

LETTER TO THE EDITOR

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Cardiovascular risk factors among older adults with cognitive impairment in primary care

Cardiovascular risk factors like diabetes, hypertension, cerebrovascular accidents and coronary artery disease become increasingly common with advancing age. However, their frequency and exact relevance in those with cognitive impairment are largely unknown. It is speculated that they may contribute to cognitive impairment *per se* by altering lifestyle or diet by conferring increase in risk of non-communicable diseases like diabetes and hypertension. In the current study, the frequency of common cardiovascular risk factors was assessed in older adults with cognitive impairment compared to those who did not have the same among those coming to primary care.

A cross-sectional survey was conducted in 204 older adults out of 1200 who reported to primary care in the study duration (mean age = 66.67 ± 6.63 years; M:F: 131:73) in Western India. Those with subjective memory complaints were asked to undergo Mini-Mental State Examination (MMSE). Written and informed consent was taken from all the study participants, and the study was approved by Institutional Ethics Committee, ICMR-NIIRNCD Jodhpur (Rajasthan). There were a total of 76 older adults (37.2%) with mild cognitive impairment (Petersen *et al.* 1999). A total of 109 (53.4%) had mean MMSE score as 22.18 ± 4.66 suggesting significant cognitive impairment. Total number of diabetes were 67/204 (32.8%), 94/204 were hypertensives (46.1%) and 115/204 diabetes with hypertension (56.3%). A total of 5 had cerebrovascular accidents (2.4%), and none had coronary artery disease.

Frequency of cardiovascular risk factors in older adults with cognitive impairment was 84/204 (41.2%) and in those without significant cognitive impairment was 31/204 (15.2%). A Chi-Squared test of proportion showed two groups to be statistically significantly different (p -value ≤ 0.0001 ; difference in percentage = 26, 95% confidence interval = 17.41 to 34.08).

Odds ratio was calculated to be 2.7 (95% confidence interval = 1.71 to 4.2; p -value ≤ 0.0001). Comparison of MMSE scores of those with uncontrolled diabetes and hypertension using

unpaired t test failed to show statistically significant difference. Values obtained in poorly controlled despite being on drugs diabetics or hypertensive or both subjects were similar (p -value ≥ 0.05) to those in cognitively impaired subjects with controlled diabetics or hypertensives or both. Hypothesis of vascular risk factors in Alzheimer's disease and mild cognitive impairment is being worked up by present group (Dhikav *et al.*, 2009, 2012, 2013, 2015) and by others (Cechetto *et al.*, 2008; Hasnain & Vieweg, 2014) for more than a decade.

It has been said that treating vascular risk factors could lower the risk of cognitive impairment. Reasons behind co-occurrence of association between cognitive impairment and non-communicable diseases of cardiovascular type, e.g. diabetes, hypertension or both, could be many including poor dietary and lifestyle patterns, poor medication adherence (Dhikav *et al.*, 2013) etc. Diabetes causes oxidative stress among brain neurons, interferes in neuronal signaling pathways causing cognitive impairment. Alteration in brain structure and cognition is one of the main reasons of putative association between cognitive impairment and cardiovascular risk factors. In the current study, there were more subjects with significant cognitive impairment (MMSE < 24) compared to mild cognitive impairment (MMSE between 24 and 27), suggesting that cognitive impairment may have contributed interference in adopting healthy lifestyle, exercise and diet or medication adherence etc.

The current study highlights the high frequency of cardiovascular risks in older adults with cognitive impairment screened at community level using MMSE. If these factors are not adequately controlled, they can perhaps facilitate conversion into clinical dementia later on. This is because both cognitive impairment and cardiovascular diseases share same risk factors (Song *et al.*, 2020). At community level, therefore, addressing modifiable CV risk factors is important.

Conflict of interest

None.

Description of authors' roles

Vikas Dhikav conceptualized the study, trained others in cognitive assessment, did data analysis, written, edited, did required revisions and finalized

the manuscript for publication. Bhargavi Jadeja did data collection and helped in data analysis under direct supervision of Vikas Dhikav. Dr Praveen Kumar Anand did editorial corrections, reviewed the manuscript and helped revising the manuscript for publication.

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