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Cognitive health and wellbeing among inmates of care homes: Exploring profile characteristics and cognitive impairment levels

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Abstract
The definition of health provided by the World Health Organization (WHO) in 2010 extends beyond the mere absence of illness to encompass complete physical, mental, and social well-being. The global increase in life expectancy, which stands as a hallmark of the 20th century, presents the challenge of an "age-quake" due to the growing population of individuals aged 60 and above. This demographic shift, driven by advancements in healthcare and related policies, underscores the significance of addressing mental health needs. The imminent surge in the elderly population underscores the critical need for effective mental health interventions. While aging does not universally lead to mental disorders, the rising number of older adults raises concerns about the potential strains on mental health resources. Psychologists have now broadened their focus to include the promotion of mental health alongside the treatment of mental illnesses. The socioeconomic impact of aging, particularly in low- and middle-income countries, underscores the importance of investing in mental health programs. This paper delves into the topic of cognitive health, emphasizing the preservation of multifaceted cognitive abilities in older adults to support social connections, independence, and resilience. While cognitive changes are not inevitable, proactive measures are essential. The study conducted an analysis of 60 individuals residing in a care facility, collecting data on their age, gender, education, and medical history. Cognitive function was assessed using the Mini-Mental State Examination (MMSE), a tool developed by Folstein *et al*. in 1983. The findings revealed a predominance of inmates aged above 70, mostly male, with varying levels of education. Common medical conditions included high blood pressure and diabetes. MMSE scores were used to categorize cognitive impairment, revealing a positive correlation with education and a negative correlation with medical illness. A regression equation was used to predict cognitive health based on these factors. The insights gained from this study inform the development of tailored interventions aimed at enhancing the quality of life for older adults.

Keywords: Health concept, aging population, mental health challenges, cognitive health, cognitive function, mini-mental state examination (MMSE), cognitive impairment levels

Introduction
Health can be defined as "a state characterized by complete physical, mental, and social well-being, rather than merely the absence of illness or infirmity" (World Health Organization, 2010) [12]. The significant increase in life expectancy at birth stands out as one of the notable achievements of the 20th century. However, instead of celebrating this positive demographic trend, the world is grappling with what has been termed an "age-quake" (Krishnakumar, 2004) [8]. This phenomenon can be attributed to advancements in technology within the fields of healthcare, education, and medical facilities, alongside various national programs targeting the elderly population. These factors have led to a decrease in the mortality rate among older individuals, resulting in a continuous growth in the population of people aged 60 years and above in India (Amiri, 2018) [12]. In the year 2050, it is projected that the global population of individuals aged 60 and above will reach a staggering two billion. While there exists a widespread misconception that elderly individuals are often depicted as sad, slow, and forgetful, it's important to emphasize that mental health issues are not an inevitable outcome of the aging process. Nonetheless, a potential downside of the rapid global aging phenomenon is the escalating prevalence of mental disorders, a situation that may strain mental health systems in all nations in the near future (UN, 2009) [15]. In recent years, the field of psychology has undergone a notable transformation. Psychologists have shifted their focus beyond solely addressing individuals with mental illnesses and have also started advocating for the promotion of mental health and overall well-being (Radzyk, 2014) [9].

Elderly individuals often experience a decline in activity, increased dependency, health issues, and weakened economic, physical, and psychological conditions. These developments can give rise to various socio-economic challenges. Low- and Middle-Income Countries (LMICs) are expected to witness a rapid increase in their elderly populations, which will have significant repercussions for their vulnerable economies (World Health Organization, 2012) [13]. Based on past emergency situations, it is anticipated that there will be a substantial rise in the demand for mental health and psychosocial support in the months and years ahead.

Investing in mental health programs, which have historically been underfunded both nationally and internationally, is now of paramount importance (World Health Organization, 2010) [10]. The measurement of people's self-reported subjective well-being has become a subject of significant debate in public policy and economics, with the enhancement of the population's well-being emerging as a prominent societal goal. In the UK, the Office for National Statistics is leading discussions on well-being measurement (Seaford, 2011) [11], while in the USA, the Gallup-Health ways Wellbeing Index Poll conducts daily interviews with 1000 adults regarding their well-being. Similar initiatives are also taking shape in other countries (Harter and Gurley, 2008) [6]. A Declaration has recognized that mental health plays a pivotal role in social and economic development, is an integral component of overall health and well-being, and underscores the importance of access to care as a fundamental human right. The Declaration seeks to support all countries in the Region in bolstering and expediting their longstanding efforts to implement equitable mental health policies, laws, programs, and services. These endeavours align with the Region's Flagship Priorities, which include preventing and controlling noncommunicable diseases, strengthening emergency risk management, and achieving universal health coverage (World Health Organization, 2022) [14].

Cognitive health, as defined by the Critical Evaluation Study Committee (CESC), refers to "the development and preservation of the multidimensional cognitive structure that enables older adults to maintain social connectedness, an ongoing sense of purpose, and the ability to function independently, recover functionally from illness or injury, and manage residual functional deficits" (Hendrie *et al*., 2006) [7]. Cognitive behavior encompasses the capacity to perceive and respond, process and comprehend, store and retrieve information, make decisions, and generate appropriate responses. Both cognition and cognitive health are aspects that span the entire course of one's life. Cognitive health is characterized as the maintenance of optimal cognitive function as one age. The evidence demonstrates that cognitive aging and its impact on cognitive health are topics of significant public health relevance (Blazer *et al*., 2015) [3].

As people age, there is a profound preoccupation with the decline in memory and decision-making capabilities. Concerns may arise that these declines could signify the early onset of a neurodegenerative condition, notably Alzheimer's disease, and individuals may dread the prospect of losing their independence and experiencing a decline in their overall quality of life. Preserving cognitive function and the desire to "stay mentally sharp" often take precedence as the primary health concern among older adults (AARP, 2012) [1]. Mental health issues can exert a significant impact on an older individual's ability to perform fundamental daily activities, thereby diminishing their independence, autonomy, and overall quality of life. (deMendonça and Ivbijaro, 2013) [4].

A significant proportion, exceeding 20%, of individuals aged 55 or older may experience various forms of mental health challenges. These issues can significantly impede an older person's capacity to carry out essential daily tasks, resulting in a reduction of their independence, autonomy, and overall quality of life. The initial step in mitigating these adverse consequences is the timely diagnosis of these conditions. Regrettably, mental health problems frequently go unrecognized and untreated, leaving many older individuals to grapple with these issues without appropriate or any assistance whatsoever (deMendonça and Ivbijaro, 2013) [4]. In the current research, the cognitive well-being of residents in care homes is assessed using "The Mini-Mental State Examination (MMSE)" (Folstein *et al*., 1983) [5].

Materials and Methods

The research was conducted at the Government care home in Pulayanarkotta, Thiruvananthapuram, Kerala, India. This care home was specifically chosen because it is the sole public-sector facility that accommodates both genders. A total of 60 residents were thoughtfully selected from this care home, and their demographic information, encompassing age, gender, education, and medical history, was gathered through comprehensive interviews. To assess the cognitive well-being of the participants, the "Mini-Mental State Examination (MMSE)," developed by Folstein *et al*. in 1983 [5], was employed. This standardized assessment tool gauges cognitive function across various domains, offering a dependable framework for evaluating cognitive impairment. The collected data were then scrutinized to identify associations between demographic characteristics and levels of cognitive impairment, with results presented in tabular form.Furthermore, the MMSE scores were utilized to categorize the cognitive impairment levels of the residents into four distinct categories: "Questionably Significant," "Mild," "Moderate," and "Severe." These categories were determined based on predefined score ranges, specifically (25-30) for Questionably Significant, (20-25) for Mild, (10-20) for Moderate, and (0-10) for Severe impairment.

Results

F-Female, M-Male

The table provides information about the distribution of inmates in the care home based on different age categories. The majority of inmates fall into the category of "Above 70 years," accounting for 51.67% i.e., 31 out of the total 60 inmates of care home. This indicates that the care home serves a significant number of elderly individuals. The data reflects that a substantial portion of the care home's population is above the age of “65 to 70 years” category accounting to 35.00% i.e., 21 while 8 inmates i.e., 13.33% of total 60 inmates belongs to “60-65” years age category. Regarding the gender distribution of inmates within the care5 home, the data shows that the majority of inmates are male, accounting for 68.33% i.e., 41 out of total 60 inmates of care home. In contrast, the female inmates make up 31.67% i.e., 19 out of total 60 inmates of care home. While educational backgrounds among the residents shows that 25% i.e., 15 out of 60 inmates belongs to Primary education category, 21.67% i.e., 13 inmates belong to illiterate category, 18.33% i.e., 11 inmates belong to Middle school category, another 18.33%

i.e., 11 inmates belong to High school category, 10% i.e., 6 inmates having Degree as their education level while only 4 inmates i.e., 6.67% inmates belong to Higher secondary level of education. The most prevalent medical conditions among the inmates are "BP" (21.67%) and "Both" (21.67%), which likely refers to both diabetes and high blood pressure (BP). "Diabetes" also ranks as a significant medical concern (16.67%).

Table 1: Profile Characteristics and Cognitive Impairment Levels of Care Home Inmates

Respondent No.	Age	Gender	Education	Medical illness	MMSE score	Degree of Impairment
1.	75	F	Illiterate	Diabetes	15	Moderate
2.	65	F	Primary	other	21	Mild
3.	>70	F	Illiterate	dia,bp,heart comp.	26	Questionably significant
4.	70	F	Illiterate	Nil	23	Mild
5.	65-75	M	Higher secondary	Nil	11	Moderate
6.	65-70	M	Primary	Nil	16	Moderate
7.	65	M	High school	Nil	27	Questionably significant
8.	>70	F	Illiterate	Diabetes	28	Questionably significant
9.	>70	M	Middle school	bp	11	Moderate
10.	>70	M	Illiterate	Nil	21	Mild
11.	>70	M	Higher secondary	Nil	26	Questionably significant
12.	64	M	Degree	bp,others	18	Moderate
13.	>70	M	Middle school	bp,others	12	Moderate
14.	>70	M	Primary	other	15	Moderate
15.	>70	M	Middle school	diabetes,bp	7	Severe
16.	65-70	M	High school	bp	5	Severe
17.	>70	M	Higher secondary	Nil	26	Questionably significant
18.	82	M	Illiterate	Nil	13	Moderate
19.	76	M	Middle school	other	27	Questionably significant
20.	>70	M	Illiterate	other	18	Moderate
21.	64	M	Middle school	bp,dia	24	Mild
22.	88	F	Illiterate	dia,bp,heart comp.	22	Mild
23.	75	F	Middle school	bp	24	Mild
24.	65-70	M	Degree	diabetes	6	Severe
25.	61	F	Primary	Nil	17	Moderate
26.	64	M	Primary	Nil	20	Mild
27.	65-70	F	Illiterate	Nil	5	Severe
28.	>70	M	Illiterate	bp,dia,others	12	Moderate
29.	75	F	Primary	other	27	Questionably significant
30.	65-70	F	Primary	diabetes,bp	18	Moderate
31.	82	M	Primary	Nil	27	Questionably significant
32.	>70	M	Primary	other	7	Severe
33.	>70	M	High school	Nil	18	Moderate
34.	65-70	M	Middle school	Nil	22	Mild
35.	62	M	High school	Nil	21	Mild
36.	>70	M	Middle school	BP	23	Mild
37.	>70	M	Degree	bp,dia,others	26	Questionably significant
38.	65-70	M	Middle school	bp,dia,others	12	Moderate
39.	>70	F	Higher secondary	Nil	16	Moderate
40.	66	M	Middle school	other	3	Severe
41.	65-70	M	High school	other	21	Mild
42.	>70	M	High school	bp,others	8	Severe
43.	65-70	M	Primary	bp,dia	11	Moderate
44.	70	M	High school	Nil	9	Severe
45.	65-70	M	Middle school	dia,bp,other	27	Questionably significant
46.	65-70	M	Middle school	Nil	22	Mild
47.	>70	M	Primary	Nil	13	Moderate
48.	>70	M	High school	BP	17	Moderate
49.	>71	M	Degree	BP,DIA	3	Severe
50.	>70	F	Degree	BP	3	Severe
51.	65-70	F	High school	bp,others	26	Questionably significant
52.	65-70	M	Illiterate	Nil	13	Moderate
53.	>70	M	Middle school	Nil	4	Severe
54.	>70	M	High school	Nil	26	Questionably significant
55.	65-70	F	Middle school	bp,dia,others	18	Moderate
56.	65-70	F	High school	bp,others	27	Questionably significant
57.	65-70	F	Primary	other	2	Severe
58.	65-70	F	Middle school	Diabetes	22	Mild
59.	62	M	Primary	Nil	8	Severe
60.	90	F	Illiterate	Nil	26	Questionably significant

Table 2: Distribution of experimental group according to their cognitive impairment

Sl. No.	Categories	Frequency	Percentage (%)
1.	Questionably significant (25-30)	14	23.33
2.	Mild (20-25)	12	35.00
3.	Moderate (10-20)	21	20.00
4.	Severe (0-10)	13	21.67

The highest frequency of residents falls into the "Moderate" cognitive impairment category, accounting for 35% i.e., 21 of the total 60 inmates,14 inmates i.e., 23.33% falls under Questionably significant category,13 inmates i.e., 21.67% were with severe impairment and only 12 inmates out of 60 i.e., 20% belongs to mild category of MMSE.

Table 3: Association between profile characteristics and cognitive status

Sl. No.	Name of variables	Correlation coefficient 'r'	p value
1.	Age	0.027NS	0.452
2.	Gender	0.193NS	0.139
3.	Education	0.324**	0.012
4.	Medical illness	-0.383**	0.003

** 1% significant level *5% significant level

The above table 3 shows that there is a positive correlation between Education and in negative correlation with Medical illness with cognitive status of inmates of care. Age and Gender are not in significant relation with cognitive status.

Table 4: Regression between profile characteristics and cognitive status

Sl. No.	Name of variables	Regression coefficient 'β'	p value
1.	Age	0.001	0.452
2.	Gender	0.037	0.139
3.	Education	0.105*	0.012
4.	Medical illness	0.147*	0.003

*significant relationship between variable and cognitive status

The above table no.4 shows that provided appears to be the results of a regression analysis, likely a multiple linear regression, explains the relationship between profile characteristics and their cognitive status. Age and gender do not have a significant linear relationship with cognitive status among the inmates. The regression coefficient for education and medical illness the p-value indicates a statistically significant relationship between education level and cognitive status. This suggests that there is a statistically significant positive relationship between education and the dependent variable.

Conclusion

The paper sheds light on cognitive health, highlighting its multidimensional nature in maintaining social connections, purpose, independence, and resilience in older adults. Through a meticulous study of care home inmates, the relationships between profile characteristics and cognitive status were unveiled. The findings underscore the significance of education and the potential impact of medical conditions on cognitive health. These insights are invaluable for developing targeted interventions and support strategies tailored to the needs of older adults.

As societies worldwide grapple with the challenges and opportunities posed by an aging population, it is imperative to invest in mental health programs and services that promote cognitive health. By prioritizing the mental and emotional wellbeing of older adults, society can foster an environment that not only extends their quality of life but also enhances their overall contribution to the community. The study's outcomes provide a foundation for evidence-based policies and interventions that can positively influence the cognitive health and wellbeing of the elderly, thereby contributing to a more inclusive and thriving society.

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