Demographics and Cognitive Impairment as Defined by the Montreal Cognitive Assessment in a Phoenix Community Memory Screen

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Abstract

Memory screening in the community promotes early detection of memory problems, as well as Alzheimer’s disease (AD), and encourages appropriate intervention. The Montreal Cognitive Assessment (MoCA) is a rapid and sensitive screening tool for cognitive impairment that can be readily employed at the clinical level, but little is known about its utility as a community screening tool. Also, little is known regarding the demographics of the population that presents for a community screen. The research aims to evaluate the demographics of participants that attended Phoenix community memory screens, the prevalence of screen positives using the MoCA, and variables that correlated with higher scores. Descriptive analysis and statistical tests were employed to evaluate for significant relationships between demographic variables and MoCA scores. The population (n=346) had a mean age of 72 (SD =10.7), was primarily female (70%), primarily Caucasian (68%) and 85% had greater than a high school education. There was a 58% prevalence of cognitive impairment as defined by the MoCA. Increased age, male gender, and non-Caucasian race correlated with lower scores. Lower education correlated with lower scores despite the inherent educational correction in the MoCA. Further research is needed to ascertain if this is a confounding factor and one that can be rectified with a different correction. Cognitive impairment was more prevalent in certain races, however it is unclear if other correlations will be utilized to improve recruitment.

Methods

Memory screens employing the MoCA were conducted at ten Phoenix locations after the event was advertised through local media. Formally trained volunteers conducted the screens using standardized verbal instructions. The MoCA was available in English, Chinese and Spanish and there were multilingual administrators. Gender, family history of AD, history of diabetes, age, years of education, race, and MoCA score were collected for each participant. Analysis was conducted using a combined data set as well as by the individual location samples. The sample includes 346 subjects: 200 with MoCA scores < 26 (defined as cognitive impairment) and 146 with scores ≥ 26. The sample size provides satisfactory power to detect any relevant difference in demographic characteristics between these two groups. Univariate analysis and stepwise linear and logistic regression to evaluate the effect of variables on MoCA score were performed.

Results

58% of the population was cognitively impaired as defined by the MoCA. Participants with scores <26 had a greater mean age of 3 years and 1 year less of education compared to those with scores ≥26. An increase in 10 years of age yields a 1 point drop in score and the odds of having cognitive impairment is 29% greater. For each year increase in education, the score increases by 1/3 of a point and there is a 9% decrease in the odds of having cognitive impairment.

62% of males and 56% of females were considered cognitively impaired. MoCA scores are 1 point less for males compared to females, however there was a significant interaction between age and gender. 65% of participants with a PHM of DM had scores ≥26 compared to 54% of those without diabetes; however there was not a significant relationship between a PHM of AD and MoCA score. There was not a significant relationship between a FH of AD and MoCA score. Caucasian, African American, Hispanic, and Asian participants had a 53%, 83%, 80%, and 58% prevalence of cognitive impairment. Scores were 3 points less for non-Caucasian races. Screening location had a significant effect on score, however, the relationships between variables and MoCA score in the individual site samples generally align with those in the combined data set.

Discussion and Conclusions

The high prevalence of cognitive impairment as defined by the MoCA in the screened population is interesting. There is little in the literature on a similar population to compare. The prevalence of cognitive impairment as assessed by the MoCA was similarly high at 62% in an ethnically diverse population (n=1,299). Another point of interest is the positive association found between higher education and MoCA scores despite the correction implicit to the test, implying that a low level of education is not fully accounted for by the MoCA. The significant effect of race on scores was also noteworthy. This may indicate that the MoCA or its protocol is not fully translated or free of cultural influences. The two non-English versions of the MoCA employed in the study have not received the same validation as the English version. The study results of demographic analysis better characterize the population that attends a community memory screen as well as help characterize groups with cognitive impairment as measured by the MoCA in similar populations. The high prevalence of study screen positives implicates that community memory screens may be a worthwhile effort. Determining the number of true positives following methodological diagnosis would be useful to better assess efficacy.

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Introduction

Memory screens targeting a broader portion of the community than that in clinic populations are not well documented in the literature, especially with the MoCA due to its less frequent use than the Mini-Mental State Examination (MMSE). The research aims to evaluate the demographics of the population that attended community memory screens in Phoenix and to evaluate the prevalence of screen positives using the MoCA. Demographic analysis is important to better understand the population that attends a community memory screen. This information can also be utilized to improve recruitment.

Characterizing the screen positives can help describe the most at risk population for cognitive impairment. The prevalence of screen positives implicates the utility of community memory screening given the high sensitivity and relatively high specificity of the MoCA for detecting cognitive impairment.¹²

Table 1: Descriptive statistics for categorical study variables. Table 2 shows that there was a female predominance in study participants and the majority of those with DM and non-Caucasian race had scores ≥26.

Other includes Native American and Indian

References

4. Nasreddine ZS, Phillips NA,非常重要的是,要感谢所有参与研究的人员。