Comment on: Neighbourhood greenness and depression among older adults: a risk assessment

The discussion about the risk of depression, frailty and cognitive impairment in elderly people is important. In their article, Perrino et al examined the relationship between neighbourhood greenness and depression among older adults, aged 65 years and older. Adjusted odds ratios (ORs) of the middle and highest tertial of greenness against the lowest for depression were 0.92 (95% CI 0.88–0.96) and 0.84 (95% CI 0.79–0.88), respectively. We greatly appreciate for verifying host–environment relationship among older adults, which might lead to improve quality of life in later life of people. I want to present some information regarding frailty in older adults.

First, Zhu et al conducted a prospective study with a 12-year follow-up to evaluate the effect of residential greenness on subsequent frailty in older adults aged ≥65 years. They used the Normalized Difference Vegetation Index (NDVI) in the 500 m radius around participants’ residence as the indicator of residential greenness, and the OR of the highest quartile of NDVI values for frailty was 0.86 (95% CI 0.77–0.97). In addition, the OR of each 0.1-unit increase in annual average NDVI for the improvement of frailty was 1.02 (95% CI 1.00–1.04). As they recognised that these significant relationships were stronger among urban residents; urbanisation indices might substitute for neighbourhood greenness to evaluate the relationship with depression.

Second, Perrino et al showed that the dose–response relationship, but Zhu et al could not identify a relationship between the level of NDVI and subsequent frailty, even in urban areas. I suppose that several confounders might affect the relationship and risk assessment should be specified in further studies.

Third, de Keijzer et al conducted a 10-year prospective study to investigate the association between long-term residential surrounding greenness and subsequent cognitive decline in participants with a baseline age of 45- to 68-years-old. An interquartile range of increase in NDVI was associated with an increase in the global cognition z-score of 0.020 (95% CI 0.003–0.037) in the 500 m radius and of 0.021 (95% CI 0.003–0.039) in the 1000 m radius. Although higher NDVI was associated with slower cognitive decline, especially in women, they handled a relatively younger population than Perrino et al.s. The effect of ageing on the relationship between neighbourhood greenness and depression should be evaluated.

Finally, there is a lowering effect of residential greenness on subsequent all-cause mortality in older individuals. Hazard ratios of the highest quartile of NDVI values in the 250 m and 1250 m radius for mortality were 0.73 (95% CI 0.70–0.76) and 0.70 (95% CI 0.67–0.74), respectively. I suppose that the interrelationship among depression, frailty and cognitive would be related to life prognosis, and causality seems difficult to confirm. Comprehensive analysis is recommended to understand the relationship between neighbourhood greenness and depression in older adults.