Online First

Visual Impairment, Optical Correction, and Their Impact on Activity Limitations in Elderly Persons: The POLA Study

The loss of autonomy among older persons is a major public health issue. In the disablement process model, chronic and acute conditions lead to psychological and physical deficiencies and ultimately to difficulty in performing activities of daily life. In elderly persons, visual impairment is one of the major deficiencies leading to activity limitations and can be caused by either eye trauma or ocular diseases (affecting the ability to receive or process visual information), or by refractive errors (a failure of the eye to focus images sharply on the retina). Refractive errors affect approximately a third of the US and Western European populations.

We estimated the proportion of uncorrected refractive errors and the potential improvement in daily life functioning that could be brought about by optimal visual correction.

Methods. The POLA (Pathologies Oculaires Liées à l’Age) Study, described in detail previously, aimed to identify risk factors for age-related eye diseases. The present study included the 1947 persons, 63 years and older, who completed the 3-year follow-up (1998-2000). Participants were administered standardized questionnaires and were assessed for Instrumental Activities of Daily Living (IADL) limitations (participants unable to perform without assistance at least 1 of the 8 activities of the Lawton scale). Eye examinations, performed by 5 ophthalmologists in a mobile unit equipped with ophthalmologic devices, included a measure of distance visual acuity in each eye, with the participants’ usual optical correction (or no correction if they did not wear glasses or contact lenses) and then with the best achieved correction determined using objective refraction (RM-A7000; Topcon, Tokyo, Japan) and lenses of varying power.

Distance visual acuity was assessed with the Snellen decimal chart and analyzed by extending the World Health Organization taxonomy of visual impairment. “Low vision” (including blindness) and “moderate visual impairment” were defined as visual acuity in the better eye lower than 6/18 and 6/18 to 6/12, respectively. The “unilateral visual loss group” included participants with visual acuity worse than 6/12 for one eye and normal for the other eye and the “normal group” those with 6/6 to 6/12 in each eye.

To assess the proportion of IADL limitations that could be prevented with the use of the best achieved correction, the generalized impact fraction (GIF) of inappropriate optical correction was estimated using equations previously described and stratified by age group (63 to 74 years vs ≥75 years). The age-stratified GIFs were combined using a case-load weighted sum method for an overall GIF. The 95% confidence intervals (CIs) were obtained by bootstrapping.

Results. Of the 1947 participants 3.0% were excluded owing to missing data, leaving 1887 participants (804 men and 1083 women) for this analysis. The median age was 72.3 years (interquartile range, 68.1-77.0), and 10.3% of participants (195) had IADL limitations.

Moderate visual impairment and low vision were much more frequent in subjects with IADL limitations (39.0% vs 23.3% and 24.1% vs 5.6%, respectively) but not unilateral visual loss. Overall, 38.5% of participants had an inappropriate optical correction, which accounted for 64.5% and 50.4% of the cases of moderate visual impairment and low vision, respectively.

The overall GIF, which represents the fractional reduction of activity limitations resulting from changing the usual visual correction to the best achieved visual correction (Table), was estimated at 20.5% (95% CI, 13.6%-27.9%). We were not able to adjust the GIF calculation for all possible confounders because of sparse data; however, age was the only obvious confounding factor when we examined the association between vision and activity limitations (ad-
justing for sex, living alone, smoking, alcohol, body mass index, cardiovascular and cerebrovascular disease, antide-pressant use, and hospitalization).

Comment. Among this noninstitutionalized elderly popula-
tion, the majority of cases of low vision and moderate
visual impairment were due to uncorrected refractive er-
rors. One-fifth of IADL limitations could be prevented
by use of the best optical correction. Our results under-
line the importance of including eye examinations in
cohorts studying disability and integrating ophthalmic sur-
veillance in routine evaluation of elderly persons.

According to the 2009 American Academy of Ophthal-
mology recommendations, people older than 65 years
should have eye examinations every 1 to 2 years. This is
critical not only to detect eye diseases but also to measure
refractive errors (which vary with age) and to correct these
with glasses or contact lens. Programs designed to pro-
vide optical services in this population may contribute to
maintaining activities and autonomy in elderly persons.

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prevalence of refractive errors among adults in the United States, Western
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Health Care Reform

Work/Home Conflict and Burnout Among
Academic Internal Medicine Physicians

Studies suggest that work/home conflict may have
a central role in physicians developing burnout.1-5
In a recent comprehensive evaluation of a wide va-
riety of personal and professional factors hypothesized to
contribute to burnout in 7903 American surgeons, 3 fac-
tors—hours worked per week, experiencing a work/
home conflict within the last 3 weeks, and how the most
recent work/home conflict was resolved—were indepen-
dently associated with burnout.6 To validate the impor-
tance of these factors to physician burnout and to explore
whether they are relevant to physicians in specialties other
than surgery, we assessed their importance in a large sample
of internal medicine physicians at an academic center.

Methods. In the fall of 2009, all faculty physicians in the
Mayo Clinic Department of Medicine received a survey with
items pertaining to demographics, work characteristics,
and experience of work/home conflict, including whether
this was resolved in favor of work or home responsibili-
ities or in a manner meeting both responsibilities. These
questions derived from the prior study of American sur-
gicians.7 Burnout was measured using 2 items derived from
the Maslach Burnout Inventory (MBI) shown to stratify
risk of burnout in multiple independent samples of phy-
sicians and medical students including more than 10 000
participants.8 Report of feeling “burned out from my work”
at least weekly has a positive likelihood ratio of 14.9 for a
high emotional exhaustion score on the full MBI and an
area under the curve of 0.94 relative to the full MBI.8 Re-
porting that “I’ve become more callous toward people since
I took this job” at least weekly has a positive likelihood ratio of 23.4 for a high depersonalization score on the full
MBI and an area under the curve of 0.93 relative to the
full MBI. Consistent with prior literature,7 participants indi-
cating they experienced symptoms in either domain at
least weekly were considered to have at least 1 symptom
of burnout.

Multivariate logistic regression models were used to
identify and evaluate the relative strength of independ-
ent associations of demographics, work-related char-
acteristics, experience of a work/home conflict, and how
the last such conflict was resolved with burnout. All sta-

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