

3. Mini Mental State Examination (MMSE)

MMSE is a brief, easily-scored test of several cognitive functions. This scale comprises questions concerning orientation in place and time, immediate and delayed recall of three words, attention and calculation, language and praxis, and visual construction. Cognitive impaired person might fall in the total score of 23 or less in the scale. Only participants over 60 years old administer this scale because of the characteristic of the scale as a screening test for dementia.

MMSE: total score of 30 items (possible range 0-30. less than 60 years older unperformed)

	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	0	0	0	0	0	28.1	1.7	295	27.2	2.1	260	26.3	2.2	42	27.6	2.0	597
Female	0	0	0	0	0	0	28.2	1.7	284	27.4	2.2	272	27.6	2.3	33	27.8	2.0	589
Total	0	0	0	0	0	0	28.2	1.7	579	27.3	2.1	532	26.9	2.3	75	27.7	2.0	1186

MMSE: parameter of distribution using cutoff score

		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%
Score of 24 and over	Male	282	95.6	234	90.0	33	78.6	549	92.0
	Female	273	96.1	246	90.4	28	84.8	547	92.9
	Total	555	95.9	480	90.2	61	81.3	1096	92.4
Score of 23 or less	Male	13	4.4	26	10.0	9	21.4	48	8.0
	Female	11	3.9	26	9.6	5	15.2	42	7.1
	Total	24	4.1	52	9.8	14	18.7	90	7.6

8) Other measures

1. Age awareness

Awareness of old age means the subjective self-concept. In the NILS-LSA Wave 3, participants were asked about the existence of age awareness and the background by which they were aware of old age.

Awareness of old age during the last six months

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Yes	Male	145	55.6	198	60.4	166	55.9	193	73.4	38	92.7	740	62.2
	Female	185	63.4	185	65.1	203	71.2	233	87.3	33	97.1	839	72.2
	Total	330	59.7	383	62.6	369	63.4	426	80.4	71	94.7	1579	67.1
No	Male	116	44.4	130	39.6	131	44.1	70	26.6	3	7.3	450	37.8
	Female	107	36.6	99	34.9	82	28.8	34	12.7	1	2.9	323	27.8
	Total	223	40.3	229	37.4	213	36.6	104	19.6	4	5.3	773	32.9

The greatest cause of age awareness

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Illness	Male	5	3.4	10	5.1	11	6.7	26	13.5	4	10.5	56	7.6
	Female	6	3.2	9	4.9	24	11.8	48	20.6	6	18.8	93	11.1
	Total	11	3.3	19	5.0	35	9.5	74	17.4	10	14.3	149	9.5
Change of physical appearance	Male	70	48.3	67	33.8	50	30.3	34	17.6	10	26.3	231	31.3
	Female	92	49.7	67	36.6	46	22.7	55	23.6	4	12.5	264	31.6
	Total	162	49.1	134	35.2	96	26.1	89	20.9	14	20.0	495	31.4
Change of physical capacity	Male	51	35.2	80	40.4	58	35.2	80	41.5	16	42.1	285	38.6
	Female	52	28.1	46	25.1	65	32.0	61	26.2	17	53.1	241	28.8
	Total	103	31.2	126	33.1	123	33.4	141	33.1	33	47.1	526	33.4
Change of social relationships	Male	1	0.7	2	1.0	6	3.6	7	3.6	0	0.0	16	2.2
	Female	4	2.2	2	1.1	5	2.5	2	0.9	1	3.1	14	1.7
	Total	5	1.5	4	1.0	11	3.0	9	2.1	1	1.4	30	1.9
Change of mental functions	Male	15	10.3	35	17.7	38	23.0	41	21.2	7	18.4	136	18.4
	Female	28	15.1	58	31.7	61	30.0	64	27.5	4	12.5	215	25.7
	Total	43	13.0	93	24.4	99	26.9	105	24.6	11	15.7	351	22.3
Other reasons	Male	3	2.1	4	2.0	2	1.2	5	2.6	1	2.6	15	2.0
	Female	3	1.6	1	0.5	2	1.0	3	1.3	0	0.0	9	1.1
	Total	6	1.8	5	1.3	4	1.1	8	1.9	1	1.4	24	1.5

2. Social and Domestic Activities

To comprehend participants' social and psychological characteristics, the NLS-LSA 3rd Wave asked participants to report the extent of the following unpaid activities they were doing in their home and community.

Overall household duties

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	52	20.0	84	25.6	40	13.5	33	12.5	9	22.0	218	18.3
	Female	1	0.3	0	0.0	4	1.4	4	1.5	0	0.0	9	0.8
	Total	53	9.6	84	13.7	44	7.6	37	7.0	9	12.2	227	9.7
A little	Male	171	65.8	201	61.3	201	67.7	165	62.7	20	48.8	758	63.8
	Female	8	2.7	5	1.8	14	4.9	36	13.5	6	18.2	69	5.9
	Total	179	32.4	206	33.7	215	36.9	201	37.9	26	35.1	827	35.2
About a half	Male	25	9.6	24	7.3	44	14.8	45	17.1	9	22.0	147	12.4
	Female	32	11.0	22	7.7	34	11.9	49	18.4	6	18.2	143	12.3
	Total	57	10.3	46	7.5	78	13.4	94	17.7	15	20.3	290	12.3
All or most	Male	12	4.6	19	5.8	12	4.0	20	7.6	3	7.3	66	5.6
	Female	251	86.0	257	90.5	233	81.8	178	66.7	21	63.6	940	81.0
	Total	263	47.6	276	45.1	245	42.1	198	37.4	24	32.4	1006	42.8

Preparation of a meal

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	130	49.8	179	54.6	110	37.0	94	35.5	14	34.1	527	44.2
	Female	2	0.7	3	1.1	6	2.1	13	4.9	3	8.8	27	2.3
	Total	132	23.9	182	29.7	116	19.9	107	20.1	17	22.7	554	23.5
A little	Male	107	41.0	116	35.4	149	50.2	121	45.7	21	51.2	514	43.1
	Female	8	2.7	8	2.8	17	6.0	39	14.6	7	20.6	79	6.8
	Total	115	20.8	124	20.3	166	28.5	160	30.0	28	37.3	593	25.2
About a half	Male	13	5.0	16	4.9	21	7.1	27	10.2	3	7.3	80	6.7
	Female	27	9.2	12	4.2	30	10.5	31	11.6	3	8.8	103	8.9
	Total	40	7.2	28	4.6	51	8.8	58	10.9	6	8.0	183	7.8
All or most	Male	11	4.2	17	5.2	17	5.7	23	8.7	3	7.3	71	6.0
	Female	255	87.3	261	91.9	232	81.4	185	69.0	21	61.8	954	82.0
	Total	266	48.1	278	45.4	249	42.8	208	39.0	24	32.0	1025	43.5

Dishwashing after a meal

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	100	38.3	163	49.7	102	34.3	82	30.9	12	29.3	459	38.5
	Female	1	0.3	4	1.4	5	1.8	11	4.1	2	5.9	23	2.0
	Total	101	18.3	167	27.3	107	18.4	93	17.4	14	18.7	482	20.5
A little	Male	126	48.3	124	37.8	131	44.1	129	48.7	20	48.8	530	44.5
	Female	7	2.4	4	1.4	16	5.6	39	14.6	6	17.6	72	6.2
	Total	133	24.1	128	20.9	147	25.3	168	31.5	26	34.7	602	25.6
About a half	Male	22	8.4	23	7.0	46	15.5	27	10.2	6	14.6	124	10.4
	Female	35	12.0	26	9.2	37	13.0	28	10.4	6	17.6	132	11.3
	Total	57	10.3	49	8.0	83	14.3	55	10.3	12	16.0	256	10.9
All or most	Male	13	5.0	18	5.5	18	6.1	27	10.2	3	7.3	79	6.6
	Female	249	85.3	250	88.0	227	79.6	190	70.9	20	58.8	936	80.5
	Total	262	47.4	268	43.8	245	42.1	217	40.7	23	30.7	1015	43.1

Household shopping

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	38	14.6	62	18.9	42	14.1	43	16.2	11	26.8	196	16.4
	Female	1	0.3	3	1.1	6	2.1	21	7.8	3	8.8	34	2.9
	Total	39	7.1	65	10.6	48	8.2	64	12.0	14	18.7	230	9.8
A little	Male	179	68.6	211	64.3	178	59.9	136	51.3	17	41.5	721	60.5
	Female	11	3.8	6	2.1	30	10.5	43	16.0	8	23.5	98	8.4
	Total	190	34.4	217	35.5	208	35.7	179	33.6	25	33.3	819	34.8
About a half	Male	28	10.7	32	9.8	53	17.8	51	19.2	8	19.5	172	14.4
	Female	13	4.5	14	4.9	31	10.9	34	12.7	4	11.8	96	8.3
	Total	41	7.4	46	7.5	84	14.4	85	15.9	12	16.0	268	11.4
All or most	Male	16	6.1	23	7.0	24	8.1	35	13.2	5	12.2	103	8.6
	Female	267	91.4	261	91.9	218	76.5	170	63.4	19	55.9	935	80.4
	Total	283	51.2	284	46.4	242	41.6	205	38.5	24	32.0	1038	44.1

Cleaning inside and outside the home

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	80	30.7	91	27.7	46	15.5	33	12.5	8	19.5	258	21.6
	Female	3	1.0	2	0.7	1	0.4	6	2.2	2	5.9	14	1.2
	Total	83	15.0	93	15.2	47	8.1	39	7.3	10	13.3	272	11.5
A little	Male	143	54.8	180	54.9	157	52.9	125	47.2	17	41.5	622	52.2
	Female	10	3.4	8	2.8	11	3.9	29	10.8	6	17.6	64	5.5
	Total	153	27.7	188	30.7	168	28.9	154	28.9	23	30.7	686	29.1
About a half	Male	22	8.4	39	11.9	66	22.2	73	27.5	11	26.8	211	17.7
	Female	50	17.1	35	12.3	56	19.6	57	21.3	9	26.5	207	17.8
	Total	72	13.0	74	12.1	122	21.0	130	24.4	20	26.7	418	17.7
All or most	Male	16	6.1	18	5.5	28	9.4	34	12.8	5	12.2	101	8.5
	Female	229	78.4	239	84.2	217	76.1	176	65.7	17	50.0	878	75.5
	Total	245	44.3	257	42.0	245	42.1	210	39.4	22	29.3	979	41.6

Laundry work

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	167	64.0	223	68.0	179	60.3	126	47.5	22	53.7	717	60.2
	Female	3	1.0	2	0.7	2	0.7	8	3.0	1	2.9	16	1.4
	Total	170	30.7	225	36.8	181	31.1	134	25.1	23	30.7	733	31.1
A little	Male	61	23.4	73	22.3	80	26.9	91	34.3	13	31.7	318	26.7
	Female	9	3.1	11	3.9	13	4.6	21	7.8	5	14.7	59	5.1
	Total	70	12.7	84	13.7	93	16.0	112	21.0	18	24.0	377	16.0
About a half	Male	18	6.9	15	4.6	20	6.7	24	9.1	3	7.3	80	6.7
	Female	35	12.0	12	4.2	31	10.9	37	13.8	5	14.7	120	10.3
	Total	53	9.6	27	4.4	51	8.8	61	11.4	8	10.7	200	8.5
All or most	Male	15	5.7	17	5.2	18	6.1	24	9.1	3	7.3	77	6.5
	Female	245	83.9	259	91.2	239	83.9	202	75.4	23	67.6	968	83.2
	Total	260	47.0	276	45.1	257	44.2	226	42.4	26	34.7	1045	44.4

Primary childcare

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	100	38.3	236	72.0	152	51.2	173	65.3	33	80.5	694	58.2
	Female	100	34.4	176	62.0	142	50.2	185	69.5	26	76.5	629	54.3
	Total	200	36.2	412	67.3	294	50.7	358	67.4	59	78.7	1323	56.3
A little	Male	107	41.0	77	23.5	111	37.4	67	25.3	6	14.6	368	30.9
	Female	13	4.5	60	21.1	85	30.0	55	20.7	7	20.6	220	19.0
	Total	120	21.7	137	22.4	196	33.8	122	23.0	13	17.3	588	25.0
About a half	Male	52	19.9	14	4.3	32	10.8	24	9.1	1	2.4	123	10.3
	Female	19	6.5	18	6.3	38	13.4	13	4.9	1	2.9	89	7.7
	Total	71	12.9	32	5.2	70	12.1	37	7.0	2	2.7	212	9.0
All or most	Male	2	0.8	1	0.3	2	0.7	1	0.4	1	2.4	7	0.6
	Female	159	54.6	30	10.6	18	6.4	13	4.9	0	0.0	220	19.0
	Total	161	29.2	31	5.1	20	3.4	14	2.6	1	1.3	227	9.7

Taking out the garbage

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Never	Male	92	35.2	114	34.8	59	19.9	44	16.6	6	14.6	315	26.4
	Female	13	4.5	13	4.6	20	7.0	20	7.5	5	14.7	71	6.1
	Total	105	19.0	127	20.8	79	13.6	64	12.0	11	14.7	386	16.4
A little	Male	93	35.6	130	39.6	118	39.7	87	32.8	17	41.5	445	37.3
	Female	18	6.2	8	2.8	24	8.4	31	11.6	5	14.7	86	7.4
	Total	111	20.1	138	22.5	142	24.4	118	22.1	22	29.3	531	22.5
About a half	Male	33	12.6	32	9.8	58	19.5	54	20.4	8	19.5	185	15.5
	Female	65	22.3	36	12.7	45	15.8	43	16.0	5	14.7	194	16.7
	Total	98	17.7	68	11.1	103	17.7	97	18.2	13	17.3	379	16.1
All or most	Male	43	16.5	52	15.9	62	20.9	80	30.2	10	24.4	247	20.7
	Female	196	67.1	227	79.9	196	68.8	174	64.9	19	55.9	812	69.8
	Total	239	43.2	279	45.6	258	44.3	254	47.7	29	38.7	1059	45.0

Gardening

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Rarely	Male	205	78.5	195	59.5	128	43.1	105	39.9	17	41.5	650	54.6
	Female	172	59.1	155	54.6	146	51.2	113	42.2	16	47.1	602	51.8
	Total	377	68.3	350	57.2	274	47.1	218	41.1	33	44.0	1252	53.2
Several times a year	Male	31	11.9	52	15.9	38	12.8	21	8.0	6	14.6	148	12.4
	Female	55	18.9	33	11.6	21	7.4	12	4.5	1	2.9	122	10.5
	Total	86	15.6	85	13.9	59	10.1	33	6.2	7	9.3	270	11.5
2 or 3 times a month	Male	21	8.0	32	9.8	29	9.8	31	11.8	3	7.3	116	9.7
	Female	29	10.0	24	8.5	23	8.1	21	7.8	4	11.8	101	8.7
	Total	50	9.1	56	9.2	52	8.9	52	9.8	7	9.3	217	9.2
Once a week	Male	4	1.5	49	14.9	102	34.3	106	40.3	15	36.6	276	23.2
	Female	35	12.0	72	25.4	95	33.3	122	45.5	13	38.2	337	29.0
	Total	39	7.1	121	19.8	197	33.8	228	42.9	28	37.3	613	26.1

Home maintenance

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Rarely	Male	59	22.6	61	18.6	48	16.2	36	13.6	13	31.7	217	18.2
	Female	149	51.0	163	57.4	187	65.6	196	73.4	23	67.6	718	61.8
	Total	208	37.6	224	36.6	235	40.4	232	43.7	36	48.0	935	39.7
Several times a year	Male	166	63.6	178	54.3	145	48.8	132	50.0	18	43.9	639	53.7
	Female	122	41.8	98	34.5	77	27.0	55	20.6	11	32.4	363	31.2
	Total	288	52.1	276	45.1	222	38.1	187	35.2	29	38.7	1002	42.6
2 or 3 times a month	Male	32	12.3	74	22.6	73	24.6	60	22.7	5	12.2	244	20.5
	Female	21	7.2	18	6.3	15	5.3	14	5.2	0	0.0	68	5.9
	Total	53	9.6	92	15.0	88	15.1	74	13.9	5	6.7	312	13.3
Once a week	Male	4	1.5	15	4.6	31	10.4	36	13.6	5	12.2	91	7.6
	Female	0	0.0	5	1.8	6	2.1	2	0.7	0	0.0	13	1.1
	Total	4	0.7	20	3.3	37	6.4	38	7.2	5	6.7	104	4.4

Participation in hobby groups

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Rarely	Male	97	37.2	134	40.9	111	37.5	120	45.6	18	43.9	480	40.4
	Female	136	46.7	133	47.0	95	33.3	113	42.8	13	41.9	490	42.5
	Total	233	42.2	267	43.7	206	35.5	233	44.2	31	43.1	970	41.4
Several times a year	Male	63	24.1	83	25.3	50	16.9	32	12.2	5	12.2	233	19.6
	Female	28	9.6	12	4.2	13	4.6	12	4.5	1	3.2	66	5.7
	Total	91	16.5	95	15.5	63	10.8	44	8.3	6	8.3	299	12.8
2 or 3 times a month	Male	41	15.7	54	16.5	67	22.6	30	11.4	6	14.6	198	16.7
	Female	54	18.6	46	16.3	53	18.6	43	16.3	5	16.1	201	17.4
	Total	95	17.2	100	16.4	120	20.7	73	13.9	11	15.3	399	17.0
Once a week	Male	60	23.0	57	17.4	68	23.0	81	30.8	12	29.3	278	23.4
	Female	73	25.1	92	32.5	124	43.5	96	36.4	12	38.7	397	34.4
	Total	133	24.1	149	24.4	192	33.0	177	33.6	24	33.3	675	28.8

Participation in block clubs

		40-49yr		50-59yr		60-69yr		70-79yr		80yr-		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Rarely	Male	180	69.2	240	73.4	186	62.6	133	50.4	21	51.2	760	63.9
	Female	173	59.2	178	62.7	186	65.3	162	61.4	15	46.9	714	61.7
	Total	353	63.9	418	68.4	372	63.9	295	55.9	36	49.3	1474	62.8
Several times a year	Male	63	24.2	66	20.2	58	19.5	61	23.1	11	26.8	259	21.8
	Female	79	27.1	73	25.7	60	21.1	60	22.7	12	37.5	284	24.5
	Total	142	25.7	139	22.7	118	20.3	121	22.9	23	31.5	543	23.1
2 or 3 times a month	Male	13	5.0	14	4.3	38	12.8	38	14.4	1	2.4	104	8.7
	Female	32	11.0	16	5.6	32	11.2	33	12.5	4	12.5	117	10.1
	Total	45	8.2	30	4.9	70	12.0	71	13.4	5	6.8	221	9.4
Once a week	Male	4	1.5	7	2.1	15	5.1	32	12.1	8	19.5	66	5.6
	Female	8	2.7	17	6.0	7	2.5	9	3.4	1	3.1	42	3.6
	Total	12	2.2	24	3.9	22	3.8	41	7.8	9	12.3	108	4.6

VIII. Visual and Auditory Examinations

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

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

5. Retinal fundus camera

Fundus photographs were taken with Topcon fundus camera (TRC-NW5S) at 20 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 20 degree angles.

6. Specular microscope

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

7. Heidelberg Retina Tomograph II

The Heidelberg Retina Tomograph is a confocal laser scanning microscope for acquisition and analysis of three-dimensional images of the posterior segment. It enables the quantitative assessment of the retinal topography and precise follow-up of topographic changes. In the NLS-LSA, the topographic description of the optic nerve head was assessed.

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-73A)

※ 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	Input level	Maximum output level	Input 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)

1. Refraction

Autorefractometer 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	-1.62	1.53	265	-1.20	1.46	329	-0.45	1.30	291	-0.30	1.07	251	-0.51	1.26	36	-0.89	1.45	1172
Female	-1.44	1.45	293	-1.07	1.49	283	-0.25	1.31	282	-0.14	1.41	251	-0.80	1.26	30	-0.75	1.51	1139
Total	-1.52	1.49	558	-1.14	1.47	612	-0.35	1.30	573	-0.22	1.25	502	-0.64	1.26	66	-0.82	1.48	2311

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	-1.57	1.54	265	-1.17	1.34	328	-0.40	1.17	292	-0.24	1.09	247	-0.67	1.22	34	-0.86	1.40	1166
Female	-1.39	1.43	294	-1.09	1.45	284	-0.26	1.38	279	-0.15	1.25	258	-0.57	0.98	30	-0.74	1.47	1145
Total	-1.48	1.48	559	-1.13	1.39	612	-0.33	1.27	571	-0.19	1.18	505	-0.63	1.11	64	-0.80	1.43	2311

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 autorefraction 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	-	0.0	-	0.0	1	0.3	1	0.4	-	0.0	2	0.2
	Female	-	0.0	-	0.0	-	0.0	1	0.4	1	2.9	2	0.2
	Total	-	0.0	-	0.0	1	0.2	2	0.4	1	1.3	4	0.2
0.3 or worse	Male	2	0.8	14	4.2	4	1.3	9	3.4	2	4.7	31	2.6
	Female	3	1.0	5	1.8	9	3.1	19	6.9	5	14.7	41	3.5
	Total	5	0.9	19	3.1	13	2.2	28	5.2	7	9.1	72	3.0
0.3-0.6	Male	23	8.6	25	7.6	40	13.5	84	31.6	20	46.5	192	16.0
	Female	32	10.9	33	11.6	48	16.8	91	33.1	17	50.0	221	18.8
	Total	55	9.8	58	9.4	88	15.1	175	32.3	37	48.1	413	17.4
0.7 or better	Male	241	90.6	292	88.2	252	84.8	172	64.7	21	48.8	978	81.3
	Female	259	88.1	246	86.6	229	80.1	164	59.6	11	32.4	909	77.5
	Total	500	89.3	538	87.5	481	82.5	336	62.1	32	41.6	1887	79.4

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	-	0.0	1	0.3	-	0.0	-	0.0	-	0.0	1	0.1
	Female	-	0.0	-	0.0	1	0.3	-	0.0	-	0.0	1	0.1
	Total	-	0.0	1	0.2	1	0.2	-	0.0	-	0.0	2	0.1
0.3 or worse	Male	1	0.4	6	1.8	12	4.0	18	6.8	5	11.6	42	3.5
	Female	5	1.7	8	2.8	7	2.4	20	7.3	8	23.5	48	4.1
	Total	6	1.1	14	2.3	19	3.3	38	7.0	13	16.9	90	3.8
0.3-0.6	Male	18	6.8	29	8.8	33	11.1	72	27.1	16	37.2	168	14.0
	Female	19	6.5	32	11.3	51	17.8	93	33.8	10	29.4	205	17.5
	Total	37	6.6	61	9.9	84	14.4	165	30.5	26	33.8	373	15.7
0.7 or better	Male	247	92.9	295	89.1	252	84.8	176	66.2	22	51.2	992	82.5
	Female	270	91.8	244	85.9	227	79.4	162	58.9	16	47.1	919	78.3
	Total	517	92.3	539	87.6	479	82.2	338	62.5	38	49.4	1911	80.4

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	1	0.4	-	0.0	1	0.3	1	0.4	-	0.0	3	0.2
	Female	-	0.0	-	0.0	-	0.0	1	0.4	1	2.9	2	0.2
	Total	1	0.2	-	0.0	1	0.2	2	0.4	1	1.3	5	0.2
0.3 or worse	Male	-	0.0	3	0.9	1	0.3	3	1.1	1	2.3	8	0.7
	Female	-	0.0	1	0.4	1	0.3	11	4.0	4	11.8	17	1.4
	Total	-	0.0	4	0.7	2	0.3	14	2.6	5	6.5	25	1.1
0.3-0.6	Male	3	1.1	9	2.7	12	4.0	39	14.7	9	20.9	72	6.0
	Female	2	0.7	3	1.1	15	5.2	43	15.6	10	29.4	73	6.2
	Total	5	0.9	12	2.0	27	4.6	82	15.2	19	24.7	145	6.1
0.7 or better	Male	262	98.5	319	96.4	283	95.3	223	83.8	33	76.7	1120	93.1
	Female	292	99.3	280	98.6	270	94.4	220	80.0	19	55.9	1081	92.2
	Total	554	98.9	599	97.4	553	94.9	443	81.9	52	67.5	2201	92.6

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	-	0.0	1	0.3	-	0.0	-	0.0	-	0.0	1	0.1
	Female	-	0.0	-	0.0	1	0.3	-	0.0	-	0.0	1	0.1
	Total	-	0.0	1	0.2	1	0.2	-	0.0	-	0.0	2	0.1
0.3 or worse	Male	-	0.0	1	0.3	4	1.3	8	3.0	4	9.3	17	1.4
	Female	1	0.3	-	0.0	1	0.3	7	2.5	5	14.7	14	1.2
	Total	1	0.2	1	0.2	5	0.9	15	2.8	9	11.7	31	1.3
0.3-0.6	Male	-	0.0	6	1.8	15	5.1	40	15.0	8	18.6	69	5.7
	Female	1	0.3	6	2.1	22	7.7	40	14.5	9	26.5	78	6.6
	Total	1	0.2	12	2.0	37	6.3	80	14.8	17	22.1	147	6.2
0.7 or better	Male	266	100.0	323	97.6	278	93.6	218	82.0	31	72.1	1116	92.8
	Female	292	99.3	278	97.9	262	91.6	228	82.9	20	58.8	1080	92.1
	Total	558	99.6	601	97.7	540	92.6	446	82.4	51	66.2	2196	92.4

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

	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	47.5	21.0	266	42.9	18.4	330	40.1	18.7	296	33.4	15.2	264	31.8	19.4	42	40.7	19.1	1198
Female	44.4	20.1	294	40.8	18.2	284	36.8	17.0	285	30.4	12.0	267	29.3	13.2	30	38.0	17.9	1160
Total	45.9	20.5	560	42.0	18.3	614	38.4	17.9	581	31.9	13.7	531	30.8	17.1	72	39.4	18.6	2358

Contrast Sensitivity at 3 cycles/degree

	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	100.4	41.1	266	84.1	34.1	330	78.6	35.8	296	63.5	29.6	264	54.6	27.0	42	80.8	37.5	1198
Female	91.0	38.2	294	83.1	32.8	284	69.5	28.6	285	58.6	29.5	267	55.7	27.7	30	75.4	34.8	1160
Total	95.4	39.9	560	83.6	33.5	614	74.1	32.7	581	61.0	29.6	531	55.1	27.1	72	78.1	36.3	2358

Contrast Sensitivity at 6 cycles/degree

	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	97.3	43.8	266	88.7	44.0	330	79.7	44.9	296	51.7	31.0	264	43.8	28.4	42	78.7	44.7	1198
Female	96.2	46.4	294	91.4	43.8	284	72.5	41.6	285	47.9	29.6	267	40.9	30.5	30	76.6	45.1	1160
Total	96.7	45.1	560	89.9	43.9	614	76.2	43.4	581	49.8	30.3	531	42.6	29.1	72	77.7	44.9	2358

Contrast Sensitivity at 12 cycles/degree

	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	56.8	36.8	266	49.1	34.4	330	40.1	33.7	296	18.7	20.3	264	13.8	13.8	42	40.7	34.8	1198
Female	51.3	34.4	294	50.6	34.2	284	37.7	32.2	285	17.4	18.7	267	11.7	15.9	30	39.0	33.5	1160
Total	53.9	35.7	560	49.8	34.3	614	38.9	32.9	581	18.0	19.5	531	12.9	14.7	72	39.8	34.2	2358

Contrast Sensitivity at 18 cycles/degree

	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	16.5	12.2	266	14.6	11.8	330	11.8	10.6	296	5.4	6.2	264	2.6	4.3	42	11.9	11.3	1198
Female	16.3	12.0	294	15.4	11.6	284	11.2	11.1	285	5.0	5.9	267	4.6	7.8	30	11.9	11.4	1160
Total	16.4	12.1	560	15.0	11.7	614	11.5	10.8	581	5.2	6.1	531	3.5	6.0	72	11.9	11.3	2358

4. Intraocular pressure

Intraocular pressure was measured three times for each eye with a noncontact tonometer (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	13.55	2.43	265	13.20	2.67	331	12.71	2.60	296	12.45	2.39	265	12.26	3.00	43	12.96	2.59	1200
Female	12.47	2.41	294	12.58	2.50	284	12.58	2.45	286	12.12	2.27	273	11.82	3.16	33	12.42	2.44	1170
Total	12.98	2.48	559	12.91	2.61	615	12.65	2.53	582	12.28	2.33	538	12.07	3.06	76	12.69	2.53	2370

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	13.51	2.43	265	13.09	2.72	330	12.73	2.76	297	12.82	2.78	266	12.61	2.67	42	13.02	2.69	1200
Female	12.50	2.50	294	12.70	2.51	284	12.65	2.42	285	12.39	2.48	274	11.93	2.67	34	12.54	2.48	1171
Total	12.98	2.51	559	12.91	2.63	614	12.69	2.60	582	12.60	2.64	540	12.30	2.67	76	12.78	2.60	2371

5. Retinal fundus camera

Fundus photographs were taken with Topcon fundus camera (TRC-NW5S) at 20 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 20 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	0.43	0.13	265	0.44	0.12	330	0.43	0.14	294	0.46	0.14	258	0.45	0.15	37	0.44	0.13	1184
Female	0.42	0.13	294	0.43	0.13	283	0.43	0.15	282	0.43	0.14	263	0.46	0.15	31	0.43	0.14	1153
Total	0.43	0.13	559	0.44	0.13	613	0.43	0.14	576	0.44	0.14	521	0.46	0.15	68	0.44	0.13	2337

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	0.43	0.13	265	0.44	0.13	328	0.43	0.14	294	0.45	0.14	258	0.45	0.14	37	0.44	0.13	1182
Female	0.42	0.12	293	0.43	0.13	283	0.44	0.14	284	0.44	0.13	263	0.47	0.15	32	0.43	0.13	1155
Total	0.43	0.12	558	0.44	0.13	611	0.43	0.14	578	0.45	0.14	521	0.46	0.15	69	0.44	0.13	2337

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	-	0.0	2	0.7	1	0.4	2	4.7	5	0.4
	Female	-	0.0	-	0.0	-	0.0	4	1.5	3	8.8	7	0.6
	Total	-	0.0	-	0.0	2	0.3	5	0.9	5	6.5	12	0.5
nothing	Male	265	99.6	329	99.4	289	97.3	255	95.9	36	83.7	1174	97.6
	Female	294	100.0	283	99.6	282	98.6	255	92.7	31	91.2	1145	97.6
	Total	559	99.8	612	99.5	571	97.9	510	94.3	67	87.0	2319	97.6
simple	Male	-	0.0	-	0.0	1	0.3	1	0.4	-	0.0	2	0.2
	Female	-	0.0	-	0.0	1	0.3	-	0.0	-	0.0	1	0.1
	Total	-	0.0	-	0.0	2	0.3	1	0.2	-	0.0	3	0.1
preproliferative	Male	1	0.4	-	0.0	3	1.0	-	0.0	-	0.0	4	0.3
	Female	-	0.0	-	0.0	-	0.0	1	0.4	-	0.0	1	0.1
	Total	1	0.2	-	0.0	3	0.5	1	0.2	-	0.0	5	0.2
invisible	Male	-	0.0	2	0.6	2	0.7	9	3.4	5	11.6	18	1.5
	Female	-	0.0	1	0.4	3	1.0	15	5.5	-	0.0	19	1.6
	Total	-	0.0	3	0.5	5	0.9	24	4.4	5	6.5	37	1.6

Diabetic Retinopathy - Left Eye

		40 - 49yr		50 - 59yr		60 - 69yr		70 - 79yr		80 - yr		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
not recorded	Male	-	0.0	2	0.6	-	0.0	2	0.8	2	4.7	6	0.5
	Female	-	0.0	-	0.0	1	0.3	2	0.7	1	2.9	4	0.3
	Total	-	0.0	2	0.3	1	0.2	4	0.7	3	3.9	10	0.4
nothing	Male	264	99.2	327	98.8	289	97.3	251	94.4	38	88.4	1169	97.2
	Female	293	99.7	283	99.6	281	98.3	255	92.7	33	97.1	1145	97.6
	Total	557	99.5	610	99.2	570	97.8	506	93.5	71	92.2	2314	97.4
simple	Male	-	0.0	-	0.0	3	1.0	1	0.4	-	0.0	4	0.3
	Female	-	0.0	-	0.0	1	0.3	-	0.0	-	0.0	1	0.1
	Total	-	0.0	-	0.0	4	0.7	1	0.2	-	0.0	5	0.2
preproliferative	Male	1	0.4	-	0.0	-	0.0	1	0.4	-	0.0	2	0.2
	Female	1	0.3	-	0.0	-	0.0	1	0.4	-	0.0	2	0.2
	Total	2	0.4	-	0.0	-	0.0	2	0.4	-	0.0	4	0.2
invisible	Male	1	0.4	2	0.6	5	1.7	11	4.1	3	7.0	22	1.8
	Female	-	0.0	1	0.4	3	1.0	17	6.2	-	0.0	21	1.8
	Total	1	0.2	3	0.5	8	1.4	28	5.2	3	3.9	43	1.8

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	-	0.0	2	0.7	1	0.4	2	4.7	5	0.4
	Female	-	0.0	-	0.0	-	0.0	4	1.5	3	8.8	7	0.6
	Total	-	0.0	-	0.0	2	0.3	5	0.9	5	6.5	12	0.5
nothing	Male	102	38.3	56	16.9	22	7.4	3	1.1	1	2.3	184	15.3
	Female	143	48.6	86	30.3	33	11.5	5	1.8	1	2.9	268	22.8
	Total	245	43.8	142	23.1	55	9.4	8	1.5	2	2.6	452	19.0
K-W I	Male	144	54.1	216	65.3	186	62.6	120	45.1	16	37.2	682	56.7
	Female	136	46.3	158	55.6	187	65.4	116	42.2	13	38.2	610	52.0
	Total	280	50.0	374	60.8	373	64.0	236	43.6	29	37.7	1292	54.4
K-W IIa	Male	19	7.1	53	16.0	75	25.3	114	42.9	18	41.9	279	23.2
	Female	14	4.8	37	13.0	54	18.9	120	43.6	13	38.2	238	20.3
	Total	33	5.9	90	14.6	129	22.1	234	43.3	31	40.3	517	21.8
K-W IIb	Male	1	0.4	3	0.9	9	3.0	16	6.0	1	2.3	30	2.5
	Female	1	0.3	2	0.7	10	3.5	12	4.4	2	5.9	27	2.3
	Total	2	0.4	5	0.8	19	3.3	28	5.2	3	3.9	57	2.4
K-W III	Male	-	0.0	-	0.0	1	0.3	1	0.4	-	0.0	2	0.2
	Female	-	0.0	-	0.0	-	0.0	1	0.4	1	2.9	2	0.2
	Total	-	0.0	-	0.0	1	0.2	2	0.4	1	1.3	4	0.2
invisible	Male	-	0.0	3	0.9	2	0.7	11	4.1	5	11.6	21	1.7
	Female	-	0.0	1	0.4	2	0.7	17	6.2	1	2.9	21	1.8
	Total	-	0.0	4	0.7	4	0.7	28	5.2	6	7.8	42	1.8