NH DIVISION OF Public Health Services
Department of Health and Human Services

December 2022

Data Brief: **Adverse Childhood Experiences (ACES), Adult Health Behaviors and Adult Health Outcomes**

Data from the New Hampshire (NH) Behavioral Risk Factor Surveillance System (BRFSS), 2021

BACKGROUND

The Behavioral Risk Factor Surveillance System (BRFSS) is a yearly telephone survey of adults regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. Results of the survey are used for planning and evaluating public health programs, focusing resources and monitoring the health of NH residents.

In 2021, NH BRFSS added 11 questions were about Adverse Childhood Experiences (ACEs) before the age of 18 years; 5,486 respondents answered these questions.

The 11 ACEs can be categorized as **Abuse/Neglect**:

- Physical harm by an adult
- Being sworn at or insulted by an adult
- Being touched sexually by an adult
- Being asked by an adult to touch them sexually
- Being forced to have sex by a adult

or **Household Challenges**:

- Living with someone depressed, mentally ill or suicidal
- Living with a problem drinker or alcoholic
- Living with someone who used illegal street drugs or abused prescription medications
- Living with someone who served time in prison or jail
- Witnessed violence between adults in the home
- Parents separated or divorced.

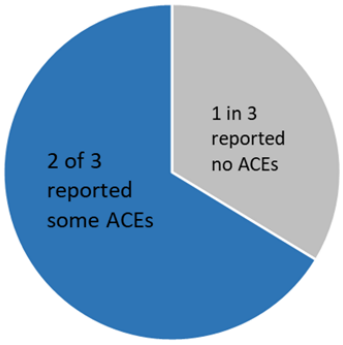
Two other questions were asked to assess the presence of **family supports** in the home:

- Was there an adult I the household who made your feel safe and protected
- Was there an adult in the household who tried hard to make sure your basic needs were met

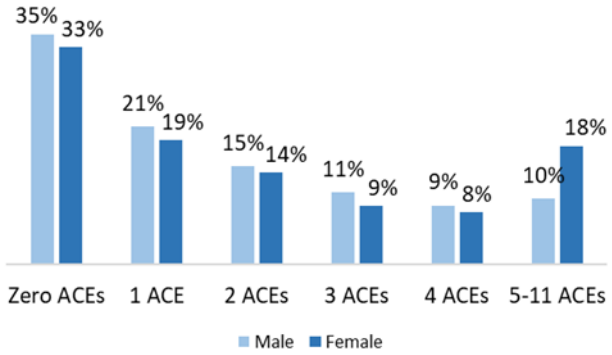
This report presents an analysis of associations between ACEs in childhood and health outcomes and behaviors in adulthood, and the possible mitigation of effects of the ACEs by the presence of family supports during childhood.

ACEs prevalence

In 2021, two of every three NH residents (66%) experienced at least one ACE in their childhood.

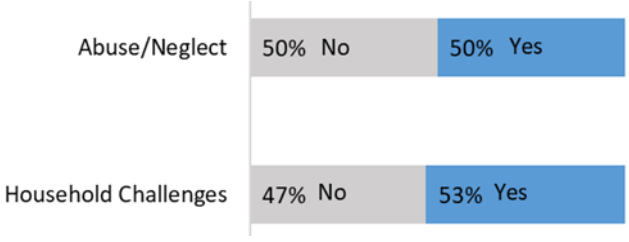


Males and females report similar numbers of ACEs between 0 and 4; but females report having 5-11 ACEs significantly more often than males (18% vs. 10%).



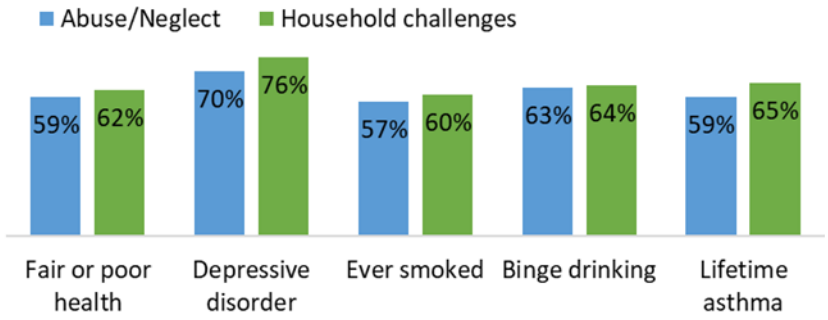
There are no racial differences in the reporting of ACEs.

Both categories of ACEs (see the categories defined in the blue box to the left) are approximately equally prevalent, occurring in about half of all persons.



Both categories of ACEs are equally associated with negative outcomes or harmful behaviors

When examining the type of ACEs experienced by those who reported certain health outcomes or behaviors, very little difference was found in the type of ACEs reported. Household challenges may appear to be slightly more strongly linked with outcomes or behaviors than Abuse/Neglect, but these small differences are not statistically significant.

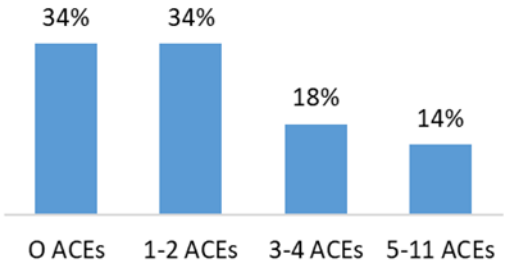


ACEs are added, showing cumulative stress

Cumulative stress is calculated by adding the number of ACEs experienced regardless of the type of ACEs, since both Abuse/Neglect and Household challenges have similar associations with the outcomes.

The ACE scores are then grouped:

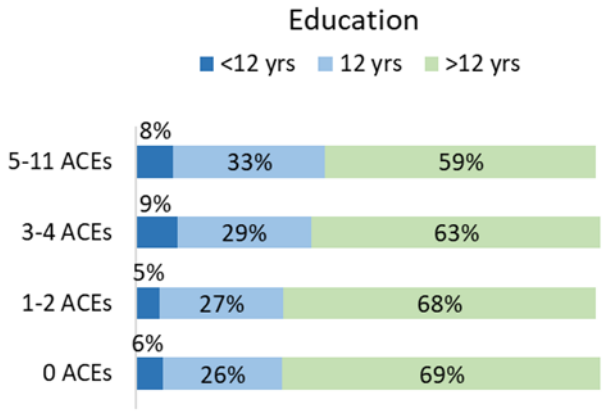
- 34% experienced no ACEs
- 34% experienced 1-2 ACEs
- 18% experienced 3-4 ACEs
- 14% experienced 5-11 ACEs

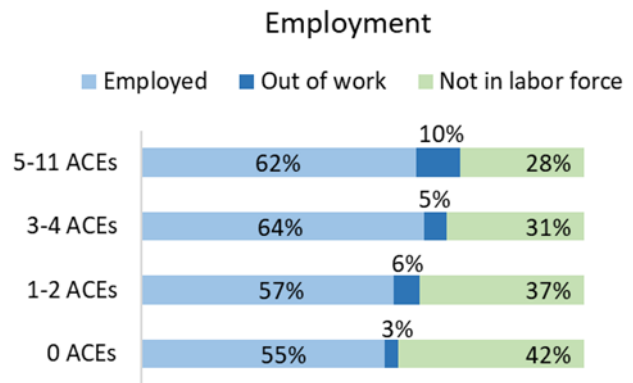


ACEs' association with education and employment

ACEs were analyzed in relation to education and employment. While it might be expected that ACEs would have a significant negative association with these, in fact the association often is not statistically significant.

Nonetheless, having more than 12 years of education is associated with zero ACEs significantly more often than with 5-11 ACEs (69% vs. 59%). And being out of work is associated significantly more often with 5-11 ACEs than zero ACEs (10% vs. 3%).



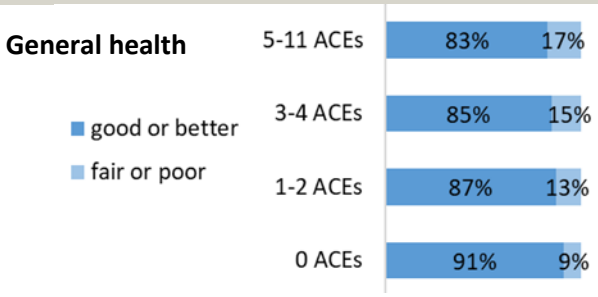


'Not in labor force' includes homemakers, students, and retired persons.

ACEs and general health

General health is reported as being good or better significantly more often among those with no ACEs (91%), compared to those with 5-11 ACEs (83%).

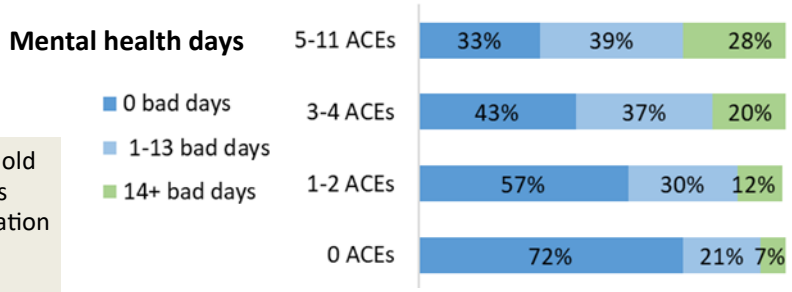
Fair to poor health is almost twice as common among those with 5-11 ACEs (17% vs. 9%).



ACEs and mental health

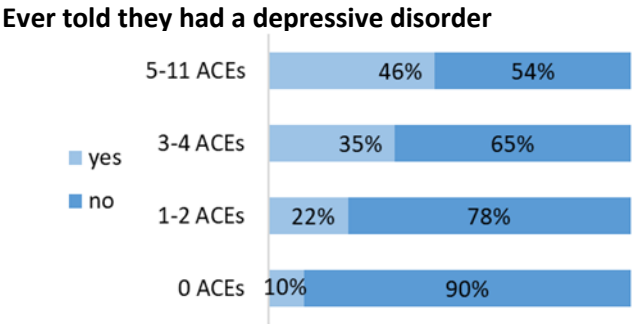
Those reporting 5-11 ACEs had 14 or more bad mental health days around four times as often (28%) than those who reported no ACEs (7%).

Fourteen or more bad mental health days is the threshold for the definition of 'frequent mental distress,' which is predictive of medical disease and health services utilization (Measuring Healthy Days, Population Assessment of Health-Related Quality of Life; US DHHS/CDC; Nov. 2000).



Nearly half (46%) of those reporting 5-11 ACEs had a depressive disorder diagnosis at some point in their lives, compared to only 10% among those reporting no ACEs.

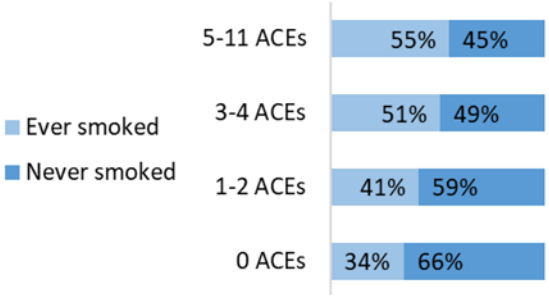
A consistent correlation is seen: as the number of ACEs increases, so does the proportion who reported having a depressive disorder, from 10% to 22% to 35% to 46%.



ACEs and substance use—smoking, vaping

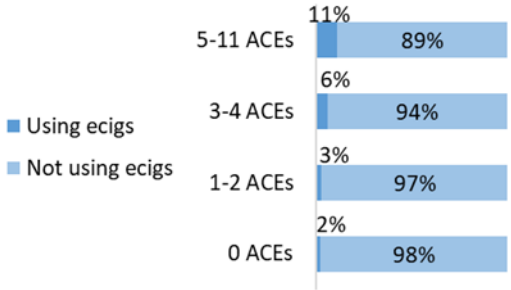
Smoking cigarettes

The proportion who ever smoked cigarettes rises from around one-third (34%) among those reporting zero ACEs, to more than one half (55%) among those reporting 5-11 ACEs.



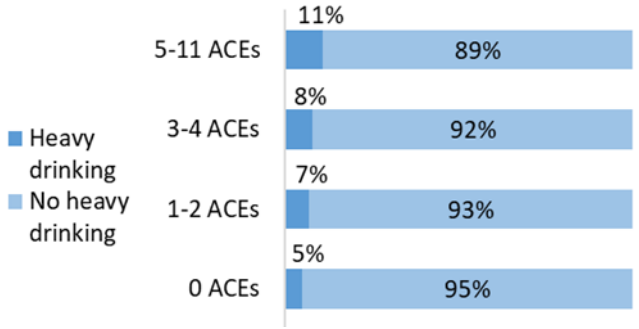
Using e-cigarettes (vaping)

Although the numbers are much smaller than with smoking, the number who use e-cigarettes increases five-fold, from 2% in those who report no ACEs, to 11% among those who report experiencing 5-11 ACEs.

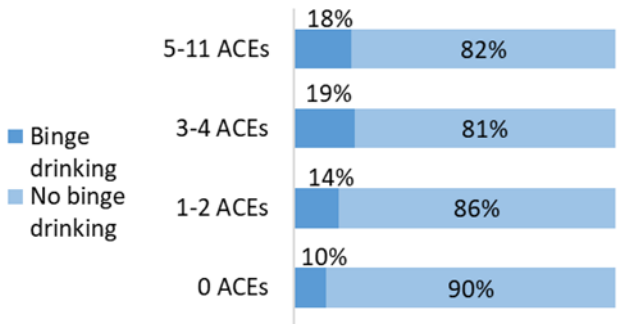


ACEs and substance use—drinking alcohol

Heavy drinking increases consistently from 5% to 11%, as the number of ACEs increases.



Similarly, binge drinking increases from 10% to 18% or 19%, as the number of ACEs increases.



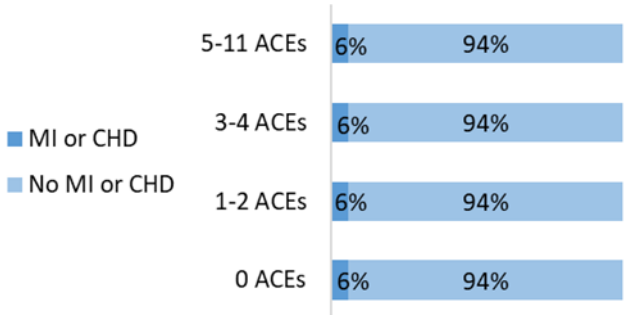
A drink is defined as any alcoholic beverage such as beer, wine, a malt beverage or liquor.

Heavy drinking is defined as adult men having more than 14 drinks per week and adult women having more than 7 drinks per week.

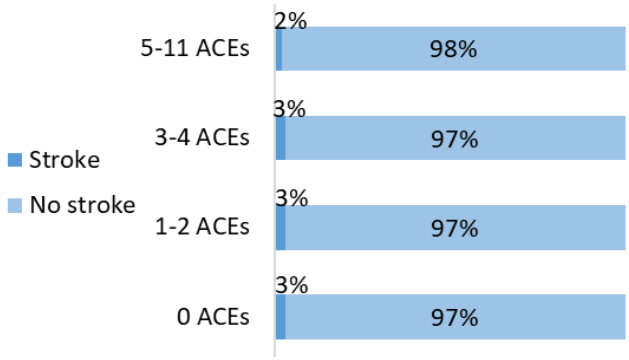
Binge drinking is defined as having 5 or more drinks for men, or 4 or more drinks for women, on one occasion.

ACEs and cardiovascular disease

No association was found between ACEs and having a myocardial infarction (MI) or coronary heart disease (CHD). The rate of MI or CHD was stable, at 6%.

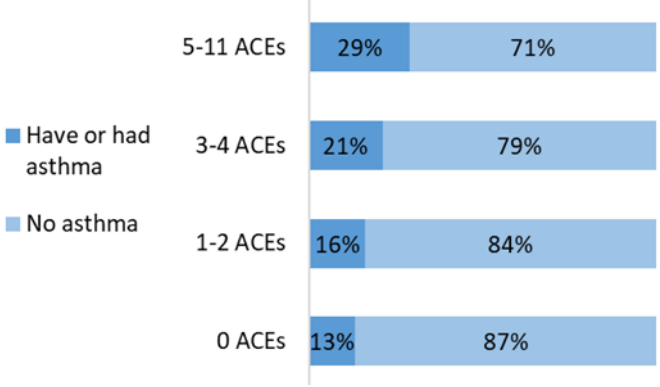


Similarly, no association was found between ACEs and having a stroke. The rate of stroke was 2-3%, regardless of ACEs.



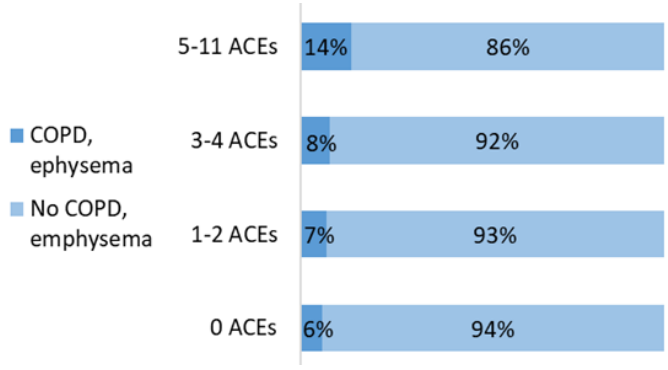
ACEs and asthma

The rate of ever having asthma was more than doubled among those reporting 5-11 ACEs (29%), compared to those who had zero ACEs (13%).



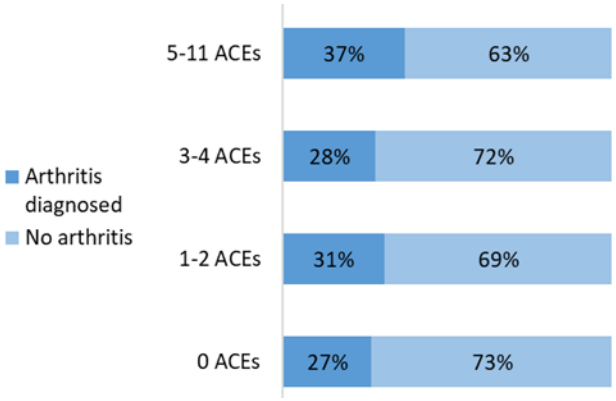
| ACEs and COPD

Similarly in the case of chronic obstructive pulmonary disease (COPD) or emphysema, the rate approximately doubled, from 6% among those with zero ACEs, compared to 14% among those with 5-11 ACEs.



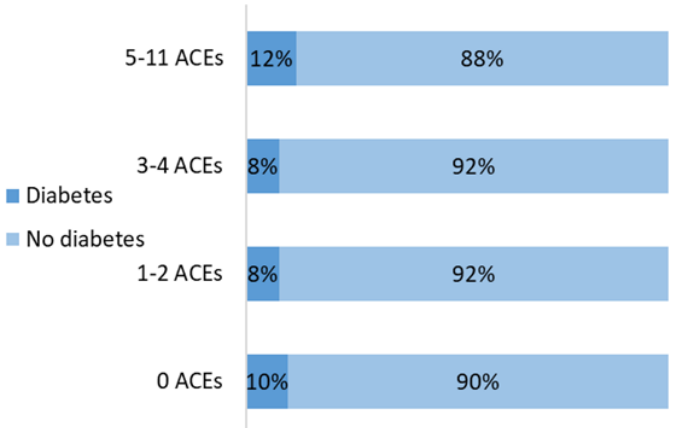
ACEs and arthritis

There is a statistically significant increase in the rate of arthritis diagnoses among those who report 5-11 ACEs (37% have arthritis) compared to those who report zero ACEs (of whom 27% report arthritis).



ACEs and diabetes

There is no significant association of ACEs with diabetes; the rate of diabetes varies from 8-12%, independently of the number of ACEs reported.

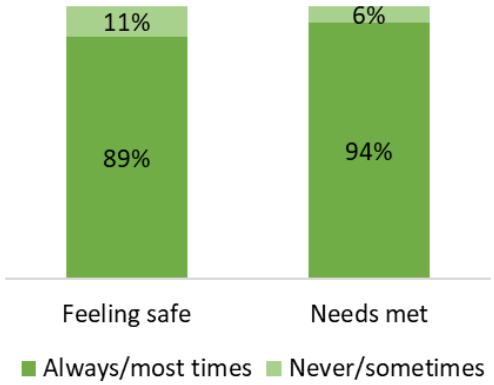


ACEs SUMMARY: Similarly to national findings and to findings of the 2016 NH BRFSS survey (the last time that the ACEs module was implemented in NH), in 2021 adults in New Hampshire who reported having a variety of negative health outcomes and/or engaging in unhealthy behaviors also often reported more ACEs than those with healthier outcomes or behaviors.

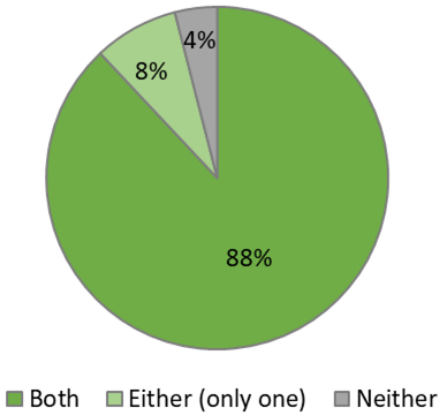
Subsequently, family supports during childhood were analyzed.

Family supports

Two family support factors were assessed. It was found that, during childhood, **89% of NH residents felt safe and protected** always or most of the time; and **94% had someone who made sure their needs were met** always or most of the time.



When combined together, it emerges that 88% had both of these family supports in their childhood, while 8% had one of these, and 4% had neither.

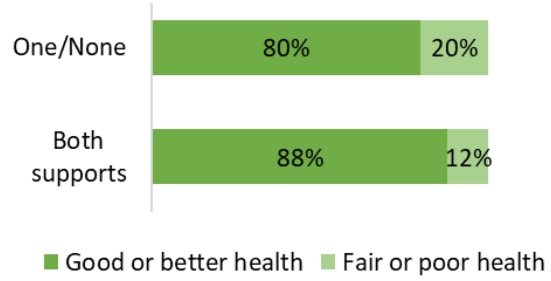


Analysis was performed to determine if these family supports had any association with the 13 behaviors and conditions previously examined. Unlike with ACEs, it was expected that any association with family supports would be toward healthy outcomes or behaviors.

The following graphics show the eight behaviors and conditions where a statistically significant difference in prevalence was found, depending on the presence or absence of family supports.

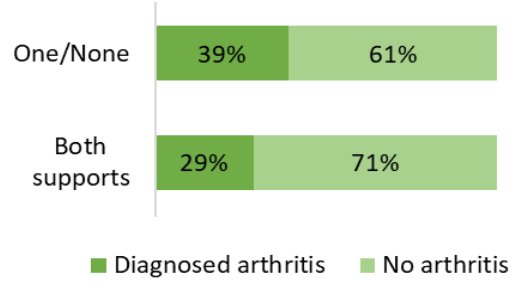
Family supports and general health

Those who had both family supports significantly more often reported **good or better health** (88%) than those who had only one or no family supports (80%).



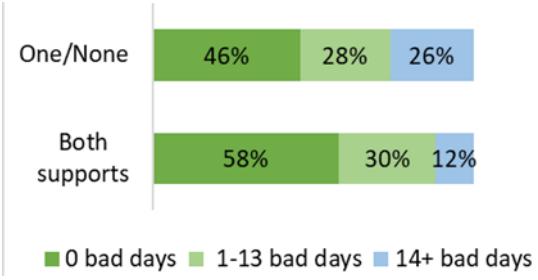
Family supports and arthritis

An **arthritis diagnosis** was found significantly less often when both supports were present (29%) than when there was only one or no family supports (39%).

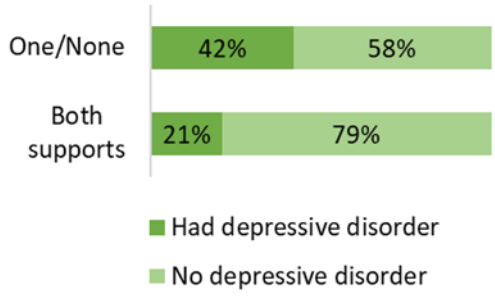


Family supports and mental health

Those who had both family supports reported zero **bad mental health days** significantly more frequently (58% vs. 46%), and those who had only one or no family supports reported 14 or more bad mental health days significantly more frequently (26% vs. 12%).

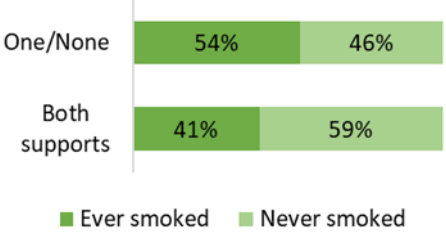


Those who had one or no family supports were told they had a **depressive disorder** twice as frequently (42%) as those who had both family supports (21%).

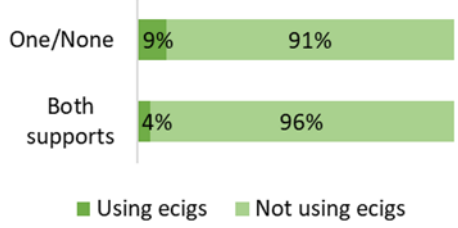


Family supports and substance use

Persons with both supports reported **smoking cigarettes** less frequently (41%) than those who had one or no family supports (54%).

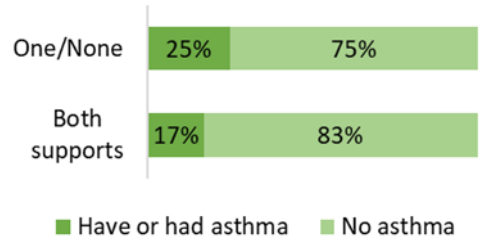


Similarly, persons with both supports reported **vaping (use of e-cigarettes)** about half as often (4% vs. 9%) as those who had only one or no family supports.



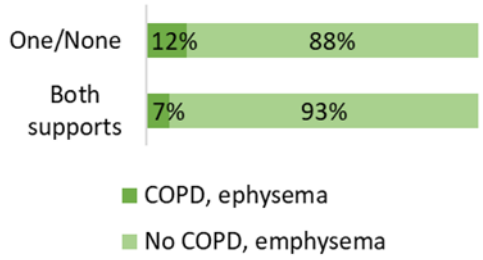
Family supports and asthma

17% of persons who reported having both family supports also reported **having asthma**, compared to 25% of those who had only one or no family supports.



Family supports and COPD

Those who had both family supports had COPD or emphysema less frequently (7%) than those who had one or no family supports (12%).



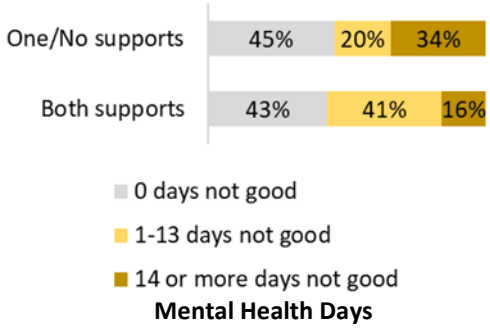
Family Supports SUMMARY: Unlike ACEs, the presence of family supports is often associated with a reduced prevalence of negative health outcomes or unhealthy behaviors.

There remains to analyze what happens to the prevalence of negative health outcomes or unhealthy behaviors in the presence of both, ACEs and family supports. Will the harmful association seen with ACEs be reduced or cancelled out by the healthful association seen with family supports?

When ACEs meet Family supports: Mental Health

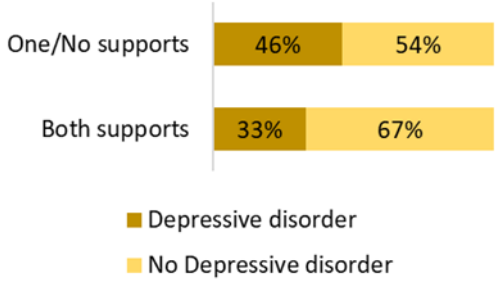
When considering mental health and the **number of days when mental health is not good**, it was found that in the presence of 3-4 ACEs, 16% of those having both family supports reported 14 or more bad mental health days, compared to 34% among those who reported one or no family supports.

In the presence of 5-11 ACEs, no statistically significant difference was seen between both supports compared to one or no supports.



In the presence of 3-4 ACEs, having a **diagnosed depressive disorder** (including depression, major depression, dysthymia, or minor depression) similarly was reported less frequently when both family supports were present (33%) compared to when only one or no family supports were present (46%).

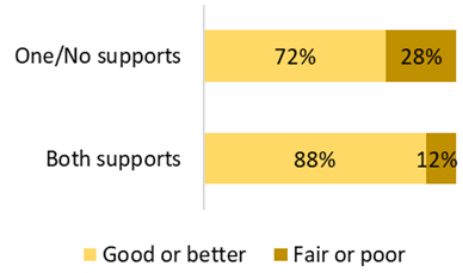
When 5-11 ACEs were reported, no statistically significant difference was seen between having both supports or having only one or no family supports.



When ACEs meet Family supports: General Health | Smoking cigarettes

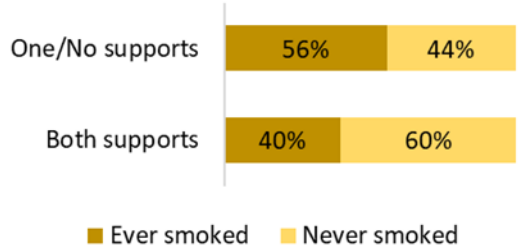
An analysis of **general health** also showed that, in the presence of 3-4 ACEs, good or better health was reported more often (88%) when both family supports were present, compared to when only one or no family supports were present (72%).

In the presence of 5-11 ACEs, no statistically significant difference in general health was seen between having both family supports, compared to one or no supports.



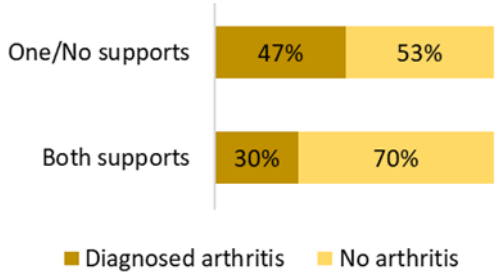
Smoking cigarettes (either currently every day, or currently some days, or former smoker), when 1-2 ACEs were reported, was less prevalent when both family supports were present (40%), compared to when there was only one or neither family support (56%).

There was no statistically significant association between smoking and family supports in the presence of 5-11 ACEs.

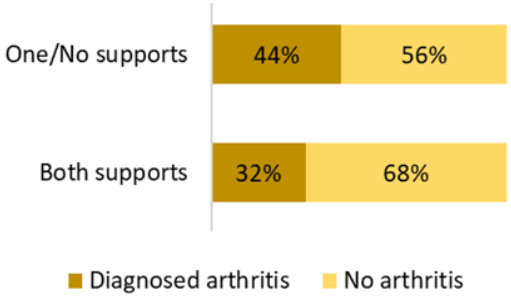


When ACEs meet Family supports: Arthritis

When 1-2 ACEs were reported, having an **arthritis diagnosis** was less prevalent when both family supports were reported (30%) than when only one or no family supports were reported (47%)



Even when 5-11 ACEs were reported, having an arthritis diagnosis was less prevalent when both family supports were also reported (32%) compared to when one or no family supports were reported (44%).



Unlike the other conditions or behaviors analyzed, arthritis is the only one that showed a statistically significant association between having family supports and a change in the outcome when 5-11 ACEs were reported.

Discussion

Adverse Childhood Experiences (ACEs) are associated with worse general and mental health, more smoking, vaping and drinking alcohol, and increases in arthritis, asthma, and chronic obstructive pulmonary disease (COPD), than is found among persons who do not experience ACEs. This does not imply a cause-effect relationship—causality cannot be discerned from this analysis of current outcomes and early childhood factors. Nonetheless, the association is interesting and statistically significant. Children who experience adverse, traumatic events are the ones who, in adulthood, disproportionately practice some unhealthy behaviors and live with some poor health outcomes.

Having family supports in childhood, in the form of an adult who made them feel safe and who took care of their needs, is associated with a reduction in some unhealthy behaviors and some poor health outcomes. This association also was statistically significant in the examples presented in this report.

Some persons experienced both ACEs and family supports. In these instances, a mitigation of harms was found in general health, mental health, smoking, and arthritis, when the number of ACEs was between one and four; when the number of ACEs was five or higher, having family supports was not associated in any mitigation, except in the sole case of arthritis.

One conclusion that can be drawn from this observation is that the beneficial association of family supports may be insufficient when childhood trauma is very extensive. Reducing ACEs may accompany a reduction of harmful behaviors or outcomes, but it will likely not eliminate them. Other factors must be considered, such as family history, co-morbidities, or genetics.

Summary

The prevalence of ACEs as reported by the NH adults in the 2021 BFRSS survey is very consistent with the ACEs prevalence in the 2016 BRFSS survey. In both, it was found that ACEs were significantly associated with general health, mental health, smoking, vaping, drinking alcohol, asthma, COPD, and arthritis; ACEs were not associated with heart attack, cardiovascular disease, stroke, or diabetes.

The 2021 survey assessed the presence of 11 ACEs, compared to 7 ACEs in 2016, and also the presence of two family supports (see the Background section on page 1 of this report).

As the number of ACEs increased, the prevalence of negative health behaviors or outcomes likewise increased; the associations with ACEs presented in this data brief are statistically significant.

The 2021 analysis of family supports showed an opposite association, with negative health behaviors or outcomes diminishing when both family supports were present. The associations with family supports presented here are likewise statistically significant. Family supports were not assessed in 2016.

Key Take-away

ACEs are associated with some negative health behaviors and outcomes, and family supports are associated with better health behaviors and outcomes.

When both are present, sometimes family supports mitigate the harms typically seen in association with ACEs, but this relationship is nullified as the number of ACEs increases to 5 or more. Family supports cannot completely counterbalance the harmful outcomes that often occur after adverse childhood experiences.

Limitation: The retrospective nature of the ACEs module within the BRFSS survey may introduce reporting bias, depending on how clearly one remembers childhood experiences. This cannot be controlled.

Technical note: The BRFSS dataset contains 6531 records. Of these, 1,045 omitted any of the 11 ACEs questions (and >90% omitted all), and 1,058 omitted either of the household support questions; these were not included in the respective analyses.

Some respondents answered Don't know/Not Sure or Refused; the number varied from 68 to 161, depending on the question; these were counted as 'no ACEs' or 'no family support' in the analysis.

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Research for this publication was supported by the Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services (DHHS) as part of an award totaling $100,000. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the US Government. For more information, please visit HRSA.gov