

Body weight and glaucoma risk; new 'map' for severe myopia

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This month's *Ophthalmology* journal includes surprising research from the Massachusetts Eye and Ear Infirmary on the relation of body weight to the risk for glaucoma. Also, from researchers at the Tokyo Medical and Dental University, comes the first specific map of how the development of myopic maculopathy, an illness that afflicts many severely nearsighted people, predicts which patients will be most susceptible to vision loss.

Does Higher Body Weight Protect Women from One Type of Glaucoma?

Maintaining a healthy body weight is important for avoiding many diseases, but a new study from the Massachusetts Eye and Ear Infirmary (MEEI) finds that for primary open-angle glaucoma (POAG), one of the most common age-related eye diseases, the picture may be more complex. A large, prospective MEEI study, conducted over 20+ years, found that higher body weight (specifically, [body mass index](#), BMI) is not associated with higher risk of POAG. In fact, the research shows that in women, higher BMI is significantly linked to reduced risk for a variant of POAG known as normal tension glaucoma (NTG). The researchers, led by Louis R. Pasquale, MD, say that clinicians and patients should be cautious about these findings until further research provides substantiation and clarifies the related biological mechanisms.

Glaucoma is a complex, potentially blinding illness that damages the

optic nerve, and POAG is the most common type. Elevated [eye pressure](#) (intraocular pressure, IOP) is strongly linked to optic nerve damage. Effective treatments to control IOP are available to help [glaucoma](#) patients preserve their best possible vision. But in people with NTG, optic nerve damage occurs even though their IOPs are not elevated, as defined by accepted standards. Diagnosing and treating NTG presents special challenges for Eye M.D.s (ophthalmologists) and patients.

"Understanding the mechanisms that drive BMI and other body composition factors in relation to POAG might help us solve some mysteries connected with this complex illness," Dr. Pasquale said. "It's reasonable to speculate that hormonally-controlled factors released from adipose or lean tissues may alter the risk of NTG in women. Higher BMI in postmenopausal women is linked with higher estrogen levels, which might positively affect estrogen receptors in the optic nerve," he explained.

BMI (body mass index) refers to the body's adipose (fat) content in relation to lean body mass tissues (muscle, fluid, bone, and other non-fat tissues). When a person has a "higher BMI," that means the person's body includes more fat than the normal standard for his or her age.

The study participants were 78,777 women enrolled in the Nurses Health Study (1980 through 2004) and 41,352 men enrolled in the Health Professionals Follow-up Study (1986 through 2004). In women, each unit increase in BMI was associated with a six percent reduction in risk for NTG (defined as IOP equal to or less than 21 mmHg at the time of diagnosis of POAG). Also, in women, having higher BMI during the young adult years was associated with reduced risk of NTG. In men, BMI was not associated with POAG. Because the ethnicity of most participants was European-Caucasian, the study's implications may be limited to similar patient populations.

Dr. Pasquale suggested that if the relationship of POAG to BMI and related [body-composition](#) factors can be clarified in future research, new treatments could be developed for patients with POAG, particularly those who have the normal tension variant of the disease.

Study May Improve Screening and Treatment of People with Severe Myopia

Severe myopia (nearsightedness) can lead to other, more serious eye disorders in some people. Ophthalmologists (Eye M.D.s) are interested in understanding the factors that make some patients more susceptible to these disorders and related vision loss. Kyoko Ohno-Matsui, MD, Tokyo Medical and Dental University, and her colleagues studied severely myopic patients over time, and found that in 40 percent of them a condition known as myopic maculopathy became significantly worse. The macula is the part of the eye that provides clear, detailed vision. In this subset of patients, the types and patterns of abnormalities that developed in the macula were found to influence the extent to which vision would be affected. Dr. Ohno-Matsui's study is the first to specifically describe the relationships between the disease pattern and vision loss, and this knowledge could help Eye M.D.s determine which myopic patients to follow most closely and the best treatments to use.

The researchers analyzed medical records of 429 hospital patients (802 eyes) who received comprehensive eye exams, including vision testing and specific myopia-tracking tests, at least once a year. Study patients were followed for 12 years, on average.

"Our findings suggest that a patient's age, degree of nearsightedness, eye (axial) length and a specific abnormal bulging of the back surface of the eye (a posterior staphyloma) may be important factors that affect the severity of myopic maculopathy," Dr. Ohno-Matsui said. "Also, our

results show that in eyes that are likely to progress to serious disease, the first observable sign may be a tessellated fundus (a specific abnormality in the macula)," she added.

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