
PREDICTORS OF INTENTIONAL AND
UNINTENTIONAL NON-ADHERENCE,
AND ASSOCIATED HEALTH
UTILITIES, AMONG WOMEN
RECEIVING ORAL TREATMENTS
FOR BREAST CANCER

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Kantar Health Contact:

Amir Goren, PhD; Shaloo Gupta, MS; Lulu K.
Lee, PhD (Kantar Health)

Kuang-Yi Wen, PhD; Daniel M. Geynisman,
MD (Fox Chase Cancer Center Temple Health)

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BACKGROUND

Introduction

- As breast cancer (BC) survivorship increases, maintenance treatment with adjuvant endocrine therapy (ET) is critical to improved long-term survival and recurrence prevention.¹⁻⁶
- Suboptimal adherence is seen in clinical practice: 12-59% (tamoxifen, a selective estrogen receptor modulator [SERM]) and 9-50% (aromatase inhibitors [AIs]) non-adherence, plus high non-persistence after 5 years.⁷
- Factors associated with non-adherence to tamoxifen and AIs:⁸
 - Patient-related (race, age, fear of adverse events [AEs], forgetfulness, smoking)
 - Tx-related (duration, additional Rx, side effects)
 - Healthcare system (patient-provider relationship)
 - Socioeconomic (Rx costs, marital status)
 - Disease-related (comorbidities, BC stage)

1. *From Cancer Patient to Cancer Survivor: Lost in Transition*. Institute of Medicine; 2005
2. Burstein *et al.* *J Clin Oncol.* 2010
3. Early Breast Cancer Trialists' Collaborative G. *Lancet.* 1998;351:1451-1467
4. Haque *et al.* *Cancer Med.* 2012;1(3):318-327
5. Davies *et al.* *Lancet.* 2013;381(9869):805-816
6. Petrelli *et al.* *Breast Cancer Res Treat.* 2013;140(2):233-240
7. Murphy *et al.* *Breast Cancer Res Treat.* 2012;134(2):459-478
8. Sawesi *et al.* *Clin J Oncol Nurs.* 2014 Jun;18(3):E50-7



OBJECTIVE

Objective

- Examine potential predictors (demographic and lifestyle behaviors) of intentional (INA) and unintentional (UNA) non-adherence among women receiving oral treatments for BC using real-world data.
- Quantify health utilities (burden) associated with INA and UNA.
- These findings can help support development of targeted, effective interventions addressing underlying unhealthy behaviors to maximize the benefit of ET.



METHODS

Methods

Data Source

National Health and Wellness Survey (NHWS):

- Cross-sectional, Internet-based survey of adults (≥ 18 years)
- Stratified random sampling (by age, gender, and ethnicity) used to reflect Census distributions of the total US adult population
- 2010-2015 US NHWS data

N=679 females reporting diagnosis with BC and adjuvant/metastatic oral therapy (exclusive):

- AIs (n=457)
- SERMs (n=222)

Methods

Measures

- Demographics
 - Age
 - Race/ethnicity
 - Education
 - Employment
 - Income
 - Marital status
 - Health insurance
- Health Outcome
 - SF-6D health utilities^{11,12}
- Lifestyle Behaviors
 - Exercise
 - Alcohol
 - Cigarette smoking
- Health Characteristics
 - BMI (height/weight)
 - Charlson comorbidity index^{9,10}
 - BC stage at diagnosis
 - SERMs vs. AIs

9. Charlson *et al.* *J Chron Dis.* 1987; 40(5):373-83
10. Quan *et al.* *Am J Epidemiol.* 2011;173(6):676-82
11. Brazier *et al.* *J Health Econ.* 2002;21:271-92
12. Walters & Brazier. *Qual Life Res.* 2005;14(6):1523-32

Methods

Measures

- Adherence

- Morisky Medication Adherence Scale (MMAS) equivalent items from MMAS-4¹³ and MMAS-8¹⁴ were summed to create scores for:
 - Intentional non-adherence (INA): stop taking medicine when feeling better/worse
 - Unintentional non-adherence (UNA): forget or miss taking medication
 - These were categorized: 0 = adherent; 1+ = non-adherent

13. Morisky *et al.* *Med Care.* 1986;24:67-74

14. Morisky *et al.* *J Clin Hypertens.* 2008;10(5):348-354

Methods

Analyses

- Binary logistic regressions predicted INA or UNA from variables noted previously, plus UNA or INA, respectively.
- A normal generalized linear model predicted health utilities from INA and UNA, controlling for covariates.

13. Morisky *et al.* *Med Care.* 1986;24:67-74

14. Morisky *et al.* *J Clin Hypertens.* 2008;10(5):348-354



RESULTS

Results

Sample

- Among 679 total respondents, 6.0% reported INA and 22.4% reported UNA; 3.2% reported both.
 - Mean age = 61.64 (SD=11.06)

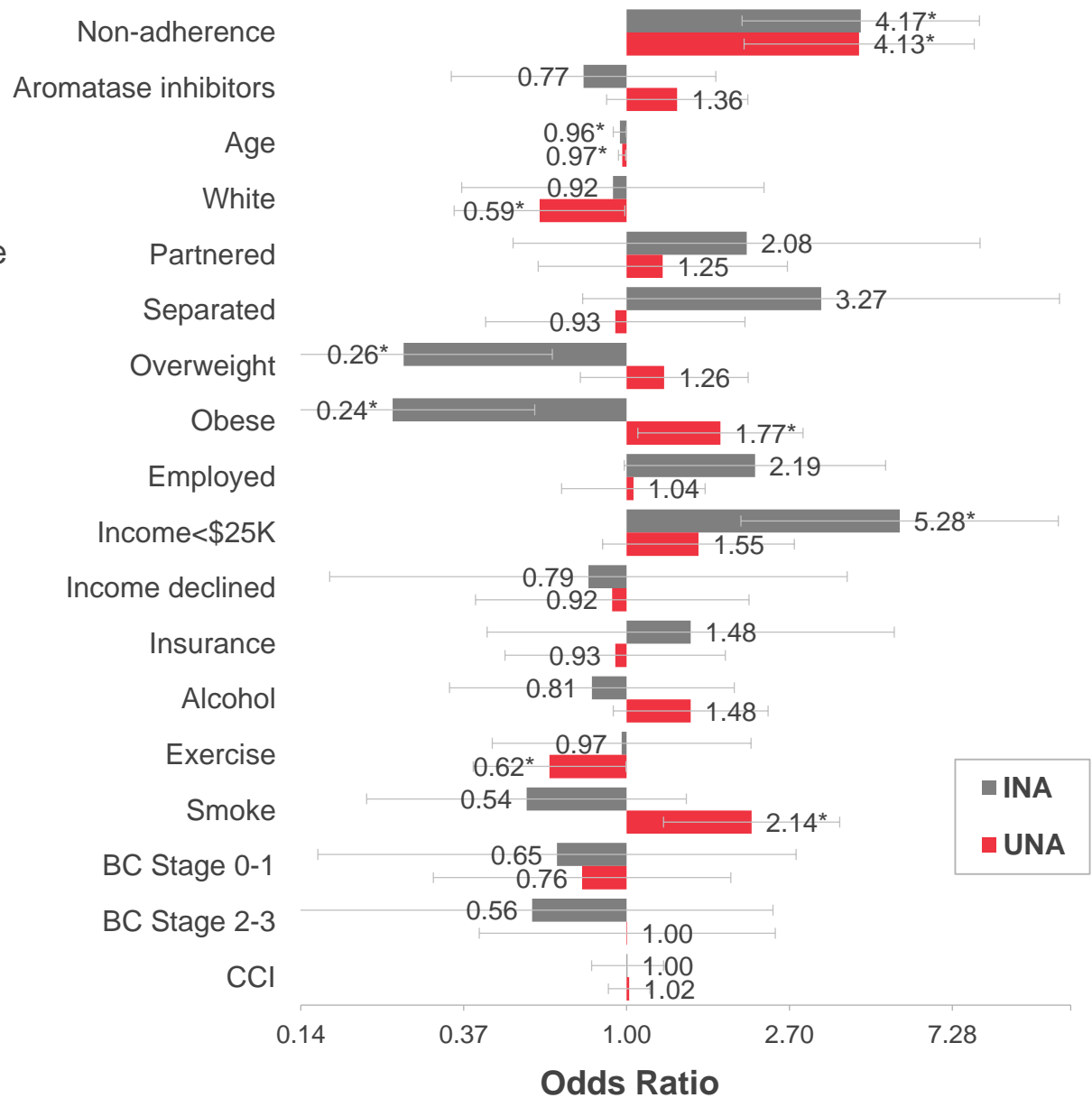
Descriptive Results

		%	N
Non-adherence	Adherent	74.8%	508
	Non-adherent	25.2%	171
Oral ET	Als	67.3%	457
	SERMs	32.7%	222
Employment status	Employed FT/PT/Self	38.3%	260
	Disabled	7.7%	52
	Unemployed	54.1%	367
Health insurance	No	8.2%	56
	Yes	91.8%	623
Smoke cigarettes	No	87.2%	592
	Yes	12.8%	87

Results

Multivariable Results

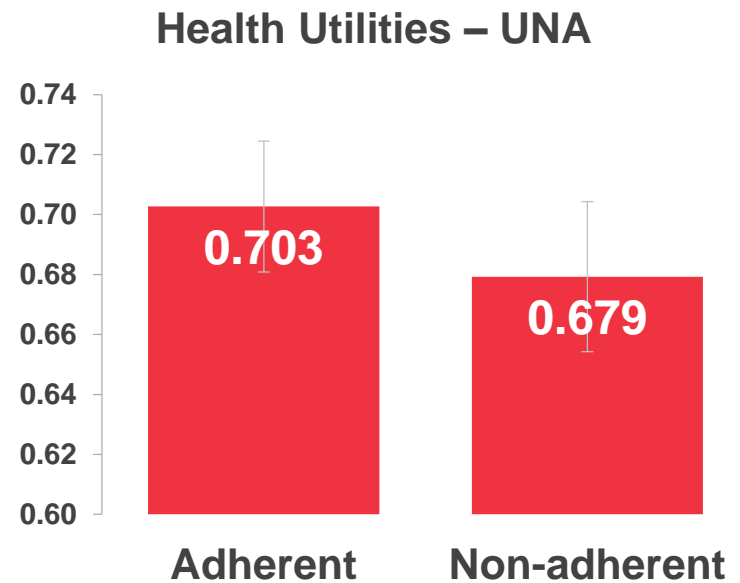
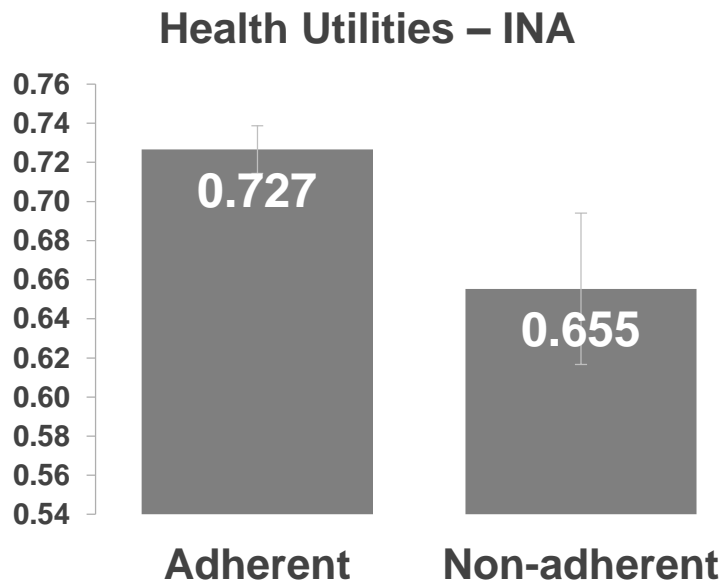
- Significant predictors of INA included UNA (OR=4.17), age (OR=0.96), income <\$25K (OR=5.28), non-overweight BMI (OR=3.90), and non-obesity (OR=4.17).
- Significant predictors of UNA included INA (OR=4.13), age (OR=0.97), non-white ethnicity (OR=1.70), obesity (OR=1.77), infrequent exercise (OR=1.60), and smoking (OR=2.14).



Results

Multivariable Results

- Adjusting for covariates (age, ethnicity, employment, marital status, BMI, health insurance, income, etc.):
 - INA and UNA were each associated with significantly lower **health utilities** ($b_{\text{INA}}=-0.071$, $p=0.001$; $b_{\text{UNA}}=-0.023$, $p=0.048$)





CONCLUSIONS

Conclusions

- Self-reported non-adherence to oral ET in women with BC was common (25.2%).
 - Similar to previously reported rates of 23.7%-32.2%^{15,16}
- Both INA and UNA were associated with significantly poorer health status; INA had a greater impact (>minimally important difference [MID]).¹²
 - Non-adherence and decreased health-related quality of life (HRQoL) findings mirror previous NHWS research in BC and other conditions¹⁷
- Younger age was associated with both INA and UNA.
 - Previous research found 1-year age increments were associated with better adherence¹⁶
- Lower income and non-overweight/obese respondents were at greater risk of INA.

15. Brito *et al.* *BMC Cancer*. 2014;14:397

16. Quinn *et al.* *Ir J Med Sci*. 2016;85(2):383-92

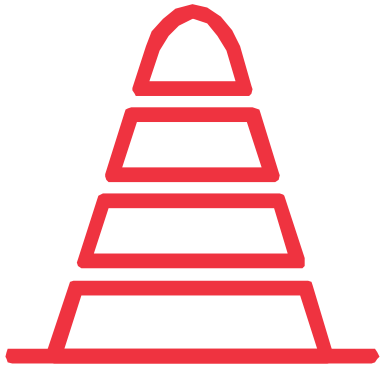
17. daCosta DiBonaventura *et al.* *Am Health Drug Benefits*. 2014;7(7):386-96

Conclusions

- Given relatively high UNA prevalence in BC, targeted interventions may help reduce UNA especially, to improve outcomes among at-risk populations (e.g., younger adults, non-whites, obese or sedentary patients, and smokers) predisposed to non-adherence.
- Given recommendations of 10 years of adjuvant therapy and evidence of decreased survival when this is interrupted, improved adherence is key in delaying disease progression, thereby leading to better outcomes.
- Targeted interventions should be less complex and less toxic, as previous research found that forgetfulness and AEs are the most common reasons for non-adherence.¹⁷

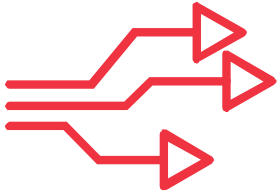
17. daCosta DiBonaventura *et al.* *Am Health Drug Benefits.* 2014;7(7):386-96

Limitations



- Causal conclusions cannot be drawn from cross-sectional data.
- Self-report measures associated with recall and other biases.
- Generalizability is limited to those with access, motivation, and ability to participate in online surveys.
- Majority of patients were non-Hispanic white.

Implications



Given increasing use of oral ET in BC, suboptimal adherence levels, and detrimental effects of non-adherence, interventions in those at highest risk should be developed and tested.

For UNA:



- Develop tools to aid adherence (e.g., reminders; get family/caretaker involved)
- Refills on time

For INA:



- Increase patient education
- Address costs