

Applicability and Sensitivity of the Clinical Dementia Rating (CDR) in patients with Low Educational Levels: A Cross-sectional Study

P4-13

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The application of the CDR classification proved to be feasible and useful in patients with low education levels and could help reduce the underdiagnosis of dementia in Brazil, reinforcing its clinical value even in contexts of educational limitation, such as a Brazilian public health setting.

INTRODUCTION	RESULTS	CONCLUSIONS	REFERENCES																																																																																																																																									
The Clinical Dementia Rating (CDR), which classifies the severity of dementia, has high sensitivity and specificity for identifying mild cognitive impairment (MCI) and dementia, even in individuals with low education. Therefore, the CDR classification has proven to be a useful tool for detecting and staging dementia in populations with a high prevalence of low educational attainment, such as in Brazil. We aim to assess the use of the CDR in a Brazilian public health setting.	Table 1 presents the clinical and sociodemographic characteristics of the 62 patients. The mean age observed was 68.66 years (± 10.04). The cohort included 31 women and 31 men. The predominant age group was 61 to 70 years (37.10%), followed by 71 to 80 years (27.42%). Regarding the time of symptom onset, the vast majority of patients reported that cognitive symptoms began more than 1 year prior to the first consultation with the specialist (96.77%). <table><caption>Table 1 – Sociodemographic and Clinical Characteristics of the Patients</caption><tr><th>Population</th><th>n</th><th>%</th></tr><tr><td colspan="3">Age (years) (n=62)</td></tr><tr><td>Mean ($\pm$ SD)</td><td>68,66 ($\pm$ 10,04)</td><td></td></tr><tr><td>Min - Max</td><td>44 - 93</td><td></td></tr><tr><td colspan="3">Age range (n=62)</td></tr><tr><td>44 - 60 years</td><td>13</td><td>20,97</td></tr><tr><td>61 - 70 years</td><td>23</td><td>37,10</td></tr><tr><td>71 - 80 years</td><td>17</td><td>27,42</td></tr><tr><td>> 81 years</td><td>9</td><td>14,52</td></tr><tr><td colspan="3">Gender (n=62)</td></tr><tr><td>Female</td><td>31</td><td>50,00</td></tr><tr><td>Male</td><td>31</td><td>50,00</td></tr><tr><td colspan="3">Education level (n=62)</td></tr><tr><td>0 - 4 years</td><td>44</td><td>70,97</td></tr><tr><td>5 - 8 years</td><td>10</td><td>16,13</td></tr><tr><td>9 - 11 years</td><td>4</td><td>6,45</td></tr><tr><td>> 11 years</td><td>4</td><td>6,45</td></tr><tr><td colspan="3">Time from symptom onset to first consultation (n=62)</td></tr><tr><td>$\leq$ 1 year</td><td>2</td><td>3,23</td></tr><tr><td>> 1 year</td><td>60</td><td>96,77</td></tr><tr><td colspan="3">CDR scale – quantitative (n=62)</td></tr><tr><td>Median (P25 - P75)</td><td>1 (0,5 - 2)</td><td></td></tr><tr><td>Min - Max</td><td>0,5 - 3</td><td></td></tr><tr><td colspan="3">CDR scale – category (n=62)</td></tr><tr><td>0,5</td><td>17</td><td>27,42</td></tr><tr><td>1</td><td>20</td><td>32,26</td></tr><tr><td>2</td><td>19</td><td>30,65</td></tr><tr><td>3</td><td>6</td><td>9,68</td></tr></table> Abbreviations: n = absolute frequency; % = percentage; SD = standard deviation; Min = minimum; Max = maximum; P25 = 25th percentile; P75 = 75th percentile; CDR = Clinical Dementia Rating Scale.	Population	n	%	Age (years) (n=62)			Mean ($\pm$ SD)	68,66 ($\pm$ 10,04)		Min - Max	44 - 93		Age range (n=62)			44 - 60 years	13	20,97	61 - 70 years	23	37,10	71 - 80 years	17	27,42	> 81 years	9	14,52	Gender (n=62)			Female	31	50,00	Male	31	50,00	Education level (n=62)			0 - 4 years	44	70,97	5 - 8 years	10	16,13	9 - 11 years	4	6,45	> 11 years	4	6,45	Time from symptom onset to first consultation (n=62)			$\leq$ 1 year	2	3,23	> 1 year	60	96,77	CDR scale – quantitative (n=62)			Median (P25 - P75)	1 (0,5 - 2)		Min - Max	0,5 - 3		CDR scale – category (n=62)			0,5	17	27,42	1	20	32,26	2	19	30,65	3	6	9,68	It is noteworthy that only 27.42% of the patients presented for consultation with a questionable level of impairment (CDR 0.5). Most patients (70.97%) had 0 to 4 years of education, followed by 5 to 8 years (16.13%), as shown in Table 1. When assessing education level according to the CDR, despite $p > 0.05$, mild, moderate and severe levels of dementia were more common in low-education patients, with the majority having 0 to 4 years of schooling, followed by 5 to 8 years. In the questionable impairment level (CDR=0.5), the highest rates were found in the 0 to 4 years group (70.59%), but followed by 9 to 11 years (17.65%), not 5 to 8 years, indicating higher percentages of patients with more years of education (Table 2). <table><caption>Table 2 - Assessment of education level according to the Clinical Dementia Rating</caption><tr><th rowspan="2"></th><th colspan="4">CDR (Clinical Dementia Rating)</th><th rowspan="2">p value</th></tr><tr><th>Questionable Level (CDR=0,5) (n=17)</th><th>Mild Level (CDR=1) (n=20)</th><th>Moderate Level (CDR=2) (n=19)</th><th>Severe Level (CDR=3) (n=6)</th></tr><tr><td colspan="6">Education (n=62)</td></tr><tr><td>0 to 4 years</td><td>12</td><td>70,59</td><td>14</td><td>70,00</td><td>13</td><td>68,42</td><td>5</td><td>83,33</td></tr><tr><td>5 to 8 years</td><td>1</td><td>5,88</td><td>4</td><td>20,00</td><td>4</td><td>21,05</td><td>1</td><td>16,67</td></tr><tr><td>9 to 11 years</td><td>3</td><td>17,65</td><td>1</td><td>5,00</td><td>0</td><td>0,00</td><td>0</td><td>0,00</td></tr><tr><td>> 11 years</td><td>1</td><td>5,88</td><td>1</td><td>5,00</td><td>2</td><td>10,53</td><td>0</td><td>0,00</td></tr></table> ^aabsolute frequency; [%]percentage; ^QChi-square test via Monte Carlo simulation.		CDR (Clinical Dementia Rating)				p value	Questionable Level (CDR=0,5) (n=17)	Mild Level (CDR=1) (n=20)	Moderate Level (CDR=2) (n=19)	Severe Level (CDR=3) (n=6)	Education (n=62)						0 to 4 years	12	70,59	14	70,00	13	68,42	5	83,33	5 to 8 years	1	5,88	4	20,00	4	21,05	1	16,67	9 to 11 years	3	17,65	1	5,00	0	0,00	0	0,00	> 11 years	1	5,88	1	5,00	2	10,53	0	0,00	Considering the patients' education level, the comparative analysis did not establish statistical significance in relation to the level of dementia ($p > 0.05$), but identified a prevalence of patients with 0 to 4 years of education of 70.97%. The fact that the majority has a low level of education is, unfortunately, an expected finding given the reality of public health in Brazil. The application of the CDR proved to be feasible and useful in patients with low levels of education, reinforcing its clinical value even in contexts of educational limitation. Despite the lack of statistical significance, a predominance of higher scores was observed among individuals with 0 to 4 years of schooling, suggesting that the CDR may maintain good sensitivity for identifying and staging dementia in this population. Thus, the proper application of this widely used tool could reduce the underdiagnosis of dementia in Brazil.	GONG, J. <i>et al.</i> Sex differences in dementia risk and risk factors: individual-participant data analysis using 21 cohorts across six continents from the COSMIC Consortium. <i>Alzheimer's & Dementia: The Journal of the Alzheimer's Association</i>, v. 19, n. 8, p. 3365–3378, 2023. DOI: 10.1002/alz.12962. HUQUE, H. <i>et al.</i> Could country-level factors explain sex differences in dementia incidence and prevalence? A systematic review and meta-analysis. <i>Journal of Alzheimer's Disease</i>, v. 91, n. 4, p. 1231–1241, 2023. DOI: 10.3233/JAD-220724. EMRANI, S.; SUNDERMANN, E. E. Sex/gender differences in the clinical trajectory of Alzheimer's disease: insights into diagnosis and cognitive reserve. <i>Frontiers in Neuroendocrinology</i>, v. 77, p. 101184, 2025. DOI: 10.1016/j.ynrne.2025.101184. BARTZ, D. <i>et al.</i> Clinical advances in sex- and gender-informed medicine to improve the health of all: a review. <i>JAMA Internal Medicine</i>, v. 180, n. 4, p. 574–583, 2020. DOI: 10.1001/jamainternmed.2019.7194. EASTMAN, J.; BAHORIK, A.; KORNBILTH, E.; XIA, F.; YAFFE, K. Sex differences in the risk of dementia in older veterans. <i>The Journals of Gerontology: Series A, Biological Sciences and Medical Sciences</i>, v. 77, n. 6, p. 1250–1253, 2022. DOI: 10.1093/geronl/giac029. HASSELGREN, C. <i>et al.</i> Sex differences in dementia: on the potentially mediating effects of educational attainment and experiences of psychological distress. <i>BMC Psychiatry</i>, v. 20, n. 1, p. 434, 2020. DOI: 10.1186/s12888-020-02820-9. 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