Advanced degrees add up to lower blood pressure

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Freshmen on the eve of finals and graduate students staring down a thesis committee may not feel this way, but the privilege of obtaining an advanced education correlates with decades of lower blood pressure, according to a study led by a public health researcher at Brown University. The benefit appears to be greater for women than for men.

Eric Loucks, assistant professor of community health, says the analysis of nearly 4,000 patient records from the 30-year Framingham Offspring Study may help explain a widely documented association in developed countries between education and lower risk of heart disease. The paper was published online in the open access journal BMC Public Health.

"Does education influence heart disease?" said Loucks, who came to Brown in 2009 from McGill University in Montreal, where he did his analysis. "One of the ways to get at that is to see if education is related to the biological underpinnings of heart disease, and one of those is blood pressure."

The difference education makes

Controlling just for age, Loucks and his co-authors found that women who completed 17 years of schooling or more had systolic blood pressure readings that were, on average, 3.26 millimeters of mercury (mmHg) lower than women who did not finish high school. Women who went to college, but did not pursue graduate studies, had a 2 mmHg

benefit compared to less educated women. For men, going to graduate school versus not finishing high school made a 2.26 mmHg difference, with a lesser benefit for going to college.

Even after controlling for influences such as smoking, drinking, obesity and blood pressure medication, the benefit persisted, although at a lower level (graduate school gave a benefit of 2.86 mmHg for women and 1.25 mmHg for men).

Loucks then went even further in his analysis by indexing the blood pressure readings to make them all equal at the beginning of the 1971-2001 Framingham study period. This statistical maneuver allowed him to determine whether the analysis measured a static difference apparent early on in life or whether the differences increased at all over time. For women, they did. The most educated group retained a 2.53 mmHg benefit over the least educated. In men, the difference was much less, only 0.34 mmHg.

That the gender differences are so pronounced and appear to become more so as life goes on suggests that education may have a greater impact on women's health over their lifetime than on men's health, Loucks said. That could be because of the correlation between low educational attainment and other health risk factors found in other studies of women.

"Women with less education are more likely to be experiencing depression, they are more likely to be single parents, more likely to be living in impoverished areas and more likely to be living below the poverty line," Loucks said.

One caveat, he said, is that the population in the study, drawn from the suburban community of Framingham, Mass., decades ago, is disproportionately white and that the conclusions might not generalize to

other races.

Education and public health

Loucks said the study adds to a chorus of others suggesting that policy makers who want to improve public health and are struggling to do it in other ways, might want to look at improving access to education.

"Socioeconomic gradients in health are very complex," he said. "But there's the question of what do we do about it. One of the big potential areas to intervene on is education."

More information: Associations of education with 30 year life course blood pressure trajectories: Framingham Offspring Study, Eric B. Loucks, Michal Abrahamowicz, Yongling Xiao, and John W. Lynch, *BMC Public Health* (in press)

Provided by Brown University