

VIII. Visual and Auditory Examinations

1) Visual system

1. Refraction

Autorefractometry was obtained with the NIDEK-ARK700A. Refractive errors, in spherical equivalent, were assessed.

2. Visual acuity (5 m)

Distant visual acuity was measured for each eye with a Landolt C letter at 5m. Presenting visual acuity was measured with the participant's current distance correction; when distance correction was not used, the unaided distant visual acuity was measured. Subsequently, best-corrected visual acuity for each eye was determined after objective autorefractometry and subjective refinement.

3. Contrast sensitivity

Contrast sensitivity was measured at 1.5, 3, 6, 12, 18 cycles per degree with Vistech VCTS-6500.

4. Intraocular pressure (mmHg)

5. Retinal fundus camera

Fundus photographs were taken with Topcon non-mydratric retinal camera (TRC-NW6S) at 30 and 45 degree angles for each eye without pupil dilatation. Diabetic retinopathy, arteriosclerosis, and macular degeneration were assessed on the photograph at 45 degree angles. Vertical cup to disc ratio was measured on the photograph at 30 degree angles.

6. Specular microscope

Corneal thickness was obtained with the Topcon SP-2000 specular microscope.

2) Auditory system

1. Pure-tone audiometry

Air conduction thresholds at 125,250,500,1000,2000,4000,8000Hz(dBHL)

Bone conduction thresholds at 250,500,1000,2000,4000Hz(dBHL)

Pure-tone audiometry (Audiometer RION AA-78)

*If no response occurs at the maximum output level of this audiometer, the threshold is treated as following.

	Air conduction		Bone conduction	
	Maximum output level	Inputed level	Maximum output level	Inputed level
125Hz	70	75	-	-
250Hz	85	90	55	60
500Hz	100	105	65	70
1000Hz	100	105	70	75
2000Hz	100	105	70	75
4000Hz	100	105	60	65
8000Hz	95	100	-	-

2. Impedance audiometry

(1) Single frequency tympanometry

Tympanometric peak pressure in the single frequency tympanogram at 226Hz(daPa)

Static compliance in the single frequency tympanogram at 226Hz(ml)

(2) Multifrequency tympanometry

Middle ear resonance frequency(Hz)

3. Video otoscopy

Status of one's ear canals and eardrums MP-5(RF SYSTEM lab.)

1) Visual system

1. Refraction

Autorefractometry was obtained with the NIDEK-ARK700A. Refractive errors, in spherical equivalent, were assessed.

Spherical Equivalent of Refractive Error – Right Eye (Diopters)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.19	6.26	277	-0.72	4.61	287	0.15	6.36	272	0.25	5.13	270	1.06	8.73	65	0.02	5.86	1171
Female	-0.08	5.40	294	-0.99	2.47	274	0.50	5.92	278	0.70	5.47	265	0.76	7.60	77	0.07	5.25	1188
Total	0.05	5.83	571	-0.85	3.72	561	0.32	6.14	550	0.48	5.30	535	0.89	8.11	142	0.05	5.56	2359

Spherical Equivalent of Refractive Error – Left Eye (Diopters)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.08	5.03	277	-0.52	3.48	287	-0.04	4.41	263	0.45	4.18	262	1.03	7.02	61	0.04	4.50	1150
Female	-0.07	4.15	294	-0.92	2.08	272	0.37	4.30	270	0.78	4.00	259	1.28	4.99	79	0.11	3.90	1174
Total	0.00	4.60	571	-0.71	2.89	559	0.17	4.35	533	0.62	4.09	521	1.17	5.94	140	0.08	4.20	2324

2. Visual acuity: distant vision (5 m)

Distant visual acuity was measured for each eye with a Landolt C letter at 5m. Presenting visual acuity was measured with the participant's current distance correction; when distance correction was not used, the unaided distant visual acuity was measured. Subsequently, best-corrected visual acuity for each eye was determined after objective autorefractometry and subjective refinement.

Presenting Visual Acuity – Right Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	14	5.0	16	5.5	7	2.6	13	4.6	5	6.8	55	4.6
	Female	21	7.1	5	1.8	7	2.5	14	5.0	14	15.9	61	5.0
	Total	35	6.1	21	3.7	14	2.5	27	4.8	19	11.7	116	4.8
0.3 or worse	Male	3	1.1	8	2.8	4	1.5	18	6.3	4	5.4	37	3.1
	Female	3	1.0	5	1.8	9	3.2	13	4.7	7	8.0	37	3.0
	Total	6	1.0	13	2.3	13	2.3	31	5.5	11	6.8	74	3.1
0.3-0.6	Male	10	3.6	25	8.7	34	12.4	67	23.6	33	44.6	169	14.1
	Female	15	5.1	30	10.8	38	13.5	61	21.9	25	28.4	169	13.9
	Total	25	4.4	55	9.7	72	13.0	128	22.8	58	35.8	338	14.0
0.7 or better	Male	252	90.3	240	83.0	229	83.6	186	65.5	32	43.2	939	78.3
	Female	256	86.8	237	85.6	227	80.8	190	68.3	42	47.7	952	78.1
	Total	508	88.5	477	84.3	456	82.2	376	66.9	74	45.7	1891	78.2

Presenting Visual Acuity – Left Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	15	5.4	17	5.9	6	2.2	11	3.9	2	2.7	51	4.3
	Female	22	7.5	4	1.4	6	2.1	9	3.2	12	13.6	53	4.3
	Total	37	6.4	21	3.7	12	2.2	20	3.6	14	8.6	104	4.3
0.3 or worse	Male	3	1.1	5	1.7	4	1.5	18	6.3	6	8.1	36	3.0
	Female	1	0.3	8	2.9	11	3.9	14	5.0	6	6.8	40	3.3
	Total	4	0.7	13	2.3	15	2.7	32	5.7	12	7.4	76	3.1
0.3-0.6	Male	14	5.0	22	7.6	36	13.1	59	20.8	21	28.4	152	12.7
	Female	13	4.4	24	8.7	32	11.4	74	26.6	32	36.4	175	14.4
	Total	27	4.7	46	8.1	68	12.3	133	23.7	53	32.7	327	13.5
0.7 or better	Male	247	88.5	245	84.8	228	83.2	196	69.0	45	60.8	961	80.1
	Female	259	87.8	241	87.0	232	82.6	181	65.1	38	43.2	951	78.0
	Total	506	88.2	486	85.9	460	82.9	377	67.1	83	51.2	1912	79.0

Best-corrected Visual Acuity - Right Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	14	5.0	16	5.5	7	2.6	13	4.6	5	6.8	55	4.6
	Female	21	7.1	5	1.8	7	2.5	14	5.0	14	15.9	61	5.0
	Total	35	6.1	21	3.7	14	2.5	27	4.8	19	11.7	116	4.8
0.3 or worse	Male	1	0.4	3	1.0	1	0.4	4	1.4	2	2.7	11	0.9
	Female	0	0.0	0	0.0	3	1.1	7	2.5	4	4.5	14	1.1
	Total	1	0.2	3	0.5	4	0.7	11	2.0	6	3.7	25	1.0
0.3-0.6	Male	2	0.7	4	1.4	12	4.4	41	14.4	26	35.1	85	7.1
	Female	1	0.3	9	3.2	13	4.6	28	10.1	15	17.0	66	5.4
	Total	3	0.5	13	2.3	25	4.5	69	12.3	41	25.3	151	6.2
0.7 or better	Male	262	93.9	266	92.0	254	92.7	226	79.6	41	55.4	1049	87.4
	Female	273	92.5	263	94.9	258	91.8	229	82.4	55	62.5	1078	88.4
	Total	535	93.2	529	93.5	512	92.3	455	81.0	96	59.3	2127	87.9

Best-corrected Visual Acuity - Left Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	15	5.4	17	5.9	6	2.2	11	3.9	2	2.7	51	4.3
	Female	21	7.1	4	1.4	6	2.1	9	3.2	12	13.6	52	4.3
	Total	36	6.3	21	3.7	12	2.2	20	3.6	14	8.6	103	4.3
0.3 or worse	Male	1	0.4	0	0.0	3	1.1	10	3.5	5	6.8	19	1.6
	Female	0	0.0	2	0.7	2	0.7	5	1.8	5	5.7	14	1.1
	Total	1	0.2	2	0.4	5	0.9	15	2.7	10	6.2	33	1.4
0.3-0.6	Male	1	0.4	3	1.0	15	5.5	30	10.6	11	14.9	60	5.0
	Female	1	0.3	6	2.2	16	5.7	41	14.7	20	22.7	84	6.9
	Total	2	0.3	9	1.6	31	5.6	71	12.6	31	19.1	144	6.0
0.7 or better	Male	262	93.9	269	93.1	250	91.2	233	82.0	56	75.7	1070	89.2
	Female	273	92.5	265	95.7	257	91.5	223	80.2	51	58.0	1069	87.7
	Total	535	93.2	534	94.3	507	91.4	456	81.1	107	66.0	2139	88.4

3. Contrast sensitivity

Contrast sensitivity was measured at 1.5, 3, 6, 12, 18 cycles per degree with Vistech VCTS-6500.

Contrast Sensitivity at 1.5 cycles/degree – Right Eye

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	44.2	19.5	279	41.5	19.5	287	38.6	15.8	274	35.2	14.5	282	29.8	12.1	73	39.3	17.7	1195
Female	42.4	16.9	294	40.9	16.5	276	36.2	12.5	280	33.6	12.0	273	32.1	11.8	83	37.9	15.0	1206
Total	43.3	18.2	573	41.2	18.1	563	37.4	14.3	554	34.4	13.3	555	31.1	11.9	156	38.6	16.4	2401

Contrast Sensitivity at 3 cycles/degree – Right eye

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	115.7	44.7	279	106.0	49.0	287	90.3	46.4	274	69.9	41.8	282	58.4	38.0	73	93.2	48.9	1195
Female	112.1	47.4	294	111.9	50.5	276	93.1	49.1	280	66.7	41.3	273	66.5	41.3	83	94.2	50.6	1206
Total	113.9	46.1	573	108.9	49.8	563	91.7	47.8	554	68.4	41.5	555	62.7	39.9	156	93.7	49.8	2401

Contrast Sensitivity at 6 cycles/degree – Right Eye

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	114.7	52.5	279	111.9	55.1	287	89.9	52.7	274	63.2	46.0	282	46.3	35.9	73	92.0	55.8	1195
Female	116.8	54.1	294	113.1	59.6	276	98.0	57.5	280	57.0	41.0	273	50.8	36.4	83	93.5	58.4	1206
Total	115.8	53.3	573	112.5	57.3	563	94.0	55.2	554	60.1	43.7	555	48.7	36.1	156	92.8	57.1	2401

Contrast Sensitivity at 12 cycles/degree – Right Eye

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	61.8	37.0	279	60.1	38.2	287	43.9	35.6	274	25.8	27.7	282	12.9	14.8	73	45.8	37.7	1195
Female	62.8	37.7	294	60.6	41.4	276	49.0	37.7	280	22.3	22.4	273	19.6	21.4	83	47.0	38.8	1206
Total	62.3	37.3	573	60.4	39.8	563	46.5	36.7	554	24.1	25.3	555	16.4	18.8	156	46.4	38.3	2401

Contrast Sensitivity at 18 cycles/degree – Right Eye

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	18.8	14.6	279	17.4	13.6	287	12.8	11.9	274	7.4	9.3	282	2.6	4.6	73	13.4	13.2	1195
Female	20.1	14.3	294	18.7	15.8	276	14.1	13.3	280	6.2	7.5	273	5.0	6.9	83	14.2	14.0	1206
Total	19.5	14.5	573	18.0	14.7	563	13.5	12.6	554	6.8	8.5	555	3.9	6.0	156	13.8	13.6	2401

4. Intraocular pressure

Intraocular pressure was measured three times for each eye with a noncontact tomometer (NIDEK NT-3000) between 9 and 12 AM. The mean value of the three measurements was used for analysis.

Intraocular Pressure – Right Eye (mmHg)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	13.21	3.80	265	13.19	3.47	273	12.63	3.81	267	12.36	3.69	270	13.56	10.25	69	12.89	4.38	1144
Female	12.78	4.13	273	11.89	2.40	272	12.57	3.41	273	12.47	3.42	263	11.77	3.29	75	12.38	3.40	1156
Total	12.99	3.97	538	12.54	3.05	545	12.60	3.61	540	12.42	3.56	533	12.62	7.51	144	12.64	3.93	2300

Intraocular Pressure – Left Eye (mmHg)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	12.87	3.89	265	13.24	3.91	272	12.91	4.05	266	12.69	4.58	270	13.53	8.58	68	12.96	4.51	1141
Female	12.48	4.44	273	11.86	2.54	271	12.52	3.35	273	12.82	3.84	265	12.19	3.65	75	12.40	3.62	1157
Total	12.67	4.18	538	12.55	3.37	543	12.71	3.71	539	12.76	4.23	535	12.82	6.49	143	12.68	4.09	2298

5. Retinal fundus camera

Fundus photographs were taken with Topcon fundus camera (TRC-NW6S) at 30 and 45 degree angles for each eye without pupil dilatation.

Diabetic retinopathy, Arteriosclerosis, and macular degeneration were assessed on the photograph at 45 degree angles.

Vertical cup to disc ratio was measured on the photograph at 30 degree angles.

Cup-Disc Ratio of Optic Disc - Right Eye

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.54	0.08	279	0.55	0.09	288	0.56	0.08	273	0.57	0.09	280	0.61	0.10	73	0.56	0.09	1193
Female	0.54	0.09	293	0.55	0.08	277	0.56	0.08	281	0.57	0.09	270	0.58	0.08	82	0.56	0.09	1203
Total	0.54	0.09	572	0.55	0.09	565	0.56	0.08	554	0.57	0.09	550	0.60	0.09	155	0.56	0.09	2396

Cup-Disc Ratio of Optic Disc - Left Eye

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.54	0.09	278	0.54	0.09	287	0.55	0.08	267	0.56	0.09	276	0.59	0.08	71	0.55	0.09	1179
Female	0.53	0.08	293	0.54	0.09	276	0.55	0.07	278	0.57	0.09	268	0.58	0.09	79	0.55	0.08	1194
Total	0.53	0.09	571	0.54	0.09	563	0.55	0.08	545	0.57	0.09	544	0.58	0.09	150	0.55	0.09	2373

Diabetic Retinopathy - Right Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	0	0.0	1	0.3	0	0.0	2	0.7	1	1.4	4	0.3
	Female	1	0.3	0	0.0	0	0.0	1	0.4	3	3.4	5	0.4
	Total	1	0.2	1	0.2	0	0.0	3	0.5	4	2.5	9	0.4
nothing	Male	278	99.6	286	99.0	267	97.4	263	92.6	72	97.3	1166	97.2
	Female	291	98.6	274	98.9	277	98.6	259	93.2	73	83.0	1174	96.3
	Total	569	99.1	560	98.9	544	98.0	522	92.9	145	89.5	2340	96.7
simple	Male	0	0.0	1	0.3	0	0.0	1	0.4	0	0.0	2	0.2
	Female	1	0.3	1	0.4	1	0.4	0	0.0	0	0.0	3	0.2
	Total	1	0.2	2	0.4	1	0.2	1	0.2	0	0.0	5	0.2
proliferative	Male	0	0.0	0	0.0	1	0.4	0	0.0	0	0.0	1	0.1
	Female	1	0.3	1	0.4	0	0.0	0	0.0	0	0.0	2	0.2
	Total	1	0.2	1	0.2	1	0.2	0	0.0	0	0.0	3	0.1
invisible	Male	1	0.4	1	0.3	6	2.2	18	6.3	1	1.4	27	2.3
	Female	1	0.3	1	0.4	3	1.1	18	6.5	12	13.6	35	2.9
	Total	2	0.3	2	0.4	9	1.6	36	6.4	13	8.0	62	2.6

Diabetic Retinopathy - Left Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	1	0.4	1	0.3	1	0.4	1	0.4	2	2.7	6	0.5

	Female	1	0.3	1	0.4	0	0.0	0	0.0	4	4.5	6	0.5
	Total	2	0.3	2	0.4	1	0.2	1	0.2	6	3.7	12	0.5
nothing	Male	277	99.3	285	98.6	258	94.2	263	92.6	66	89.2	1149	95.8
	Female	289	98.0	272	98.2	274	97.5	253	91.0	74	84.1	1162	95.3
	Total	566	98.6	557	98.4	532	95.9	516	91.8	140	86.4	2311	95.5
simple	Male	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0	1	0.1
	Female	1	0.3	1	0.4	1	0.4	0	0.0	0	0.0	3	0.2
	Total	1	0.2	2	0.4	1	0.2	0	0.0	0	0.0	4	0.2
proliferative	Male	1	0.4	0	0.0	1	0.4	0	0.0	0	0.0	2	0.2
	Female	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1
	Total	2	0.3	0	0.0	1	0.2	0	0.0	0	0.0	3	0.1
invisible	Male	0	0.0	2	0.7	14	5.1	20	7.0	6	8.1	42	3.5
	Female	3	1.0	3	1.1	6	2.1	25	9.0	10	11.4	47	3.9
	Total	3	0.5	5	0.9	20	3.6	45	8.0	16	9.9	89	3.7

Arteriosclerosis (Keith-Wagener) - Right Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	0	0.0	1	0.3	0	0.0	2	0.7	1	1.4	4	0.3
	Female	1	0.3	0	0.0	0	0.0	1	0.4	3	3.4	5	0.4
	Total	1	0.2	1	0.2	0	0.0	3	0.5	4	2.5	9	0.4
nothing	Male	273	97.8	269	93.1	238	86.9	225	79.2	46	62.2	1051	87.6
	Female	292	99.0	265	95.7	247	87.9	208	74.8	64	72.7	1076	88.3
	Total	565	98.4	534	94.3	485	87.4	433	77.0	110	67.9	2127	87.9
K-W I	Male	4	1.4	13	4.5	23	8.4	34	12.0	25	33.8	99	8.3
	Female	1	0.3	11	4.0	28	10.0	45	16.2	8	9.1	93	7.6
	Total	5	0.9	24	4.2	51	9.2	79	14.1	33	20.4	192	7.9
K-W IIa	Male	1	0.4	5	1.7	4	1.5	4	1.4	1	1.4	15	1.3
	Female	0	0.0	0	0.0	1	0.4	1	0.4	1	1.1	3	0.2
	Total	1	0.2	5	0.9	5	0.9	5	0.9	2	1.2	18	0.7
K-W IIb	Male	0	0.0	0	0.0	3	1.1	1	0.4	0	0.0	4	0.3
	Female	0	0.0	0	0.0	1	0.4	3	1.1	0	0.0	4	0.3
	Total	0	0.0	0	0.0	4	0.7	4	0.7	0	0.0	8	0.3
K-W III	Male	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Female	0	0.0	0	0.0	2	0.7	2	0.7	0	0.0	4	0.3
	Total	0	0.0	0	0.0	2	0.4	2	0.4	0	0.0	4	0.2
invisible	Male	1	0.4	1	0.3	6	2.2	18	6.3	1	1.4	27	2.3
	Female	1	0.3	1	0.4	2	0.7	18	6.5	12	13.6	34	2.8
	Total	2	0.3	2	0.4	8	1.4	36	6.4	13	8.0	61	2.5

Arteriosclerosis (Keith-Wagener) - Left Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	1	0.4	1	0.3	1	0.4	1	0.4	2	2.7	6	0.5
	Female	1	0.3	1	0.4	0	0.0	0	0.0	4	4.5	6	0.5
	Total	2	0.3	2	0.4	1	0.2	1	0.2	6	3.7	12	0.5
nothing	Male	269	96.4	270	93.4	232	84.7	214	75.4	47	63.5	1032	86.0
	Female	286	96.9	260	93.9	248	88.3	209	75.2	63	71.6	1066	87.4
	Total	555	96.7	530	93.6	480	86.5	423	75.3	110	67.9	2098	86.7
K-W I	Male	8	2.9	15	5.2	24	8.8	42	14.8	16	21.6	105	8.8
	Female	4	1.4	12	4.3	24	8.5	40	14.4	10	11.4	90	7.4

	Total	12	2.1	27	4.8	48	8.6	82	14.6	26	16.0	195	8.1
K-W IIa	Male	0	0.0	1	0.3	3	1.1	5	1.8	2	2.7	11	0.9
	Female	1	0.3	0	0.0	4	1.4	2	0.7	1	1.1	8	0.7
	Total	1	0.2	1	0.2	7	1.3	7	1.2	3	1.9	19	0.8
K-W IIb	Male	0	0.0	0	0.0	0	0.0	1	0.4	1	1.4	2	0.2
	Female	0	0.0	1	0.4	0	0.0	1	0.4	0	0.0	2	0.2
	Total	0	0.0	1	0.2	0	0.0	2	0.4	1	0.6	4	0.2
K-W III	Male	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0	1	0.1
	Female	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	1	0.0
invisible	Male	1	0.4	2	0.7	14	5.1	20	7.0	6	8.1	43	3.6
	Female	3	1.0	3	1.1	5	1.8	26	9.4	10	11.4	47	3.9
	Total	4	0.7	5	0.9	19	3.4	46	8.2	16	9.9	90	3.7

Macular Degeneration - Right Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	0	0.0	1	0.3	0	0.0	2	0.7	1	1.4	4	0.3
	Female	1	0.3	0	0.0	0	0.0	1	0.4	3	3.4	5	0.4
	Total	1	0.2	1	0.2	0	0.0	3	0.5	4	2.5	9	0.4
nothing	Male	274	98.2	274	94.8	241	88.0	214	75.4	60	81.1	1063	88.6
	Female	289	98.0	263	94.9	257	91.5	201	72.3	51	58.0	1061	87.0
	Total	563	98.1	537	94.9	498	89.7	415	73.8	111	68.5	2124	87.8
drusen	Male	0	0.0	2	0.7	10	3.6	11	3.9	3	4.1	26	2.2
	Female	1	0.3	3	1.1	6	2.1	23	8.3	11	12.5	44	3.6
	Total	1	0.2	5	0.9	16	2.9	34	6.0	14	8.6	70	2.9
atrophic change	Male	0	0.0	2	0.7	1	0.4	3	1.1	1	1.4	7	0.6
	Female	0	0.0	1	0.4	1	0.4	2	0.7	0	0.0	4	0.3
	Total	0	0.0	3	0.5	2	0.4	5	0.9	1	0.6	11	0.5
exudative change	Male	0	0.0	0	0.0	0	0.0	2	0.7	0	0.0	2	0.2
	Female	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	0	0.0	0	0.0	0	0.0	2	0.4	0	0.0	2	0.1
epiretinal membrane	Male	2	0.7	1	0.3	4	1.5	7	2.5	0	0.0	14	1.2
	Female	1	0.3	0	0.0	2	0.7	2	0.7	1	1.1	6	0.5
	Total	3	0.5	1	0.2	6	1.1	9	1.6	1	0.6	20	0.8
others	Male	1	0.4	1	0.3	0	0.0	2	0.7	1	1.4	5	0.4
	Female	0	0.0	0	0.0	1	0.4	2	0.7	0	0.0	3	0.2
	Total	1	0.2	1	0.2	1	0.2	4	0.7	1	0.6	8	0.3
invisible	Male	2	0.7	8	2.8	18	6.6	43	15.1	8	10.8	79	6.6
	Female	3	1.0	10	3.6	14	5.0	47	16.9	22	25.0	96	7.9
	Total	5	0.9	18	3.2	32	5.8	90	16.0	30	18.5	175	7.2

Macular Degeneration - Left Eye

		40-49yr		50-59yr		60-69yr		70-79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	1	0.4	1	0.3	1	0.4	1	0.4	2	2.7	6	0.5
	Female	1	0.3	1	0.4	0	0.0	0	0.0	4	4.5	6	0.5
	Total	2	0.3	2	0.4	1	0.2	1	0.2	6	3.7	12	0.5
nothing	Male	272	97.5	272	94.1	227	82.8	218	76.8	51	68.9	1040	86.7
	Female	286	96.9	262	94.6	254	90.4	193	69.4	54	61.4	1049	86.1
	Total	558	97.2	534	94.3	481	86.7	411	73.1	105	64.8	2089	86.4
drusen	Male	0	0.0	2	0.7	9	3.3	9	3.2	3	4.1	23	1.9

	Female	0	0.0	1	0.4	6	2.1	24	8.6	11	12.5	42	3.4
	Total	0	0.0	3	0.5	15	2.7	33	5.9	14	8.6	65	2.7
atrophic change	Male	0	0.0	1	0.3	0	0.0	2	0.7	1	1.4	4	0.3
	Female	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0	1	0.1
	Total	0	0.0	1	0.2	0	0.0	3	0.5	1	0.6	5	0.2
exudative change	Male	0	0.0	0	0.0	2	0.7	0	0.0	0	0.0	2	0.2
	Female	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	0	0.0	0	0.0	2	0.4	0	0.0	0	0.0	2	0.1
epiretinal membrane	Male	0	0.0	3	1.0	3	1.1	3	1.1	1	1.4	10	0.8
	Female	1	0.3	1	0.4	2	0.7	5	1.8	0	0.0	9	0.7
	Total	1	0.2	4	0.7	5	0.9	8	1.4	1	0.6	19	0.8
others	Male	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0	1	0.1
	Female	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0	1	0.1
	Total	0	0.0	1	0.2	0	0.0	1	0.2	0	0.0	2	0.1
invisible	Male	6	2.2	9	3.1	32	11.7	51	18.0	16	21.6	114	9.5
	Female	7	2.4	12	4.3	19	6.8	54	19.4	19	21.6	111	9.1
	Total	13	2.3	21	3.7	51	9.2	105	18.7	35	21.6	225	9.3

6. Specular microscope

Corneal thickness was obtained with the Topcon SP-2000 specular microscope.

Central Corneal Thickness - Right Eye (mm)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.528	0.030	277	0.525	0.032	289	0.521	0.030	273	0.519	0.029	283	0.513	0.034	73	0.523	0.031	1195
Female	0.520	0.029	293	0.514	0.033	276	0.515	0.032	279	0.514	0.028	275	0.512	0.028	86	0.516	0.030	1209
Total	0.524	0.030	570	0.520	0.033	565	0.518	0.031	552	0.517	0.028	558	0.512	0.031	159	0.519	0.031	2404

Central Corneal Thickness - Left Eye (mm)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.530	0.030	277	0.529	0.032	287	0.525	0.029	272	0.524	0.029	280	0.517	0.034	72	0.527	0.031	1188
Female	0.524	0.029	293	0.518	0.033	276	0.521	0.031	278	0.521	0.028	273	0.516	0.029	85	0.521	0.030	1205
Total	0.527	0.030	570	0.524	0.033	563	0.523	0.030	550	0.523	0.029	553	0.516	0.031	157	0.524	0.031	2393

Corneal Endothelial Cell Density - Right Eye (/mm²)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	2709.6	288.2	43	2669.9	317.5	129	2610.3	308.1	103	2607.6	337.1	87	2479.0	468.2	23	2632.9	329.8	385
Female	2584.9	253.0	48	2587.1	300.8	124	2613.8	330.3	105	2491.6	412.5	85	2324.8	415.5	38	2548.6	350.6	400
Total	2643.8	275.9	91	2629.3	311.6	253	2612.1	318.7	208	2550.2	379.7	172	2383.0	438.8	61	2590.0	342.9	785

Corneal Endothelial Cell Density - Left Eye (/mm²)

	40-49yr			50-59yr			60-69yr			70-79yr			80 - yr			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	2641.4	308.8	43	2668.4	398.8	128	2609.0	336.8	103	2581.6	365.8	86	2448.8	405.1	24	2616.3	368.7	384
Female	2598.8	291.8	47	2606.9	289.5	124	2604.1	342.9	104	2449.6	341.8	86	2342.6	461.9	37	2546.7	344.9	398
Total	2619.1	299.1	90	2638.2	350.0	252	2606.6	339.1	207	2515.6	359.1	172	2384.4	440.0	61	2580.9	358.3	782

2) Auditory system

1. Pure-tone audiometry (Audiometer RION AA-73A)

Air conduction threshold of right ear at 125Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	19.6	7.5	278	23.1	8.6	289	27.9	12.2	274	32.2	13.2	284	36.6	14.5	73	26.4	12.1	1198
Female	20.6	7.3	295	23.5	8.5	277	27.3	10.6	280	34.5	14.6	277	39.7	14.1	87	27.3	12.4	1216
Total	20.1	7.4	573	23.3	8.5	566	27.6	11.4	554	33.3	13.9	561	38.3	14.3	160	26.9	12.3	2414

Air conduction threshold of right ear at 250Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	17.8	7.9	278	21.0	8.0	289	25.9	13.0	274	30.0	14.6	284	35.6	16.4	73	24.4	12.8	1198
Female	18.4	8.4	295	21.3	9.1	277	25.5	11.8	281	33.1	16.0	277	38.9	17.0	87	25.5	13.7	1217
Total	18.1	8.2	573	21.2	8.6	566	25.7	12.4	555	31.6	15.4	561	37.4	16.7	160	25.0	13.3	2415

Air conduction threshold of right ear at 500Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	13.5	7.9	278	17.0	8.0	289	22.8	14.5	274	27.4	15.9	284	33.5	17.6	73	21.0	13.9	1198
Female	14.4	8.9	295	17.2	9.3	277	22.4	12.7	281	30.6	17.1	277	37.0	18.5	87	22.2	14.8	1217
Total	14.0	8.4	573	17.1	8.7	566	22.6	13.6	555	29.0	16.6	561	35.4	18.1	160	21.6	14.4	2415

Air conduction threshold of right ear at 1000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	10.0	7.8	278	13.8	8.7	289	20.1	15.3	274	26.5	16.4	284	34.2	19.0	73	18.6	14.9	1198
Female	9.1	9.3	295	13.0	9.4	277	18.3	12.8	281	27.7	16.7	277	32.6	17.5	87	18.0	15.0	1217
Total	9.5	8.6	573	13.4	9.1	566	19.2	14.1	555	27.1	16.5	561	33.3	18.2	160	18.3	15.0	2415

Air conduction threshold of right ear at 2000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	12.2	8.8	278	18.2	11.1	289	26.3	16.6	274	35.6	17.2	284	44.5	17.8	73	24.4	17.3	1198
Female	11.5	10.9	295	15.8	9.5	277	23.6	13.5	281	33.7	16.0	277	37.7	18.3	87	22.2	16.1	1217
Total	11.8	10.0	573	17.0	10.4	566	24.9	15.2	555	34.7	16.6	561	40.8	18.3	160	23.3	16.7	2415

Air conduction threshold of right ear at 4000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	15.8	13.9	278	25.3	16.3	289	37.4	20.9	274	47.7	19.4	284	58.3	16.4	73	33.2	22.2	1198
Female	9.5	12.1	295	15.1	10.9	277	24.1	16.0	281	37.1	18.7	277	45.1	20.7	87	22.9	19.2	1217
Total	12.5	13.4	573	20.3	14.9	566	30.7	19.8	555	42.5	19.7	561	51.1	19.9	160	28.0	21.4	2415

Air conduction threshold of right ear at 8000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	17.4	14.4	278	31.6	17.8	289	45.8	21.3	274	61.6	19.6	284	72.9	15.1	73	41.2	25.5	1198
Female	14.4	14.2	295	23.2	14.8	277	37.8	19.5	281	55.0	20.2	277	67.5	17.6	87	34.9	24.6	1217
Total	15.9	14.4	573	27.5	16.9	566	41.8	20.8	555	58.4	20.2	561	70.0	16.7	160	38.0	25.2	2415

Bone conduction threshold of right ear at 250Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	15.8	6.9	278	18.1	7.9	289	20.9	9.4	274	25.5	12.1	284	30.1	13.5	73	20.7	10.5	1198
Female	16.2	8.5	295	18.1	8.1	277	21.5	9.0	281	28.1	12.4	277	32.7	13.4	86	21.7	11.3	1216
Total	16.0	7.8	573	18.1	8.0	566	21.2	9.2	555	26.8	12.3	561	31.5	13.4	159	21.2	10.9	2414

Bone conduction threshold of right ear at 500Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	6.3	8.4	278	9.4	9.7	289	13.1	11.0	274	18.1	14.1	284	25.3	16.1	73	12.6	12.6	1198
Female	6.4	10.2	295	9.2	9.8	277	14.0	10.5	281	21.4	14.7	277	27.8	16.6	86	13.7	13.6	1216
Total	6.3	9.4	573	9.3	9.7	566	13.5	10.7	555	19.7	14.5	561	26.6	16.3	159	13.1	13.1	2414

Bone conduction threshold of right ear at 1000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	9.4	8.2	278	12.6	8.6	289	18.5	12.9	274	25.1	15.1	284	34.2	17.4	73	17.5	14.0	1198
Female	8.8	9.8	295	13.4	10.1	277	18.0	11.4	281	27.7	14.2	277	31.6	15.7	86	17.9	14.1	1216
Total	9.1	9.0	573	13.0	9.4	566	18.3	12.2	555	26.3	14.7	561	32.8	16.5	159	17.7	14.1	2414

Bone conduction threshold of right ear at 2000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	13.3	8.7	278	18.6	10.3	289	26.0	14.4	274	34.6	15.3	284	43.9	15.7	73	24.4	15.7	1198
Female	12.7	9.4	295	17.4	9.6	277	24.4	11.7	281	33.3	13.7	277	37.6	15.3	86	22.9	14.3	1216
Total	12.9	9.1	573	18.0	10.0	566	25.2	13.1	555	34.0	14.5	561	40.5	15.8	159	23.7	15.0	2414

Bone conduction threshold of right ear at 4000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	13.3	12.2	278	21.3	14.9	289	30.7	16.0	274	39.3	15.1	284	47.3	11.7	73	27.4	18.0	1198
Female	8.5	9.5	295	12.8	10.0	277	20.1	13.0	281	32.0	14.7	277	39.1	15.9	86	19.7	15.9	1216
Total	10.8	11.1	573	17.1	13.4	566	25.4	15.5	555	35.7	15.3	561	42.9	14.7	159	23.5	17.4	2414

Air conduction threshold of left ear at 125Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	17.6	7.4	278	21.5	8.4	289	25.6	12.2	273	30.1	13.5	284	35.8	15.9	73	24.4	12.3	1197

Female	19.0	6.9	295	21.5	9.2	277	25.8	11.4	281	31.7	12.6	277	37.5	12.8	87	25.4	11.9	1217
Total	18.3	7.2	573	21.5	8.8	566	25.7	11.8	554	30.9	13.1	561	36.7	14.3	160	24.9	12.1	2414

Air conduction threshold of left ear at 250Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	16.0	8.1	278	19.5	8.5	289	23.6	14.0	273	28.7	15.4	284	36.0	17.9	73	22.8	13.6	1197
Female	17.0	7.9	295	19.4	10.2	277	23.4	12.4	281	29.9	14.2	277	37.2	15.5	87	23.4	13.2	1217
Total	16.5	8.0	573	19.5	9.3	566	23.5	13.2	554	29.3	14.8	561	36.7	16.6	160	23.1	13.4	2414

Air conduction threshold of left ear at 500Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	12.9	8.7	278	16.5	8.6	289	21.2	14.9	273	26.9	16.7	284	34.1	19.5	73	20.3	14.6	1197
Female	13.3	8.7	295	16.4	11.2	277	20.8	13.4	281	27.9	15.6	277	36.1	17.8	87	20.7	14.5	1217
Total	13.1	8.7	573	16.4	9.9	566	21.0	14.1	554	27.4	16.2	561	35.2	18.6	160	20.5	14.6	2414

Air conduction threshold of left ear at 1000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	11.0	9.9	278	14.1	9.6	289	20.9	17.2	273	27.8	18.0	284	34.7	19.8	73	19.4	16.3	1197
Female	8.1	9.6	295	12.6	11.7	277	17.6	13.1	281	25.4	16.9	277	31.9	16.4	87	17.0	15.3	1217
Total	9.5	9.9	573	13.4	10.7	566	19.2	15.3	554	26.6	17.5	561	33.2	18.0	160	18.2	15.8	2414

Air conduction threshold of left ear at 2000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	13.7	11.7	278	19.4	11.9	289	28.5	18.8	273	37.3	18.3	284	45.9	18.8	73	26.0	18.7	1197
Female	11.3	10.8	295	16.4	12.0	277	23.0	13.2	281	32.8	16.4	277	38.9	18.5	87	22.1	16.4	1217
Total	12.5	11.3	573	18.0	12.0	566	25.7	16.5	554	35.1	17.5	561	42.1	18.9	160	24.0	17.7	2414

Air conduction threshold of left ear at 4000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	16.5	15.1	278	26.9	17.0	289	38.5	20.4	273	49.5	19.0	284	60.6	15.2	73	34.5	22.4	1197
Female	9.7	11.4	295	16.2	13.0	277	24.8	15.8	281	37.0	18.2	277	46.5	19.7	87	23.5	19.2	1217
Total	13.0	13.8	573	21.7	16.1	566	31.5	19.4	554	43.3	19.6	561	52.9	19.1	160	29.0	21.6	2414

Air conduction threshold of left ear at 8000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	17.4	14.9	278	31.3	18.3	289	46.3	21.3	273	61.5	19.5	284	72.5	15.3	73	41.2	25.6	1197
Female	13.2	13.7	295	22.6	15.6	277	37.4	18.9	281	54.0	19.3	277	67.2	17.9	87	34.1	24.4	1217
Total	15.3	14.4	573	27.0	17.5	566	41.8	20.6	554	57.8	19.7	561	69.6	16.9	160	37.6	25.3	2414

Bone conduction threshold of left ear at 250Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
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	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	15.6	7.3	278	17.6	7.9	289	21.0	9.6	274	25.5	11.8	283	31.3	13.0	73	20.6	10.6	1197
Female	16.6	7.8	295	17.8	7.8	277	20.9	9.3	281	26.8	11.8	277	34.1	14.5	86	21.4	11.0	1216
Total	16.1	7.6	573	17.7	7.9	566	21.0	9.4	555	26.2	11.8	560	32.8	13.8	159	21.0	10.8	2413

Bone conduction threshold of left ear at 500Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	6.1	9.0	278	9.8	9.0	289	12.6	10.8	274	18.3	14.1	283	27.4	17.9	73	12.7	12.8	1197
Female	6.0	9.9	295	9.0	9.3	277	13.1	10.4	281	19.9	12.7	277	28.6	17.1	86	13.1	13.0	1216
Total	6.0	9.5	573	9.4	9.2	566	12.9	10.6	555	19.1	13.4	560	28.1	17.4	159	12.9	12.9	2413

Bone conduction threshold of left ear at 1000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	10.5	9.2	278	13.3	9.5	289	19.4	13.5	274	26.2	15.5	283	35.4	18.5	73	18.5	14.6	1197
Female	8.6	9.6	295	13.4	9.8	277	17.8	11.6	281	25.9	13.4	277	32.1	16.2	86	17.4	13.7	1216
Total	9.6	9.5	573	13.4	9.7	566	18.6	12.6	555	26.1	14.5	560	33.6	17.3	159	17.9	14.2	2413

Bone conduction threshold of left ear at 2000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	15.1	10.4	278	20.1	11.0	289	27.9	15.6	274	36.5	16.7	283	45.9	16.4	73	26.2	16.7	1197
Female	12.8	9.3	295	17.3	10.2	277	24.0	11.6	281	32.7	14.3	277	38.6	15.9	86	22.8	14.5	1216
Total	13.9	9.9	573	18.7	10.7	566	25.9	13.9	555	34.6	15.6	560	41.9	16.5	159	24.5	15.7	2413

Bone conduction threshold of left ear at 4000Hz (dBHL)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	13.8	12.7	278	21.9	14.7	289	31.6	16.0	274	40.9	14.4	283	49.7	10.8	73	28.4	18.2	1197
Female	8.6	9.3	295	13.8	10.3	277	20.9	12.5	281	32.1	14.0	277	39.7	14.9	86	20.2	15.6	1216
Total	11.2	11.4	573	18.0	13.3	566	26.2	15.3	555	36.5	14.9	560	44.3	14.0	159	24.3	17.4	2413

2. Impedance Audiometry

Tympanometric peak pressure in the single frequency tympanogram at 226Hz for right ear (daPa)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.9	16.7	255	-6.0	34.6	250	-6.2	35.4	231	-11.7	41.4	239	-17.4	45.8	60	-6.3	34.3	1035
Female	-0.1	17.6	281	-3.4	27.7	247	-4.1	35.4	239	-12.8	42.5	245	-15.6	44.3	77	-5.7	33.1	1089
Total	0.3	17.2	536	-4.7	31.3	497	-5.2	35.4	470	-12.2	41.9	484	-16.4	44.8	137	-6.0	33.7	2124

Static compliance in the single frequency tympanogram at 226Hz for right ear (ml)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.84	0.50	255	0.99	0.86	250	1.05	0.92	231	0.99	0.91	239	0.91	0.72	60	0.96	0.81	1035
Female	0.73	0.51	281	0.81	0.71	247	0.87	0.89	239	0.66	0.56	245	0.79	0.86	77	0.77	0.69	1089

Total 0.78 0.51 536 0.90 0.79 497 0.96 0.91 470 0.82 0.77 484 0.84 0.80 137 0.86 0.76 2124

Middle ear resonance frequency for right ear (Hz)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	835.9	262.2	241	848.9	244.0	232	805.2	272.2	202	819.0	260.4	203	741.9	280.7	43	824.3	261.0	921
Female	906.4	261.1	259	863.0	260.8	228	889.4	272.3	207	897.6	294.4	209	890.0	244.6	55	889.5	270.1	958
Total	872.4	263.7	500	855.9	252.3	460	847.8	275.2	409	858.9	280.6	412	825.0	270.0	98	857.6	267.6	1879

Tympanometric peak pressure in the single frequency tympanogram at 226Hz for left ear (daPa).

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	1.8	15.0	248	-5.2	33.3	251	-5.5	36.1	233	-8.1	43.5	233	-15.7	53.0	61	-4.8	35.1	1026
Female	2.3	13.9	278	1.5	21.9	238	-7.5	38.7	236	-13.8	43.8	235	-16.7	44.4	73	-4.9	33.2	1060
Total	2.0	14.4	526	-1.9	28.5	489	-6.5	37.4	469	-11.0	43.7	468	-16.3	48.3	134	-4.9	34.1	2086

Static compliance in the single frequency tympanogram at 226Hz for left ear (ml)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.85	0.58	248	0.94	0.81	251	1.00	0.89	233	1.00	0.88	234	0.85	0.73	61	0.94	0.80	1027
Female	0.71	0.52	278	0.77	0.62	238	0.78	0.69	236	0.66	0.58	235	0.65	0.56	73	0.72	0.60	1060
Total	0.77	0.55	526	0.85	0.73	489	0.89	0.80	469	0.83	0.77	469	0.74	0.65	134	0.83	0.71	2087

Middle ear resonance frequency for left ear (Hz)

	40-49yr			50-59yr			60-69yr			70-79yr			80yr-			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	830.5	222.7	226	854.6	234.6	227	823.8	258.5	200	835.6	225.3	184	771.7	283.2	46	833.2	238.3	883
Female	900.7	267.3	253	891.4	251.1	210	898.5	280.7	197	905.4	272.5	197	954.9	314.4	51	902.1	270.4	908
Total	867.6	249.5	479	872.3	243.1	437	860.9	272.0	397	871.7	252.9	381	868.0	312.3	97	868.1	257.3	1791

3. Video otoscopy

Status of one's ear canals and eardrums MP-5(RF SYSTEM lab.)

Video otoscopy
Finding of right ear

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
normal (R)	Male	244	87.8	232	80.3	205	74.8	186	65.7	47	64.4	914	76.4
	Female	274	92.9	231	83.4	210	74.7	181	65.1	50	56.8	946	77.6
	Total	518	90.4	463	81.8	415	74.8	367	65.4	97	60.2	1860	77.0
A-B gap susp (R)	Male	6	2.2	17	5.9	32	11.7	30	10.6	3	4.1	88	7.4
	Female	1	0.3	13	4.7	22	7.8	22	7.9	6	6.8	64	5.3
	Total	7	1.2	30	5.3	54	9.7	52	9.3	9	5.6	152	6.3
wax (R)	Male	15	5.4	17	5.9	12	4.4	35	12.4	14	19.2	93	7.8
	Female	11	3.7	17	6.1	21	7.5	47	16.9	19	21.6	115	9.4
	Total	26	4.5	34	6.0	33	5.9	82	14.6	33	20.5	208	8.6
not recorded (R)	Male	13	4.7	23	8.0	25	9.1	32	11.3	9	12.3	102	8.5
	Female	9	3.1	16	5.8	28	10.0	28	10.1	13	14.8	94	7.7
	Total	22	3.8	39	6.9	53	9.5	60	10.7	22	13.7	196	8.1

Video otoscopy
Finding of left ear

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
normal (L)	Male	249	89.6	235	81.3	207	75.5	190	67.1	46	63.0	927	77.4
	Female	266	90.2	226	81.6	215	76.5	198	71.2	59	67.0	964	79.1
	Total	515	89.9	461	81.4	422	76.0	388	69.2	105	65.2	1891	78.3
A-B gap susp(L)	Male	4	1.4	12	4.2	32	11.7	38	13.4	6	8.2	92	7.7
	Female	5	1.7	20	7.2	32	11.4	27	9.7	8	9.1	92	7.5
	Total	9	1.6	32	5.7	64	11.5	65	11.6	14	8.7	184	7.6
wax(L)	Male	14	5.0	12	4.2	12	4.4	27	9.5	11	15.1	76	6.3
	Female	7	2.4	8	2.9	14	5.0	23	8.3	10	11.4	62	5.1
	Total	21	3.7	20	3.5	26	4.7	50	8.9	21	13.0	138	5.7
not recorded(L)	Male	11	4.0	30	10.4	23	8.4	28	9.9	10	13.7	102	8.5
	Female	17	5.8	23	8.3	20	7.1	30	10.8	11	12.5	101	8.3
	Total	28	4.9	53	9.4	43	7.7	58	10.3	21	13.0	203	8.4