Leveraging US surveillance systems to support a health equity agenda in e-cigarette/HTP research

Background and Methods

Minimal research has focused on the relationship between health equity indicators and e-cigarettes/heated tobacco products (HTPs). National surveillance systems present an opportunity for consistent and efficient data collection to monitor population-level e-cigarette/HTP trends. In August 2020, we examined the most recent available versions of surveys from 11 US surveillance systems to identify information collected and existing gaps related to e-cigarettes/HTPs and health equity indicators: Alaska Native Adult Tobacco Survey (ANATS, 2010); American Indian Adult Tobacco Survey, core + supplement (AIATS, 2018); Behavioral Risk Factor Surveillance System, core + optional (BRFSS, 2019); Current Population Survey + Tobacco Use Supplement (TUS-CPS, 2018-19); National Youth Tobacco Survey (NYTS, 2019); National Health Interview Survey (NHIS, 2020); Population Assessment of Tobacco and Health, adult (PATH adult, 2018-19) and youth (PATH youth, 2018-19; includes questions asked to the child and asked to the parent about the child); and Youth Risk Behavior Surveillance System, middle school (YRBSS mid, 2019), national (YRBSS nat, 2019), and standard (YRBSS stan, 2019) (Table 1).

Results

Health equity indicators (Table 2)

➡️ Three systems (YRBS middle, national, and standard) included only Hispanic/Latino or non-Hispanic/non-Latino as options for ethnicity; the remaining systems included options like Puerto Rican and Cuban. Five provided an 'other' option for ethnicity.

➡️ Seven of the 11 systems included only male and female as options for gender identity.

➡️ Measures that may inform health equity included access to places like libraries; abuse by dating partner; skipping medication to save money; meal skipping due to financial constraints; neighborhood walkability; access to transit stops; and access to playgrounds.

Tobacco-related questions (Table 3)

➡️ Most of the systems (n=9) included questions about e-cigarettes; exceptions include ANATS (developed in 2010) and BRFSS. Only four systems asked questions about HTPs, of which three asked only about use and lacked measures of reasons for use, susceptibility, advertising, and access.

➡️ PATH included the most detailed questions on frequency of e-cigarette use, such as refill frequency, puffs/session, and devices used/day.

➡️ Unique measures related to e-cigarettes/HTPs included second-hand vaping exposure, exposure to warning labels on e-cigarettes, difficulty in purchasing e-cigarettes online and in a store (among youth), use of e-cigarettes for sacred or ceremonial purposes (AIATS), changes in e-cigarette nicotine concentration used over time, elevated insurance premiums due to tobacco use, and price paid for e-cigarette liquid.

Conclusions

These surveillance systems present an opportunity for secondary analyses related to e-cigarettes/HTPs and health equity indicators; however, limitations exist. Questions about HTPs are limited in number and scope. While use of HTPs is currently low in the United States, variables related to HTPs beyond use should be monitored as these trends may shift. Questions must include appropriate response options. Gender identity questions should include transgender and other as options, in addition to male and female. Ethnicity questions should allow disaggregation into subgroups like Vietnamese and Chinese. Disability questions should include specific options (e.g. trouble hearing, trouble seeing). Because of the complex and historical nature of health inequities, it is critical to assess a wide range of variables that have relevance to health equity in order to better understand the root causes of tobacco-related disparities and the best avenues for moving towards health equity. More attention is needed on health equity indicators that were not assessed in these systems, such as religion and incarceration. Including a comprehensive set of well-developed questions about e-cigarettes/HTPs and health equity in nationally representative systems will provide a foundation for monitoring e-cigarette/HTP trends, while also steering research towards understanding the underlying causes of e-cigarette/HTP disparities.

Table 1. Number of questions/indicators included in each surveillance system

Surveillance System	Number of health equity indicators (N=23)[‡]	Number of tobacco-related questions (N=17)[‡]
ANATS*	11	1
AIATS*	12	7
BRFSS	19	2
TUS-CPS	14	11
NYTS	8	15
NHIS	21	3
PATH adult	20	15
PATH youth	14	15
YRBS mid*	9	4
YRBS nat	14	4
YRBS stan*	12	4

[‡] *The numbers included here refer to the total number of health equity indicators assessed (N=23) and the total number of tobacco-related questions assessed (N=17).*
*Surveys for these surveillance systems are administered by localities or researchers at irregular time points

Table 2. Number of surveillance systems (N=11) that included health equity indicators

Indicator	Number of surveillance systems
Education	11
Gender Identity	11
Race	11
Age	10
Ethnicity	10
Medical conditions	9
Mental health	9
Access to medical care	8
Alcohol use	7
Language	7
Sexual orientation	7
Disability status	6
Income	6
Location	6
Food access	5
Pregnancy status	5
Access to housing	4
Citizenship status	4
Employment status	4
Health insurance status	4
Occupation	4
Transgender Identity	4
Exposure to traumatic experiences	2

No systems assessed religion, internet access, incarceration, pollution, exposure to alcohol use/ads, or access to childcare. NHIS was the only system to assess transportation access, engagement with art, access to green space/parks, and perceived neighborhood safety.

Table 3. Number of surveillance systems (N=11) that included tobacco-related questions

Question topic	Number of surveillance systems
Cigarette use	11
Other tobacco use	10
E-cigarette use	9
E-cigarette source	7
Cessation with e-cigarettes	5
E-cigarette flavor	5
E-cigarette flavor type	5
E-cigarette device type	4
E-cigarette brand	4
Reasons for e-cigarette use	4
Susceptibility to e-cigarettes	3
Price paid for e-cigarette	3
E-cigarette ad exposure	3
Use of discount to buy e-cigarette	2
HTP use	4
HTP flavor	1
HTP flavor type	1

No systems assessed HTP advertising exposure, HTP source, use of HTPs for cessation, use of discounts to buy HTPs, HTP price, susceptibility to HTPs, or reasons for HTP use.