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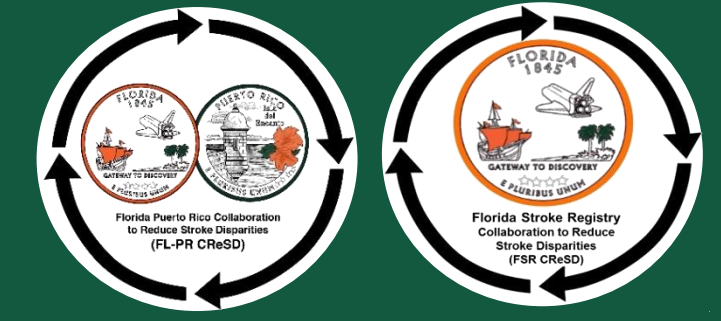
Predictors of Good Functional Outcome at Discharge in Stroke Patients with Depression in the FL-PR Collaboration to Reduce Stroke Disparities

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INTRODUCTION

Stroke is the 5th leading cause of death in the US and results in major disability. It is important to identify modifiable factors that increase risk of poor outcome to target for intervention. Depression is related to worse post-stroke outcomes, with Hispanics having a higher burden of stroke and depression than non-Hispanics. The goal of this study was to determine the effect of ethnicity and prior depression on post-stroke outcomes.

METHODS

We analyzed 80,687 cases (84 institutions) from the FL-PR Stroke Registry (2014-2017). Pre-existing depression was identified by prior history or anti-depressant medications as per Get With The Guidelines-Stroke data. Figure 1.
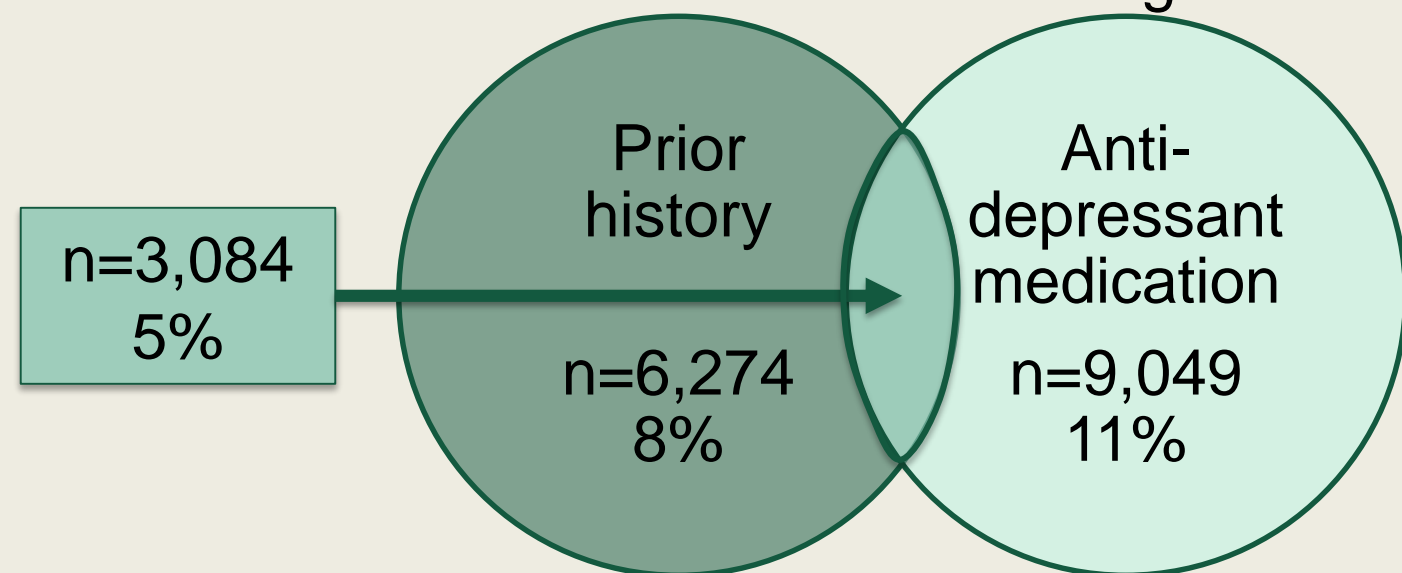

Figure 1. Definition of "Pre-Existing Depression"
Combined N = 10,085 (13%)

n=3,084 5%
Prior history n=6,274 8%
Anti-depressant medication n=9,049 11%

Univariate analyses of patient characteristics, medical history, mode of arrival, initial stroke severity (NIHSS), and independent ambulation prior to stroke using discharge modified Rankin Scale (mRS) score and ambulatory status as outcomes were completed. Next, multilevel multivariable logistic regression models were created.

- Prior stroke/TIA
- Hypertension (HTN)
- Diabetes mellitus (DM)
- Dyslipidemia
- Tobacco use
- Peripheral vascular disease (PVD)
- Atrial fibrillation (AF)
- Heart failure (HF)
- Chronic renal insufficiency (CRI)
- Coronary artery disease (CAD)

RESULTS

Patient Characteristics	All	Depression	No Depression
Age, mean±SD	71.0±14.4	72±13.6	70.9±14.5
Sex, %			
Female	49	61	48
Race/Ethnicity, %			
FL-White	62	74	60
FL-Black	18	10	19
FL-Hispanic	13	12	14
PR-Hispanic	6	4	7
Vascular risk factors, %			
HTN	68	83	66
Dyslipidemia	40	56	37
DM	31	39	30
Prior stroke/TIA	26	39	25
CAD	21	29	19
AF	19	21	19
Tobacco use	16	19	16
CRI	6	10	6
HF	6	10	5
PVD	4	7	3
Carotid Stenosis	3	5	3
Insurance status, %			
Private	36	41	35
Medicare	31	39	30
No Insurance/Medicaid	9	7	9
Unknown/missing	25	13	26
NIHSS, median (IQR)	4 (8)	5 (9)	4 (9)
Arrival mode, %			
EMS	64	68	63
Private transportation	35	31	36
Unknown/missing	1	1	1
Prior ambulatory status, %			
Independent ambulation	52	63	51
Unable/with assist	6	12	5
Unknown/missing	42	25	44

Table 1. Univariate Results

RESULTS

	Depression	No Depression
Modified Rankin Score (mRS) at discharge (0-2 vs. 3-5)		
N (%)	2,377 (38)	16,201 (47)
AOR (95% CI)	0.85 (0.78, 0.92)*	Ref
Functional Status at discharge (Independent ambulation vs. unable/with assist)		
N (%)	4,264 (47)	28,372 (55)
AOR (95% CI)	0.86 (0.80, 0.94)*	Ref

Table 2. Multivariate Results

- Depression **decreased** the likelihood of good clinical outcomes in both models
- **mRS 0-2**
  - *Decreased likelihood*: age ≥65, black, female, Medicare, no insurance or Medicaid, NIHSS ≥5, prior stroke/TIA, HTN, DM, AF, PVD, HF, CRI, and arrival by EMS
  - *Increased likelihood*: premorbid independent ambulation and dyslipidemia
- **Independent Ambulation**
  - *Decreased likelihood*: age ≥ 65, black, female, Medicare, initial NIHSS ≥ 5, prior stroke or TIA, HTN, DM, PVD, HF, CRI, and arrival via EMS
  - *Increased likelihood*: premorbid independent ambulation, dyslipidemia, and tobacco use
- No interactions for depression x race/ethnicity or depression x sex for mRS or functional status at discharge

CONCLUSIONS

Pre-stroke depression and other vascular comorbidities adversely affected functional outcomes at discharge. Antidepressant medications and intensive management of risk factors in the hospital may improve delayed outcomes.