ADHERENCE AND ITS ASSOCIATION WITH HEALTH OUTCOMES AMONG PATIENTS CURRENTLY TREATED FOR LEUKEMIA, MELANOMA, OR NON-SMALL CELL LUNG CANCER (NSCLC)

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ABSTRACT

OBJECTIVE: Cancer treatment is rapidly evolving with the emergence of highly effective oral targeted therapies, which has elevated the importance of adherence. This study examined the rates and effect of real-world non-adherence from a patient perspective among those using treatments where such oral therapies are the standard of care.

METHODS: Data from the 2012 U.S. National Health and Wellness Survey (NHWS) were analyzed. Patients who reported a diagnosis of either leukemia, melanoma, or non-small cell lung cancer (NSCLC) and reported currently using a treatment for their condition were included in the analyses. Adherence was measured using the Morisky Medication Adherence Scale (MMAS-8) modified for use in oncology. Sociodemographics, health history, and health outcomes were also assessed. Descriptive analyses of adherence were conducted along with an assessment of the relationships between adherence and health outcomes.

RESULTS: 103 respondents were included in the analyses (n=42, 41, and 20 for leukemia, melanoma, and NSCLC, respectively). Most respondents were male (69.9%) and the mean age was 57.1 years (SD=15.79). Across the three tumor types, 65.0% of respondents reported some form of non-adherent behavior (71.4%, 58.5%, and 65.0% for leukemia, melanoma, and NSCLC, respectively). Pooling tumor types, patients who were non-adherent reported significantly worse mental health status compared with patients who were adherent (mean=44.41 vs. 49.48, p<.05). Similar trends (though only marginally significant) were observed for hospitalizations (mean=0.97 vs. 0.42, p=.11) and emergency room visits (mean=1.18 vs. 0.25, p=.07) in the past six months.

CONCLUSIONS: These results suggest a significant level of non-adherence among patients being treated for leukemia, melanoma, and NSCLC. Although statistical power was modest due to small sample size, preliminary results suggest a deleterious effect of non-adherence on health outcomes. As more oral targeted therapies emerge, an emphasis should be placed on improving adherence rates to maximize treatment benefit and reduce societal costs.

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INTRODUCTION

- Cancer treatment is rapidly evolving, with the emergence of highly effective oral targeted therapies. These oral therapies have elevated the importance of adherence.

OBJECTIVES

- This study examined the rates and effect of real-world non-adherence, from a patient perspective, among those using treatments where such oral therapies are the standard of care.

METHODS

Sample Source

- Data from the 2012 U.S. NHWS were analyzed.
- Patients who reported a diagnosis of either leukemia, melanoma, or NSCLC and reported currently using a treatment for their condition were included in the analyses.

Measures

- Adherence was measured using the MMAS-8, modified for use in oncology.
- Sociodemographics and health history were assessed, as were health outcomes measures.
- Work Productivity and Activity Impairment questionnaire-based measures were assessed, which only included data for those employed full-time, part-time, or self-employed for work productivity [1].
- Health-related quality of life (HRQoL) included Mental and Physical Component Summary (MCS and PCS) scores and health utilities (SF-6D) from the SF-36v2 [2].
- Healthcare resource utilization measures included the number of visits to a traditional provider and the number of times respondents had been to the emergency room (ER) or hospitalized in the past six months for their own medical condition.

Analyses

- Descriptive analyses of adherence were conducted, along with an assessment of the relationships between adherence and health outcomes.
- For the purposes of analysis, respondents were dichotomized according to whether they were "perfectly" adherent or non-adherent (i.e., they reported exhibiting at least one non-adherent behavior).

RESULTS

- A total of 103 respondents were included in the analyses (n=42, 41, and 20 with leukemia, melanoma, and NSCLC, respectively) (see **Table**).
- Most respondents were male (69.9%) and the mean age was 57.1 years (SD=15.79).
- Across the three tumor types, 65.0% of respondents reported some form of non-adherent behavior (71.4%, 58.5%, and 65.0% for leukemia, melanoma, and NSCLC, respectively).
- Pooling tumor types, patients who were non-adherent reported significantly worse mental health status compared with patients who were adherent (mean=44.41 vs. 49.48, p<.05) (see **Figure 1**).
- Similar trends (though only marginally significant) were observed for hospitalizations (mean=0.97 vs. 0.42, p=.11) and emergency room visits (mean=1.18 vs. 0.25, p=.07) in the past six months (see **Figures 2** and **3**).

Table: *Respondent Characteristics and Health Outcomes as a Function of Adherence vs. Non-Adherence, Across Tumor Types*

		Current Prescription for Leukemia (exclusive), Melanoma (n=2 leukemia), or NSCLC (n=1 leukemia)					
		Adherent		Non-adherent		Total	
		Mean / %	Standard Deviation / n	Mean / %	Standard Deviation / n	Mean / %	Standard Deviation / n
Age		62.28	14.92	54.31	15.64	57.10	15.79
Sex	Female	33.3%	12	28.4%	19	30.1%	31
	Male	66.7%	24	71.6%	48	69.9%	72
Race / Ethnicity	African-American	5.6%	2	7.5%	5	6.8%	7
	American Indian	.0%	0	4.5%	3	2.9%	3
	Asian	.0%	0	1.5%	1	1.0%	1
	Hispanic	5.6%	2	10.4%	7	8.7%	9
	White	86.1%	31	73.1%	49	77.7%	80
	Multi-ethnic	2.8%	1	3.0%	2	2.9%	3
Some College Education	High school degree or less	13.9%	5	28.4%	19	23.3%	24
	Some college+	86.1%	31	71.6%	48	76.7%	79
Employment Status	Employed FT/PT/Self	11.1%	4	35.8%	24	27.2%	28
	Disabled	11.1%	4	16.4%	11	14.6%	15
	Unemployed	77.8%	28	47.8%	32	58.3%	60
Household Income in 2010	Income: <$25k	16.7%	6	14.9%	10	15.5%	16
	Income: $25k to <$50k	33.3%	12	31.3%	21	32.0%	33
	Income: $50k to <$75k	19.4%	7	22.4%	15	21.4%	22
	Income: $75k+	22.2%	8	28.4%	19	26.2%	27
	Income: Declined to answer	8.3%	3	3.0%	2	4.9%	5
Health Insurance	No	8.3%	3	6.0%	4	6.8%	7
	Yes	91.7%	33	94.0%	63	93.2%	96
Exercise 20+ Minutes 12+ Times in Past Month	Exercise: 0-11 times	72.2%	26	65.7%	44	68.0%	70
	Exercise: 12+ times	27.8%	10	34.3%	23	32.0%	33
Drink Alcohol >= 2-3 Times a Week	Alcohol: <= once	66.7%	24	70.1%	47	68.9%	71
	Alcohol: >= 2-3 times	33.3%	12	29.9%	20	31.1%	32
Smoke Cigarettes	Smoke: No	86.1%	31	71.6%	48	76.7%	79
	Smoke: Yes	13.9%	5	28.4%	19	23.3%	24
MMAS-8 Score		.00	.00	2.55	1.89	1.66	1.95
WPAI: % Absenteeism		25.00	50.00	15.48	20.94	17.00	26.28
WPAI: % Presenteeism		26.67	25.17	42.73	32.83	40.80	32.01
WPAI: % Overall Work Impairment		45.00	42.03	45.52	34.81	45.44	35.08
WPAI: % Activity Impairment		47.22	35.10	50.30	30.25	49.22	31.89
Number of Times Hospitalized in Past 6 Months		.42	1.08	.97	1.86	.78	1.64
Number of Times to ER in Past 6 Months		.25	.60	1.18	3.07	.85	2.53
Number of Visits to Traditional Healthcare Provider in Past 6 Months		11.50	12.56	14.28	20.39	13.31	18.03
SF-36v2: Mental Component Summary		49.48	10.78	44.41	11.19	46.18	11.26
SF-36v2: Physical Component Summary		37.66	9.85	39.44	9.72	38.82	9.76
SF-36v2: SF-6D Health Utilities		.6401	.1028	.6114	.1262	.6215	.1188

Figure 1: *MCS Scores as a Function of Adherence vs. Non-adherence, Across Tumor Types*
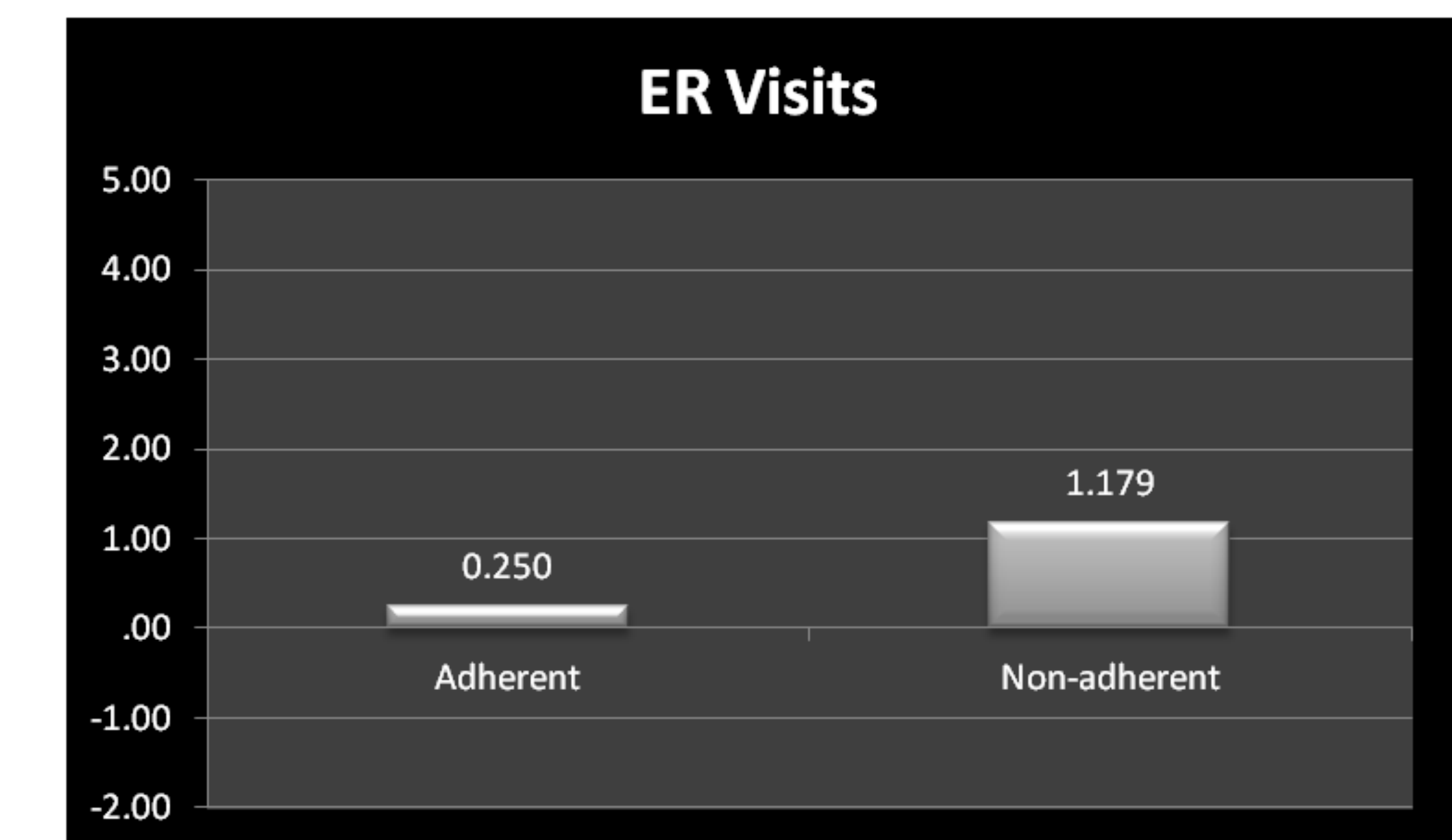

Mental Component Summary
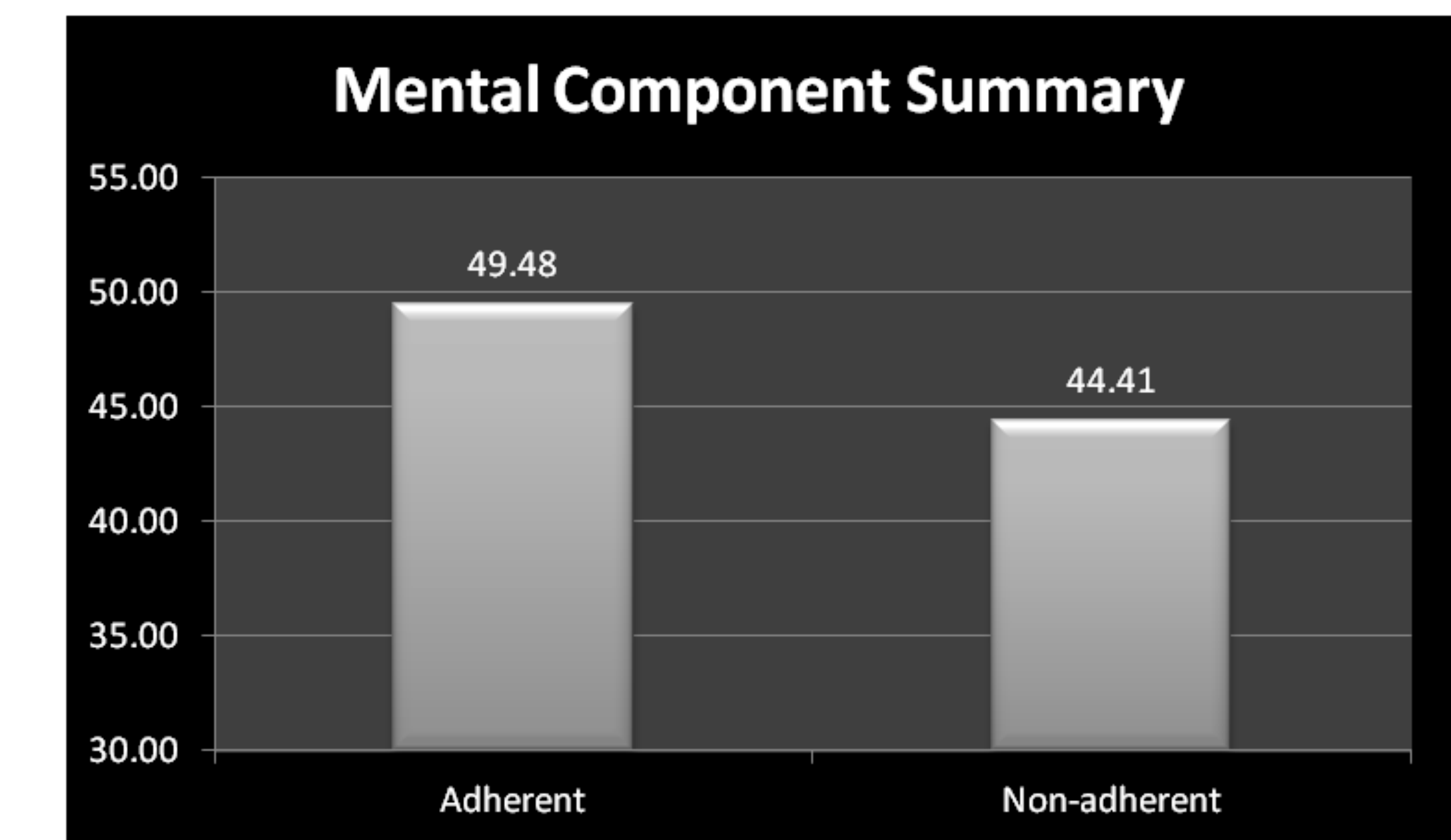
Note: Presented are mean scores.

Figure 2: *Hospitalizations as a Function of Adherence vs. Non-adherence, Across Tumor Types*

Hospitalizations
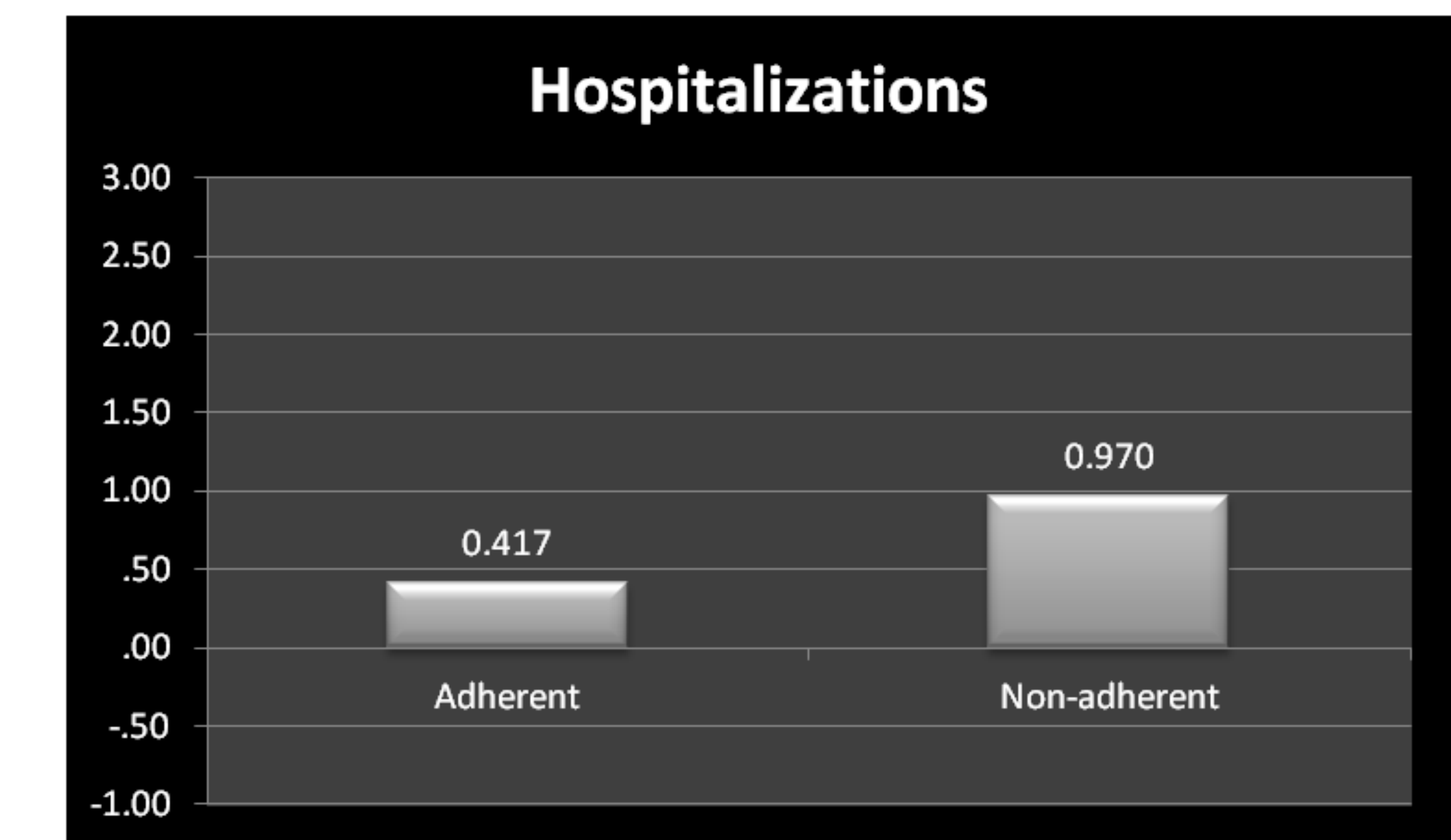
Note: Presented are mean scores.

Figure 3: *ER Visits as a Function of Adherence vs. Non-adherence, Across Tumor Types*

ER Visits

Note: Presented are mean scores.

CONCLUSIONS

- These results suggest a significant level of non-adherence among patients being treated for leukemia, melanoma, and NSCLC.
- Although statistical power was modest due to small sample size, preliminary results suggest a deleterious effect of non-adherence on health outcomes.
- As more oral targeted therapies emerge, an emphasis should be placed on improving adherence rates to maximize treatment benefit and reduce societal costs.

References

1. Reilly, M. C., Zbrozek, A. S., and Dukes, E. M. *The validity and reproducibility of a work productivity and activity impairment instrument.* Pharmacoeconomics 1993. **4**(5): 353-65.
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