

# Psychological Distress and Adherence to Mammogram Screening

## Recommendations: Results from the 2018 Health Information National Trends Survey

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### PURPOSE AND BACKGROUND

- **Psychological distress** has been shown to be a barrier to adherent breast cancer screening.
- However, psychological distress is a general term that includes multiple concepts such as depression and anxiety.

### OBJECTIVE

- To examine the relationship between specific aspects of psychological distress and adherence to mammogram screening.

### METHODS

#### DATA SOURCE

- The **2018 Health Information National Trends Survey (HINTS)**.
- HINTS is conducted by the National Cancer Institute to monitor the US population's use of cancer-related information.

#### SAMPLE

- Women aged 40-74 (**N=1,205**).

#### OUTCOME

- Mammogram screening was dichotomized as adherent (screened within the past 2 years) or non-adherent (screened >2 years ago or never).

#### MAIN PREDICTOR

- The **Personal Health Questionnaire-4 (PHQ-4)**. A 4-item measure in which each item is scored 0-3 based on frequency of occurrence. Items assess: feeling nervous anxious, or on edge; not being able to stop or control worrying; feeling down, depressed, or hopeless; and little interest or pleasure in doing things.

#### ANALYSES

- Population weighted logistic regression models examined the odds of mammogram adherence.

### RESULTS

- Most women had some college or more (69%), and less than 8% had less than a high school education. Non-Latina white women represented the largest racial/ethnic group (61%), and adherence did not significantly vary by race/ethnicity.
- Worrying status varied significantly by mammogram status. Approximately twice as many non-adherent women (13.7%) reported worrying "*nearly every day*" compared to adherent women (5.6%). Mammogram adherence also varied by income level and the ability to independently take care of one's health.

Sample distribution and comparison of female respondents aged 40-74 adherent and non-adherent to mammogram screening in the 2018 Health Information National Trends Survey (N=1,205)

Demographics	n	Full Sample % (SE)	Mammogram Status		p-value*
			Adherent (n=921)	Non-Adherent (n=284)	
<b>Age</b>					0.06
40-44	135	16.87 (1.73)	12.60 (2.00)	29.41 (4.18)	
45-49	140	18.94 (1.82)	15.49 (1.78)	21.93 (3.16)	
50-54	205	21.90 (1.82)	24.04 (2.54)	15.83 (2.94)	
55-59	196	13.65 (0.49)	14.73 (0.86)	10.49 (1.97)	
60-64	200	13.00 (0.54)	14.37 (0.96)	8.96 (2.09)	
65-69	195	9.99 (0.47)	10.45 (0.63)	8.86 (1.66)	
70-74	134	7.65 (0.40)	8.33 (0.55)	5.65 (1.24)	
<b>Race/ethnicity</b>					0.63
Latina	163	13.09 (1.42)	12.00 (1.32)	16.28 (3.40)	
Non-Latina Black	184	13.01 (1.27)	13.15 (1.58)	12.62 (2.72)	
Non-Latina White	674	60.65 (1.61)	61.93 (1.89)	56.92 (4.07)	
Other/Unknown	184	13.25 (1.33)	12.93 (1.34)	14.18 (3.13)	
<b>Education level</b>					0.51
< high school	95	7.18 (1.05)	6.30 (1.12)	9.77 (2.68)	
High school	223	23.35 (1.56)	23.82 (1.68)	22.57 (3.38)	
College+	887	69.46 (1.61)	70.08 (1.76)	67.66 (3.37)	
<b>Income level</b>					0.04
\$0-\$19,999	194	12.33 (1.09)	10.64 (1.06)	17.26 (2.69)	
\$20,000-\$74,999	484	38.70 (1.96)	37.71 (2.03)	41.60 (3.67)	
\$75,000+	402	39.43 (2.05)	41.85 (2.37)	32.33 (3.69)	
Other/Unknown	125	9.54 (1.14)	9.79 (1.28)	8.80 (2.69)	
<b>Self-reported health</b>					0.23
Health status					
Excellent	147	12.92 (1.14)	13.18 (1.41)	12.18 (2.15)	
Very good	458	36.40 (2.03)	38.36 (2.50)	30.64 (3.86)	
Good	403	34.20 (1.89)	33.53 (2.10)	36.18 (4.06)	
Fair	158	13.22 (1.49)	12.54 (1.50)	15.22 (2.80)	
Poor	39	3.25 (0.79)	2.39 (0.77)	5.78 (1.95)	
<b>Independently take care of health</b>					0.03
Completely confident	330	26.62 (2.01)	26.03 (2.42)	28.37 (3.59)	
Very confident	552	45.38 (2.14)	49.00 (2.41)	34.76 (4.56)	
Somewhat confident	287	24.85 (1.90)	22.58 (2.16)	31.51 (3.34)	
A little confident	27	2.12 (0.60)	1.43 (0.42)	4.14 (1.65)	
Not confident at all	9	1.03 (0.36)	0.96 (0.45)	1.22 (0.63)	
<b>PHQ-4 items</b>					0.62
Little interest					
Nearly every day	73	5.79 (1.06)	5.04 (1.20)	7.98 (2.41)	
More than half the days	93	8.83 (1.25)	8.26 (1.40)	10.49 (2.52)	
Several days	239	19.59 (1.68)	19.85 (1.94)	19.40 (3.49)	
Not at all	800	65.80 (1.92)	67.05 (2.41)	62.13 (3.92)	
Hopelessness					0.07
Nearly every day	49	4.26 (0.95)	3.28 (1.07)	7.11 (2.17)	
More than half the days	74	6.37 (0.90)	5.73 (1.03)	8.25 (2.22)	
Several days	232	19.99 (1.73)	17.93 (1.96)	26.32 (4.06)	
Not at all	850	69.38 (1.89)	73.15 (2.27)	58.32 (4.73)	
Nervousness					0.24
Nearly every day	55	5.16 (1.02)	4.98 (1.24)	5.68 (1.81)	
More than half the days	84	6.80 (0.91)	5.40 (1.06)	10.85 (2.42)	
Several days	291	25.18 (1.64)	25.19 (1.86)	25.18 (3.91)	
Not at all	775	62.86 (2.01)	64.43 (2.26)	58.26 (5.05)	
Worrying					0.01
Nearly every day	80	7.63 (1.24)	5.55 (1.20)	13.71 (2.67)	
More than half the days	65	4.87 (0.86)	4.73 (0.92)	5.29 (2.19)	
Several days	252	20.35 (1.59)	19.86 (1.77)	21.82 (3.34)	
Not at all	808	67.15 (1.99)	69.86 (2.21)	59.18 (3.99)	

\* Adjusted Chi-square test

### MULTIVARIATE ANALYSES

- Women with higher frequency of not being able to control or stop worrying experienced significantly *lower odds* of mammogram screening compared to those with lower worrying scores in models adjusted for age, race/ethnicity, education, and income level.
- In contrast, no other individual items of the PHQ-4 had a significant relationship with mammogram screening outcomes.
- Interactions were also tested among worrying, race/ethnicity, and education level.

Odds of adherent mammogram screening for female respondents aged 40-74 in the 2018 Health Information National Trends Survey (N=1,205)

PHQ-4 item	OR	95% CI
Worrying	0.75***	0.62-0.90
<b>Demographics</b>		
Age	1.05***	1.03-1.08
Race/ethnicity		
Latina	0.83	0.45-1.53
Non-Latina Black	1.36	0.66-2.80
Non-Latina White	Ref.	
Other/Unknown	0.99	0.52-1.91
Education level		
< high school	0.89	0.35-2.25
High school	1.11	0.70-1.75
College+	Ref.	
Income level		
\$0-\$19,999	0.44*	0.24-0.79
\$20,000-\$74,999	0.65*	0.43-0.96
\$75,000+	Ref.	
Other/Unknown	0.64	0.27-1.52

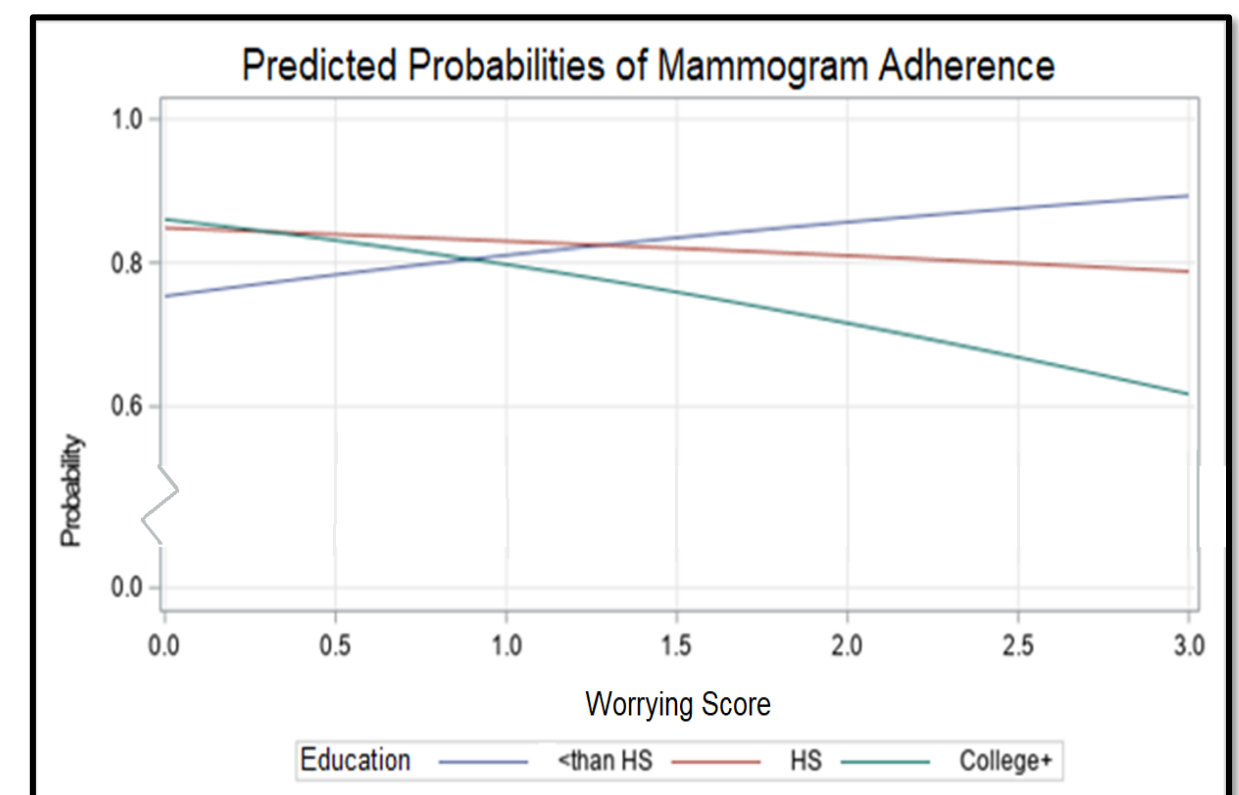
\*P < .05, \*\*P < .01, \*\*\*P < .001

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### INTERACTION

- A **significant interaction** was observed between worrying and education level.



- For women with less than a high school education, more worrying *increased* the odds of adherent mammogram screening.
- In contrast, women with some college or more had *lower odds* of adherent mammogram screening with more worrying.

### DISCUSSION

- These findings suggest that the frequency of not being able to control or stop worrying is the main component of psychological distress driving lower adherence to mammograms. Further, worrying impacts screening behavior differently based on education level.
- Routine screening for psychological distress might identify women at risk for poor adherence to breast cancer screening who could benefit from supplemental interventions to help them overcome barriers.

### LIMITATIONS

- Results are cross-sectional, the directionality of the relationship is not known.
- The PHQ-4 indicates general psychological distress and worrying. It does not measure cancer-related distress or screening distress.