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Lifetime Economic Burden of Refractive Errors by Correction Methods; Iranian Patients' Perspective

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To estimate and compare incurred cost of refractive errors by corrective methods: spectacles, contact lenses and Keratorefractive surgery

A consecutive sample of 52 subjects who had Keratorefractive surgery more than 18 months ago in Farabi Eye Hospital is taken. An expert on health economics conducted a structured interview on cost considering direct and indirect estimates by bottom-up and human capital approaches, respectively. Intangible costs are not included. 4 standard treatment scenarios of spectacles (SC), contact lenses (CL), combination (SCL) and refractive surgeries (RS) are assessed. 5% discount rate and 73 years life expectancy at birth were assumed. One-year and lifetime horizon in cost analysis were considered. In order to determine the uncertainty magnitude for deterministic and probabilistic estimations, one-way with scenario sensitivity analysis and Monte Carlo simulation with 5000 iterations were used, respectively and a 95% confidence interval was calculated.

Given the 6% unmet need, deterministic (and probabilistic) expected annual cost of SC, CL, SCL and RS is estimated at 12449.6 (11735.2), 3063 (3218.1), 11856.5 (12488.4) and124 (118.7) USD, respectively.92% or more of total cost in all scenarios was related to indirect cost especially patient and caregiver opportunity cost. Our observation revealed that the estimations for RS are more sensitive to inflation, discount rate and lost time cost.

According to a patient perspective economic assessment, refractive surgery is highly cost-saving as compared with conventional non-surgical methods of refractive error corrections. The most costly and the least costly conventional choices then would be: SC+CL and SC+RS in one's life course, respectively. From a health economics perspective, one may infer that refractive surgery should be considered as soon as medically and legally possible.