Gender Differences in Social and Behavioral Determinants of Health in Aging Adults

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INTRODUCTION

Adverse social determinants of health (SDOH) are associated with poor health.[1] Cumulative social risk factors, such as food insecurity and social isolation, have a higher correlation with poor health outcomes than single social risk factors.[2] New health policy incentives encourage implementation of social and behavioral risk screening and referral models into health care delivery.[3] Understanding patient variation in facing adverse SDOH will allow policy makers and health care systems to prioritize screening for those most at risk, and develop targeted SDOH interventions. Women and men may have differing individual and cumulative social risk factors which is relevant when implementing social risk screening. The objective of this research was to examine gender differences in negative SDOH in adults as they age using nationally representative data.[4]

METHODS

We used the National Health and Nutrition Examination Survey (NHANES) 2013–2014 survey wave to create a dataset of all non-institutionalized individuals ≥ 18 years old. NHANES is the only nationally representative dataset with social, behavioral and health outcomes reported at the individual level. Using the National Academy of Medicine's (NAM) ten recommended measures for social and behavioral determinants of health, we created eight variables that aligned with the corresponding domains.[5] We excluded stress as there was no equivalent variable in the NHANES data, and race/ethnicity as it is not a modifiable risk factor. Each variable was developed using applicable NHANES survey questions, then collapsed and dichotomized based on NAM scoring criteria.[5] These included the following: (1) low educational attainment, (2) income to poverty ratio (proxy for material hardship), (3) food insecurity, (4) depression, (5) tobacco use, (6) alcohol abuse, (7) low physical activity, and (8) lack of a partner (proxy for social connection). We applied survey weights to estimate nationally representative proportions by gender, which NHANES collects as a self-reported variable, for each risk factor and cumulative risk factors. Chi-square and Student's *t* tests were used to measure statistically significant gender differences. We evaluated the nationally representative proportion of men and women facing > 3 cumulative risk factors by age, using 10-year age bands since decades of life are also often used for guideline-driven recommendations for screening (i.e., colon cancer screening at age 50).

RESULTS

Of the 6113 respondents included in our analysis, 52% were women (Table 1). Men and women had equivalent mean number of risk factors. Overall, women were significantly more likely to be low income, screen positively for depression, and be unpartnered. Men were significantly more likely to be smokers.

Figure 1 demonstrates the proportions of men and women with the mean number of risk factors or higher for aging adults. Although women and men had similar rates of > 3 risk factors at younger ages (67% vs 70%, *p* value 0.34), there was a widening gender gap in risk factors as women and men age. The largest gender difference occurred in the oldest age group, > 70 years of age; 62% of women had > 3 risk factors compared with 50% of men (*p* value 0.002).

DISCUSSION

Our study found that women in the USA face different social and behavioral risk factors compared with men. Women were more likely to live in poverty, screen positive for depression, and be unpartnered. While the youngest men and women had similar number of cumulative social and behavioral risk factors, there was a significantly higher proportion of older women with > 3 risk factors compared to similarly aged men. These results expand on the existing literature that hypothesizes social risks in older women and men differ because women have a longer life expectancy and outlive their social networks resulting in higher rates of depression and decreasing social connectedness.[6] Lower lifetime earnings for women also increase their risk of poverty later in life. These are important

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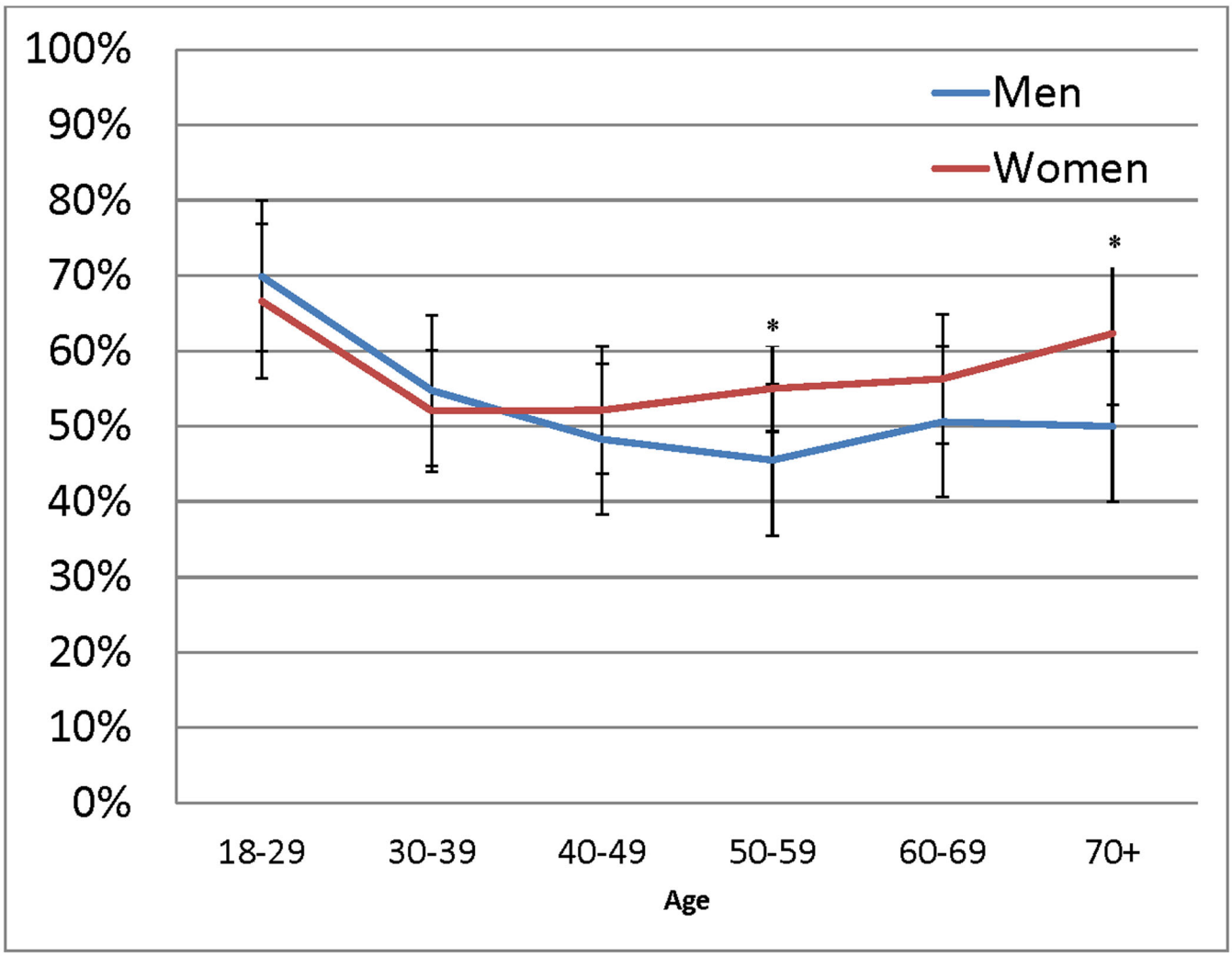

Figure 1 Prevalence of three or more social/behavioral determinants of health by age and gender: NHANES 2013–2014 survey. *p value < 0.05.

Table 1 Sample Characteristics—NHANES 2013–2014 Survey Wave

	Men	Women	p value
N (%)	2916 (48)	3197 (52)	
Mean age (SD)	45.8 (17.3)	47.1 (17.9)	0.002
Social risk factors (%)			
< H.S. diploma	686 (8)	691 (8)	0.3
Low income (family income ≤ 200% FPL)	1267 (17)	1530 (21)	< 0.001
Food insecure	832 (11)	992 (13)	0.14
Smoker	1479 (23)	1100 (20)	0.001
Not physically active	1722 (27)	1887 (29)	0.24
Unpartnered	996 (16)	1388 (22)	< 0.001
Positive depression screen	513 (9)	857 (15)	< 0.001
Positive alcohol screen	422 (13)	497 (16)	0.35
Cumulative risk factors (%)			
0	126 (4)	133 (4)	0.31
1	399 (14)	418 (13)	
2	586 (20)	661 (21)	
3	628 (22)	675 (21)	
4	559 (19)	580 (18)	
5	339 (12)	433 (14)	
6	205 (7)	205 (6)	
7	65 (2)	80 (3)	
8	9 (0.3)	12 (0.4)	
Mean cumulative risk (SD)	2.9 (1.6)	3.0 (1.7)	0.06

considerations as national priorities focus on screening for and addressing SDOH in clinics. A gender-neutral "one size fits all" screening approach may not be appropriate. Tailoring and targeting SDOH screening for women in clinical settings, especially for older women where the prevalence of multiple risk factors is highest, could increase the impact of SDOH interventions, and subsequently improve women's health and quality of life. Future work should focus on when and how women may be targeted to reduce the accumulation of social risks as they age.

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Compliance with Ethical Standards:

Conflict of Interest: *The authors declare that they do not have a conflict of interest.*

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