dependent upon nicotine. To date, little research has studied nicotine addiction among Eastern European children. METHODS: In 2014-2015, we conducted an anonymous, cross-sectional study of 883 children living in institutional settings of the Romanian Child Protection Authority in four counties. Trained data collectors conducted in-person surveys with all children. An abbreviated version of the Fagerstrom Test for Nicotine Dependence was administered for past 30-day smokers. Statistical analyses were performed using IBM SPSS v.22. RESULTS: The average age of children was 14 years (range 10-18), and 29.2% were current smokers. 43.5% smoke their first cigarette within 30 minutes of waking, 46.4% consider it difficult to refrain from smoking in places where it is forbidden, and 45.6% indicate that the hardest cigarette to give up would be the first one in morning. 28.9% smoke 11 or more cigarettes/day, with older children (17-18 years) smoking significantly more cigarettes than younger children (12-13 years), p=.02. CONCLUSION: Children in foster care in Romania have high rates of current smoking (29.2%), which is higher than the average Romanian adult population according to the WHO 2014 report. Efforts are needed to reduce initiation and to promote quitting among this highly vulnerable population with high rates of nicotine dependence.

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POS5-102

THE ROLE OF PERSONNEL AND HOUSEHOLD SMOKING RULES ON SMOKING EXPERIMENTATION AMONG CHILDREN LIVING IN ROMANIAN FOSTER CARE FACILITIES

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INTRODUCTION: Tobacco smoking is the most important and preventable underlying cause of death worldwide. Childhood and adolescence is a vulnerable developmental period, when tobacco use experimentation is at its peak. The aim of this study is to evaluate factors that influence ever smoking among children living in facilities of the Romanian child protection system. METHODS: We conducted an anonymous questionnaire (2014-2015) among children ages 8-19 years of age in 153 foster care homes in five central Romanian counties (n=1,112). Binary logistic regression was used to assess correlates of ever smoking (vs. never smoking) among the children. RESULTS: There were 492 ever smokers (44%) among Romanian foster care residents. Knowledge about the harmful impact of smoking was correlated with a lower odds of ever smoking (OR = 0.082, 95%CI 0.014-0.490). Children living in homes that permit smoking by family members (OR=1.91, 95%CI 1.02-3.59) and who observed smoking inside the home were more likely to have experimented (OR=1.88, 95%CI 1.40-2.52). Children report that teachers (OR=3.90, 95%CI 2.87-5.30), foster parents (OR=1.95, 95%CI 1.36-2.81), and other personnel (OR=2.19, 95%CI 1.67-2.86) have a strong impact on their decision to try smoking. CONCLUSION: Implementation of the general public smoking ban in Romania that was enacted in 2016 requires tailored educational programs in Romanian facilities of the foster care system. Our data suggest that focusing on employees and foster care parents as encouraging the enforcement of household smoking bans are needed to reduce tobacco use among Romanian foster care children.

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POS5-103

EFFECTIVENESS OF TOBACCO CESSATION INTERVENTION IN PRIMARY CARE: A QUASI EXPERIMENTAL STUDY

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INTRODUCTION: Tobacco cessation interventions by physician that include counseling have been found to be an effective intervention to promote cessation[i]. The present study aims to examine the effectiveness of tobacco cessation counseling intervention on intention to quit among patients in primary care settings in India. METHODS: The present study was a quasi-experimental study conducted among 1382 patients visiting primary care facilities in two states in India. Data was collected through an exit interview among patients visiting primary health care facilities across two states in India. Tobacco users were screened from the total no of patients visiting these primary health care clinics. The study compared the intervention arm which includes counseling intervention (5As: Ask, Advice, Assess, Assist, Arrange) and the control arm comprised of routine advice by the physicians. Change in intention to quit in 30 days was the primary outcome measured at two point of time (baseline (2015) and endline (2016). Logistic regression model was applied using intention to treat principle with intention to quit as the primary

outcome. The model was adjusted for socio-demographic variables. RESULTS: About half of the patients were willing to quit tobacco in 30 days. An increase of 41% was observed from baseline to end-line in intention to quit tobacco among patients in intervention units as compared to the 10% increase in control units. In end-line more than two-third of patients were willing to quit tobacco (77%) versus one-third of patients (36%) in baseline. Patient who have received tobacco cessation counseling were three and a half times more willing to quit tobacco use in intervention units as compared to those who have received routine care in control units (intention to treat analysis; OR=3.48; CI=2.66-4.54; p value-0.00). CONCLUSIONS: This is among few studies testing low cost models of integration of tobacco counseling into routine primary care. The findings from the study established that physician delivered cessation counseling has positive effect on intention to quit. More specifically an integrated '5A' model for tobacco cessation can have a significant effect in motivating tobacco users to quit tobacco. This intervention may be an answer to the resource scare settings in low middle income countries like India where primary care is well established and reaches large section of vulnerable populations. There is a need for such rigorous evaluations so as to provide evidence that cessation when integrated into routine clinical care can have significant influences on the pathways to quit tobacco. [i] Fiore MC, Jaen CR, Baker TB, et al. Treating tobacco use and dependence: 2008 update. Clinical practice guideline. Rockville, MD: US Department of Health and Human Services, Public Health Service; 2008

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POS5-104

BELIEFS THAT E-CIGARETTES PROVIDE A BETTER SMOKING ALTERNATIVE MEDIATE THE RELATIONSHIP BETWEEN SOCIAL MEDIA E-CIGARETTE EXPOSURE AND E-CIGARETTE USE AMONG YOUNG ADULTS

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A vast majority of U.S. young adults use social media such as Facebook and Instagram daily. Research suggests that young adults are continuously exposed to e-cigarette-related marketing or other posts on the social media they use. Currently, however, there is limited empirical evidence as to how social media e-cigarette exposure is associated with e-cigarette use beliefs and behavior. In particular, limited evidence exists to support the proposition that social media e-cigarette exposure is uniquely associated with e-cigarette use after adjusting for the effects of e-cigarette use in young adults' actual or 'offline' social networks. This study was conducted to test the hypotheses that 1) social media e-cigarette exposure is associated with positive e-cigarette use expectancies and current e-cigarette use; and 2) the association between social media and e-cigarette use is mediate by positive outcome expectancies. We collected cross-sectional data from a sample of young adult college students (N = 488; 65% Women; *M* age = 20.9, SD=2.1) in Hawaii. Hypotheses were tested by fitting a structural equation model to the data. The model accounted for the associations of demographic variables, cigarette smoking history, as well as e-cigarette use prevalence in participants' actual social networks with expectancies and behavior. Results indicated that social media e-cigarette exposure was associated with current e-cigarette use indirectly through two of the four positive outcome expectancies examined, namely, positive "smoking" experience and positive sensory experience. Affect regulation and social enhancement expectancies were positively associated with social media e-cigarette exposure but did not mediate its effect on behavior. Positive sensory experience expectancies represent beliefs that use of e-cigarettes would result in experiencing of good taste and smell. Positive "smoking" experience expectancies tap beliefs that e-cigarettes provide a safer, more convenient, and socially more acceptable alternative to smoking. Highlighting flavors and associated positive sensory experience has been integral to e-cigarette marketing. In addition, research suggests that e-cigarettes are routinely marketed as a safer, more convenient, and socially more acceptable alternative to smoking. Our findings suggest that e-cigarette-related texts and visuals on social media efficiently carry the messages propagated by e-cigarette manufacturers/vendors. Social media-based communication efforts towards reducing e-cigarette uptake and misuse by youth and young adults may benefit from targeting positive sensory and positive "smoking" experience expectancies associated with e-cigarette use.

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POS5-105

ELECTRONIC NICOTINE PRODUCT USE, CIGARETTE SMOKING, AND DUAL USE AMONG AMERICAN INDIANS IN A PILOT STUDY

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Little information exists on electronic nicotine product (ENP) use among American Indians, a priority population with high levels of tobacco use. We examined exposure and dependence among a small sample of American Indian adult ENP users (n=27), cigarette smokers (n=27), and dual users (n=28) from the Southern Plains region of the United States. Participants used cigarettes and/or ENPs *ad libitum* in the 24-hours prior to the study and regularly in the past 3 months. Participants provided a measurement of carbon monoxide in exhaled breath (eCO) and completed a questionnaire. Hooked on Nicotine Checklist (HONC) was used to assess loss of autonomy over cigarettes and was reworded to assess loss of autonomy over ENPs. Dual users completed the HONC twice. Sum of endorsed items (0-10) on the HONC indicated severity of diminished autonomy over cigarettes or ENPs. Data were compared with nonparametric statistical methods in SAS 9.4 and statistical significance was considered at p-value<0.05. Among smokers and dual users, median age initiated smoking regularly was 19.0 and 16.5 years, median duration of smoking was 26.0 and 21.5 years, and median cigarettes per day was 10.0 and 15.0, respectively. A significantly greater proportion of dual users than smokers made a 24-hour quit attempt in past 12 months (57.1% vs. 25.9%; p =0.0190). Median severity of diminished autonomy over cigarettes was 8.0 and 9.0 among smokers and dual users. Among ENP and dual users, median age initiated ENP use regularly was 32.0 and 38.0 years and median duration of ENP use was 2.0 and 1.0 years. Most ENP and dual users reported <20 vape sessions per day (72.0% vs. 72.0%) with ≤10 puffs per vape session (70.4% vs. 69.2%). Median severity of diminished autonomy over ENPs was 4.0 and 3.0 among ENP and dual users. ENP users had significantly lower median eCO level than smokers (2.0 vs. 16.0 parts per million (ppm); p=<.0001) and dual users (2.0 vs. 20.5 ppm; p=<.0001). This pilot study provides several novel findings about ENP use, cigarette smoking, and dual use among American Indians and informs future studies related to prevention, cessation, and tobacco regulatory science.

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POS5-106

MULTIMODAL NEUROIMAGING DIFFERENCES IN NICOTINE ABSTINENT VS. SATIATED SMOKERS

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INTRODUCTION: Inhibitory control impairment, a functional neurobiological marker of nicotine dependence, differs between smokers and former smokers. It's still unclear whether brain activation characteristics during inhibitory control are more pronounced when the smokers are allowed to smoke freely (satiated) or are required to abstain from smoking prior to testing. Likewise, cerebral blood flow ("CBF") differs between smokers and non-smokers but acute effects of nicotine on CBF have rarely been investigated in the human brain with perfusion imaging. Here, we tested whether both the functional brain activation measures, and CBF are more pronounced when smokers are allowed to smoke freely (satiated) or required to abstain from smoking prior to testing. It would be of high value to determine the optimal procedures with regard to smoking state (abstinent vs. satiated) for revealing these differences. METHODS: 15 smokers and 15 non-smokers were recruited, on whom neuroimaging and behavior data were acquired. Individuals with a history of psychiatric disorders, or reported smoking less than 5 cigarettes per day, were excluded. Smokers were scanned twice, once following ad-lib access to their regular cigarettes (the last cigarette smoked 15 minutes prior to scanning), and once following an overnight abstinence (order

counterbalanced). Non-smokers were also scanned twice. Breath carbon monoxide levels were verified at baseline, abstinence and satiety. Whole-brain activation maps of inhibitory control were generated from the Stop Signal task fMRI paradigm, measuring successful motor response inhibitions. Likewise, for CBF, whole-brain parametric perfusion maps were generated using Pseudo-Continuous Arterial Spin Labeling (pCASL) and compared among smokers and non-smokers with age, gender, educational level and handedness included as covariates in the design matrix. RESULTS: Abstinent and satiated smokers showed more inhibitory control activity compared to non-smokers in the right inferior frontal gyrus ("IFG"; with a 91% overlap), a key region of the brain involved in response inhibition. Abstinent and satiated smokers showed less CBF levels compared to non-smokers in three regions of interest ("ROIs")-- right IFG, bilateral occipital lobe and right posterior cortical regions (cluster-corrected at $p<0.05$). There was no nicotine effects on CBF within smokers. ROI-level analyses for each of the three regions revealed that abstinent smokers had the lowest CBF ($p<0.05$), while satiated smokers showed intermediate CBF between abstinent and non-smokers. CONCLUSIONS: Abstinent smokers were characterized by the highest levels of functioning in the right IFG during stop success trials, and the lowest levels of regional CBF in the brain, including the same region (right IFG) implicated in the stop task. Therefore, abstinent smokers are more sensitive probes than satiated smokers for elucidating differences between smokers and non-smokers in nicotine dependence studies assessing inhibitory control and cerebral blood perfusion.

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POS5-107

ADOLESCENT E-CIGARETTE USE AND PERCEIVED SAFETY: A LONGITUDINAL ANALYSIS

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Use of e-cigarettes has become prevalent among adolescents, in recent studies more prevalent than smoking combustible cigarettes. However, there is relatively little information about the cognitive consequences of e-cigarette use; that is, how does using e-cigarettes change perceptions of other variables? Studies of cognitive-behavioral variables have shown e-cigarette use related to less perceived harm from cigarettes (Miech et al., TC 2017) and more positive expectancies about cigarettes (Wills et al., PAB 2016). The perceived safety of e-cigarettes relative to cigarettes is a cognitive variable of considerable significance because it is related to uptake (Wills et al., TC 2016). To examine the effect of e-cigarette use on perceived safety, we studied a multiethnic sample of 1,297 high school students followed longitudinally over 1 year. The sample was 53% female and M age was 14.7 years (SD 0.7). Analyses examined change over time in an item asking whether e-cigarettes are healthier than cigarettes (1=No,2=Yes); for the total sample, endorsement was 68% at T1 and 60% at T2. Analyses were conducted for both ever-use and current (30-day) use of e-cigarettes at T1. Analytic models with T2 perceived safety as criterion entered T1 e-cigarette use together with T1 perceived safety and other covariates (demographics, personality, and parenting). Based on ever-use of e-cigarettes, adjusted Ms for T2 safety from glms were 1.59 for nonusers and 1.67 for users ($p < .01$); for current use, adjusted Ms were 1.60 and 1.67 ($p < .05$), respectively. Adjusted odds ratios (aOR) from logistic regression indicated the aOR for the effect of e-cigarette use on change over time in perceived safety was 1.60 [CI 1.16 - 1.21] for ever use ($p = .004$) and was 1.55 [CI 1.03 - 2.33] for current use ($p = .04$). Analyses stratified by baseline cigarette smoking status indicated this effect was contributed primarily by nonsmokers (for current e-cigarette use, aOR = 2.27 [CI 1.26 - 4.08], $p < .01$) rather than by smokers (aOR = 1.03 [CI 0.48 - 2.22], ns), p for interaction = .03. The results show that never smokers who use e-cigarettes show a relative increase in perceived safety compared to never smokers who do not use e-cigarettes. Because perceived safety is a compound construct (involving perceptions of both e-cigarettes and cigarettes), further research is needed to test whether changes in these perceptions work to encourage continued e-cigarette only use or are implicated in transition to cigarette smoking. Cognitive processes should be considered in risk/benefit analyses for e-cigarettes.

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POS5-108

SUPPORT FOR AN IMMINENT BAN ON MENTHOL CIGARETTES AMONG SMOKERS IN ONTARIO, CANADA

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BACKGROUND: A number of jurisdictions across the world have banned flavored tobacco products including cigarettes, but provinces in Canada are the first to implement a ban on menthol cigarettes. The province of Ontario, Canada will ban menthol cigarettes beginning January 1, 2017. The purpose of this study is to understand the support for the ban of current menthol smokers compared to non-menthol smokers. METHOD: Smokers (n=1041) were sampled through random digit dialing performed September to December 2016. Eligible participants included all Ontario residents (16+) who had smoked in the past 30 days. The response rate was 44%. All smokers were asked demographic information, smoking behaviour, and level of support for the menthol ban. Past year menthol cigarette smokers were also asked how the new law will impact their use of menthol cigarettes. Chi-squares were used to compare characteristics of menthol to non-menthol smokers. RESULTS: Of Ontario smokers in our sample, 27% had smoked a menthol cigarette in the past year. Menthol users were younger (average age 48 vs 56; P<0.001) and less likely to be White (77% vs 87%; p=0.002). There were no differences by education, number of cigarettes smoked per day, or being a non daily smoker. Menthol users were more likely to have used other types of flavoured and unflavoured tobacco products including cigars, pipes, smokeless, hookah, and e-cigarettes. Only 40 % of menthol users and 25% of non-menthol users had heard of the law (p<0.001). Support for the law was lower among menthol users with 24% supporting the ban compared to 34% of non-menthol users (p<0.001). Menthol usersmost commonly expected to switching to or continuing to use only non-menthol cigarettes (66%) when the law was implemented, followed by expecting to quit because of the law (12%) and using or continuing to use contraband menthol tobacco (9.4%). CONCLUSION: Awareness of the law banning menthol in tobacco was low among menthol and non-menthol smokers. Nevertheless, most users they would switch to using non-menthol tobacco in response to the law.

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POS5-109

HITS AND MISSES: RECRUITMENT INTO A MULTISITE SMOKING CESSATION TRIAL DESIGNED TO ADDRESS RACIAL/ETHNIC DISPARITIES

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Multiple recruitment strategies are often required to obtain a diverse sample of treatment-seeking smokers. This study is a multisite, behavioral randomized controlled trial designed to address racial/ethnic cessation disparities, among non–Hispanic White, African American, and Hispanic smokers. We implemented an 18-month recruitment campaign utilizing reactive (e.g., newspaper, radio, and internet ads, flyers, and community partnerships) and proactive (e.g., direct invitations from referrals, previous respondents) strategies. We examined (1) overall recruitment by source and (2) racial/ethnic differences in recruitment source. The sample includes respondents who self-reported how they learned of the study and identified as White, African American, or Hispanic (N=592) during screening. The majority of the sample self-identified as African American (54%; n=317), followed by White (30%; n=178), and Hispanic (16%, n=97). The top three sources of recruitment were word-of-mouth (32%; n=190), newspapers (32%; n=190), and flyers (11%; n=66), followed by proactive contact (9%; n=54), community partners (6%, n=38), internet ads (6%, n=33), and radio (4%, n=21). There were significant racial/ethnic differences in recruitment source (chi-square=106.11, df=12, p<.001). Compared to all other racial/ethnic groups, African Americans learned of the study

by word-of-mouth (44% vs. 16% of Whites and 23% of Hispanics, p<.05), and were less responsive to radio or internet ads (p<.05). Non-Hispanic whites were the most responsive to newspaper ads (51% vs. 25% African Americans and 23% of Hispanics, p<.05), and less so from flyers or community partners (p<.05). There were no racial/ethnic differences in recruitment via proactive contact. These findings highlight the value of using multiple recruitment strategies to obtain a diverse sample of smokers. Moreover, the recruitment approach may result in racial/ethnic differences in response rates. Traditional approaches led to more screenings compared to internet ads, which could reflect less frequent deployment of the latter strategy. Findings have implications for targeted recruitment to achieve accrual and project goals.

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POS5-110

REASONS FOR EXCLUSION FROM A SMOKING CESSATION RCT: AN ANALYSIS BY RACE/ETHNICITY

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The underrepresentation of racial/ethnic minorities in smoking cessation trials may contribute to disparities in quitting. The strict inclusion and exclusion criteria of randomized controlled trials (RCTs) may have unintended consequences on racial/ethnic inclusivity. The present study examined racial/ethnic differences in (a) exclusion from a group smoking cessation RCT and (b) reasons for exclusion. Inclusion criteria were self-identification as African American/Black, White, or Hispanic (any race), adults, smoked at least 5 cigarettes/day or carbon monoxide reading of 8 ppm or more, interest in quitting, and spoke/read English. Exclusions were contraindications for nicotine patch therapy (NPT), cognitive, physical, or mental health conditions that inhibited group treatment (e.g., serious mental illness; SMI), alcoholism or illicit drug use, current tobacco treatment, barriers to session attendance (e.g., transportation), and inappropriateness for the study (e.g., aggressive, intoxicated, disruptive, visibly ill). Of 739 screened, 41% were ineligible. The greatest single reasons were SMI (25%), barriers to attendance (6%), and lack of motivation (6%). Most were ineligible for two (28%) or 3 (10%) reasons. Ineligibility was significantly greater among African Americans (41%) compared to both Hispanics (35%), and Whites (28%; p<.05); Hispanic ineligibility was greater than Whites (p<.05). We also found significant differences in exclusion reasons, such that Whites were more likely to be excluded for single reasons, including barriers to attendance, drugs/alcohol, and medical conditions compared to African Americans (p<.05), while African Americans were more than twice as likely as Whites to be excluded for 3 or more reasons (12% vs. 4% respectively, p<.05). In conclusion, a notable proportion of smokers were ineligible for this RCT, with SMI as the greatest single cause. Racial/ethnic minorities were most likely to be excluded, with African Americans showing a greater likelihood of having multiple reasons. Findings have implications for generalizability and addressing tobacco disparities.

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POS5-111

THE EFFECT OF "ORGANIC" AND "ADDITIVE FREE" DESCRIPTORS ON NATURAL AMERICAN SPIRIT CIGARETTE PACKS: RESULTS FROM AN ONLINE EXPERIMENTAL STUDY

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SIGNIFICANCE: Natural American Spirit (NAS) cigarette packaging includes the words "natural," "organic," and "additive-free." There is concern that these terms mislead consumers into believing they are less harmful than other cigarettes, possibly increasing smoking initiation and reducing smoking cessation. This study examines how aspects of the NAS pack affect harm perceptions and perceived addictiveness among smokers and non-smokers. METHODS: This randomized controlled trial was conducted using an online national convenience sample recruited through Amazon Mechanical Turk. A total of 1,711 participants were randomized to 1 of 4 conditions in which they viewed images of the front, sides, and back of NAS cigarette packs. The 4 conditions included: 1) an unmodified pack; 2) a pack with "natural" removed; 3) a pack with "organic" removed; and, 4) a pack with "additive-free" removed. Conditions were examined using chi square tests to confirm equivalence across sociodemographic and tobacco use characteristics. Logistic regression models were used to examine the odds of reduced harm perceptions and reduced perceived addictiveness by smoking status. RESULTS: Just over half the sample was female (54.7%), 73.7% were non-Hispanic white and had 95.0% had completed at least some college. Overall, 39.1% of the sample were current smokers and 12.7% of current smokers reported NAS as their usual brand. Among participants exposed to the unmodified pack, 40.6% believed the product was less harmful and 74.7% believed it was less addictive than other cigarette brands. Compared to never smokers, current smokers had greater odds (OR: 1.65, 95% CI 1.07, 2.55) of perceiving the unmodified pack as less harmful. Compared to the unmodified pack, removing "organic" had the greatest effect (OR: 1.40, 95% CI 1.06, 1.85) on increasing harm perceptions and removing "additive free" had the greatest effect (OR: 1.91, 95% CI 1.32, 2.76) on increasing perceived addictiveness. CONCLUSIONS: The NAS descriptors "organic" and "additive free" on cigarette packs decrease harm perceptions and perceived addictiveness.

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POS5-112

THE DEVELOPMENT OF MEASURING INSTRUMENTS INTENTION EARLY ADOLESCENT SMOKING BEHAVIOR: VALIDITY STUDY OF THE RASCH MODEL

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This research aims to develop an instrument to measure the behavior of smoking in early adolescent intention beginning with Rasch model analysis. The smoking behavior of intention is one of the stages of the translation that connecting the psychological attitude of an individual's behavior or object with the actual behavior. So, the intention is seen as the most effective psychological invalid constructs to predict actual behavior of individuals. Many found the behavior of smoking that began at the age of adolescent. Based on this, then preventive efforts need to be made on the smoking behavior of adolescent, one of which must be done through the assessment with the aim to identify adolescents who have a tendency to become active smokers in the age-the age of the next. In this study, researchers have developed a tool to measure the smoking behavior in early adolescent intention totaling 16 items with a rating scale of 1-5, using Rasch model. Rasch model is used because it is judged more objective and better able to meet the definition of measurement in the study of the science of psychology. The results of the test the validity of the instrument shows the value of reliability for the respondents obtained is 0.65. This shows the congruency between respondents with instruments used. In addition, the reliability values for the item is 0.99, which indicates that the instrument has a very good reliability (alpha > 0.94). Based on a series of process research done, measuring instruments intention early adolescent smoking on the behavior of the start made in the form of the scale that has been analyzed with a

Rasch model which suggests that the valid scale and reliability so that it can be used to measure the behavior of smoking on intention early adolescent.

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POS5-113

ALTERNATIVE TOBACCO PRODUCTS: ATTITUDES AND EXPERIENCES OF MEDICAL STUDENTS

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The prevalence of smoking among Slovak adults has been increasing, and is almost 35% (males 43.5%, females 26.3%) (WHO 2015), and 29.2% among teenagers (Global Youth Tobacco Survey, 2011). In combination, the use of alternative tobacco products (ATP) is growing worldwide; however their use among young adults in Slovakia is not well documented. The aim of the present study was to investigate medical students' use of various tobacco products, their knowledge and beliefs about classical cigarettes (CC) and ATPs, perceptions about the risk of CC and ATPs, as well as assessing the type of education, and cessation training they received during medical school study. This cross-sectional, anonymous online survey (adapted from New York University ATP Survey) was conducted among medical students at Comenius University in Bratislava via email with a survey link. A total of 786 students completed questionnaires, 645 (82%) were Slovak students, and 141 (18%) international students. The average age of participants was 23yrs (range:18-36). The results of the study indicate that the prevalence of current or past smoking is quite high: 10% of Slovak students are current smokers of CC compared with 30% of international students; 18% vs 24% were former smokers, and only 70% and 42% were never-smokers ($p<0.001$). Significantly higher numbers of international students were heavier smokers (2.8 vs 17.7%). Twenty two percent of the Slovak students and 26% of the international students use ATP. The most popular form of ATPs are water pipes (7.8% students have smoked in the previous month, 16.7% during the last year, 41.9% several times in their lives), and cigars (1.3%, 7.9%, 22.6%), and electronic cigarettes (0.5%, 4.1%, 9.9%). The majority of students underestimate the risk of dependency and the harmful effects of ATPs. For example, over 50% of the sample (+25% with neutral opinion) think they are not educated sufficiently on CC and ATPs, especially about smoking cessation. These results suggest that future healthcare providers, who will play critical roles in health promotion and disease prevention, do not feel confident providing CC or ATP cessation counseling in their future practice.

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POS5-114

EXPLORING COGNITIVE BIASES TOWARDS E-CIGARETTES AND CIGARETTES AMONG ADOLESCENTS

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INTRODUCTION: E-cigarette use has been increasing among adolescents over the past few years, but their appeal is poorly understood. Previous research has found that cognitive biases towards drug-related stimuli predict substance use among youth and adults. However, cognitive biases toward e-cigarette related stimuli have not yet been examined. This exploratory pilot study compared cognitive biases towards e-cigarettes among adolescent e-cigarette users and non-users. METHODS: We developed stimuli for an Approach Avoidance Task (AAT; automatic approach tendencies towards towards e-cigarettes), and an Implicit Associations Task (IAT; positive and negative associations to e-cigarette and cigarette stimuli) using feedback from 20 adolescent e-cigarette users/ cigarette smokers. Following this, a new group of 34 adolescents [13 e-cigarette users (5 smokers) and 21 non-users (all non-smokers); 15-18 years old] were recruited to complete the tasks. RESULTS: For the IAT, relative to non-users, e-cigarette users (regardless of cigarette smoking status) had stronger positive implicit associations with e-cigarettes (e-cigarette users: $M = .18$, $SD = .46$; non-users: $M = -.34$, $SD = .46$; $t = -3.15$, $p = .004$) and conventional cigarettes (e-cigarette users: $M = .02$, $SD = .29$; non-users: $M = -.35$, $SD = .39$; $t = -2.77$, $p = .01$). For the AAT, while e-cigarette users did appear to have greater approach tendencies than non-users, this difference was not statistically significant ($p = .13$). We are increasing our sample size and we will present updated findings. CONCLUSION: Our preliminary findings indicate the presence of positive implicit associations towards e-cigarettes in e-cigarette users. Future studies need to examine if positive implicit associations to e-cigarettes predict the initiation of e-cigarette use.

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POS5-115

COMBINING WEB-BASED COGNITIVE BIAS MODIFICATION WITH A BRIEF FACE-TO-FACE MOTIVATIONAL INTERVIEWING IN CHINESE DAILY SMOKERS: A PILOT STUDY WITH A SINGLE CASE EXPERIMENTAL DESIGN

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BACKGROUND: There are more than 300 million current smokers in China, but there are only few empirically valid smoking interventions for Chinese smokers. Relatively automatic action tendencies toward smoking-related cues have been found in smokers and related to smoking behavior. Cognitive Bias Modification (CBM) has been shown to change addiction-related action tendencies, with promising clinical effects, in case participants are motivated to change. Motivational interviewing (MI) has been effective in increasing motivation to quit and increasing quitting rates. DESIGN/METHODS: An A-B-A (pre-intervention-post) single-case experimental phase design plus a follow-up phase was used to evaluate a smoking reduction intervention where a web-based CBM was combined with a face-to-face MI for Chinese daily smokers. After 13-15 days of pre-assessment, four male adult smokers received 4-6 sessions of CBM combined with 2 sessions of MI (two received real CBM and other two received placebo CBM). A 14-day post-assessment took place directly after the intervention followed by a 14-day period of daily assessment at three-month follow-up. Ecological Momentary Assessment was used to assess daily cigarette consumption by sending daily text messages throughout the study. Several other assessments of smoking behavior were added at the beginning and the end of intervention along with Carbon Monoxide (CO) assessment. Mixed Modeling Analysis (MMA) and Reliable Change Index (RCI) were used to detect the change of daily cigarette consumption, and descriptive analysis was used to describe the change of other smoking-behavior-related assessment values. RESULTS: According to MMA, compared with the daily cigarette consumption at the end of the pre-assessment, smoking significantly decreased for one participant receiving the real CBM at the end of the intervention and two weeks after the intervention; smoking significantly decreased for one participant receiving the placebo CBM at the end of the intervention, two weeks after the intervention, and three months after the intervention, and significantly decreased for another participant receiving the placebo CBM at the end of the intervention. Additionally, RCIs

indicated a clinically significant decrease in daily cigarette consumption for one participant receiving placebo CBM at the end of the intervention and three months after the intervention compared to the pre-assessment phase. Furthermore, CO values, values of heaviness of smoking and urges for smoking greatly decreased, and values of readiness to change and self-efficacy to quit greatly increased at the end of the intervention compared to those at the beginning of the intervention for all four participants. CONCLUSIONS: The pilot study provides initial process-level data on a smoking reduction intervention combining CBM and MI for Chinese daily smokers. All participants benefitted from the intervention regardless of receiving real or placebo CBM, but the way in which change unfolded was unique for each participant. The novel online CBM for reducing smoking is practicable in China where there is no such kind of intervention before. And CBM may help Chinese smokers who are motivated to change, but more research is needed to understand the working mechanisms in smoking interventions targeting Chinese populations.

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POS5-116

USE OF SOCIAL MEDIA ANALYTICS FOR TOBACCO CESSATION OUTREACH IN THAILAND

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Social media is a new battlefield between the tobacco industry and tobacco control. Recent research has highlighted the tactics and efficiency of social media activities for tobacco control campaigns. OBJECTIVE: The aims of this study were: 1) to use social media tools to analyze interest in tobacco topics, and 2) to compare interest data about quitting in two periods of the year to inform cessation efforts in Thailand. METHOD: Twitter interests were examined using common keywords about tobacco use and quitting smoking. Application programming interfaces (APIs) were used to access, collect and extract social media data for data analysis using the Python program. We identified the number and type of uses of those seeking information on smoking by those looking at tobacco-related content during two periods of interest (July to September 2016 (Buddhist Lent) and October 2016 through early January 2017 (Calendar New Year) for smoking cessation in Thailand. RESULTS: We found substantial increases in social media interactions about cessation in these periods as compared to other tobacco-related interests. A total of 575 interactions occurred at the end of the calendar year as opposed to 341 interactions in the earlier Buddhist lent period when many Thais give up smoking and drinking. This initial analysis shows that cessation efforts at the beginning of the calendar year may be a better time for social media interactions about cessation. We believe our approach could be valuable in future exploration of tobacco users' interests such as for youth, and even lead to the design of a new anti-tobacco model for social network management. CONCLUSIONS: APIs allow greater understanding of the frequency and type of tobacco-interest interactions on social media. Our analysis showed useful information about when social media outreach might lead to interactions beneficial to cessation among Thai social media users.

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POS5-117

THE ASSOCIATION OF E-CIGARETTE USE WITH COTININE AND EXPOSURE TO METALS: A STUDY OF NON-INVASIVE BIOMARKERS

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BACKGROUND: Electronic cigarette (e-cigarette) use is increasing worldwide. Yet few studies have assessed metabolites of e-cigarette derived nicotine and little is known about e-cigarette's role as a pathway for metal exposure. Nickel (Ni) and chromium (Cr), components of e-cigarette heating coils, have been found at high levels in e-liquid and aerosol. We assessed associations of urine cotinine levels, e-cigarette use patterns, and e-liquid and aerosol metal concentrations with Ni and Cr biomarker levels in e-cigarette users from Maryland. METHODS: We recruited 64 e-cigarette users from December 2015 to March 2016. We collected urine, saliva, and exhaled breath condensate (EBC) samples, data on e-cigarette use, and 3 samples from their e-cigarette device: e-liquid from the refilling dispenser, aerosol, and e-liquid from the tank. Urine cotinine assays were performed; Ni and Cr levels in biospecimen and e-cigarette samples were measured using ICP-MS. RESULTS: Median (range) urine cotinine was 2,356 (0.34- 31,478) µg/g creatinine. Median Ni and Cr levels were 0.73 and 0.39 µg/g creatinine in urine, 3.11 and 1.71 µg/L in saliva, and 1.25 and 0.29 µg/L in EBC. In adjusted models, tertiles 2 and 3 of urinary cotinine were associated with 37% and 79% higher urinary Ni levels (p-trend 0.04), respectively. Tertiles 2 and 3 of aerosol Ni levels were associated with 31 and 63% higher urine Ni levels (p for trend 0.03) and 80% and 120% higher saliva Ni levels (p for trend 0.03) compared to the lowest tertile. Tertiles 2 and 3 of aerosol Cr levels were associated with 60 and 130% higher saliva Cr levels (p for trend 0.02). An earlier time to first vape in the morning (≤15 minutes) and more frequent coil change were associated with higher urine Ni levels. CONCLUSION: Positive associations of Ni and Cr levels in aerosol samples with urine and saliva Ni levels and saliva Cr levels show e-cigarette emissions as a relevant source of metal exposure. Higher urine cotinine levels, a shorter time to first vape from waking, and more frequent coil change were associated with higher Ni biomarker levels. Product review and metal standards are needed to prevent involuntary metal exposure.

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POS5-118

PHARMACY STUDENTS' ABILITY TO ADDRESS PATIENT TOBACCO CESSATION NEEDS: ELECTRONIC CIGARETTES VERSUS TRADITIONAL CIGARETTES

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BACKGROUND: Despite claims that electronic cigarettes (e-cigarettes) can help smokers quit, studies show that e-cigarettes contain detectable levels of carcinogens. In the wake of increased prevalence of e-cigarette use, the American Lung Association has called for the regulation of e-cigarettes and issued a statement about e-cigarettes not being an approved safe and effective method for quitting smoking. We aimed to compare pharmacy students' ability to provide cessation counseling between e-cigarette use and traditional cigarette smoking. METHODS: A cross-sectional study of PharmD students at a College of Pharmacy was conducted in Spring 2014. Students (N=176) rated their level of confidence to provide cessation counseling on e-cigarettes and traditional cigarettes using general tobacco cessation counseling skills and the Ask-Advise-Assess-Assist-Arrange follow-up model (5A's model). Comparisons between e-cigarettes and traditional cigarettes were made using paired t-tests. RESULTS: A higher proportion of students reported having no training on e-cigarettes use cessation compared to cigarette smoking cessation (59% vs 9%). Compared to traditional cigarettes, a lower proportion perceived themselves to be knowledgeable about the harmful effects of e-cigarettes (35.8% vs 99.4%), pharmacists' role in counseling (59.1% vs 88.6%), and how patients can benefit from e-cigarette cessation counseling (65.9% vs 92.6%). Most students thought e-cigarettes were less harmful than traditional cigarettes (61.4%). Compared to traditional cigarettes, students were less confident in their ability to counsel on e-cigarettes use cessation using general counseling skills and the 5A's model ($p<0.001$ in each case). CONCLUSIONS: Considering the current popularity of e-cigarettes, but potential harm associated with use, targeted training on how to counsel patients on e-cigarette use cessation should be included in pharmacy curricula, and potentially other curricula targeting health professionals. Such training may help increase the confidence of pharmacists in-training to address the needs of patients who use e-cigarettes.

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POS5-119

MENTHOL'S EFFECTS ON NICOTINE REINFORCEMENT IN HUMANS

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Evidence suggests that menthol is a potential contributor to the development and maintenance of tobacco addiction. However, the potential reinforcing properties of menthol in humans have not been examined with systematic studies in controlled settings. The goal of this study was to determine if menthol administered by inhalation via e-cigarettes would change the reinforcing effects of pure nicotine administered intravenously in cigarette smokers who smoke mentholated and non-mentholated cigarettes. A total of 70 smokers (56 Male, 14 Female, 34 African-American and 36 White) were enrolled in this double-blind, placebo-controlled study with three test sessions. Participants were assigned a random sequence of three different e-cigarette conditions [0 % (no menthol), 0.5% (low) or 3.2 % (high) dose of menthol] for the 3 test sessions (a different flavor condition for each session). To determine the low and high menthol doses to be used, an initial dose-finding study was conducted. In each test session, smokers received a random order of one intravenous delivery of saline and two intravenous deliveries of nicotine (0.25 mg/70 kg and 0.5 mg/70kg), one hour apart. Each infusion was given concurrent with the menthol delivery via the e-cigarette. The main outcomes included the Drug Effects Questionnaire (DEQ), Minnesota Nicotine Withdrawal Scale (MNWS), Brief Questionnaire of Smoking Urges (BQSU) and plasma menthol glucuronide levels. For some of the DEQ items, those who smoke non-mentholated cigarettes, compared to those who smoke mentholated cigarettes, reported greater nicotine effects. Non-mentholated cigarette smokers had greater withdrawal severity, assessed with the MNWS, following overnight abstinence than mentholated cigarette smokers. Among mentholated smokers, high and low menthol were associated with lower BQSU scores compared to placebo. Both mentholated and non-mentholated cigarette smokers showed dose dependent increases in plasma menthol glucuronide after menthol inhalation. These findings suggest that mentholated cigarette smoking may impact nicotine addiction by blunting nicotine's effects, attenuating withdrawal severity and urges to smoke.

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POS5-120

ROLL YOUR OWN SMOKERS ADJUST THE WEIGHT OF TOBACCO PER CIGARETTE TO KEEP SMOKING AFFORDABLE: DATA FROM THE INTERNATIONAL TOBACCO CONTROL 4-COUNTRY SURVEY 2006-2014

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Roll-your-own (RYO) tobacco use is increasing, especially in countries with high rates of tobacco taxation. RYO users can control the amount of tobacco per cigarette: less tobacco reduces costs without reducing the number of cigarettes smoked. Yet little research exist on variations in the amount of tobacco contained in RYO cigarettes, despite implications for tobacco tax policies. We investigate changes in the weight of RYO cigarettes over time in four countries with differing rates of tobacco taxation: the UK, Australia, Canada, and USA. Data were from the International Tobacco Control survey from 2006 to 2014. Current smokers using exclusively RYO tobacco were included. The average weight of tobacco per RYO cigarette (in grams) was calculated based on the reported weight of smokers' most recent purchase of tobacco, the number of days taken to smoke this amount, and the number of cigarettes smoked per day. Exclusive RYO use in Canada and the USA was low (typically 5% or less) with no data from 2014 so only descriptive data are provided (N = 476). For the UK and Australia, longitudinal multilevel regression analyses were conducted on the changes in weight over time, adjusting for country, sex, age, ethnicity, income, education and time to first cigarette (TTFC) with N = 1387 smokers giving 2766 responses. Mean tobacco weight per cigarette (WPC) was highest in the USA and increased from 0.87g (sd 0.48) in 2006 to 1.14g (sd 0.56) in 2013. In Canada, WPC decreased from 0.82g (sd 0.50) in 2006 to 0.70g (sd 0.33) in 2013. In Australia, WPC decreased from 0.58g (sd 0.29) to 0.49g (sd 0.26) and in the UK from 0.57g (sd 0.39) to 0.47g (sd 0.25) between 2006 and 2014. There was a significant decrease in WPC over time for Australia and the UK of about 0.012g per year (95% CI 0.008 - 0.016), $p < .001$. Compared to low income smokers, WPC was significantly higher for moderate ($p = 0.044$) and high income ($p = 0.004$) smokers. WPC was also significantly associated with TTFC and age, but not sex, ethnicity or education. RYO smokers adjust the amount of tobacco in their cigarettes to reduce costs, and this is especially true for low income smokers. WPC was highest in the USA, where tax accounts for a relatively smaller proportion of tobacco prices, and lowest in the UK and Australia, which have comparably high rates of taxation. The significant reductions in WPC over time appear to counter tax increases, particularly those intending to close the gap between factory made and RYO cigarettes: e.g. in the UK the average reduction of 0.012g per year represents about a 2.4% reduction in WPC, similar to the average rate of tobacco tax increases of 2% above inflation over the same period.

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POS5-121

CYTISINE FOR NICOTINE ADDICTION TREATMENT: AN UPDATED META-ANALYSIS

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BACKGROUND: Cytisine, considered to be the oldest medication used for smoking cessation, is underutilized internationally despite its longstanding antismoking efficacy evidence from clinical observations and studies dating back to the late 1960's and early 1970's. DATA SOURCES, EXTRACTION AND SYNTHESIS: We conducted a new meta-analysis of clinical trials to gather updated evidence on cytisine's efficacy and safety. The meta-analysis provides an update to an earlier meta-analysis published in 2013. We searched Pubmed, Embase and the Russian electronic library database www.elibrary.ru for studies on cytisine. All reports published from 2012 to December 2016 in any language were considered eligible. We included all clinical trials that had provided data on cytisine's effectiveness or safety for smoking cessation. In total, two eligible controlled trials were added to the existing 7 trials, resulting in an overall pool of 9 included studies on cytisine. From the pool of included studies, we extracted crude or adjusted effect measures of successful abstinence in the efficacy analysis, and the overall side effects in the safety analysis. Relative risk (RR) with the corresponding 95% confidence interval (CI) from each study were extracted or calculated if not reported by the authors. We pooled data into a random effect model meta-analysis using Stata yielding RRs of both successful abstinence (in the efficacy analysis) and overall side effects (in the safety analysis). RESULTS: The overall analysis of the 9 included studies demonstrated that cytisine is an effective medication, increasing the likelihood of successful treatment by 65%. With heterogeneous results, the overall RR of successful continuous abstinence in random effects model was 1.65 (95% CI: 1.36-2.00). Not all studies included in our meta-analysis reported ad-

verse effects associated with a standard 25-day treatment course. In 7 studies, adverse events significantly differed from the alternative treatment (placebo or nicotine replacement therapy) only in one study and the RR of adverse effects ranged from 0.80 to 1.84. CONCLUSION: Our meta-analysis confirmed that cytisine is: 1) significantly more effective than placebo, 2) as safe as other marketed smoking cessation aids. Given cytisine's potential as a very low-cost and effective treatment with demonstrated safety, its wider adoption, particularly in low- and middle-income countries for smoking cessation appears warranted, as other treatments are currently cost-prohibitive.

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POS5-122

SMOKERS SHOW REDUCED TARGET DETECTION-RELATED ATTENTIONAL FOCUS WITHOUT EXHIBITING DIFFERENCES IN ATTENTIONAL ORIENTING/SHIFTING AS MEASURED BY P300 NEURAL INDICES

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The prevalence of many psychological disorders such as schizophrenia and attentional deficit disorder is greater among smokers than nonsmokers. Being a smoker and/or an individual who has a psychological disorder is predictive of reduced capacity to concentrate and pay attention. Indeed, the proportion of smokers with psychopathology is much greater than is the case among nonsmokers. The traditional target P300 (P3b) event-related brain potential (ERP) component amplitude is a neural index indicative of task-related attentional focus in the context of target detection. P3b amplitude is negatively associated with various psychopathological disorders and maladaptive traits. P3b amplitude has also been shown to be reduced among smokers. Another important P300 component is the novelty/orienting P300 or P3a. Amplitude of the P3a is indicative of attentional shifting/orienting. Orienting attention to the unexpected smell of smoke might interrupt the task that one is currently engaged in, but also allows for the processing of information that may turn out to be important. Amplitudes of the P3b and P3a have been associated with positive psychological functioning, but studies have yet to compare potential differences between smokers and nonsmokers on P3a amplitude. The current secondary analysis combined separate smoker and nonsmoker studies. 121 smokers and 78 nonsmokers completed the same P3b- and P3a-evoking 3-stimulus oddball task. Consistent with previous studies, smokers exhibited reduced P3b amplitude compared to nonsmokers. However, smokers and nonsmokers showed no differences in P3a amplitude. Our results suggest that attentional focus may be compromised among smokers, whereas attentional shifting/orienting may be the same among smokers and nonsmokers, at least as measured via P300s. Ultimately, these findings may be relevant to understanding attentional processes relevant to self-regulation in the context of smoking behavior.

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POS5-123

NICOTINE METABOLITES AND TOBACCO ALKALOIDS INFLUENCE COTININE DETECTION SYSTEMS

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Systems for the determination of cotinine, the major metabolite of nicotine, within various body fluids commonly employ antibodies for detection and are susceptible to influence by structurally similar compounds, often metabolites of the target molecule. The work conducted here evaluated the effect of several commercially available devices' response to compounds structurally similar to cotinine (trans-3'-hydroxycotinine (30%, 3HC), norcotinine (2%, NC), nicotine, and nornicotine) as well as nicotine alkaloids and metabolites (anabasine, nitrosoanabasine, anatabine, mysomine). Each analyte was tested at concentrations of 11 µM with the exception of 3HC and nicotine which were tested at 0.52 and 33 µM, respectively. The quantitative, blood-based PTS Detect™ cotinine system and Calbiotech Cotinine ELISA assay as well as qualitative/semi-quantitative, saliva-based Alere iScreen® OFD Cotinine and Nicalert® were evaluated both in the absence and presence of cotinine. The quantitative PTS Detect cotinine system and Calbiotech ELISA systems were evaluated to CLSI EP7 – "Interference testing in Clinical Chemistry" to determine the cross reactivity and interference of the system, while the qualitative systems were tested for false positives and false negatives. The PTS Detect cotinine system and Calbiotech ELISA systems both quantified a cross reactivity of 100% for 3HC and 5% for NC with respect to cotinine. The iScreen and Nicalert both resulted in false positives in the absence of cotinine due to interference of 3HC and NC. Additionally, the Nicalert system resulted in low levels of interference due to the presence of myosamine. All other compounds did not interfere or cross react with the test systems. In summary, POC systems differentially respond to cotinine and its metabolites. The PTS Detect cotinine system was the only quantitative, point-of-care system demonstrating reactivity to cotinine and its major metabolite, 3HC, thus allowing accurate assessment of nicotine exposure.

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POS5-124

SOCIOECONOMIC STATUS (SES) AND ADOLESCENT E-CIGARETTE USE: THE MEDIATING ROLE OF E-CIGARETTE ADVERTISEMENT EXPOSURE

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AIMS: Among adolescents, low socioeconomic status (SES) is associated with greater exposure to cigarette advertising and cigarette use, yet these associations are not well understood for e-cigarettes. This study examined exposure to e-cigarette advertisements as a mediator of the relationship between SES and adolescent e-cigarette use. METHODS: Adolescents (N=3473; 51% Female) from 8 high schools in Connecticut completed an anonymous survey in Spring 2015. Path analysis in Mplus examined whether the total number of channels of recent e-cigarette advertising exposure mediated the association between SES (measured by the Family Affluence Scale) and frequency of e-cigarette use. This model clustered for school and controlled for other tobacco product use, age, gender, race/ethnicity and perceived social norms for e-cigarette use. RESULTS: The hypothesized mediation model was supported (*B* = 0 .06, *SE* = 0.03, 95% CI 0.01, 0.11). Specifically, high SES, relative to low SES, was associated with greater recent advertising exposure (B = 0.71, SE = 0.16, 95% CI 0.40, 1.03), which was in turn associated with greater frequency of e-cigarette use (B = 0.08, SE= 0.03, 95% CI 0.02 .15). CONCLUSIONS: Higher SES is associated with greater exposure to e-cigarette advertising, suggesting that regulations to reduce youth exposure to e-cigarette advertisement may be especially relevant to higher SES youth. Future research should examine the types of advertisements targeting different SES groups.

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POS5-125

NEURAL CORRELATES OF GENETIC VARIANT RS16969968 OF THE NICOTINIC RECEPTOR SUBUNIT ALPHA 5

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INTRODUCTION: The functional rs16969968 single nuclear polymorphism (SNP) in the nicotinic acetylcholine receptor subunit alpha 5 (CHRNA5) has A/G as minor/major alleles, with the A allele strongly associated with an increased risk for nicotine dependence, lung cancer and chronic obstructive pulmonary disease [1-3]. However, the neurological and psychological correlates of variation in rs16969968, if any exist, are still unknown. In this work, we investigate the effect of rs16969968 on grey matter volume (GMV) and psychiatric symptoms in a large sample of adolescents. METHODS: *Participants:* A large sample (N>2000) of 14

year old children were recruited on whom neuroimaging and whole-genome genotyping were acquired according to standard operating procedures for the IMAGEN project (http://www.imagen-europe.com/en/Publications_and_SOP.php). *Neuroimaging:* T1-weighted magnetization prepared gradient echo sequence structural MR-images were processed with the standard 'optimized' VBM method using the Statistical Parametric Mapping version 8 (SPM8) (http://www.fil.ion.ucl.ac.uk/spm/software/spm8/) VBM toolbox (http://dbm.neuro.uni-jena.de/vbm/). *Genotyping and quality control:* The autosomal SNPs from the 1000 Genomes project [4] were used for genotyping and dosage data imputation. Quality control was done following the standard methods (http://imagen.cea.fr). The rs16969968 dosage data were controlled for minor-allele frequency (>5%) and significance threshold for Hardy-Weinberg equilibrium test (p=0.9) using PLINK (Purcell et al., 2007), http://pngu.mgh.harvard.edu/~purcell/plink). *Statistical Analyses:* The sample included in the analyses consisted of 1696 participants who had VBM and genetic data that survived quality control, grouped according to the 3 genotypes (206 AA; 770 GA; 720 GG), where AA represents the high-risk, GA the intermediate-risk and GG the low-risk genotype carriers. A whole brain, voxel-wise one way ANCOVA was performed on the GMV to assess structural differences between the rs16969968 genotypes. A Mann-Whitney test was performed to compare band scores reflecting the likelihood of psychiatric disorders generated from the Development and Well-Being Assessment (DAWBA) between the three genotypes. Age, sex, handedness, site, puberty level, Verbal IQ, Performance IQ and total GMV (only in the GMV analysis) were included as nuisance covariates. RESULTS: A 3-groups ANCOVA did not reveal significant GMV differences between the three genotypes. However, a *post-hoc* AA vs GG analysis showed less GMV in AA carriers in the ventromedial prefrontal cortex (vmPFC) and the right middle frontal gyrus (rMFG). Clusters were corrected for p<0.05 with an initial threshold of α=0.001. The AA-carriers were at a higher risk of developing ADHD (p=0.01) and Oppositional Defiant Disorder (ODD) (p=0.01) compared to GG-carriers. On the other hand, the AA genotype had a protective effect on generalized anxiety (p=0.002) and obsessive-compulsive disorders (p=0.03) relative to GG. Finally, Pearson's correlation test revealed that, in the whole sample, both ADHD and ODD scores were negatively correlated with the vmPFC volume extracted from the AA vs GG whole-brain comparison, with (ρ = -0.25; p=0.003) for ADHD and (ρ= -0.2; p=0.001) for ODD. CONCLUSION: Adolescents carrying the high-risk genotype AA of the variant rs16969968 in the CHRNA5 are characterized with smaller vmPFC and rMFG volumes and altered risks of developing psychiatric disorders relative to GG carriers. The correlation between ADHD/ODD and the vmPFC volume suggests a possible neurobiological mechanism underlying a genetic predisposition towards psychiatric disorders that could be partially mediated via specific parts of the cortex.

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MODELING THE POPULATION HEALTH EFFECTS OF MODIFIED-RISK ADVERTISING FOR A SMOKELESS TOBACCO PRODUCT

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When evaluating whether a risk-modification order is appropriate for a smokeless tobacco product [STP] that presents lower health risks than smoking, it is important to assess the STP's likely effect on the population as a whole. We present findings from a statistical model, used to assess the population health effects of an STP with modified-risk advertising. Analyses followed a single cohort of 1 million males from age 13 to age 72, comparing the number of survivors in a base case, where only cigarette use is allowed, to a counterfactual scenario in which cigarette or STP use is allowed. The likelihood that relevant groups – smokers who otherwise would quit, smokers who otherwise would continue to smoke, non-tobacco-users who otherwise would initiate smoking, and non-tobacco-users who otherwise would not use tobacco – would use the STP was derived from a study that assessed intent to try an STP with modified-risk advertising. The effects of conservative (high) probabilities for secondary transitions, such as gateway effects (the possibility that adoption of the STP by non-users might cause them to progress to smoking), were also assessed. Analyses that considered all potential beneficial and harmful transitions estimated that the STP would improve survival by about 7,000 individuals (based on an estimated 89-92% reduction in risk for the STP versus smoking). In addition, a survival benefit would be realized if the STP reduced risk by as little as 55%, compared to smoking. Extrapolation of this estimate to a realistic cohort size of 4.1 million, comprised of both genders, suggests survival would be increased by over 25,000 individuals. Tipping point analyses that included all potential harmful transitions indicated that if about 1.5% of continuing smokers switched to the STP at each age interval, there would be a survival benefit at age 72. These single cohort analyses demonstrate that the transition with the greatest effect on survival is switching to STP use among smokers who otherwise would continue to smoke. Collectively, these analyses indicate that an STP with modified-risk advertising is likely to have a beneficial effect on population health.

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POS5-127

APPROACHES TO TRANSPOSING THE EUROPEAN UNION TOBACCO PRODUCT DIRECTIVE E-CIGARETTE RULES INTO LEGISLATION BY EUROPEAN UNION MEMBER STATES

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INTRODUCTION: The 2014 European Union (EU) Tobacco Product Directive (TPD) mandates as well as recommends a range of policy domains for regulating nicotine-containing e-cigarettes. Member states were required to transpose these rules by May 20, 2016. We describe approaches EU Member States have taken to implement this Directive. METHODS: National policies regulating e-cigarettes in the 28 EU Member States were identified by searching Ministry of Health, media monitoring and other websites. The policy domains identified include restrictions or prohibitions on product: sale (including cross-border distance sales), safety and quality, packaging and labeling requirements, advertising/promotion/sponsorship, requirements for reporting/notification, and child-safety packaging standards. Other domains identified include use and possession by minors, taxation, and importation. Country results were reviewed by a country expert. RESULTS: Fourteen countries implemented the EU TPD e-cigarette rules as of December 31, 2016. E-cigarettes are classified as consumer products by 5 countries and as tobacco-related products by 9 countries. Six countries prohibit cross-border advertising; 12 have rules about ingredients/flavors; 12 have reporting/notification requirements; and 13 have safety and quality requirements. Eight countries have age of majority purchase rules; 5 prohibit use in public places. Approaches that went beyond the TPD include prohibiting the sale of nicotine-containing e-cigarettes in pharmacies (France); prohibiting use by minors (Estonia, Germany and Lithuania); prohibiting possession by minors (Finland, Lithuania); and levying taxes on e-cigarettes (Italy, Latvia, Portugal, United Kingdom). Denmark rules apply to both nicotine- and non-nicotine e-cigarettes. CONCLUSION: Neither mandatory nor recommended TPD provisions are being implemented uniformly across all Member States. Inconsistencies in TPD implementation may undermine its intended impact on public health.

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POS5-128

REAL-WORLD EFFECTIVENESS OF NICOTINE REPLACEMENT THERAPY IN LIGHT SMOKERS

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BACKGROUND: Although there is epidemiological evidence that North American smokers are smoking fewer cigarettes, there is very little research into the effectiveness of nicotine replacement therapy (NRT) in treating light smokers. We hypothesized that light smokers would be less dependent and therefore would be more likely to quit smoking and maintain abstinence at 6- and 12-month follow-up compared to heavy smokers. METHODS: This is a secondary analysis of data from a large smoking cessation program (STOP program) in Ontario, Canada which provides cost free behavioural counselling and NRT through participating primary care clinics and addictions agencies. Duration and dose of NRT was tailored to the individual with a maximum dose of 84 mg nicotine per day and a max duration of 26 weeks. The sample consisted of daily smokers who enrolled in the program between January 1, 2014 and November 30, 2015. They were separated into two distinct groups by baseline cigarettes per day (CPD): light smokers (1 to 9 CPD) (n=3,873) (11.3% of the sample) and heavy smokers (10 or more CPD) (30,357) (88.8%). RESULTS: Light smokers were more likely to be female than heavy smokers (60% vs 51%; p<0.001), but there was no between group difference in age. Only 16% of light smokers smoked within 5 minutes of waking compared to 46% of heavy smokers (p < 0.0001). 7-day point prevalence abstinence (PPA) was significantly greater in light versus heavy smokers at both 6-months post-enrollment (35.8% vs 32.5%; p<0.004) and at 12-months (35.4% vs 29.9%; p<0.0001). However, when age, gender and time to first cigarette were included in a regression model these differences were no longer statistically significant. CONCLUSION: Light and heavy smokers appear equally able to successfully quit using NRT and behavioural counselling. Additional analyses will be presented examining potential differences in dose and duration of NRT between these two smoker groups.

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POS5-129

REGIONAL AND GENDER DIFFERENCES IN TOBACCO USE AMONG AMERICAN INDIAN YOUTH

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PURPOSE: Smoking cigarettes and smokeless tobacco represent a significant public health concern. Differences in daily smoking have been observed in AI and non-AI adolescents, with AI samples reporting more smoking and smokeless tobacco use. Despite documented differences in smoked and smokeless tobacco prevalence rates in national samples and smaller samples in specific regions, there is limited information regarding regional differences in smoked and smokeless tobacco use rates. The purpose of the present study was to examine regional differences by smoked and smokeless tobacco by region, gender, and Native status. METHOD: Participants were American Indian students (N=5,672) sampled from 33 schools in 11 states with reservations. There were 3,483 Natives and 2,189 non-Natives. Participants completed the American Drug and Alcohol Survey. Multilevel logistic models with individual-level variables (level 1) nested within schools (level 2) were used to account for the non-independence of observations due to nesting of students within schools/communities. Dichotomous (yes/no) dependent variables were lifetime history of cigarette smoking and smokeless tobacco use, past 30-day smoking and smokeless tobacco use. RESULTS: Almost a third (*n* = 1,652, 31.2%) of the sample had ever used smokeless tobacco. Thirty-seven percent (*n* = 2,057) were current cigarette smokers, and a quarter (23.9%; *n* = 1,323) were current users of smokeless tobacco. Significant interactive effects of Native status with region and gender showed that the log odds of ever being a smoker was increased 2.8 times for Natives from the Upper Great Lakes, OR = 2.77, *p* < .001, and 1.6 times for Native females, OR = 1.59, *p* = .008. Significant interactive effects of Native status with region and gender were not shown for smokeless tobacco use. A significant main effect of Native status showed the log odds of ever using smokeless tobacco was increased 1.5 times for Natives, relative to non-natives, OR = 1.49, *p* < .001. The same pattern of results was shown for current (past month) smoking and smokeless tobacco use. CONCLUSION: Our results further research showing health disparities in smoking rates among American Indian adolescents. Findings suggest that cigarette smoking among Native students is more problematic especially in certain North American regions and among females. While smokeless tobacco rates were also higher among Native students, differences were not exacerbated in certain regions or among females. Prevention/intervention programs should account for these differences.

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POS5-130

ASSOCIATION BETWEEN SELF-ESTEEM AND NICOTINE DEPENDENCE IN ADOLESCENTS

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SIGNIFICANCE: Early onset of nicotine dependence is associated with sustained and frequent smoking in adulthood and significant health consequences. While previous research has linked low self-esteem to smoking in adolescents, the association with nicotine dependence is unclear. The present study examined the association between self-esteem and nicotine dependence in Chinese adolescent smokers in Hong Kong. METHODS: In a 2014/15 survey of 15065 Hong Kong Secondary 1-6 (United States Grade 7-12) students, 339 (2.3%) reported smoking in the past 30 days, and was used in the present analysis. Nicotine dependence was indicated by morning smoking, average numbers of cigarettes consumed in a day when smoking occurred in the past 30 days, and urges to smoke. Students also completed the Rosenberg self-esteem scale, with higher scores denoted higher self-esteem. Linear regression yielded beta-coefficients of urge to smoke scores (USS) and cigarettes per day (CPD) and logistic regression odds ratios (ORs) of morning smoking in relation to the tertiles of self-esteem scores, with adjustment of age, sex, perceived family affluence, and school clustering effect. RESULTS: The 339 smokers had a mean (standard deviation [SD]) age of 15.8 (1.7) years, and 64.9% were boys. The means (SDs) of USS and CPD were 4.2 (2.9) and 8.0 (6.4), and 61.1% reported morning smoking. The tertile cut-points of self-esteem scores were ≤15, 16 to ≤18, and ≥19. Compared with the upper tertile, the adjusted beta-coefficients (95% confidence intervals [CI]) of USS related to the middle and lower tertiles were 0.83 (-0.05, 1.72) and 1.35 (0.69, 2.01); the corresponding figures for CPD were 1.89 (0.05, 3.73) and 4.30 (2.43, 6.17). The corresponding adjusted ORs (95% CI) for morning smoking were 1.57 (0.72, 3.44) and 1.83 (1.02, 3.26). The P values for linear trend for the three nicotine dependence indicators were all statistically significant. CONCLUSIONS: Low self-esteem was associated with nicotine dependence in Chinese adolescent smokers. Targeted intervention may be needed to protect adolescents with low self-esteem from smoking and nicotine dependence.

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POS5-131

EFFECT OF MENTHOL OR FRUIT FLAVOR ON SUBJECTIVE RATINGS AND SELF-ADMINISTRATION OF NICOTINE VIA E-CIGARETTES

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This study tested whether sensitivity to the aversive qualities of nicotine delivered via e-cigarettes was reduced by the addition of menthol, relative to unflavored or fruit flavors. Regular cigarette smokers with e-cigarette experience (N=32) completed an e-cigarette self-administration session consisting of a directed self-administration component, followed by an *ad libitum* self-administration component. Within the directed self-administration component, participants self-administered puffs from e-cigarettes containing six different e-liquids differing in nicotine level (no nicotine or 24mg/ml nicotine) and flavor (unflavored, menthol, fruit-flavored). Number and duration of puffs and plasma nicotine levels were tracked during the directed and *ad libitum* self-administration components. Subjective drug effects, smoking urges, nicotine withdrawal, positive and negative affect, heart rate, blood pressure, and cognitive measures were collected. Blood was collected to measure

nicotine and menthol glucuronide at multiple time points, as well as genetic variation in nicotinic receptor genes. The primary hypotheses were that a) nicotine-containing e-liquids would be rated as less aversive when flavored with menthol relative to unflavored or fruit flavored e-liquids, and b) more nicotine-containing e-liquid would be self-administered when flavored with menthol relative to unflavored or fruit flavored e-liquids. These hypotheses were partially supported. In the absence of nicotine, fruit-flavored e-liquid was generally preferred to menthol, but in the presence of high nicotine the preference for fruit flavor was abolished and menthol partially ameliorated nicotine's aversive effects. In the absence of nicotine, menthol and fruit flavor increased self-reported and choice preference relative to unflavored, however in the presence of high nicotine, menthol more effectively countered nicotine's aversive effects than fruit flavor. Findings from this study could inform FDA regulation of e-cigarettes and menthol and other flavorants.

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POS5-132

SMOKING HISTORIES, BELIEFS ABOUT SMOKING AND QUITTING, AND EXPOSURE TO COUNSELING IN CURRENT AND FORMER SMOKERS REFERRED FOR LUNG-CANCER SCREENING

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BACKGROUND: Annual, low-dose computed tomography (LDCT), lung-cancer screenings are now routine for current and former smokers with a 30 pack/year smoking history. OBJECTIVE: We studied the extent to which LDCT screenings include smoking cessation counseling, or advice to maintain abstinence, as appropriate, by interviewing patients screened between April and September of 2016 at the only existing LDCT screening program in our State. We also describe these under-studied, high-risk tobacco users by reporting in detail their sociodemographic characteristics, smoking and smoking-cessation histories, smoking-related beliefs, intentions to quit, and global health-functioning. METHOD: Participants were recruited via mailings and telephone solicitations to respond to a paid interview ($20). Participation rate was 59%. HIGHLIGHTED RESULTS: The sample (n = 138) had a mean age of 67, was 94% white, and 51% female. Current smokers (36%) averaged 16 cigarettes/day and had smoked daily for about 50 years. Near 90% believed smoking made them likely to die of cancer, about 67% felt that quitting would significantly reduce their cancer risk, less than 40% were strongly confident that they could quit if they tried, and up to 30% reported moderate to strong intentions to quit smoking. At the time of their scans, smokers were advised to quit or asked about their interest in quitting near 80% of the time. Smoking cessation counseling was typically "light", with 66% of the interventions lasting less than 6 minutes, and no more than 4% lasting over 15 min. Regarding ex-smokers, 10% had quit since their LDCT screening and another 20% had quit within the previous 2 years. Only 64% reported being advised at their screening to remain abstinent, and about 2% relapsed after their lung-cancer screening. Participants typically received their screening results by mail or telephone, with very few learning their results in person (3%). CONCLUSION: There is room to improve smoking and abstinence counseling practices at LDCT screenings. Interventions could also focus on participants' belief that quitting will significantly reduce their cancer-death risk, and strengthen their self-efficacy to quit.

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POS5-133

EDECIDETE: BUILDING CAPACITY FOR TEXT-MESSAGE BASED SMOKING CESSATION INTERVENTION IN MEXICO

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INTRODUCTION: Approximately 80% of smokers live in Low and Middle Income Countries (LMIC). To reduce the prevalence of smoking in LMIC, it is imperative to expand efforts to reach underserved groups of smokers who have not been helped by existing strategies. mHealth interventions, specifically text messaging, has demonstrated high cost-effectiveness reaching large numbers of smokers and helping them quit in the U.S. However, no text-based smoking cessation interventions (that we are aware of) have been developed for LMIC despite their high use of mobile technology. OBJECTIVE: To develop a text-message smoking cessation intervention tailored to Mexico. METHODS: The formative phase included the development and refinement of messages derived from the literature, attaining input from communication and community experts, conducting workshops with 15 Mexican smokers and ex-smokers, and utilizing our experience in mHealth smoking cessation international projects. The refined text message intervention, eDecidete, was validated through four focus groups with 19 Mexican smokers and ex-smokers whose feedback was incorporated. RESULTS: Laying the cessation groundwork in LMIC, eDecidete text message software relies on a Mexican gateway and a local mobile infrastructure. eDecidete consists of four consecutive phases: 1) Pre-quit (5-30 days), 2) Quit-Day, 3) Post-quit Intensive (28 days), and 4) Relapse Prevention (6-8 weeks). The final library consists on 461 text-messages covering five types of content: 32.8% Motivational, 21.8% Strategies to Quit, 14.5% Educational, 13.6% Self-efficacy, and 17.1% Logistics of the program. Participants can receive daily automated messages and interact with the program by texting a keyword (e.g. family, stress, advise, craving, and depression) and/or by texting their personalized cessation counselor. Messages are tailored by name and gender. eDecidete also provides cessation pharmacotherapy management including access to mailed nicotine replacement therapy. After completing the development and technological infrastructure, the text message library will need to be tested in a randomized design to prove effectiveness.

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POS5-134

A STUDY ON THE KOREAN CIGARETTE SMOKERS BEHAVIOR

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BACKGROUND*:* Korean government is start to considering introducing regulations of tobacco products related to the WHO FCTC article 9 and 10. This research is subject to cigarette smoking behavior among Korean to provide background data for developing risk assessment method of harmful contents and emissions. METHOD: A total of 1,500 over age 19 participants were surveyed self-administered questionnaire by internet using web panel. Survey was consist of smoking period, types of smoking, smoking amount, exposure time, and etc. RESULTS: Multi tobacco product users compared to single users tend to 1) inhale cigarette smoke less($\chi2=15.158$, $p<.01$), 2) smoke shorter within a cigarette($\chi2=41.104$, $p=.000$). 3) has more number of inhalation($t=5.397$, $p=.000$), 4) take more time to smoke for one cigarette($t=-2.323$, $p<.05$). Flavored cigarette smokers in comparison with regular smokers 1) responded that inhaling smoke deeply or less than usual($\chi2=12.614$, $p<.01$), 2) smoke shorter within a cigarette($\chi2=13.991$, $p<.01$). 3) has less smoking meantime during one cigarette smoking($t=-3.324$, $p=.01$), 4) has less number of inhalation times($t=-3.428$, $p<.01$). 5) consumed less time for one cigarette($t=3.646$, $p=.000$). Smokers who had longer smoking period were more likely to increase the number of smoking inhalation($r=.146$, $p<.01$), bite a cigarette slowly($r=.088$, $p<.01$), and tended to inhale smoke shorter time when having a cigarette in their mouth($r=-.172$, $p<.01$). Smokers with high tar content were apt to smoke deeply($r=.106$, $p<.01$), and had more smoking inhalation time($r=.058$, $p<.01$). Smoker with high nicotine content tend to smoke shallowly($r=-.078$, $p<.05$), smoke shorter when smoke a cigarette however, when having a cigarette in their mouth, inhaled smoke longer time($r=.093$, $p<.01$). CONCLUSION: This study have identified the differences of smoking behaviors among users who consume various type or characteristics tobacco products. It should be considered for evaluat-

ing smokers' health and developing tobacco control policy. This research provided preliminary data through less organized but consistent results. Nonetheless, internet based self-administered questionnaire survey method cannot help fight with large deviation thus additional research should be needed to verify objectively.

FUNDING: Ministry of Food and Drug Safety, Republic of Korea.

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POS5-135

TOBACCO USE DIAGNOSIS AND KNOWLEDGE IN SMOKING CESSATION TREATMENT: ASSESSING SENIOR MEDICAL STUDENTS IN MEXICO

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INTRODUCTION: Smoking remains a major public health concern in Mexico as 16.4% of adults smoke. Overall, 78.3% of Mexican smokers plan to or are thinking about quitting, but the use of pharmacotherapy and counseling remains as low as 3.5% and 5.9% respectively, among those who attempt to quit. Only 19.3% of smokers report being advised to quit by a health care provider in the past year. Simulated patients have shown to be an effective way to evaluate smoking cessation counseling. OBJECTIVE: To assess knowledge of tobacco use, nicotine dependence, and development of a smoking cessation plan among last year medical students in Mexico. METHODOLOGY: Senior medical students were evaluated with 12 simulated patients. One simulated patient prompted medical students to conduct a complete medical history, including tobacco use and nicotine dependence. Another simulated patient was a 36 years old heavy smoker (12 CPD) without medical conditions who was interested in quitting. Medical students had 6 minutes per simulated patient, and were evaluated by physicians using score sheets. RESULTS: A total of 55 medical students were evaluated. Less than 5% asked about tobacco use during the medical history. In the second simulation, while 98.1% assessed levels of cigarette consumption, only half of the students inquired about reasons and previous attempts to quit as well as use of smoking cessation resources. While establishing a therapeutic plan, 78.1% recommended cognitive behavioral therapy to support the quit attempt, however, recommend cessation strategies without clinical evidences (tapering and e-cigarettes). Approximately, two third of students recommended pharmacotherapy (NRT products or antidepressants) to quit smoking but they did not accurately addressed dosage, indications and/or contraindications. CONCLUSION: Smoking is an underdiagnosed disease by senior medical students in Mexico. Education on smoking cessation treatment is urgently necessary. As 83.3% of medical students in Mexico do not move into residency, medical schools need to prioritize clinical evidence practices to significantly improve morbi-mortality; for example quitting smoking.

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POS5-136

HARM PERCEPTIONS, MOTIVATIONS, AND USAGE OF ELECTRONIC CIGARETTES AMONG UNIVERSITY STUDENTS IN THE DOMINICAN REPUBLIC

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BACKGROUND: The ever growing prevalence of use of Electronic Nicotine Delivery Systems (ENDS) (e.g. electronic cigarettes (EC)), poor restrictions on and regulations of access, and marketing campaigns targeting young adults make young adults one of the most vulnerable to these devices. The aforementioned information should be a wakeup call to this new and dangerous trend. A common belief supported by research as to why university students are especially vulnerable to the use of nicotine–releasing devices is because they consider ENDS less harmful than conventional cigarettes to their health. There is a relative dearth of published literature about the use of electronic cigarettes in university students. This was one of the reasons that stimulated the development of this study, we sought to investigate the prevalence of usage, as well as the motivations, and perceptions towards ENDS use in the university population. METHODS: A cross–sectional descriptive study was carried out, where the unit of analysis were the 2016 undergraduate students of the Pontificia Universidad Católica Madre y Maestra (PUCMM), Santiago campus. The study population was selected by a stratified and cluster probabilistic sampling (n=399). All students who were older than 18 years of age, and freely signed the informed consent wishing to participate, were included. Exchange students as well as those belonging to the tobacco research group were excluded. Data collection was carried out in June–July 2016, through the application of a survey as a data collection instrument. EC usage was divided in two groups: actual use for those users who have used EC in the past 30 days and ever used for those users who have used of any variant of EC ever. The chi square test was used to assess the degree of association between variables, using a p value ≤0.05 to be considered statistically significant. The Student's t test was used for the quantitative variables. RESULTS: In the studied population, the prevalence of users who have ever used EC and current users were 26.7% and 10.5%, respectively. Among those who ever used EC, 32.3% were men and 22.7% were women (p=0.035). In contrast, 14.7% of men and 7.6% of women were current users (p=0.025). The predominant age range for EC use was 18–21 years of age, tenuring a prevalence of 30.2% and 12.0% for those who have ever used EC and current users, respectively. In regard to the different nationalities of those who have ever used EC, the results showed that Americans were the most prevalent in its use (44.4%), followed by Dominicans (26.7%) and then Haitians (21.1%). The same can be said about its current use, due to the fact that EC use was still more prevalent in the American population (22.2%) than the Dominican one (10.9%). The faculty distribution of the participants who ever used EC was as follows: 50.6% in the Faculty of Social and Administrative Sciences, 28.9% in the Faculty of Engineering Sciences, 12.0% in the Faculty of Sciences and Humanities, and 20.1% in the Faculty of Health Sciences (p≤0.001). However, for those who currently used EC, 24.0% were in the Faculty of Social and Administrative Sciences, 12.4% were in the Faculty of Engineering Sciences, 6.4% were in The Faculty of Health Sciences, and 2.8% were in the Faculty of Sciences and Humanities (p≤0.001). The correlation between users who have ever used EC and their university years demonstrated that 30.6% of them had between 2 – 3 years in college. At the same time this was the group that presented the highest prevalence regarding current use (12.0%). The lowest prevalence was observed in the group that had less than one year in the university with 23.3% ever using EC and 7.0% currently using EC. To identify the motivations underlying EC use in university students, we selected the cases of participants who were users. Of the 38 total users, 55.3% tried EC out of curiosity, 15.8% tried EC because other friends also used them, 13.2% tried EC because they understood that its use was less dangerous compared to other products, 13.2%tried EC as a way to reduce the consumption of conventional cigarettes, and 2.60% tried EC to stop smoking. Regarding EC users' perception of EC use, it was observed that 82.1% considered EC to be harmful to their health while 21.9% considered EC not to be harmful. On the contrary, individuals who did not use EC perceived its use 88.5% and 11.9% of the time as harmful and non–harmful, respectively. CONCLUSIONS: The prevalence of use of electronic cigarette represents a frightening proportion of the university population. It is more prevalent in male than female, corresponding to the extant literature. The youngest age range (18–21) are at greatest risk, due to the fact that they have easy access to these devices and perceive them as less harmful. Pursuing a career that belongs to the Faculty of Social and Administrative Sciences increases the probability of using electronic cigarettes. The number of years enrolled in the university does not represent an influential variable in the usage of EC. Furthermore, regarding the motivations for the use of electronic cigarettes most of the participants expressed that they tried the device out of curiosity, on the other hand, a smaller proportion stated that they used it to reduce the use of conventional cigarettes. Most respondents considered EC to be less harmful to health compared to other products.

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POS5-137

ANALYSIS OF NICOTINE IN E-CIGARETTE REFILL SOLUTION AND AEROSOL

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Electronic cigarettes (e-cigarettes) are the devices designed to imitate regular cigarette that vaporize the nicotine solution and their global use has exponentially risen. The primary purpose of this study was to develop and validate a method based on gas chromatograph with flame ionization detector (GC-FID) for the analysis of

nicotine in e-cigarette solution and aerosol. The aerosolized nicotine generated from e-cigarette was automatically collected on 44 mm cambridge filter pads from e-smoking machine with the following puff conditions: puff velocity (1 L/min), puff duration(2 s), puff frequency(10 s), and puff number(10 times). The nicotine in the refill solution and the aerosol was extracted with isopropanol with quinoline and analyzed by GC-FID. The inter-day and the intra-day precision of the method were under 4% and 6%, respectively. The accuracy ranged from 98 to 106%, the linearity was over 0.999, and the recovery ranged from 94 to 104%. Following the validation of our method, we analysed 35 commercially available e-cigarettes obtained in Korea. The results indicated that the method can be used for determination of the nicotine contents in the refill solution and the aerosol in terms of scientific validation parameters.

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POS5-138

CHRONOLOGY OF INITIATION, CESSATION AND RE-INITIATION OF CIGARETTE SMOKING AND E-CIGARETTE USE AMONG 20,676 ADULT DAILY OR NEAR DAILY E-CIGARETTE USERS IN THE UNITED STATES

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BACKGROUND: Approximately 1.1% of adults in the United States, and 30% of current adult e-cigarette users, use e-cigarettes daily (2014 National Health Interview Survey). The rate of daily e-cigarette use was highest among recent smoking quitters (£ 1 year), and significantly lower among former smokers (2-3 years), daily smokers, someday smokers, and never smokers. Collecting data on the effect of daily e-cigarette use on the tobacco use behaviours of current, former, and never smokers is critical to the assessment of the population risks and benefits of daily e-cigarette use. However, existing U.S. population surveys do not provide information on the rates at which smoking initiation, cessation and re-initiation among daily e-cigarette users has occurred prior to or after initiation of regular e-cigarette use. METHODS: A self-complete online survey assessed the chronological order in which a non-probability sample of 22,411 U.S. adult, daily or near-daily e-cigarette users initiated, quit, and re-initiated regular use of conventional cigarettes and e-cigarettes. Data were also collected on frequency and intensity of smoking and e-cigarette use over time. RESULTS: The majority of participants (n = 20,676; 93.2% of all participants) fit to one of four 'tobacco use pathways': 15,807 (70.5% of all participants) fit criteria for categorisation as individuals who were current regular smokers at the point of initiating e-cigarette use, but were former smokers and daily/near-daily e-cigarette users at the point of survey; 1,461 (5.9% of all participants) fit criteria for categorisation as a current dual daily/near-daily user of conventional cigarettes and e-cigarettes; 2,483 (11.1% of all participants) fit criteria for categorisation as a former-smoker e-cigarette user; and 1,228 (5.5% of all participants) in this survey fit criteria for categorisation as a never-smoker e-cigarette user. CONCLUSIONS: Modelling the chronology of smoking and vaping behaviour change is critical to assessing the population health impact of e-cigarettes on adult current, former and never smokers. The majority (70.5%) of U.S. adults who currently use e-cigarettes daily or near-daily were cigarette smokers at the point of first e-cigarette use, then became a daily e-cigarette user, and are currently former smokers. Dual users and never smoker e-cigarette users account for approximately 11% of all adult daily e-cigarette users.

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POS5-139

PERCEIVED DEPENDENCE ON E-CIGARETTES AMONG 20,676 ADULT DAILY OR NEAR DAILY E-CIGARETTE USERS IN THE UNITED STATES

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BACKGROUND: Approximately 1.1% of adults in the United States, and 30% of current adult e-cigarette users, use e-cigarettes daily (2014 National Health Interview Survey). The rate of daily e-cigarette use is highest among recent smoking quitters (<1 year), and significantly lower among former smokers (2-3 years), daily smokers, someday smokers, and never smokers. Existing population surveys provide no information on how levels of perceived dependence on e-cigarette use vary across current, former or never tobacco smokers who also use e-cigarettes daily. METHODS: An online version of the Penn State Electronic Cigarette Dependence Index (Foulds et al. 2015) was self-completed by a non-probability sample of 20,676 U.S. adult daily or near-daily e-cigarette users. Perceived dependence on e-cigarettes was compared across smoking status (current, former, never) and across combinations of nicotine concentration (mg/ml) of e-liquids used, coil resistance (ohms) of current device, and volume (mls) of e-liquid consumed per week. RESULTS: The majority (62.8%) of all current e-cigarette-using enthusiasts perceived their dependence on e-cigarettes to be 'low' or 'zero'; 28.4% and 8.9% were categorized as having 'medium dependence' and 'high dependence', respectively. Never-smoker e-cigarette users reported the highest rate of zero dependence (26.9%) and, consequently, the lowest rates of low dependence (46.1%), medium dependence (21.0%), and high dependence (5.9%). In contrast, dual users of cigarettes and e-cigarettes reported the highest rates of medium dependence (31.8%) and high dependence (12.1%), and the lowest rate of zero dependence (9.1%). The most common pattern of e-cigarette use, reported by 31.3% (n = 6,481) of all participants who were currently using an open-system e-cigarette on at least 20 of the past 30 days, was smokers-turned-e-cigarette users' use of a sub-ohm device containing e-liquid with ≤ 6 mg/ml nicotine, and consuming between 0 and 60 mls of e-liquid per week. Of those citing use of this most common combination, 4.7% were categorized as highly dependent on e-cigarettes. In contrast, close to half (48.7%) were categorized as having low dependence, and a further 13.8% were categorized as being not dependent. CONCLUSIONS: Daily use of open-system e-cigarettes induced subjectively high levels of perceived dependence in only a minority of daily users, regardless of past or current regular use of combustible cigarettes and across combinations of coil resistance, nicotine strength and weekly volume of e-liquid consumption. The majority (73%) of daily open-system e-cigarette users who have never smoked report zero-low dependence on e-cigarette use.

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POS5-140

PREVALENCE AND DEMOGRAPHICS OF SECOND-HAND SMOKE EXPOSURE DURING PREGNANCY: A SECONDARY ANALYSIS OF DEMOGRAPHIC AND HEALTH SURVEYS IN 30 LOW- AND MIDDLE- INCOME COUNTRIES

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Secondhand smoke (SHS) exposure during pregnancy has been shown to increase the risk of stillbirth, congenital malformations, low birthweight, and respiratory morbidity in infants. Because SHS exposure can be more prevalent than active smoking during pregnancy, the attributable burden of SHS exposure may be greater. Using the Demographic and Health Surveys conducted by USAID, we determined the prevalence and magnitude of SHS exposure in households with pregnant women in 30 low- and middle-income countries across five world regions. We also explored variables associated with SHS exposure in pregnant women and regional trends among the countries studied. Our analysis included a total of 37,427 pregnant women across the 30 countries. Self-reported daily SHS exposure varied considerably from 6% in Nigeria to 73% in Armenia, and any level of exposure varied from 7% in Nigeria to 81% in Armenia and Indonesia. Trends in prevalence of SHS exposure and characteristics of pregnant women varied across the regions too: SHS exposure was most prevalent among countries in south/southeast Asia, Middle-east/North Africa, and Europe/Central Asia, while SHS exposure was less common in countries in sub-Saharan Africa and Latin America.

In respective countries, the trend in SHS exposure in pregnant women closely followed the active smoking prevalence among males. Household wealth and women having an occupation were associated with lower frequencies of SHS exposure in bivariate and full regression models. Urban households were associated with lower frequency of SHS exposure in the full model only, suggesting location is differentially important depending on control of other factors. Lastly, higher levels of education by pregnant women were associated with higher frequency of SHS exposure, contrary to hypothesis and under further study. In many LMICs, pre-natal exposure to tobacco smoke appears more common than previously thought when taking SHS into account. Our findings suggest that protecting women from SHS exposure during pregnancy should be among strategies to improve maternal and child health.

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POS5-141

ANALYSIS OF SECONDHAND E-CIGARETTE AEROSOL COMPOUNDS IN AN INDOOR NATURAL SETTING

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SIGNIFICANCE: Controlled experimental studies have demonstrated that e-cigarette aerosol contains fine particulate matter and a range of chemical compounds, including glycols, nicotine, aldehydes, carbonyls, aerosol particulates, metals, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons. However, data is limited on the impact of e-cigarette use on indoor air quality in naturalistic settings. This study measured concentrations of PM with 2.5 µm aerodynamic diameter or smaller ($PM_{2.5}$), and chemical compounds in the environment during ECIG use in a public indoor setting. METHODS: $PM_{2.5}$ was measured using personal aerosol monitors, and air samples were collected using treated silica gel cartridges and thermal desorption tubes, before and during an indoor public e-cigarette event. Air samples were analyzed using high performance liquid chromatography, and open characterization of volatile organic compounds (VOCs) using thermal desorption gas chromatography/mass spectrometry. RESULTS: The median pre-event concentration of $PM_{2.5}$ was 3.0 µg/m^3 and average median concentration during the event was 81.38 µg/m^3 (mean: 100.15 µg/m^3). Event levels of $PM_{2.5}$ ranged from 40-447 µg/m^3. The total pre-event VOC concentration was 220 µg/m^3 compared to 330 µg/m^3 during the event. Specifically, propylene glycol (PG) concentrations increased from 3 µg/m^3 in the pre-event sample to 110 µg/m^3 in the event sample. Vegetable glycerin (VG) concentrations were not identified in the pre-event sample but were 35 µg/m^3 in the event sample. CONCLUSIONS: $PM_{2.5}$ concentrations during the event were comparable to those previously reported in bars where cigarette smoking was allowed. PG and VG concentrations were 35 times higher in event samples compared to pre-event samples. Given the high levels of fine particulate matter and limited knowledge on health impacts of inhaling PG and VG, regulators should consider policies that prevent exposure to secondhand e-cigarette aerosol in workspaces and public places.

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POS5-142

DO PERCEPTIONS OF HARM FOR ONE'S OWN CIGARETTE BRAND DIFFER ACROSS MENTHOL AND NON-MENTHOL SMOKERS AND BRAND? FINDINGS FROM THE PATH STUDY

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INTRODUCTION: Menthol has been hypothesized to mask the harshness of cigarette smoking, contributing to the perception that menthol cigarettes are less harmful than non-menthol cigarettes and making it easier for new users to initiate smoking. Menthol cigarettes are disproportionately used by African-Americans and Latinos, women, and younger smokers; groups that have been historically targeted by menthol cigarette marketing. This study examined differences in harm perceptions of one's own brand of cigarettes, across menthol and non-menthol smokers, and the moderating effects of age, race, and gender. METHODS: Data were from the Wave 1 adult dataset of the Population Assessment of Tobacco and Health (PATH) Study. Weighted analyses were used to estimate the prevalence and correlates of menthol and non-menthol use among current smokers, across the top three brands and all brands. Multinomial logistic regression models examined the main effect of menthol smoking on harm perceptions of one's own brand compared to other brands (less harmful or more harmful vs. no difference), and interactions with race, age, and gender, adjusting for covariates. RESULTS: A third of current smokers smoked a menthol cigarette as their usual brand, although the prevalence differed across the top three cigarette brands. For each of the top three brands and across all brands, adjusted models showed that menthol smokers were more likely to perceive their own brand as more harmful than other brands, compared to non-menthol smokers. Race and gender emerged as moderators, with African American and female menthol smokers most likely to perceive their usual brand as more harmful. CONCLUSIONS: Menthol smokers perceived their own brand as more harmful than other cigarettes, and this effect was strongest in groups who have been the target of menthol marketing. Recent public health campaigns about smoking may have increased awareness about the harms of menthol smoking, but have not necessarily reduced use of menthol cigarettes among certain groups. Additional policy and intervention targets are needed to promote cessation among menthol smokers, particularly the most vulnerable.

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POS5-143

INTERACTIVE WEB-PORTAL FOR E- CIGARETTE PUBLIC HEALTH PREVENTION AND EDUCATION

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BACKGROUND: Despite significant decline in smoking rates over the past 50 years, the rapid rise of electronic cigarettes (e-cigarettes) threatens these public health gains. E-cigarette use has more than doubled among youth each year since 2010. E-cigarettes are aggressively marketed as a 'healthier alternative' to traditional cigarettes and are perceived as less harmful. The youth might not have adequate education/knowledge about e-cigarettes. Therefore, providing effective e-cigarette knowledge is critical in addressing this alarming trend. The objective of this project was to develop an age-driven interactive and animated web-portal to illuminate the negative health consequences of e-cigarettes to be used as educational tool at middle and high-schools. METHODS: The web-portal explores the efficacy of a relatively new method, interactive and animated infographics, and combines classical and novel public health education methods to create an innovative tool to illuminate the negative health effects of e-cigarettes. Infographics leverage the brain's most dominant capacity, visual processing, and can more effectively communicate information than text alone. The web-portal promotes user engagement and navigation though targeted infographics, concise information, and exciting color. Unbiased governmental and non-governmental sources and subject matter experts are consulted for information and data included in the portal. RESULTS/CONCLUSIONS: This interactive and animated web-portal addresses the knowledge gap regarding the growing use of e-cigarettes by

creating an educational resource to communicate currently known health effects of e-cigarettes through age-specific user interaction and self-paced learning. An innovative web-page resource utilizing interactivity, illustration, and animation, can be effective at communicating how nicotine concentration and carcinogens affect e-cigarette users and their health. We expect such tool will positively influence youth to change their perceived harmfulness and perception of e-cigarettes and will become a standard public health education resource to be used directly (as part of class) and indirectly (communal website).

FUNDING: No Funding

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POS5-144

THIRD TIMES THE C.H.A.R.M.S.: A SMOKE CESSATION PROJECT BASED ON THIRDHAND SMOKE WITHIN A SOCIOECOLOGICAL CONTEXT

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Research demonstrates that Passive Tobacco Exposure (PTE) by means of Thirdhand Smoke (THS), has devastating cytotoxic effects to living tissue in the laboratory. The dangers of Secondhand Smoke were described by the Surgeon General in 1986 yet 16 million Americans have tobacco-inflicted illness. Home smoking bans have demonstrated reduction to exposure of innocents from PTE but the literature remains scarce on THSe. There are very few studies on THSe on populations as most current research is laboratory based. Actions such as public smoking bans, raising tobacco taxes, and tobacco litigation demonstrate some change in Smoke Cessation (SC) but a new approach is needed to effect societal smoking behavior and complete global smoke cessation. PURPOSE: The pilot study investigates if knowledge THSe harms would increase a subject's contemplation to stop smoking. The goal of the project was to identify and address knowledge deficit within the smoking population and to promote positive health outcomes. METHOD: Support from organizational leadership at a non-profit in Rochester, NY and the IRB at Wilkes University was received for this doctoral project. Implementation of the pilot study used a quasi-experimental, pretest-posttest design study with an educational intervention between the tests. Pre and posttest measures utilized was the Contemplation Ladder. The principal investigator provided education in a Motivational Interviewing (MI) milieu. The data was accumulated and subjected to statistical analysis. RESULTS: Paired t-tests demonstrated a statistical significant improvement in desire to quit smoking in three groups and between groups of n=34. It was concluded that education on the harms of THSe to passive recipients may increase the contemplation to cease smoking and reduce PTE. CONCLUSION: Tobacco sales and consumption is still legal so it is challenging to achieve total smoke cessation. Researchers have considered the harms of smoking as well as the usefulness of MI in smoke cessation groups in a variety of settings. The present study expands the existing body of knowledge on motivation to quit smoking as well as expanding the usefulness of MI with provision of new data. Organizational stakeholders of health centers, non-profit agencies, small clinic practices, veterinary practices and community action agencies who seek to aid individuals in quitting and who promote the health of their clients will find these results particularly useful when making decisions on ways to promote SC and in creating environments that are free of THSe.

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POS5-145

A COMPARISON OF SELF REPORTED MEASURES OF NICOTINE DEPENDENCE FOR TOBACCO CESSATION

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BACKGROUND: Nicotine addiction is believed to be a major impediment in quitting tobacco. There are several measures of nicotine dependence. The present study compares the effect of Fagerstorm Test for Nicotine Dependence (FTND) and Heaviness of Smoking Index (HSI) on smoking and smokeless tobacco cessation. The HSI is identical to a two-question subset of the FTND for smoking; we developed a similar index for measuring nicotine dependence among smokeless tobacco users and measured its effect on intention to quit tobacco use. METHODS: The present study was a quasi-experimental study conducted among 789 patients who were tobacco users visiting public health facilities in two states of India in September-November, 2016. Multivariate regression analysis was performed to assess the effect of FTND and Heaviness of smoking index on "intention to quit within 30 days". Analysis was adjusted for a set of patient-related characteristics: age, sex, poverty status, and location. RESULTS: More than two third of patients (65%) intended to quit tobacco within 30 days. Mean FTND score for smokers and smokeless tobacco users was 3.6 and 3.9 respectively. The average age of initiation of smoking was 22 years. Smokeless tobacco users with low Nicotine dependence (HSI score; OR: 5.13; CI 1.16- 22.68, p=0.03) were five times more likely to have an intention to quit compared to those with moderate and high Nicotine dependence. Our findings indicate that FTND was not significantly associated with intention to quit tobacco for both smokers and smokeless tobacco users. CONCLUSIONS: This study is amongst the first in India to explore association of FTND and HSI with "intention to quit" among patients visiting public health facilities. Our findings suggest that Heaviness of smoking index is an important factor depicting intention to quit and an index similar to HSI (two questions) works better than FTND in predicting tobacco cessation among smokeless tobacco users in India.

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POS5-146

USE OF A SMARTPHONE APP AS AN ADJUNCT TO A RESIDENTIAL STOP SMOKING PROGRAM

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Multiple approaches are used to help people stop smoking, with varying degrees of success. The residential tobacco dependence treatment program, Smoke-Free Life, at the St. Helena Lifestyle Medicine Institute in California, started in 1969. Non-medication components of the St. Helena residential program include behavioral counseling, educational sessions, understanding the role of spirituality, regular exercise, and optimal nutrition. Teaching the individual attempting to stop smoking how to use medications to suppress nicotine withdrawal symptoms, which can be intense, long-lasting, and the cause of dysfunctional behavior and serious discomfort, is crucial to achieving successful tobacco abstinence. A report describing the outcomes of the patient-centered approach to helping individuals stop smoking in the St. Helena program was published previously in the Mayo Clinic Proceedings (2013). 305 smokers, who participated in the 1 week residential program over a 3-year period, had a 7-day point prevalence tobacco abstinence rate at 1 year of 57%. QUIT RIGHT, a stop smoking app for mobile devices became available in June 2015. This was offered as an option for attendees of the St. Helena program. 33 individuals participated in the Smoke-Free Life program between July 2015 and June 2016. Eighteen (54.5%) had not smoked or used any tobacco product during the 6 months following the program. Seven individuals acknowledged that they were smoking at 6 months. The 8 individuals we could not contact at 6 months were considered to have returned to smoking. Fifteen (45.5%) used the QUIT RIGHT app after completing the program. Eleven (73.3%) of those who used the app were abstinent from tobacco at 6 months. Seven (38.9%) of those who did not use the app were tobacco abstinent at 6 months. These results suggest that this stop smoking app for mobile devices may assist individuals to remain abstinent and to eliminate the use of tobacco. A randomized design and biochemical verification of abstinence to test the observations cited will be helpful.

FUNDING: No Funding.

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POS5-147

THE DIFFERENT SMOKING BEHAVIORS ACCORDING TO SMOKING INITIATION AGE: KNHANES-IV, V (THE FIRTH AND FIFTH KOREAN NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY) 2007-2012

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BACKGROUND: Adolescent cigarette smoking is strongly associated with smoking in adulthood. The younger the smoking initiation age is, the higher risk of nicotine dependence and negative health outcomes. We aimed to evaluate the changes of smoking initiation age from 2007 to 2012 in Korea and determine the factors associated with smoking initiation during adolescent period. METHODS: This study included 35,996 current adult smokers in the Korea National Health and Nutrition Examination Survey from 2007 to 2012. Smoking initiation age was divided into three groups; <19 years old, 19-30, and >30 years old. Logistic regression analysis was performed to compare between participants who started smoking age was less than 19 years old and more than 19 years old after adjusting age, gender, socioeconomic status, and alcohol consumption. RESULTS: The average smoking initiation age turned out to be 19.5 in 2007 and 19.8 in 2012. Among men, the average smoking initiation age showed little differences, which was 18.8 in 2007, 19.0 in 2008, 19.0 in 2009, 19.3 in 2010, 19.1 in 2011, and 19.1 in 2012. Among women, it was 25.4 in 2007, 25.0 in 2008, 26.1 in 2009, 25.4 in 2010, 24.2 in 2011, and 23.6 in 2012, which indicated that the initiation age was getting younger throughout the years. Participants who initiated smoking less than 19 years old showed younger age (OR 6.23, 95% CI 4.61-8.54), lower educational level (OR 2.505, 95% CI 1.931-3.250), experienced marriage breakup (OR 1.41, 95% CI 1.02-1.95), and high risk drinking behaviors (OR 2.29, 95% CI 1.78-2.95). CONCLUSION: The smoking initiation age rarely changed among men from 2007 to 2012 in Korea. However, women were likely to start smoking younger in 2012 compared to 2007. Also, the adolescent smoking initiation was positively associated with lower educational level, divorced/separated/bereavement, and high risk alcohol consumption.

FUNDING: No funding

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POS5-148

QUANTITATIVE RISK ASSESSMENT OF COMBUSTIBLE TOBACCO PRODUCTS: TWO APPROACHES TO INHALATION EXPOSURE ASSESSMENT

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Quantitative risk assessment (QRA) may inform regulatory decisions regarding tobacco products (TP). In general, QRA is a 4-step process that includes hazard identification, dose-response assessment, exposure assessment, and risk characterization. Evaluation of human health risks from cigarette smoking requires an adequate assessment of the exposure, which is a challenging task because the concentration in the respiratory tract and exposure duration are continuously changing. No regulatory guidance currently exists for exposure assessment of TP, although examples exist in the peer-reviewed literature. The US Environmental Protection Agency (USEPA) provides guidance that addresses methods for quantitative evaluation of exposure and risk, which is useful and can be reasonably applied to TP. Importantly, USEPA guidance defers to the risk assessor to make modifications to the exposure assessment, as appropriate and as relates to, e.g., the exposure pathway and the receptor. Two different methods were developed to quantify inhalation exposure with machine-generated smoke yields from a market survey of US cigarettes. The first method treats exposure to a chemical in smoke as a continuous process and estimates an exposure concentration by averaging the yields of the chemical from cigarettes consumed over the average daily volume of air inhaled by a user. The second method treats exposure to the chemical as discrete smoking sessions and estimates a respiratory concentration of the chemical via summation of discrete smoking sessions over the course of a day. Both methods incorporate standard exposure parameters to derive a lifetime average exposure to the chemical. For simplicity and conservatism, both methods assume 100% retention of the chemical in the smoker's body. Results indicate the two methods provide QRA estimates that were <5X different; the first method was more conservative (i.e., risk-maximizing). Exposure assessment of TP should be consistent with available evidence, guidance, and state of the science for risk assessment practice. These findings indicate that incremental modifications to exposure input assumptions do not materially affect the QRA results.

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USER-CENTERED APPROACH FOR DEVELOPMENT OF NOVEL SMOKING CESSATION MEDIA AND TECHNOLOGY FOR PREGNANT SMOKERS

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Smoking in pregnancy is a prominent issue among Austrian women affecting not only the mother but also the unborn child. In our research, we aim to improve medial and conventional support for pregnant smoking women by developing novel intervention media and technologies. To best fit the needs of the target group and to facilitate informed design decisions we chose a mixed method user-centered design approach involving medical experts and pregnant smoking women. First, a media analysis provided us with crucial information about the media usage and online behavior of pregnant smoking women and how they are treated in such environments when making their habit public. Therefore, we deployed an online survey targeting smoking pregnant women to better understand their smoking behavior and its impact on their daily life, their social environment, and their preferences regarding media channels and content. The evaluation of the online survey identified relevant themes for semi-structured interviews conducted with the target group. Second, interviews and surveys with experts marked the cornerstones regarding state of the art approaches and patterns in supporting smoking cessation of pregnant women. The information gathered helped us to compare the various approaches of professionals, to derive design indicators, to spot leverage points, and to identify potential for improvement in traditional intervention processes. Our presentation includes empirical findings from each method applied, their interconnections as well as the translation to design fundamentals and guidelines. Additionally, we developed and implemented a playful technical prototype solution for smoking. Based on our findings from the applied qualitative and quantitative methods we derived three categories of results: (a) technological intervention artifacts, (b) design guidelines for smoking cessation media, (c) and potential improvements in professional smoking cessation counseling for pregnant women. These results not only serve as solid foundation for further research, it also improves existing smoking cessation technology and counseling.

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POS5-150

FACIAL APPEARANCE INDICATES SMOKING STATUS IN IDENTICAL TWINS DISCORDANT FOR SMOKING

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Smoking is associated with indicators of negative health of skin, including increased signs of facial aging and decreased facial attractiveness. Evidence that facial appearance indicates smoking status could be useful in developing behavior change interventions and public health messages targeting smoking (e.g. using social stigma to discourage smoking). To explore this, we used the faces of identical twins discordant for smoking. We averaged the faces of the male and female smoking twins to make male and female prototypical smoking faces, and averaged the faces of the non-smoking twins to make prototypical male and female non-smoking faces. The averaging process removes idiosyncrasies in facial appearance, and variations in lighting, pose and expression, and distils the common visual characteristics of the exemplar faces from which it was produced. Data for other lifestyle factors was available for most (but not all) twins, and indicated no differences between the smoking and non-smoking twin groups in terms of alcohol

consumption, body mass index, years of sun exposure, use of sun protection and use of moisturiser. Participants were shown same sex smoking and non-smoking prototype faces side by side, and asked to judge which face they thought was that of a smoker. Both male and female participants selected the smoking prototype as the smoker more often, irrespective of the sex of the prototype face. Knowledge that facial appearance alone can indicate smoking status may therefore be useful in the design of behavior change interventions and public health messages aimed at reducing smoking.

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