

LETTER

RESEARCH LETTER

Tanning bed use and depression in a preventive medicine cohort: The Cooper Center Longitudinal Study

To the Editor: Tanning bed use continues despite evidence of increased skin cancer risk. In addition to dermatologic risk, tanning bed use is linked to affective and other psychiatric disorders.¹ Individuals with a greater concern for their appearance and more depressive symptoms are more likely to engage in indoor tanning and are at risk for addiction to this unhealthy behavior.² People with depressive symptoms may seek temporary relief of their symptoms through indoor tanning and its mood-altering properties.³ The current study sought to evaluate whether depressive symptoms would be higher among tanning bed users and whether depressive symptoms were positively associated with lifetime frequency of tanning bed use.

We included 11,823 participants (32% women; mean age, 52 years) enrolled in the Cooper Center Longitudinal Study who underwent a preventive medicine examination (details described elsewhere⁴) from 2013 to 2019. Study participants were categorized into 2 groups: those who reported use of

tanning beds and those who had not. Depressive symptoms were assessed by the 10-item Center for Epidemiologic Studies Depression Scale. A lifetime frequency of tanning bed use (per year) was calculated by dividing the number of times a tanning bed was used by the time between tanning onset and examination date. Logistic regression models of Center for Epidemiologic Studies Depression Scale score ≥ 10 were fitted to tanning bed use and adjusted for age, sex, race/ethnicity, body mass index, thyroid-stimulating hormone, serum vitamin D, education, smoking status, self-rating of health, alcohol intake, cardiorespiratory fitness, and cancer history.

Descriptive characteristics of study participants are presented in Table I. Of 11,823 participants, 1791 (15.1%) reported tanning bed use. Tanning bed users were younger ($P < .001$), more likely to smoke (women, $P = .009$; men, $P = .022$), and had higher fitness levels ($P < .001$) than nontanners. Female tanning bed users were more likely to be heavy drinkers ($P = .035$). Self-reported history of depression was higher among tanning bed users ($P < .001$). Tanning bed users reported tanning on average 4.2 (SD, 12.5) times per year with a wide range (1-200

Table I. Characteristics of participants by sex and tanning bed use, Cooper Center Longitudinal Study, 2013-2019

Variable*	Women		Men	
	No tanning bed use (n = 2582)	Tanning bed use (n = 1147)	No tanning bed use (n = 7450)	Tanning bed use (n = 644)
Age, y	53.3 (11.3)	48.0 (11.1)	53.3 (10.9)	49.5 (10.0)
White	2244 (86.9)	1109 (96.7)	6182 (91.4)	622 (96.6)
Education, y	16.2 (2.2)	15.8 (2.1)	16.7 (2.1)	16.7 (2.1)
Current smoker	65 (2.5)	45 (3.9)	722 (9.7)	72 (11.2)
Self-rated health				
Poor	42 (1.6)	23 (2.0)	157 (2.1)	22 (3.4)
Fair	369 (14.3)	190 (16.6)	1366 (18.3)	115 (17.9)
Good	1505 (58.3)	674 (58.8)	4219 (56.6)	375 (58.2)
Excellent	586 (22.7)	233 (20.3)	1508 (20.2)	122 (18.9)
Heavy drinker [†]	488 (18.9)	245 (21.4)	784 (10.5)	76 (11.8)
Personal history of cancer	128 (5.0)	79 (6.9)	654 (8.8)	50 (7.8)
Body mass index, kg/m ²	25.3 (4.9)	24.8 (4.7)	28.1 (4.2)	28.2 (4.0)
Thyroid-stimulating hormone >5 μ IU/mL	92 (3.6)	43 (3.7)	199 (2.7)	17 (2.6)
Serum vitamin D ≥ 30 ng/mL	1765 (68.4)	767 (66.9)	4579 (61.5)	407 (63.2)
Cardiorespiratory fitness, METs	9.4 (2.0)	9.7 (2.0)	11.1 (2.3)	11.3 (2.2)
CES-D score ≥ 10	286 (11.1)	165 (14.4)	489 (6.6)	87 (13.5)
Personal history of depression	477 (18.5)	317 (27.6)	692 (9.3)	99 (15.4)

CES-D, Center for Epidemiologic Studies Depression Scale; METs, metabolic equivalent of task.

*Categorical data are presented as the number (%) and continuous data as the mean (SD).

[†]For women, >7 drinks per week; for men, >14 drinks per week.

Association between frequency of tanning bed use and depressive symptoms according to history of depression with p-values for differences, Cooper Center Longitudinal Study, 2013-2019.

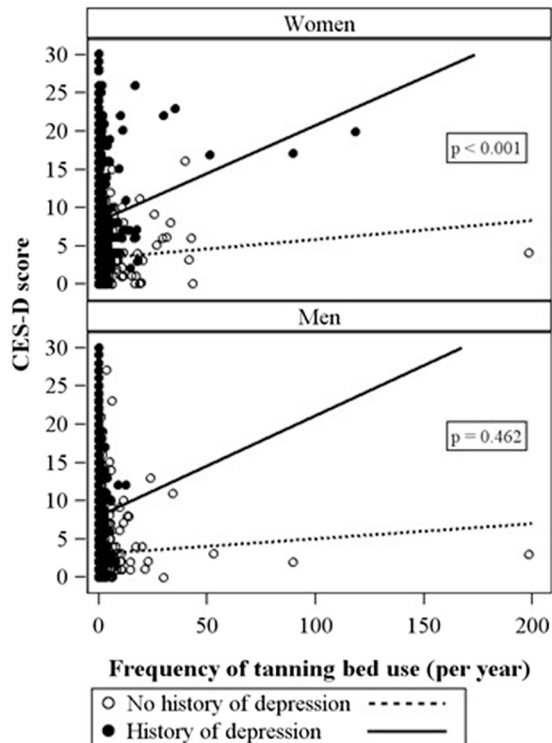


Fig 1. Depressive symptoms were directly associated with tanning bed use frequency. This relationship was stronger in those with a self-reported history of depression. *CES-D*, Center for Epidemiologic Studies Depression Scale.

times per year). Tanning bed use was associated with greater odds of depressive symptoms in men (odds ratio, 1.86; 95% confidence interval, 1.41-2.44; $P < .001$), and a similar pattern was seen in women (odds ratio, 1.26; 95% confidence interval, 0.99-1.61; $P = .06$). Fig 1 reveals that Center for Epidemiologic Studies Depression Scale scores were positively associated with tanning bed use frequency. Of note, this relationship was stronger in those with a self-reported history of depression.

In summary, in a generally healthy population, depressive symptoms were associated with tanning bed use. Prior results should encourage medical professionals to ask patients about their tanning bed use in an effort to decrease skin cancer risk through

education on the risks of artificial ultraviolet exposure. These results show that it is important to evaluate for depressive symptoms in individuals reporting regular use of tanning beds. As tanning bed use is known to contribute to the diagnosis of melanoma,⁵ educating patients on the known risks of tanning bed use as well as ensuring that primary care or psychiatry health care providers, or both, identify other options to effectively treat depression.

Katie Kinser,^a Carolyn E. Barlow, PhD,^a David Leonard, PhD,^a Stephen W. Farrell, PhD,^a Andjelka Pavlovic, PhD,^a Helen G. Kaporis, DO,^b E. Sherwood Brown, MD, PhD,^c Benjamin L. Willis, MD, MPH,^a and Laura F. DeFina, MD^a

From The Cooper Institute,^a Cooper Clinic,^b and the Department of Psychiatry, University of Texas Southwestern Medical Center,^c Dallas, Texas.

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Correspondence and reprint requests to: Carolyn E. Barlow, PhD, The Cooper Institute, 12330 Preston Rd, Dallas, TX 75230

E-mail: bwright@cooperinst.org

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