

# The effect of head positions during sleep on intraocular pressure in control and glaucoma groups

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## Abstract

**Purpose :** To study the effects of different head positions on intraocular pressure during sleep in older than 60 years old healthy subjects and glaucoma patients.

**Methods :** Forty subjects, older than 60 years old, in total - 54 eyes, which met the requirements, were included in this prospective observational study. Patients were divided into two groups based on self-reported disease status with 20 glaucoma patients (glaucoma group) and 20 non-glaucoma subjects (control group). IOP was measured using Icare Tonometer 10 min after assuming each position in a specific sequence (Fig. 1): head flat in the supine position, using two pillows and elevated bed backrest 30° up.

**Results :** Mean values of IOP in control group (C) and in glaucoma group (G) during head supine position was 12,9 mmHg (C), 19,8mmHg (G), using two pillows - 11,3 mmHg (C), 17,9 mmHg (G) and in the bed backrest up 30° position - 10,1 mmHg (R), 17,1 mmHg (G) (Fig. 2). In both groups, average IOP was 1.6 mmHg (R), 1.9 mmHg (G) lower in using two pillows position compared to the supine position. There was significant difference in IOP between all three positions in healthy subjects (p=0.001), however there were no significant difference observed in glaucoma group patients (p=0,142).

**Conclusions :** In both groups the highest IOP were found in head flat supine position, however the lowest IOP - in bed backrest 30° up position. This study suggests that elevating head using two pillows or bed backrest 30° up during sleep may help to reduce IOP.

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Figure 1. SLEEPING POSITIONS

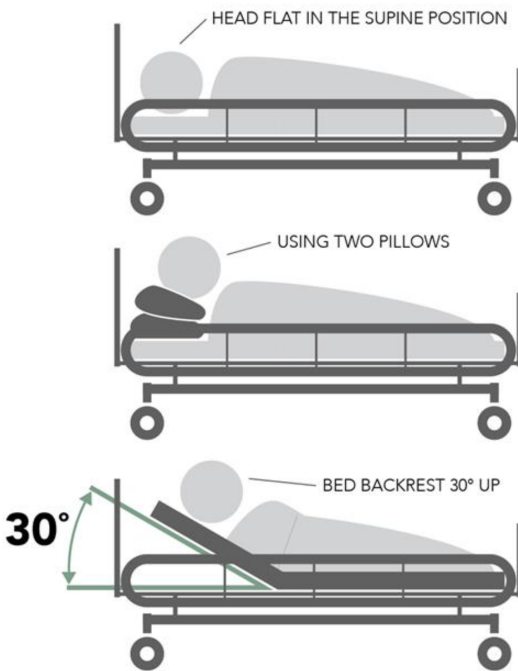


Figure 2. POSITIONAL IOP CHANGES IN CONTROL AND GLAUCOMA GROUPS

CONTROL	POSITION	GLAUCOMA
12.9	HORIZONTAL	19.8
11.3	2 PILLOWS	17.9
10.1	BED BACKREST 30°	17.1