

INTRODUCTION

- Up to 80% of the homeless may have cognitive impairment in domains such as attention, memory, and executive functions (Burra, 2009).
- Rate of TBI in homeless is 5x greater than general population. 1st TBI precedes experience of homelessness in up to 90% of cases (Hwang, et.al 2008). Severe and persistent mental illness and drug addiction, known to impact cognitive functioning, is also prevalent.
- These factors can keep the homeless in a 'revolving door' of one institution after another and inability to maintain stable housing (Backer & Howard, 2008).
- 'Basic needs' interventions such as supportive housing (Seidman et al., 2003) and better incomes may help cognition and global functioning by lightening cognitive load (Mani et. al, 2013).

HYPOTHESES:

Considering the potentially self-perpetuating problem of impaired brain functioning leading to homelessness and the circumstances of homelessness influencing cognition, we hypothesized that:

- Cognitive functioning would be lower in the currently homeless vs. previously homeless group.
- Higher education and younger age would be protective factors against cognitive impairment
- Greater number of co-occurring health problems would be associated with lower brain functioning.

GOALS:

Considering the importance of cognitive and emotional health on persons' community functioning, we sought to:

- Characterize brain functioning by analyzing all the available data available in our service to date.
- Explore risk/protective factors affecting functioning
- Identify potential cognitive tests that are predictors of community functioning and which could be used in wide scale cognitive screening programs.
- Inform possible avenues of brain injury rehabilitation.

METHOD

PATIENTS:

- 34 adult males
- 65% homeless, 35% subsidized housing
- Mean age = 52.2 years (SD=±13.6).
- Mean education level = 11.4 years (SD=±3.2).

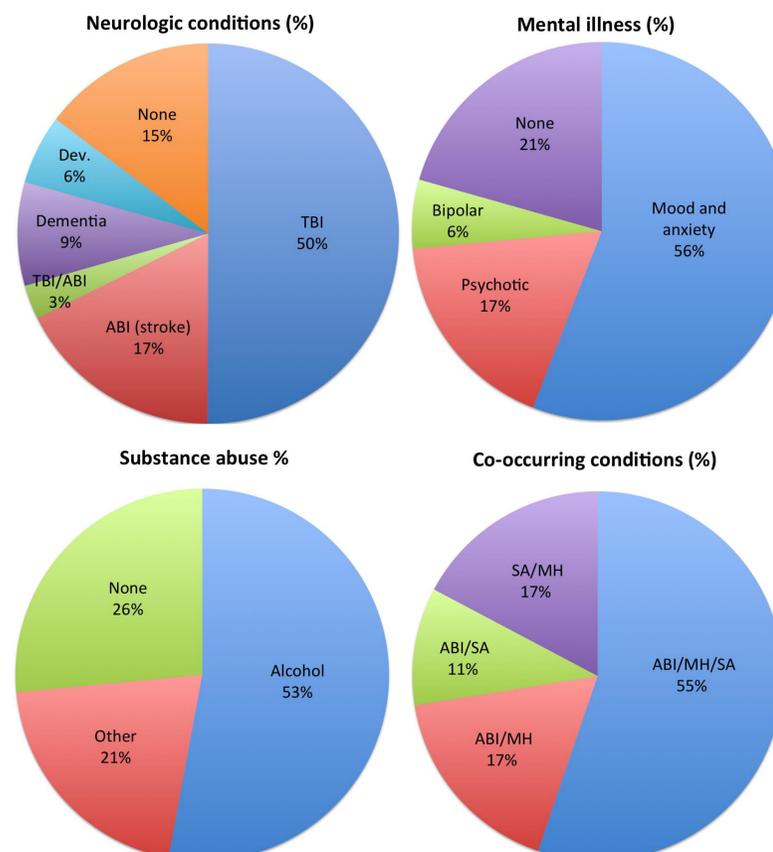
PROCEDURE: Each patient seen had an interview examining their history, functional status, physical, cognitive and emotional symptoms. Self-report measures examining psychological functioning and neuropsychological tests examining intellectual, sensory-motor, academic, and cognitive functioning were administered.

MEASURES: Wechsler Abbreviated Score of Intelligence, Repeatable Battery for the Assessment of Neuropsychological Status, Delis-Kaplan Executive Function System Trail Making Test were used in this program evaluation.

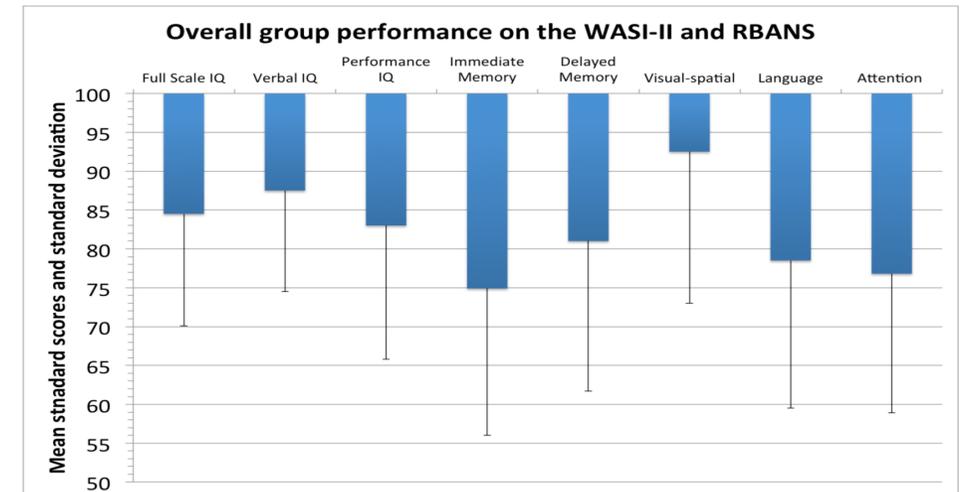
DATA ANALYSIS: All data was entered in SPSS-18 statistical package. Various analyses including Multiple Analysis of Covariance (MANCOVA) and correlations were performed.

RESULTS

Figure 1: Diagnostic characterization of patient group



RESULTS Continued



OVERALL GROUP FINDINGS:

- Compared to a normative sample, patients on average underperformed across all cognitive domains
- Processing speed, memory and mental flexibility were domains frequently impaired
 - 73% of sample had at least one score in the impaired range,
 - 63.6% of the sample had three or more scores in the impaired range
 - 27.3% of the sample had no impairment on selected screening tools

Substance use: No significant difference between alcohol vs. other drug users, though alcohol users tended to underperform on the WASI-II and RBANS.

Income: No significant difference between income groups (below or above \$1000/month). Those receiving less than \$1000 tended to perform slightly worse across all measures.

Housing: Homeless patients performed significantly worse on the D-KEFS Trail Making Test $F(1,21) = 7.087, p=.016$ than those that were housed after controlling for age, income, and education. The mean (\pm SD) scale score for homeless participants was $3.57 (\pm 3.17)$ and considered in the impaired range, while the housed clients had a mean scale score of $7.7 (\pm 3.28)$ considered in the low average range.

DISCUSSION

Mental flexibility and complex attention appears particularly affected and linked to housing status. Data suggest that housing may improve cognition or that poor cognition perpetuates homelessness.

Lack of statistical power prevents adequate examination of effects of substance use and income. Additionally, OW/ODSP likely insufficient to address day to day issues stress known to impact function.

A subset of patients (N=9) scored normally on screens suggesting that the tools used lacked sensitivity and specificity in some cases and may require a more extensive examination. Wide spread shelter based neurocognitive screening is important and warranted, but comprehensive neuropsychological testing is also recommended in complex cases.

Considering the complex nature of this patient group's low cognitive and emotional functioning, community based rehabilitation programs (for brain injury & substance abuse) is necessary to address cognitive dysfunction and should be provided alongside traditional mental health and substance use treatments.

Future studies may look into supportive housing, raised income and cognitive/vocational rehabilitation as useful interventions to buffer against homelessness and increase community participation

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