

Serum homocysteine, vitamin B12, and folate, and the prevalence and incidence of posterior subcapsular cataract

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PMID: 25406287 DOI: [10.1167/iovs.14-15531](https://doi.org/10.1167/iovs.14-15531)

Erratum in

[Erratum.](#)

[No authors listed]

Invest Ophthalmol Vis Sci. 2015 May;56(5):3345. doi: [10.1167/iovs.14-15531a](https://doi.org/10.1167/iovs.14-15531a).

PMID: 26024118 No abstract available.

Abstract

Purpose: We assessed associations between serum levels of homocysteine, vitamin B12, and folate, and the prevalence and 5-year incidence of posterior subcapsular cataract (PSC) in Blue Mountains Eye Study participants.

Methods: We examined 3508 participants aged 49+ years during 1997 to 2000, including 2334 (75.1% of survivors) original and 1174 (85.2% of those eligible) newly recruited subjects. Five years later (2002-2004), 1952 (76.6% of survivors) original participants were re-examined. Detailed examinations, including lens photographs and fasting blood tests, were conducted at both visits. Logistic regression models estimated odds ratios (OR) and 95% confidence intervals (CI) after multivariable adjustment.

Results: In this population, those with PSC were older, less likely to have higher education, and more likely to have diabetes and myopia. The PSC prevalence was 5.7% (150/2644). Higher levels of homocysteine (per SD; OR, 1.17; 95% CI, 1.00-1.37) and lower levels of folate (per SD; OR, 1.24; 95% CI, 0.99-1.56) were associated with prevalent PSC. There was significant interaction ($P < 0.05$) between vitamin B12 and homocysteine; for B12 ≥ 125 pmol/L, 28% higher PSC prevalence was associated with homocysteine (per SD; OR, 1.28; 95% CI, 1.09-1.52); however, for B12 < 125 pmol/L, nonsignificant lower PSC prevalence was associated with homocysteine (per SD; OR, 0.16; 95% CI, 0.02-1.57). The 5-year PSC incidence was 5.7% ($n = 59/1030$) with no significant associations with homocysteine, B12, and folate.

Conclusions: Higher serum homocysteine level was associated with PSC prevalence in this population. Vitamin B12 status seemed to modify this association. Lack of longitudinal association could have resulted from insufficient study power.

Keywords: cataract; epidemiology; homocysteine.

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Rochtchina E, Wang JJ, Flood VM, Mitchell P.

Am J Ophthalmol. 2007 Feb;143(2):344-6. doi: 10.1016/j.ajo.2006.08.032.
Epub 2006 Sep 29.
PMID: 17258528

Serum homocysteine and folate but not vitamin B12 are predictors of CHD mortality in older adults.

Gopinath B, Flood VM, Rohtchina E, Thiagalingam A, Mitchell P.
Eur J Prev Cardiol. 2012 Dec;19(6):1420-9. doi:
10.1177/1741826711424568. Epub 2011 Sep 29.
PMID: 21960652

Total plasma homocysteine, folate, and vitamin B12 status in healthy Iranian adults: the Tehran homocysteine survey (2003-2004)/a cross-sectional population based study.

Fakhrzadeh H, Ghotbi S, Pourebrahim R, Nouri M, Heshmat R, Bandarian F, Shafaei A, Larijani B.
BMC Public Health. 2006 Feb 13;6:29. doi: 10.1186/1471-2458-6-29.
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Ulloque-Badaracco JR, Hernandez-Bustamante EA, Alarcon-Braga EA, Al-Kassab-Córdova A, Cabrera-Guzmán JC, Herrera-Añazco P, Benites-Zapata VA.

Front Endocrinol (Lausanne). 2023 Sep 13;14:1221259. doi:
10.3389/fendo.2023.1221259. eCollection 2023.

PMID: 37772082 **Free PMC article.** Review.

Myopia and age-related cataract: a systematic review and meta-analysis.

Pan CW, Cheng CY, Saw SM, Wang JJ, Wong TY.

Am J Ophthalmol. 2013 Nov;156(5):1021-1033.e1. doi:
10.1016/j.ajo.2013.06.005. Epub 2013 Aug 12.

PMID: 23938120 Review.