

# Assessment of Patients with Presbyopia and Presbycusis Visited in Hospital: A Observational Study

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## ABSTRACT

**Introduction:** Presbyopia is a progressive optical condition where the ability to focus on near objects gradually decreases as part of the natural aging process. Presbyopia tends to manifest itself around the age of 40 to 45 years of age. Its improper correction will compromise a person's work performance with the economic loss too. It has also been described as "an irreversible optical failure, an unexplained evolutionary blunder that comes as a psychological shock. Also, hearing loss is one of the most widespread sensory impairment in aging people.

**Materials and Methods:** Study was conducted in Department of Ophthalmology, Swatantra Sainani late Dr. Mangal Singh District Hospital, Dholpur, Rajasthan, India. On a total of 50 subjects. The pre-approval was granted by the ethical board of our college. Also, an informed consent was achieved from the study subjects as well. A detailed medical history was taken for each patient. It also included the duration and onset of the underlying symptoms. As of inclusion criteria, all subject patients were above 18 years of age, but not more than 60 years. Any patient suffering from any kind of genetic disorder or autoimmune disorder was clearly left out of the study.

**Results:** In a total of 50 patients, 18 (36%) were female and 32 (64%) were male. Out of 50 patients were merely 10 patients

(18%) were diagnosed with presbyopia exclusively and 14 patients (28%) were diagnosed with presbycusis exclusively. Rest, 26 patients were suffering from both presbyopia and presbycusis. (52%)

**Conclusion:** Both the condition of presbyopia and presbycusis increased gradually with the age. Females dominated the study among the presbyopia cases while males were in dominance among the condition of presbycusis.

**Keywords:** Impairment, Presbycusis, Presbyopia.

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## INTRODUCTION

Presbyopia is a progressive optical condition where the ability to focus on near objects gradually decreases as part of the natural aging process. Presbyopia tends to manifest itself around the age of 40 to 45 years of age. Its improper correction will compromise a person's work performance with the economic loss too.<sup>1</sup> It has also been described as "an irreversible optical failure, an unexplained evolutionary blunder that comes as a psychological shock."<sup>2</sup>

Also, hearing loss is one of the most widespread sensory impairment in aging people. Age-related hearing loss is primarily a hearing loss related to functional loss of sensory and neural elements, comparable to macular degeneration in the visual system rather than what is referred to as presbyopia, which is related to conductive disturbances of the optical system. Hearing loss is one of the most commonly observed sensory impairment in aging person. Hearing ability declines with age—physiologically

beginning by the third decade, predominately in the high frequencies.<sup>3</sup> Considering demographic profile of patients with presbyopia and presbycusis, Journal of Advanced Medical and Dental Sciences Research indicates that, it can be easily corrected by near vision spectacles, whereas presbycusis exhibits multifaceted aspects also involving changes in neural structures responsible for central auditory processing. <sup>(4)</sup> Therefore, the present study was conducted to study the demographic profile of patients with presbyopia and presbycusis collectively. The cognitive and psychosocial consequences of hearing loss are well described and well established but population-based epidemiological knowledge or trends on the intensity of hearing loss and its health-related consequences have not been well described.<sup>5</sup> The present study was conducted with the aim to assess patients with presbyopia and presbycusis visited in hospital.

**MATERIAL AND METHODS**

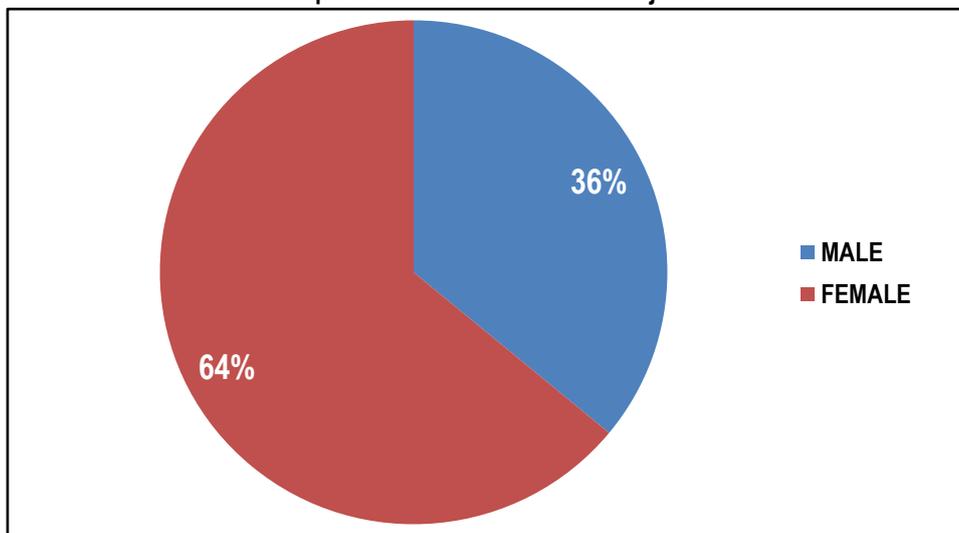
A detailed study was conducted in Department of Ophthalmology, Swatantra Sainani late Dr. Mangal Singh District Hospital, Dholpur, Rajasthan, India, on a total of 50 subjects. The pre-approval was granted by the ethical board of our college. Also, an informed consent was achieved from the study subjects as well. A detailed medical history was taken for each patient. It also included the duration and onset of the underlying symptoms. As of inclusion criteria, all subject patients were above 18 years of age, but not more than 60 years. Any patient suffering from any kind of genetic disorder or autoimmune disorder was clearly left out of the study. Patients with degenerative retinal disease and speech disorder were also left of the study. For establishing the condition of presbyopia, the distant vision was tested by Snellen's chart at a distance of 6 meters, whereas the 'near point test' was done

monocular technique. The measurement was done with the distant manifest refraction in place and root of nose was taken as point of reference. The near point card attached on the ruler was kept at distance of 50 centimeters, as the card was drawn nearer toward eye the point where blurring of smallest letter starts is noted and measured in centimeters and diopters. Any person with near point more than 30 centimeters was marked as a case of presbyopia. For the condition of presbycusis, 'pure tone audiometry test' was used to evaluate presbycusis. Patients with average hearing loss, the average of 0.5,1 and 2 KHz, ranged from 11 to 70 dBHL with a median of 40. The average air-bone gap was 3 db were considered positive for presbycusis. All the data was arranged in a tabulated form and analyzed using SPSS software.

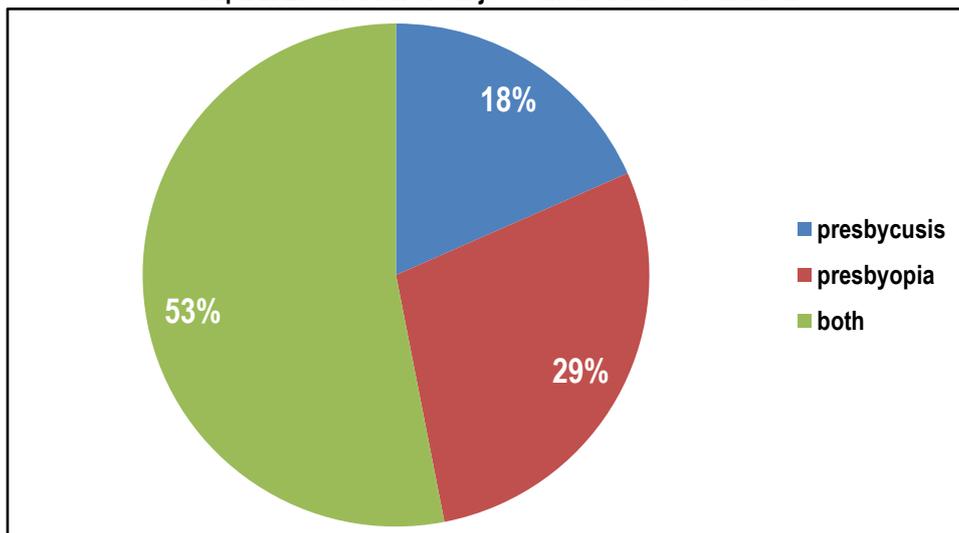
**Table 1: Classification of the subjects based on condition**

Condition	Group A (18-29)	Group B (30-40)	Group C (41-50)	Group D (51-60)
Presbyopia	2	2	4	2
Presbycusis	3	4	5	2
Both	0	9	7	10
<b>Total</b>	<b>5</b>	<b>15</b>	<b>16</b>	<b>13</b>

**Graph 1: Gender distribution of subjects.**



**Graph 2: Distribution of subjects on the basis of condition**



## RESULTS

In a total of 50 patients, 18 (36%) were female and 32 (64%) were male. (graph 1). Out of 50 patients were merely 10 patients (18%) were diagnosed with presbyopia exclusively and 14 patients (28%) were diagnosed with presbycusis exclusively. Rest, 26 patients were suffering from both presbyopia and presbycusis. (52%) (graph 2) Dividing all 50 patients in 4 age groups, group A (18-28 years) 2 cases of presbyopia and 3 cases of presbycusis exclusively. Group B (29- 39 years) had 2 cases of presbyopia, 4 cases of presbycusis and 9 cases of both presbyopia and presbycusis. Group C (40-50 years) had 4 cases of presbyopia and 5 cases of presbycusis, also had 7 cases of both presbyopia and presbycusis. Group D patients (51-60 years) had 2 cases of presbyopia, 2 cases of presbycusis and 10 cases of both presbyopia and presbycusis. (table1)

## DISCUSSION

Age-related hearing loss is primarily a hearing loss related to functional loss of sensory and neural elements, comparable to macular degeneration in the visual system rather than what is referred to as presbyopia, which is related to conductive disturbances of the optical system.<sup>6-8</sup> The present study was clearly indicative that females dominated among the cases of presbyopia while males were dominated among the cases having presbycusis. No significant difference in near vision and hearing was seen in smokers and alcoholics also. This study on effect of age and sex on hearing and reported mild degree of hearing loss was evident in both men and women at middle and aged groups. Also percentage of males having hearing loss was more than women and also found that with advancing age loss of hearing threshold is less in lower frequencies in male as compared to female. Also, with advancing age loss of hearing threshold in higher frequencies is more in male than female; statistically the results were highly significant.<sup>9</sup> The thorough analysis of the data also concluded that females might have a greater risk for presbyopia than males of equivalent age, the smaller group analysis of near add powers for presbyopic prescriptions showed that female have a need for higher-power near than male of an equivalent age.<sup>10</sup> Such findings are particularly important when combined with evidence that females in developing countries might often be underserved in receiving near-vision correction aids. Many other factors such as low socioeconomic status, noise exposure, ototoxins (eg, aminoglycosides, chemotherapeutic agents, and heavy metals), infections, smoking, hypertension, diabetes, vascular disease, immunologic disorders, and hormonal factors also contribute significantly in the onset and severity of presbycusis. A genetic component also predisposes individuals to age-related hearing loss.<sup>11</sup> According to some authors smoking and drinking habits should be considered as risk factors for hearing loss in the elderly and reported that in current study smokers showed a significantly increased risk of hearing loss compared with non-smokers, while heavy drinkers did not show an increased risk compared to non-drinkers.<sup>12</sup> Certain studies also concluded that serum level of metabolic presbycusis patients and control group and reported that total cholesterol was found to be statistically significantly high. This condition justifies that especially diet and life style are very important with regard to presbycusis. Although, the small proportion of study patients

suffering from presbycusis did contribute to the variation in the results in relation to various studies.

## CONCLUSION

Both the condition of presbyopia and presbycusis increased gradually with the age. Females dominated the study among the presbyopia cases while males were in dominance among the condition of presbycusis. Majority cases of presbyopia were seen in service class while no significant difference was observed among cases in various occupations. No major difference in near vision and hearing was observed in smokers and alcoholics.

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