

Passive Smoking and the Elderly: A Hidden Health Threat

Key Messages

- Passive smoking significantly increases health risks in the elderly, including cardiovascular disease, respiratory infections, cancer, and cognitive decline.
- Biological evidence confirms that nonsmokers absorb carcinogens from sidestream smoke, supporting the causal link between SHS and cancer.
- Sleep quality is negatively affected by secondhand smoke exposure, which is especially concerning in older adults due to its link with increased mortality.
- Public health interventions must prioritize smoke-free environments for older adults to reduce preventable illness and support healthy aging.

Background

Passive smoking can lead to serious negative health consequences, especially among the elderly. As aging is frequently accompanied by chronic illnesses and weakened immune defences, older adults become more susceptible to environmental toxins like tobacco smoke (Wu et al., 2017).

Cardiovascular, Respiratory, and Cancer Risks

Passive smoking can negatively impact a wide range of health outcomes in elderly people. Exposure to secondhand smoke (SHS) is significantly associated with both higher systolic and diastolic blood pressure as well as decreased blood pressure controllability in older adults (Wu et al., 2017). SHS also nearly doubles the risk of community-acquired pneumonia in individuals over 65 (Almirall et al., 2014) and has been linked to a higher incidence of tuberculosis (Leung et al., 2010). In addition to these cardiovascular and respiratory effects, exposure to passive smoke presents a significant cancer risk factor in older adults. Studies have shown that passive smoking increases the risk of cervical cancer (Su et al., 2018), breast cancer (Luo et al., 2011), and lung cancer (Kurahashi et al., 2008). Biological evidence supports these findings: Hecht et al. (1993) demonstrated that nonsmokers exposed to sidestream smoke absorb and metabolize NNAL, a tobacco-specific lung carcinogen. Given that over half of all cancers are diagnosed in individuals over 65 and that lung cancer is very prevalent

in this age group (Venuta et al., 2016), minimizing SHS exposure is critical for cancer prevention in the elderly.

Sleep Quality and Longevity

Passive smoking has been shown to negatively affect sleep quality, a concern that is particularly relevant for elderly individuals due to the strong link between sleep disturbances and mortality in this age group. Several studies have demonstrated that exposure to secondhand smoke (SHS) is associated with poor sleep outcomes, including short sleep duration, excessive daytime sleepiness, and poor overall sleep quality (Safa et al., 2020; Wang et al., 2022; Zhou et al., 2018). These sleep disruptions are not only detrimental to daily functioning but also carry long-term health risks. Chen et al. (2025) reported that both SHS exposure and poor sleep independently increased the risk of mortality, with the highest risk observed in individuals exposed to both. This is consistent with findings from Silva et al. (2016) and Gangwisch et al. (2008), who identified that both short and long sleep durations are linked to increased mortality in older adults. Poor sleep also weakens immunity, raising the risk of infections and chronic conditions like dementia, obesity, diabetes, and heart disease (Mukherjee et al., 2024). Together, these findings underscore the importance of minimizing SHS exposure in the elderly to protect sleep health and support longevity.

Cognitive and Functional Decline

In 2021, the worldwide prevalence of dementia was estimated at 57 million, with approximately 10 million new cases each year (World Health Organization, 2025). Passive smoking has emerged as a significant factor in the development of dementia and cognitive impairment. Barnes et al. (2010) found that older adults with high lifetime SHS exposure and subclinical cardiovascular disease had a threefold increased risk of developing dementia. Chen et al. (2012) reported a 39% increased risk of dementia among never-smoking women exposed to SHS, with a clear dose-response relationship. These findings suggest that SHS may accelerate neurodegenerative processes, especially in individuals with underlying vascular conditions. It is also associated with reduced muscle strength and impaired mobility in older adults (Craciun et al., 2022).

Implications

- Older adults require smoke-free environments to maintain their health and independence.
- Family members and caregivers should advocate for smoke-free homes and care facilities.

- Even minimal exposure to SHS can be harmful—awareness and prevention are key.
- Public health campaigns and cessation programs should specifically address the needs of the elderly population.

References

- Almirall, J., Serra-Prat, M., Bolívar, I., Palomera, E., Roig, J., Hospital, I., Carandell, E., Agustí, M., Ayuso, P., Estela, A., Torres, A., & the Study Group of Community-Acquired Pneumonia in Catalan Countries (PACAP). (2014). Passive smoking at home is a risk factor for community-acquired pneumonia in older adults: A population-based case-control study. *BMJ Open*, 4(6), e005133. <https://doi.org/10.1136/bmjopen-2014-005133>
- Barnes, D. E., Haight, T. J., Mehta, K. M., Carlson, M. C., Kuller, L. H., Tager, I. B. (2010). Secondhand smoke, vascular disease, and dementia incidence: Findings from the Cardiovascular Health Cognition Study. *American Journal of Epidemiology*, 171(3), 292–302.
- Chen, C., Jin, H., Jiang, Z., Wei, W., & Li, W.-Y. (2025). Joint effect of sleep patterns and secondhand smoke exposure with mortality among non-smoking adults. *Nicotine & Tobacco Research*. Advance online publication. <https://doi.org/10.1093/ntr/ntaf035>
- Chen, R., Zhang, D., Chen, Y., Hu, Z., & Wilson, K. (2012). Passive smoking and risk of cognitive impairment in women who never smoke. *Archives of Internal Medicine*, 172(3), 271–273. <https://doi.org/10.1001/archinternmed.2011.762>
- Craciun, O. M., Ortola, R., Pascual, J. A., Pérez-Ortuño, R., Galán Labaca, I., Banegas, J. R., Rodríguez Artalejo, F., & García-Esquinas, E. (2022). Secondhand tobacco smoke and functional impairments in older adults living in the community. *Nicotine & Tobacco Research*, 24(12), 2026–2034. <https://doi.org/10.1093/ntr/ntac131>

Gangwisch, J. E., Heymsfield, S. B., Boden-Albala, B., Buijs, R. M., Kreier, F., Opler, M. G., Pickering, T. G., Rundle, A. G., Zammit, G. K., & Malaspina, D. (2008). Sleep duration associated with mortality in elderly, but not middle-aged, adults in a large US sample. *Sleep*, 31(8), 1087–1096.

<https://doi.org/10.5665/sleep/31.8.1087>

Hecht, S. S., Carmella, S. G., Murphy, S. E., Akerkar, S., Brunnemann, K. D., & Hoffmann, D. (1993). A tobacco-specific lung carcinogen in the urine of men exposed to cigarette smoke. *The New England Journal of Medicine*, 329(21), 1543–1546.

<https://doi.org/10.1056/NEJM199311183292105>

Kurahashi, N., Inoue, M., Liu, Y., Iwasaki, M., Sasazuki, S., Sobue, T., & Tsugane, S. (2008). Passive smoking and lung cancer in Japanese non-smoking women: A prospective study. *International Journal of Cancer*, 122(3), 653–657.

<https://doi.org/10.1002/ijc.23116>

Leung, C. C., Lam, T. H., Ho, K. S., Yew, W. W., Tam, C. M., Law, W. S., Chan, W. M., & Chang, K. C. (2010). Passive smoking and tuberculosis. *Archives of Internal Medicine*, 170(3), 287–292. <https://doi.org/10.1001/archinternmed.2009.506>

Luo, J., Margolis, K. L., Wactawski-Wende, J., Horn, K., Messina, C., Stefanick, M. L., Tindle, H. A., Tong, E., & Rohan, T. E. (2011). Association of active and passive smoking with risk of breast cancer among postmenopausal women: A prospective cohort study. *BMJ*, 342, d1016. <https://doi.org/10.1136/bmj.d1016>

Mukherjee, U., Sehar, U., Brownell, M., & Reddy, P. H. (2024). Mechanisms, consequences and role of interventions for sleep deprivation: Focus on mild cognitive impairment and Alzheimer's disease in elderly. *Ageing Research Reviews*, 100, 102457.

[https://doi.org/10.1016/j.arr.2024.102457\[1\]\(https://www.x-mol.com/paper/1825028762173513728\)](https://doi.org/10.1016/j.arr.2024.102457[1](https://www.x-mol.com/paper/1825028762173513728))

Safa, F., Chaiton, M., Mahmud, I., Ahmed, S., & Alanna, C. (2020). The association between exposure to second-hand smoke and sleep disturbances: A systematic review and meta-analysis. *Sleep Health*, 6(5), 702–714.

<https://doi.org/10.1016/j.sleh.2020.03.008>

- Silva, A. A. D., Mello, R. G. B. D., Schaan, C. W., Fuchs, F. D., Redline, S., & Fuchs, S. C. (2016). Sleep duration and mortality in the elderly: A systematic review with meta-analysis. *BMJ Open*, 6(2), e008119. <https://doi.org/10.1136/bmjopen-2015-008119>
- Su, B., Qin, W., Xue, F., Wei, X., Guan, Q., Jiang, W., Wang, S., Xu, M., & Yu, S. (2018). The relation of passive smoking with cervical cancer: A systematic review and meta-analysis. *Medicine*, 97(46), e13061. <https://doi.org/10.1097/MD.00000000000013061>
- Venuta, F., Diso, D., Onorati, I., Anile, M., Mantovani, S., & Rendina, E. A. (2016). Lung cancer in elderly patients. *Journal of Thoracic Disease*, 8(Suppl 11), S908–S914. <https://doi.org/10.21037/jtd.2016.05.20>
- Wang, L., Heizhati, M., Li, M., Wang, Z., Yang, Z., Abudereyimu, R., Yang, W., Yao, L., & Li, N. (2022). Secondhand smoke is associated with poor sleep quality in self-reported never-smokers of Northwest China: A cross-sectional study. *Sleep and Breathing*, 26(3), 1417–1426. <https://doi.org/10.1007/s11325-021-02505-x>
- World Health Organization. (2025, March 31). *Dementia*. <https://www.who.int/en/news-room/fact-sheets/detail/dementia>
- Wu, L., Yang, S., He, Y., Liu, M., Wang, Y., Wang, J., & Jiang, B. (2017). Association between passive smoking and hypertension in Chinese non-smoking elderly women. *Hypertension Research*, 40, 399–404. <https://doi.org/10.1038/hr.2016.162>
- Zhou, B., Ma, Y., Wei, F., Zhang, L., Chen, X., Peng, S., Xiong, F., Peng, X., NiZam, B., Zou, Y., & Huang, K. (2018). Association of active/passive smoking and urinary 1-hydroxypyrene with poor sleep quality: A cross-sectional survey among Chinese male enterprise workers. *Tobacco induced diseases*, 16, 23. <https://doi.org/10.18332/tid/90004>