

Global And Regional Trends In Particulate Matter attributable Alzheimer’s Disease And Dementia (1990-2023)

aaic2026.0ad010f

Muhammad Usman Iqbal*, Saad Arsalan Wasti, Areesha Wasti.
*Presenter

Global particulate-matter attributable Alzheimer disease and other dementia burden fell in high-income regions but either remained stable, or showed rises elsewhere.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS																																						
Alzheimer’s disease (AD) and other dementias remain a major cause of cognitive decline and mortality worldwide. Despite advancements in healthcare and early detection, particulate matter (PM) exposure may contribute to neurodegenerative risk, particularly in regions with high industrial activity and urbanization. Understanding the impact of PM on AD and dementia trends is essential for shaping public health and environmental policies.	Data from the Global Burden of Disease Study were used to evaluate age-standardised death rates and disability-adjusted life years (DALYs) attributable to particulate matter. Temporal trends from 1990-2023 were assessed globally and across various SDI classifications, and WHO regions. Joinpoint regression analysis was employed to calculate annual percent change (APC) and average annual percent change (AAPC), with 95% confidence intervals.	From 1990 to 2023, particulate-matter-attributable dementia deaths and DALYs declined slightly worldwide (deaths AAPC -0.31%, DALYs AAPC -0.33%). Significant improvements were concentrated in high SDI nations, the Americas, and Europe. Conversely, low and low-middle SDI regions, alongside Africa and the Eastern Mediterranean, saw rising burdens, while middle SDI, South-East Asia, and the Western Pacific remained stable.	Alzheimer’s disease and dementia burden attributable to particulate matter has declined in high-income regions but continues to rise in low-income and some middle-income regions. Regional disparities highlight the unequal impact of environmental pollution on neurodegenerative health. Targeted air quality interventions are needed to reduce their risk and health inequities worldwide. Age-Standardized DALY Rates Per 100,000 Globally <table><tr><th>Year</th><th>Value</th></tr><tr><td>1990</td><td>149</td></tr><tr><td>1992</td><td>149</td></tr><tr><td>1994</td><td>150</td></tr><tr><td>1996</td><td>150</td></tr><tr><td>1998</td><td>150</td></tr><tr><td>2000</td><td>150</td></tr><tr><td>2002</td><td>150</td></tr><tr><td>2004</td><td>149</td></tr><tr><td>2006</td><td>147</td></tr><tr><td>2008</td><td>144</td></tr><tr><td>2010</td><td>141</td></tr><tr><td>2012</td><td>139</td></tr><tr><td>2014</td><td>137</td></tr><tr><td>2016</td><td>136</td></tr><tr><td>2018</td><td>133</td></tr><tr><td>2020</td><td>130</td></tr><tr><td>2022</td><td>137</td></tr><tr><td>2023</td><td>132</td></tr></table>	Year	Value	1990	149	1992	149	1994	150	1996	150	1998	150	2000	150	2002	150	2004	149	2006	147	2008	144	2010	141	2012	139	2014	137	2016	136	2018	133	2020	130	2022	137	2023	132
Year	Value																																								
1990	149																																								
1992	149																																								
1994	150																																								
1996	150																																								
1998	150																																								
2000	150																																								
2002	150																																								
2004	149																																								
2006	147																																								
2008	144																																								
2010	141																																								
2012	139																																								
2014	137																																								
2016	136																																								
2018	133																																								
2020	130																																								
2022	137																																								
2023	132																																								