The frequency of myopia between two groups of young adults with different occupational guidance

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What is myopia?

► Nearsightedness (myopia) is a **refractive defect** of the **eye** in which **collimated light** produces image **focus** in front of the **retina** when **accommodation** is relaxed.

► A cause of blurred vision.
What causes myopia?

► A natural variation in the axial length of the eyeball, making the eyeball longer
► Less often, nearsightedness may be caused by corneal or lens changes
► These problems force light rays entering the eye to focus in front of the retina
Common types

- **Pathological myopia**, in which the back of the eyeball continues to grow longer, after reaching normal adult size (posterior staphyloma)

- **Secondary myopia**, which may develop as a result of several conditions (premature birth, Keratoconus, cataract, buckling for RD repair, etc)
Pseudomyopia

Pseudomyopia, or sudden nearsightedness that gets worse because of an underlying cause, (uncontrolled diabetes, elevated IOP, accommodation, etc)

Common types and pseudomyopia may overlap
Epidemiology

The global prevalence of refractive errors has been estimated from 800 million to 2.3 billion.

The incidence of myopia within sampled population often varies with age, country, sex, race, ethnicity, occupation, environment, and other factors.

Dunaway D et al 2006
Prevalence

- **In the United States**, the prevalence of myopia has been estimated at 20%. Nearly 1 in 10 (9.2%) American children between the ages of 5 and 17 have myopia.

- Approximately 25% of Americans between the ages of 12 and 54 have the same condition.

Sperduto et al 1983

Kleinstein RN et al 2003
A recent study involving first-year undergraduate students in the United Kingdom found that 50% of British whites and 53.4% of British Asians were myopic.
In Greece, the prevalence of myopia among 15 to 18 year old students was found to be 36.8%
Risk factors

► Research has indicated a link between close work, such as reading, and the development and progression of nearsightedness.

► One study showed that people in professions that involve extensive reading have higher degrees of nearsightedness.

Ong E et al 1995
Ciuffreda KJ et al 2008
Near work has been implicated as a contributing factor to myopia in some studies.

One recent study suggested that students exposed to extensive "near work" may be at a higher risk of developing myopia, whereas extended breaks from near work during summer or winter vacations may retard myopic progression.

Jiang BC et al 2005
Education and myopia

A number of studies have shown that the incidence of myopia increases with level of education and many studies have shown a correlation between myopia and IQ, likely due to the confounding factor of formal education.

Mavracanas TA et al 2000
Purpose

► To calculate the frequency of myopia between two groups of young adults

► 12871 adults 18-22 years old with different occupational interest and educational level were examined

► To investigate the relationship between time spent on reading and higher myopic refraction
Methods

- Between 2006 and 2009 7995 professional soldier candidates and 4876 candidates for the Military Academies (University level of education) examined at the Ophthalmology department at 424 Gen. Mil. Hosp. of Thessaloniki

- Visual acuity was examined subjectively (optotype, refractometer). Cycloplegic exam applied when necessary only
Results

1992 (40.86%) of the Mil. Academy candidates and 1489 (18.62%) among the professional soldier candidates found to have up to 6.00 dpts of myopia
Conclusions

► High degree of myopia was more common in the group of young adults with higher level educational target

► Myopia is related with the prolonged reading work, during school years
The strongest evidence for an environmental link to myopia is near work activity.

Childhood exposure to night lighting has also been explored in different studies but the results have been mixed.

Studies have demonstrated that hereditary factors play an important role in myopia development.

The exact nature and interplay of genetic and environmental factors is not known and data suggest that environmental factors may interact with genetic factors to increase the risks of developing myopia.

Seang-Mei Saw et al 2003
Future prospects

► Further research is necessary in identifying specific genetic myopic factors.

► Introduction of new educational and lifestyle trends (interactive board, 3D presentations,....)

► .......will trigger the institution of “healthier education” programs.
THANK YOU FOR YOUR ATTENTION