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Hearing and vision

Health in Sweden: The National Public Health Report 2012. Chapter 17.

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Summary

Over a million people in Sweden have difficulty hearing what is said in a conversation between several people. Almost twice as many young people today consider themselves hard of hearing than was the case 10 years ago. However, this self-reported increase has not been confirmed by studies of hearing loss.

At least 10,000 deaf and hearing-impaired people are under the age of 20. In most cases, their hearing impairments are the result of hereditary factors. People who have impaired hearing report having worse health than those with normal hearing. This is particularly true of younger, actively employed people.

Many people who are hard of hearing suffer unnecessarily because they lack the hearing-aid devices they need. Almost half the people who would benefit from a hearing aid do not have one. Only a quarter of hearing-impaired people use other assistive listening devices, such as amplified sound in telephones and doorbells.

One in every two Swedes over the age of 16 needs glasses to read plain text in a daily newspaper. One per cent of the population is unable to read text in a daily newspaper with or without glasses to help them. It is slightly less common today than 10 years ago for older women to have impaired vision. This is probably because cataracts, the most common cause of impaired vision, are operable. Most people given cataract surgery regain very good vision.

The most common cause of blindness in older people is age-related degeneration of the macula lutea. The treatment currently available is only effective with a small group of people among those who suffer from acute problems. Strabism can result in vision impairment if not treated early. Child healthcare centres and schools offer screening procedures for detecting

strabism. As a result, the percentage of people in the population with this condition has declined to just under 2 per cent.

Hearing

Hearing loss is a relatively common sensory impairment. In Sweden, over a million people – 12 per cent of women and 16 per cent of men aged 16–84 [1] – have difficulty hearing what is said in a conversation between several people.

The most common cause of hearing loss is age-related degeneration of the auditory organ in the inner ear. Thirty per cent of all women and nearly 40 per cent of all men aged 75–84 report that they have difficulty hearing what is said in a conversation between several people (Table I). Another common cause of hearing impairment is damage resulting from loud and prolonged noise strain, so-called noise-induced hearing loss. Even isolated high exposure to noise, so-called impulse noise, can cause hearing loss, particularly if it is repeated.

Men in all age groups are more likely than women to be hard of hearing. The main reason why more men suffer from hearing problems is that they are exposed to noise strain to a greater extent. Similarly, hearing loss is twice as common among skilled labourers as among upper-level white-collar workers. Hearing problems have become more prevalent among younger people and increased more among women than among men. Almost twice as many people in the 35–44 age group complain of poor hearing in 2000–2005 than was the case 10 years earlier (Table I).

Studies that test hearing using audiometric measures, fail to show any appreciable increase in hearing

Table I. Difficulty hearing a conversation between several people.

Percentage of people who report having difficulty hearing a conversation between several people with or without a hearing aid. Women and men in various age groups, 16–84, 1990–1995 and 2000–2005.

Age	Women		Men	
	1990–1995	2000–2005	1990–1995	2000–2005
16–24	3	4	3	4
25–34	3	5	4	6
35–44	4	8	6	10
45–54	7	10	14	13
55–64	11	15	24	23
65–74	17	18	30	32
75–84	27	28	40	38

Source: Survey of Living Conditions (ULF), Statistics Sweden.

loss in the population as a whole. Why more people feel that their hearing has deteriorated remains unclear. It is possible that the perceived increase in hearing impairment is related to the rise in communication demands in society, perhaps in combination with changes in the sound environment. However, working in deafeningly noisy work environments has not become more common in the past 20 years, according to Survey of Living Conditions (ULF).

Hearing impairments also affect children and young people. Approximately 1–2 children per 1,000 develop these problems each year. An estimated 10,000 or more people aged 20 or below are deaf or hearing-impaired [2]. Most hearing impairments in children and young people result from hereditary factors (50–70 per cent). Non-hereditary causes include ear infections, rubella, herpes, side-effects of medication, premature birth, and cranial damage.

Tinnitus

Another type of hearing impairment is tinnitus, which often co-occurs with hearing loss. Tinnitus is the perception of sound within the human ear in the absence of corresponding external sound. People with this condition may hear beeps, roars, murmurs, or hissing sounds which may range from very weak to very loud and are often highly distressing. Approximately 10–15 per cent of sufferers have troublesome tinnitus, and more than 10,000 have tinnitus severe enough to affect their quality of life. Problems with concentration, stress, depression and sleeping at night are common among people with tinnitus [3].

Tinnitus is mainly caused by degeneration in the inner ear associated with old age and by being exposed to high noise levels. It can also be caused by trauma (cranial injuries), medication, fatigue and/or stress. Tinnitus becomes more common with age. As with hearing loss, tinnitus is more common in men. Studies have failed to show that the condition has become more prevalent.

Established noise limits and guidelines are exceeded in many of today's leisure activities (ice hockey games, rock concerts, discotheques, pubs, etc.). Many participants in these activities experience temporary hearing loss, often accompanied by tinnitus, for hours afterwards. Experiments with animals have shown that brief hearing impairment of this kind can result in permanent hearing loss and tinnitus. No reliable data showing the extent of the problem are available at present, nor do we have an understanding of how hearing loss in such cases develops in upper age groups.

Hearing impairments affect health

In most cases of hearing loss, approximately 80 per cent, the cochlea in the inner ear are affected, altering both the sound level and the sound quality. A conversation is not only less audible, it is also heard less clearly. This is because certain sounds, consonants, for example, are not picked up. Age-related hearing loss and noise injury are of this type. Hearing aids amplify sound, but they can only partially correct sound distortions. They also often amplify annoying background noise. It is therefore difficult for the hearing impaired to take part in conversations where several people are speaking at the same time, especially if there is accompanying, annoying background noise. The hearing-impaired person is forced to concentrate significantly more than someone who has normal hearing. This strain can be tiring and can cause people to tighten their neck and shoulders, giving rise to pain. It can also be stressful for a person to have to ask someone to repeat something they have not heard the first time. Even after it is repeated, they may still be unsure they have heard correctly. These difficulties can lead hearing-impaired people to withdraw from certain social situations.

Several studies have shown that hearing loss can negatively affect people's health [4–8]. The Swedish National Institute of Public Health Public Health

Figure 1. Health problems among hearing-impaired people.

Percentage of people with varying degrees of hearing loss who report health problems, compared with those who are not hearing impaired. Women and men aged 16–84, 2007. Standardised by age.

“Hear with a hearing aid” refers to people who have no difficulty hearing what is said in a conversation among more than two people while wearing a hearing aid. “Cannot hear conversations” refers to people who are unable, even with a hearing aid, to hear what is said in a conversation with more than two people.

Source: National Public Health Survey 2007, Swedish National Institute of Public Health.

Several studies have shown that hearing loss can negatively affect people’s health [4–8]. Figure 1 shows that mental ill-health and pain is more prevalent among people with hearing impairment. Hearing-impaired women have worse health than hearing-impaired men. People who cannot hear a conversation among more than two people even with a hearing aid, have the poorest health. However, people who can follow such conversations with a hearing aid are still generally in poorer health than people without hearing impairment.

Younger, actively employed hearing-impaired people in particular often suffer from poorer health than their coevals [9]. Many people with hearing loss have a hard time coping with the demands of modern working life. Workplaces are often poorly adapted to the needs of the hearing impaired, which can make it difficult to take part in conversations, for example. Hearing-impaired people are twice as likely to claim disability pension than other actively employed people.

Many people who are hard of hearing suffer unnecessarily because they lack the hearing-aid devices they need. Estimates made in 2002 showed that as many as half of those who would have benefited from a hearing aid did not have one [10]. Since then, this percentage has declined slightly. According to the Swedish Association of Hard of Hearing People (HRF), other assistive devices besides hearing aids have been neglected. Today, only a quarter of hearing-impaired people use other devices, such as telephone induction

loops, amplified sound in telephones and doorbells, etc., all of which were more common 20 years ago [11]. According to the HRF, this is due both to financial factors and lack of information.

However, technical aids alone are often not sufficient help for people with hearing loss. Hearing rehabilitation involves a wide variety of measures, such as psychosocial support, communication training, relaxation training, and work rehabilitation. These steps can prevent the adverse consequences of hearing loss and offer the hearing-impaired person the same opportunities to remain employed as other people. The percentage of hearing injuries can be reduced through improvements in sound environments and increased use of hearing protectors in the workplace and during leisure activities such as concerts.

Vision

A large proportion of the population has impaired vision. The most common cause is refraction errors of the eye such as nearsightedness, farsightedness or astigmatism. One in every two Swedes between the age of 16 and 84 needs glasses in order to “see without difficulty and read plain text in a daily newspaper,” according to the Swedish National Institute of Public Health Public Health Survey.

The need for glasses increases with age. In the very oldest age groups, only one in every ten people can read plain text in a daily newspaper without

Figure 2. Eyesight.

Percentage of people who report being able to read plain text in a daily newspaper, with or without glasses, without difficulty. Women and men in various age groups, 16–84, 2005–2007.

Source: National Public Health Survey, Swedish National Institute of Public Health.

Table II. Severely impaired eyesight.

Percentage of people who report being unable to read plain text in a daily newspaper with or without glasses. Women and men in different age groups, 16–84, 1990–1995 and 2000–2005.

Age	Women		Men	
	1990–1995	2000–2005	1990–1995	2000–2005
16–24	0.3	0.1	0.4	0.0
25–34	0.2	0.3	0.4	0.2
35–44	0.4	0.5	0.5	0.2
45–54	1.1	0.7	0.3	0.6
55–64	1.3	0.9	0.9	1.0
65–74	2.6	2.7	2.7	2.0
75–84	11.5	9.2	7.5	7.0

Source: Survey of Living Conditions (ULF), Statistics Sweden.

glasses (Figure 2). Slightly more women than men in all age groups report that they need glasses.

Just over 1 per cent of the population in the 16–84 age group report being unable to read text in a newspaper either with or without glasses according to the Survey of Living Conditions (Table II). In the 75–84 age group, the corresponding percentages were 7 per cent of men and 9 per cent of women. It is now slightly less common for women aged 75–84 to have impaired vision than was the case 10 years ago.

The Swedish Association of Visually Impaired People (SRF) estimates that approximately 100,000 people are visually handicapped, that is, have difficulty reading printed text or orienting themselves by sight. Of these, 85 per cent are assumed to have enough sight remaining that they can read a text if it is large enough. Approximately 100,000 people are registered with one of the country's vision centres.

Approximately 10,000 people subscribe to a daily newspaper on cassette, and 25,000 have cassette tape recorders as grant-supported aids.

In 2002, there were approximately 2,750 visually handicapped children aged 0–19, according to the Register of Visually Handicapped Children, in Lund. Approximately 20 per cent of these children suffer from a severe visual disability. In addition, approximately 35 per cent have a developmental disorder; approximately 30 per cent are physically disabled; and about 4 per cent are also hearing impaired [12].

The most common eye diseases

Cataracts are the most common cause of impaired vision among older people. Other eye diseases also closely linked to age are glaucoma (a disease of the optical nerve), degeneration in the macula lutea, and

Figure 3. Cataract surgeries.

Annual number of cataract surgeries, 1980–2010.

Source: Swedish National Cataract Register [14].

damage to the retina caused by diabetes. Among children, the most common problem is strabism, which can lead to vision problems. The most common causes of serious vision impairments in children are heredity, virus infections, the influence of harmful substances during the foetal stage, and injuries sustained during delivery.

A *cataract* is a loss of transparency in the lens of the eye. The most common symptom is decreased visual acuity. It becomes more difficult to see objects at a distance, and more and more light is needed in order to see. It is estimated that advanced-stage cataracts occur in 60 per cent of women and 50 per cent of men in the 65–74 age group [13]. In the 75–85 age group, the percentage increases to around 80 per cent and continues to be slightly higher among women than among men. The causes of age-dependent opacity of the optical lens are unknown.

The only available treatment for cataract is surgery; the lens of the eye is replaced with an artificial lens. The operation, the most common surgical intervention today, occurs almost exclusively on an outpatient basis, and the great majority of patients regain very good vision. The availability of comprehensive surgical programmes (Figure 3) may also be the main explanation for the slight decline in the percentage of older people who have had impaired vision in the 1990s and 2000s (Table I).

Glaucoma causes damage to the optical nerve, resulting in a gradual loss of peripheral vision. As the course of the disease is slow, it is usually at an advanced stage by the time the visual impairment is noted. The risk of blindness is estimated at between 6 and 15 per cent. The disease affects approximately 2 per cent of the population over the age of 50 and 5 per cent of the population over the age of 70. The number of people in Sweden diagnosed with glaucoma is estimated at around 100,000. Glaucoma was previously thought to be primarily the result of

excessive pressure within the eye. It is now known that glaucoma can occur even in cases where pressure within the eye is normal or low. The causes of underlying glaucoma remain unclear, and checks on eye pressure, as well as medication, are the most common method of treatment used to prevent or retard continued deterioration of vision.

With age-related degeneration of the macula lutea, central visual acuity and reading vision disappear, while peripheral vision (orientation vision) remain. In the Western world, it is the most common cause of blindness in people over the age of 65. Slightly less than one in every three people over the age of 70 has the disease in some form, according to the Association of Visually Impaired People (SRF). In Sweden, an estimated 350,000 people have some form of age-related degeneration in the macula lutea, among whom 45,000 have pronounced deterioration with severe visual impairment [15]. In 85 per cent of all cases the disease develops gradually over a long period of time. However, acute episodes may occur, leading to rapid deterioration of eyesight.

The question of whether ultraviolet and visible light could increase the risk of degeneration of the macula lutea has been discussed. However, a review of various studies has not yielded conclusive results [16], although it has been confirmed that the risk is heightened by smoking and hypertension. Previously, there were no methods of halting the disease. For several years now, new drugs that are injected into the eye have yielded favourable results in a small group of patients with acute complaints and an elevated risk of visual impairment. For the majority of people with a less aggressive course of the disease, however, there is still no adequate treatment.

The risk of retinal damage caused by diabetes (*diabetic retinopathy*) increases with the length of time a person has had the disease. Visual impairment occurs in both type 1 and type 2 diabetes. Ninety per cent of diabetics experience some kind of retinal damage after approximately 20 years with the disease. The risk is reduced if blood sugar, blood fat levels and blood pressure are carefully checked, and if early degeneration of the retina is treated. Currently, only a minority of diabetics develop serious damage to their eyesight.

Strabism in children

Strabism is the abnormal alignment of one or both eyes, characterised by a turning inwards or outwards from the nose thus preventing parallel vision. It is essential to detect the condition early on as it may otherwise result in permanent visual impairment. Approximately 3 per cent of the population has what is called constant strabism [17]. In order to avoid

double vision, the sight in one eye is inhibited, which results in visual impairment of the squinting eye. If this visual impairment is not treated before the age of 10, it becomes permanent [18]. Estimates show that approximately 4 per cent of the 'untreated' population has a visual impairment of this type (visual acuity ≤ 0.7). Thanks to screening programs provided at child health-care centres and in schools, and to early treatment, the figure has been reduced to just under 2 per cent of the Swedish population. It is mainly the number of serious visual impairments that has been reduced [19].

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