DEAF AND HEARING LOSS

COMMUNITY HEALTH PROFILE 2022

A BOLDER HEALTHIER BIRMINGHAM

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Community Evidence Summaries

As part of the Public Health Divisions work to improve the understanding of the diverse communities of Birmingham, we are developing a series of short evidence summaries to improve awareness of these communities and their needs.

There are common objectives for each of the evidence summaries, which are:

- To identify and summarise the physical health, mental health, lifestyle behaviour, and wider determinants of health-related issues affecting the specific community both nationally and locally.
- To identify and summarise gaps in knowledge regarding the physical health, mental health, lifestyle, behavioural and wider determinants of health-related issues that may be affecting the specific community both nationally and locally.
- To collate and present this information under the ten key priority areas identified in the Health and Wellbeing Strategy for Birmingham 2021.
- To engage with the local communities on the evidence found and any gaps.
- To promote the use of these summaries for Local Authority and wider system use for community and service development.

Executive Summary

The Department of Health and NHS England's action plan on hearing Loss states that hearing loss is a major public health issue often associated with other long-term conditions that should be considered in the context of strategies and plans.

The Deaf and Hearing Loss Community Health Profile identifies and summarises the national and local evidence concerning the health, lifestyle behaviours, and wider determinants of health that affect Deaf communities in Birmingham. The report covers the health topics from maternity to ageing and dying well. It identifies health status risks such as diabetes and CVD, protect and detect topics such as screening and vaccinations uptake, and other themes such as knowledge and understanding around service provision and health issues affecting the Deaf community.

Within the Deaf community, capital D and lower-case d are used to categorise those with hearing loss conditions. A capital D is used to represent those who were born deaf or experienced hearing loss before spoken language was acquired. Within the UK, D/deaf individuals' primary language is British Sign Language, and they perceive themselves as part of a linguistic and cultural minority.

The 'lowercase d' deaf refers to the physical condition of hearing loss. People who identify as deaf with a lowercase 'd' don't always have a strong connection to the Deaf community, don't always use the sign language, and may prefer to communicate with speech. Developing deafness or hearing loss later in life after communicating in spoken language is one of the many reasons why a person may choose to identify as deaf with a lower case 'd'.

The lower-case d and capital D can help individuals receive the most suitable approach to ensure that information is accessible all. It also helps to counter misconceptions and misunderstandings, which can be integral for helping to develop stronger and healthier relationships with individuals within Deaf and hearing loss communities.

The Office for National Statistics (ONS) estimates that 12 million people in the UK live with a mild to profound hearing loss, 1.2 million adults have a moderate hearing loss alone (65dB or greater), and 900,000 are severely or profoundly Deaf. By 2035, it is predicted that there will be an increase from 1 in 6 people to 1 in 5 living with mild to profound hearing loss.

There is conclusive data on the number of BSL users in the UK. In 2011, census data showed 15,482 people in England and Wales and 12,533 people in Scotland whose primary language is BSL. There is no census data in Northern Ireland.

The recent NHS estimates based on the prevalence of hearing loss by age indicate that as of 2020, there are 152,158 people in Birmingham with mild to profound hearing loss (25dB or greater), and half of them are age 60 or over. The estimates also suggest that around 11,525 people in Birmingham aged over 70 have severe or profound hearing loss alone. Like the national rates, these figures are expected to increase over the next ten years.

In 2010, data from NHS digital showed a total of 212,900 people were registered as deaf or hard of hearing. Of the 15,920 in the metropolitan districts of the West Midlands, 8,260 (52%) were from Birmingham, accounting for the largest proportion compared to other metropolitan districts in the West Midlands such as Dudley, Wolverhampton, and Solihull. Birmingham remains the largest Deaf community compared to other metropolitan districts in the country. 6.0% of people registered as Deaf in the UK live in Birmingham, compared to 425 (0.75%) in Leeds and 1550 (1.76%) in Sheffield.

The evidence of health inequalities faced by Deaf communities in Birmingham has been identified through this summary profile through various information sources. The key inequalities identified are:

- Compared to other women's maternal health, a larger proportion of Deaf women experience higher rates of caesarean deliveries and birth complications such as gestational diabetes and pregnancy-related blood pressure disorders. They also stay in the hospital longer, more than four days after delivery.
- Deaf children are less school ready and have lower educational attainment at all ages than hearing children. Among Deaf children, Black and Asian children's achievement is the lowest.
- Consistent research evidence that Deaf children are up to four times more vulnerable to abuse and are at an increased risk of experiencing mental health than hearing children.
- Research suggests "widespread lack of awareness among social care services of d/Deaf children's needs", a key limiting factor in effective safeguarding. There is a widespread gap in the number of social workers qualified to work with deaf children, nearly half of local authorities do not have appropriately qualified social workers.
- Mental illness is more prevalent amongst the Deaf population than the hearing population, and Deaf people face additional difficulties accessing services.
- Deaf women are twice as likely to experience domestic violence than hearing women and are also likely to experience sexual and emotional abuse than their hearing counterparts.
- Findings demonstrate a considerable proportion of Deaf people's employment opportunities were more limited because of their hearing loss. The unemployment rate in the UK across all the Deaf population is four times higher than that in the hearing population.
- The prevalence of high blood pressure is more common in the Deaf population than the general population, and undiagnosed blood pressure is twice as common in Deaf than in the general population.
- Older people with dual sensory loss (I.e. deaf and visually impaired) are more likely to have falls compared to people with sight loss by up to three times.

On a positive note, consistent findings show that Deaf people drink less and have lower smoking rates than the general population. Evidence also shows higher rates of engagement with screening programmes among Deaf people than the general population or other communities with single disabilities.

Methodology

An exploratory search was undertaken by the Public Health Communities Team using a range of credible sources. We utilised the limited data from Census 2011, National Surveys, reports, health data from Primary Care, Hospital Episodes Statistics (HES), private and voluntary sector reports. Keyword search terms and subject headings relevant to the themes were identified using the indicators such as population demographics, socioeconomic status, education, morbidity, mortality, and key health priorities or status (see Appendix 2). All references used within this profile are outlined in the reference section. As an initial exploratory search, the following avenues were examined:

a. National data sources

We utilised the limited data on census 2011. We also utilised the identified information and data from the national sources such as National Surveys (e.g., GP survey), reports, health data from the Primary Care, and Hospital Episodes Statistics (HES).

National voluntary and community sector reports relevant to the Deaf community were identified through google and national websites:

- Deaf British Trust
- British Deaf Association
- Sigh Health
- Deaf Scotland
- National Deaf children's society
- UK Deaf Diabetes UK
- RNID (Royal National Institute for Deaf)
- BID (Birmingham Institute for Deaf) services
- Sport England

b. PubMed search

In addition, a PubMed search (https://pubmed.ncbi.nlm.nih.gov/) was performed. All searches contained the keyword(s) "Deaf" or "hearing loss" and words that were specific to the specific topic theme. Examples of this are included in this Search Strategy (Appendix 1).

c. Grey Literature

Where information sources had not been identified through a or b, further searching through Google or Google scholar were carried out using specific search terms. Papers that were relevant to the UK were included, i.e., data and information stemming from local or national-level reports and/or surveys.

We also identified wider indicators such as the overall community context historical and cultural information from historical texts or media articles.

Findings from international and national systematic reviews and large-scale epidemiological and qualitative research studies were also considered for inclusion. Most evidence is local and national, with a handful from other countries such as the US and other European countries for topics on which there is little published evidence in the UK and may be considered to have some transferability to the UK.

In addition, some "snowballing" (a technique where additional relevant research is identified from the reference list and citations of the initial search or published article) was used where additional papers were identified from reference lists where these were added to the knowledge base. Generally, searches were limited to 2000 onwards, however, older information was occasionally used where information was scarce.

d. Data consolidation and analysis

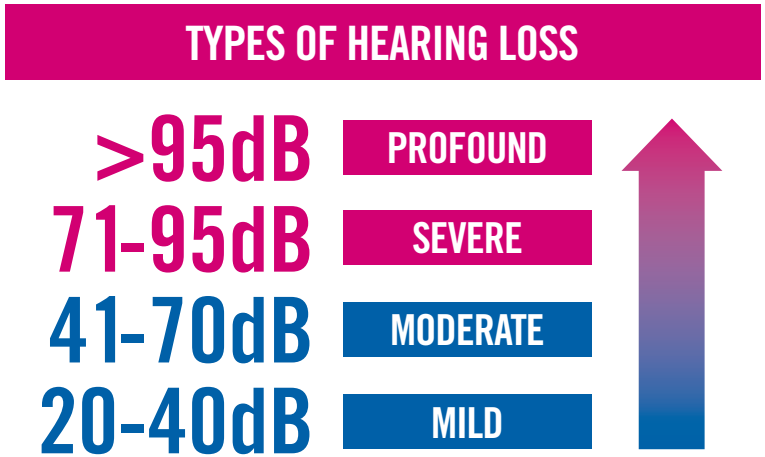
The Public Health Communities Team reviewed results retrieved from the initial searches against the inclusion and exclusion criteria (Appendix 1). The articles utilised in this document were then analysed, identified, and cross-referenced with other themes throughout the profile.

Caveats/Limitations

- Limited data were extracted by disability from the 2011 Census. It should be noted that the most recent demography data available is from the 2011 census, so any conclusions from using this data/information should be made with caution.

The data is limited by the variation in monitoring tools and definitions. For example, "deaf" and "Deaf" communities distinguish d/Deaf people. Another example is the variations in cut-off points of hearing loss severity, which affect the accuracy of the prevalence of deafness by severity.

Capital 'D' and lower case 'd' are used to categorise those with hearing loss conditions. A capital 'D' is used to represent those who were born deaf and perceive themselves as part of a linguistic and cultural minority; lower case 'd' is used for deafness or hearing loss later in life after communicating in spoken language and do not always have a strong connection with the deaf community.



The risk of developing hearing loss can be reduced by improving regulations and protective equipment at workplaces and implementing global or national safe levels in personal and recreational spaces.

1.0 Introduction

1.1 Overview

1.1.1 Definition and Types of hearing Loss

Hearing capacity is commonly measured using tone audiometry and classified based on the audiometric hearing thresholds. Any decline in hearing capacity is referred to as hearing loss, which ranges in severity from mild (20-34dB in the better ear) to complete/ profound (80- 94 dB).[1] hearing Loss can occur at any age and can be temporary or permanent, depending on the underlying cause.

Within the Deaf community, capital D and lower-case d are used to categorise those with hearing loss conditions. A capital D is used to represent those born Deaf or experienced hearing loss before spoken language was acquired. Within the UK, deaf individuals' primary language is British Sign Language, and they perceive themselves as part of a linguistic and cultural minority.

The 'lowercase d' deaf refers to the physical condition of hearing loss. People who identify as deaf with a lowercase 'd' don't always have a strong connection to the Deaf community, don't always use the sign language and may prefer to communicate with speech. Developing deafness or hearing loss later in life after communicating in spoken language is one of the many reasons why a person may choose to identify as deaf with a lower case 'd'.

The lower-case d and capital D can help individuals receive the most suitable approach to ensure that information is accessible to all. It also helps to counter misconceptions and misunderstandings, which can be integral for helping to develop stronger and healthier relationships with individuals within Deaf and hearing loss communities.[2]

This report will refer to all three terms (Deaf, deaf and hearing loss) depending on the data source or information.

1.1.2 Causes of hearing Loss

The trajectory of hearing loss is shaped by diverse influences that each individual may experience throughout their life course. These include genetic characteristics, biological, behavioural and environmental factors.

In England, earwax is the leading cause of temporary hearing loss, while age-related and noise-induced hearing loss are the two leading causes of permanent hearing loss.[3] The labour force survey (2017/2018) found that 63 per 100,000 people in the UK were employed in the last 12 months self-reported problems caused or made worse by their occupation.[4] Other causes include exposure to ototoxic substances, exposure to loud noise and a wide variety of genetic and systemic factors.

1.1.3 Types of hearing Loss

There are two main types of hearing loss. Conductive loss involves abnormalities of the outer or middle ear, which impairs sound wave conduction to the cochlea in the inner ear[5]. Causes of conductive hearing loss include impacted earwax, foreign bodies and infections. These can often be reversed by treatment or surgery).[6]

The other type of hearing loss is sensorineural hearing loss which happens when the auditory nerve becomes damaged meaning sound waves do not travel past your inner ear. The most common causes include age-related loss, noise exposure, hereditary conditions and exposure to ototoxic substances.[7]

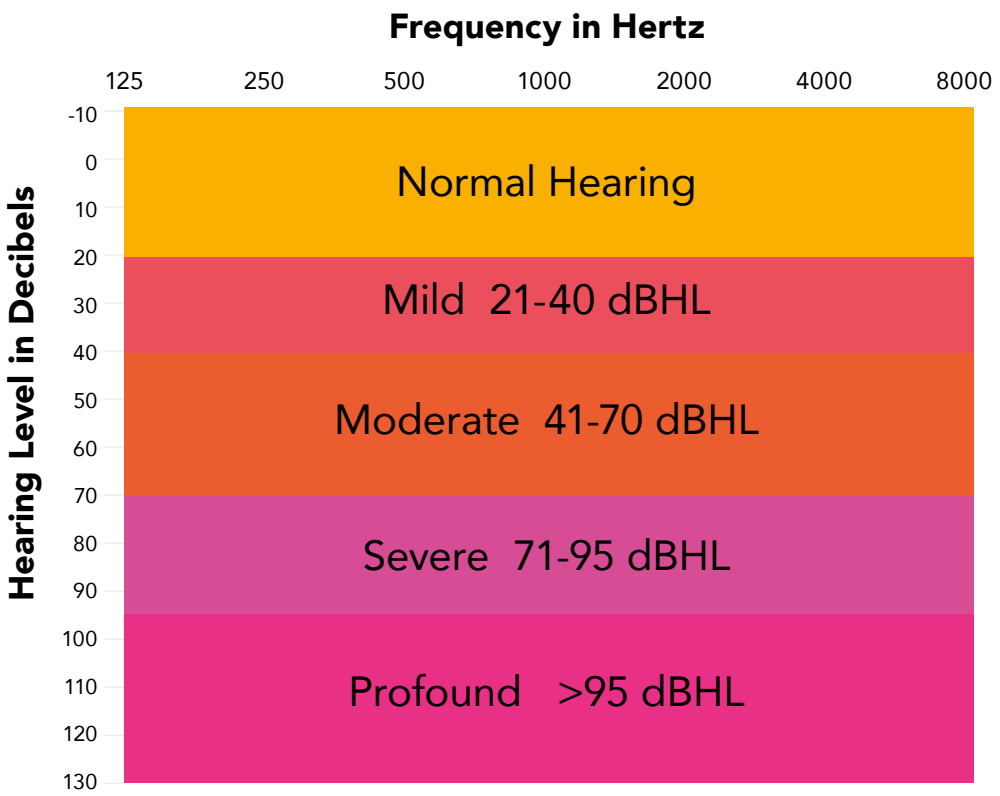
1.1.4 Diagnosis

Humans can hear noises between 0 and 140 decibels (dB). Figure 1 below illustrates the decibel hearing level range based on the British Society of Audiology definitions of hearing loss. People with normal hearing can hear sounds of less than 20dBHL. Mild hearing loss is between 20-40dB, where the person typically might find it difficult to follow speech in noisy situations. Normal conversation is normally held at around 30dB[8]. Moderate hearing loss range between 41-70dB, where the person will probably find it difficult to follow the speech. Severe hearing loss ranges between 71-95dB, where the person finds it difficult following speech without a hearing aid. Profound hearing loss is over 95dB and may need hearing aids, cochlear implants, sign language and lip-reading.[9] A loss of ≥35dB is considered a 'disabling' hearing loss, however, this figure varies worldwide.[10]

High-frequency sensorial hearing loss is a common type of hearing loss that can affect anyone, but more common in older adults with age-related hearing loss and people exposed to loud noises. Diagnoses of high-frequency hearing loss are made after the hearing test in a sound-treated booth. People with high-frequency hearing loss struggle to hear sounds between 2000 and 8000 Hz and find it harder to hear high-pitched sounds. They may struggle to hear certain consonants such as s, h or f, which are spoken at a higher pitch, and may also find it harder to hear women's and children's voices and the sound of birds singing or devices beeping.[11]

Low-frequency hearing loss is another type of sensorial hearing loss but is less common than high-frequency hearing loss. People with low frequency cannot hear deeper or low-pitched sounds that are typically 200HZ or lower, for example, the sound of a dog's growl or a bass drum. Low-frequency hearing loss diagnoses is also conducted after a more detailed hearing test. The hearing professional will use a standard hearing tests that measure hearing at different levels at different frequencies.[12]

Figure 1: hearing Loss levels



Source: MESHGuides. Understanding hearing Loss. 2021.[13]

ICD-10 codes are the international classification of disease (ICD) 10th revision code used to identify the coded clinical entry. The codes for the 'other disorders of ear' range from H90 to H95[14] as shown in table 1. H90 is the ICD10 code for conducive and sensorineural hearing loss. The code includes congenital Deafness and other descriptions represented by nine different codes.

Table 1: ICD10 version 2019 codes for the 'Other disorders of ear'

ICD10 diagnoses code	Description	Sub-category codes
H90	Conductive and sensorineural hearing loss	H90.0 to H90.8
H91	Other hearing loss	H91.0 to H91.9
H92	Otalgia and effusion of ear	H92.0 to 92.2
H93	Other disorders of the ear, not elsewhere classified	H93.0 to H93.9
H94	Other diseases of the ear in diseases classified elsewhere	H94.0 and H94.8
H95	Postprocedural disorders of ear and mastoid process, not elsewhere classified	H95.0 to H95.9

Source: ICD10Data.com

1.1.5 Prevention

There are some effective strategies for reducing hearing loss at different life course stages. In children, immunisations such as pneumococcal meningitis, good maternal and childcare practices, identification and management of common conditions including recurrent ear infections, rational use of medicines to prevent ototoxic hearing loss are all preventative measures to reduce the onset of hearing loss.[15, 16]

In adults, the risk of hearing loss due to occupational exposure can be reduced by implementing hearing conservation programmes in workplace settings. Reduction in noise levels, improved regulations and use of protective equipment such as ear plugs, or ear defenders are all effective strategies to mitigate the occurrence of occupational hearing loss. Regulation of sound exposure from recreational sources can be achieved by implementing global/national safe listening levels in personal devices or regulatory framework for the noise levels at recreational venues.

Raising awareness of the impact of loud sounds on hearing will empower people to change their behaviour.[17]

1.1.6 Treatment

The original cause of the loss determines the treatment for hearing loss. In some cases, hearing loss can be resolved naturally without treatment. Sometimes a simple treatment such as eardrops or earwax removal is required to resolve temporary hearing loss. Hearing assistive technology can be implemented for more permanent and severe forms of hearing loss. These include hearing aids, cochlear implants and middle ear implants, which help reduce and improve the hearing thresholds for hearing loss and Deafness. People who have lost hearing after learning a spoken language (Deaf and people who have milder forms of hearing loss) tend to use hearing aids and develop lipreading skills that help them communicate with individuals who do not have hearing loss.[18, 19]

1.1.7 Conditions Associated with hearing Loss

Sometimes hearing loss can occur alongside other symptoms linked to the damage within the ear and hearing sensory pathway.

Tinnitus is the name for hearing noises caused by sounds not coming from the outside world. Individuals with tinnitus tend to experience high-pitched ringing, humming, hissing and throbbing in their ears. Around 5% of UK adults (3.35 million people) have tinnitus which they find severely or moderately annoying. The exact causes of tinnitus are not always clear, but according to Healthy Hearing, around 90% of people with tinnitus suffer from hearing loss. Tinnitus is also linked with depression and anxiety, diabetes, thyroid disorders, multiple sclerosis and Meniere's disease (a condition that affects the inner ear).[20, 21]

Vertigo is the symptom of feeling unbalanced and the room spinning with no physical change in the environment. Vertigo can be associated with hearing loss, where there is damage to the inner ear, which is fundamental to our sense of balance and space. A vertigo attack can last a few seconds to hours, while severe vertigo can last weeks or months.[22]

1.1.8 Economic Impact of Deafness/hearing Loss

There are a few studies in which the economic costs of hearing loss and deafness have been addressed. However, the findings are inconsistent due to reference to people with various levels of hearing loss.

Globally, the annual economic costs of untreated hearing loss are estimated to be 980 billion US dollars (approximately £730 billion) due to health sector costs (excluding hearing devices), the cost of educational support, loss of productivity and societal costs. 57% of these costs are attributed to low- and middle-income countries.[23]

Research within the UK has suggested that the "cost" of interventions for Deaf and hard of hearing people is approximately £214,000 for every 1,000 people affected over a lifetime. The estimated cost to the UK of untreated hearing loss in adults is around £25.5 billion. Contributing costs include lower quality of life due to the disabling hearing loss costing £16.5 billion and reduced productivity expressed as loss of earnings costs £9 billion each year.[24, 25, 26]

In February 2019, Hear-it.org reported that "Lower quality of life due to disabling hearing loss costs the EU 130 billion Euros each year. Lost productivity in society due to higher unemployment among people with a disabling hearing loss costs 55 billion Euros each year in the EU. In total, this is 185 billion Euros. The cost does not cover extra health care costs caused by hearing loss…people with an untreated, disabling hearing loss are at greater risk of social isolation, depression, cognitive decline and dementia, while people who treat their hearing loss do not experience a higher risk than people without hearing loss…There are 34.4 million people with a disabling hearing loss (35 dB or greater) in the EU. More than 22.6 million are not treated for their disabling hearing loss as only around one in three in Europe with a disabling hearing loss use hearing aids or other hearing solutions. This is more than the combined population of Austria, Finland, Ireland and Lithuania".[27]

Hearing aids are very cost-effective at £4,591 per Quality-Adjusted Life Year (QALY)-3 for the first ten years of treatment, well below the cost-effectiveness NICE threshold of £20,000 per QALY. The costs are even cheaper on early treatment compared to delayed treatment.[28]

1.1.9 Social Impact of Deafness/hearing Loss

Severe hearing loss can impact many aspects of life. According to Deafness Research UK, people with acquired hearing loss may experience disassociation from their environment due to the absence of everyday background sound. Access to public spaces may also be restricted for those with hearing loss or Deafness, due to a lack of facilities available, for example, the loop system (an assistive device that works alongside a hearing aid).[29] [30]

hearing Loss can lead to secondary issues such as accessing education, learning disabilities, social isolation, depression, and a lack of independence. The negative impacts of un-treated hearing loss can affect other non-auditory aspects of life, including the ability to function in social situations, reduced self-esteem, and reduced quality of life.[31, 32]

Individuals use many different languages within the hearing loss and Deaf community to integrate into society fully. Skills such as lip reading, finger spelling, sign language, cueing, and body gestures help people with hearing loss communicate. Sign language is specific to different native languages with grammar, word order or sentence structure changing between differing sign languages (such as British Sign Language versus American Sign Language).[33]

Globally, hearing loss prevalence increases with age.

1.7% FOR CHILDREN UNDER 15

1 IN EVERY 4 PEOPLE AGED 60 AND OVER

BY 2050

1 in 10 will be registered with hearing loss around the globe by 2050.
The rates of hearing loss are expected to rise to 2.5 billion people worldwide.

£780 BILLION Global annual direct and indirect costs of untreated hearing loss

57% of these costs are attributed to low and middle income countries

PREVALENCE IN EUROPE

The average prevalence of all severity of hearing loss in the UK, similar to the European average (13%)

12%

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1.2 International Context

The overall global prevalence of self-reported hearing loss has remained relatively stable since 2015.[34] As of April 2021, the World Health Organisation reported an estimated 466 million people worldwide need treatment for their hearing loss. Approximately 432 million adults and 34 million children have a disabling hearing loss, attributed to over 5% of the world's total population. By 2050, rates of hearing loss are expected to rise to 2.5 billion people worldwide, with 700 million of those requiring hearing rehabilitation. This would result in 1 in 10 people being registered with hearing loss around the globe.[35]

Figure 2 illustrates the unequal distribution of disabling hearing loss.

Figure 2: Disabling hearing loss across the world of people aged 15 years and older

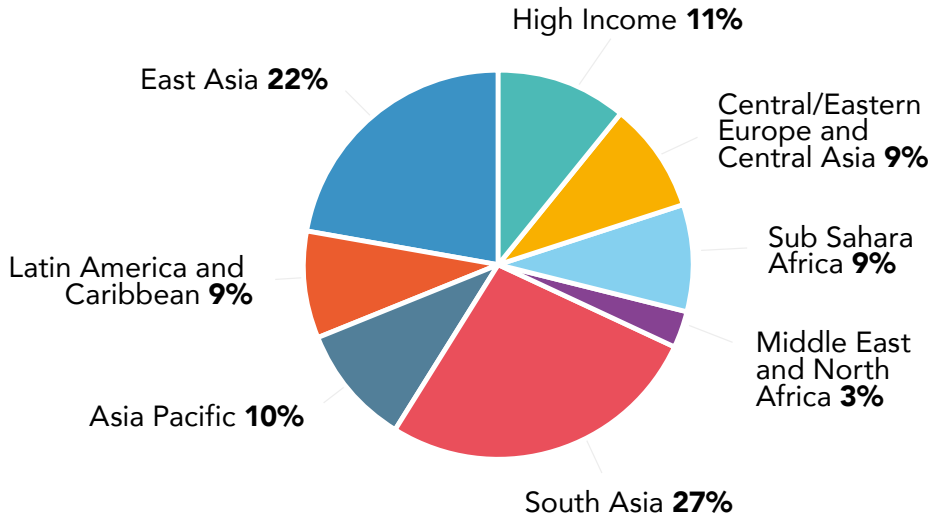
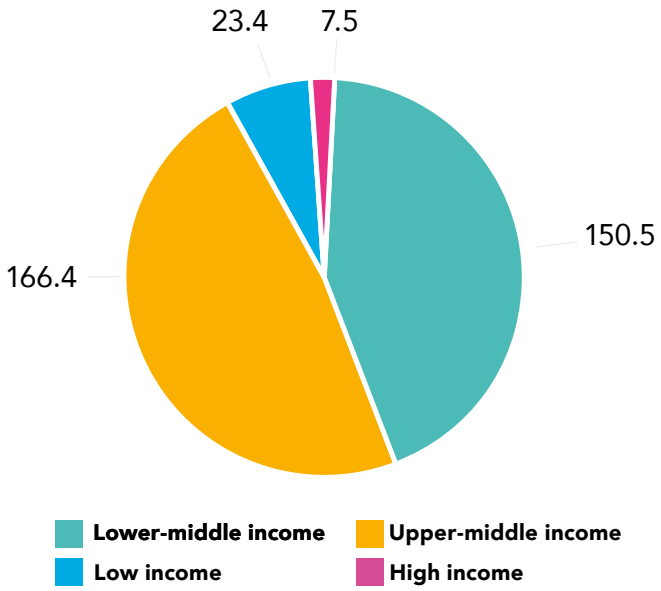


Figure 3 illustrates the variation of prevalence across the World Bank income groups, ranging from 3.3% in low-income countries to 7.5% in high-income countries. The maximum contribution of nearly 320 million (80%) of the population with disabling hearing loss lives in lower-middle-income and upper-middle-income countries compared to 20% in high-income countries. Occupational noise exposure, the incidence of new epidemics and ototoxicity are among the many risk factors contributing to the global difference in hearing loss rates.[36] The prevalence of hearing loss increases with age, with 1.7% of children reported to have a disabling hearing loss, 7% of people aged 15 and over and increasing to 1 in 4 people aged 60 and over are estimated to be living with a disabling hearing loss. The exact cause for age-related hearing loss is not always well known but is likely due to repetitive exposure to loud noises and increased disease prevalence that correlate with hearing loss and changes in the inner ear that occur as an individual gets older.[37, 38]

Figure 3: Global prevalence of hearing loss according to the World Bank income group (in Millions)



Among the European countries, the average prevalence of all severities of hearing loss in the UK was 11.7%, similar to the European average of 12.5%, lower than Germany (13.9%), Italy (13.6%), France (11.4%) and higher than Switzerland (9.5%).[39]

12 MILLION
DIAGNOSED WITH HEARING LOSS

The number of people in the UK diagnosed with a hearing loss of >25dB. This is expected to rise to 14.2 million by 2035.

152,158

People in Birmingham with a hearing loss of 25dB or greater. This is the largest amount of people with hearing loss of any metropolitan district

15,482

Estimated number of BSL users in England and Wales (Census 2011)

PREVALENCE OF HEARING LOSS

(Adult population with hearing loss of 25dB or more)

18%
BIRMINGHAM

22%
NATIONAL AVERAGE

Birmingham rates are predicted to rise to 20% by 2035, lower than the regional and national rates.

6.7 MILLION

According to Hearing Link (2021), 6.7 million people would benefit from hearing aids, but 2 million people only wear them within the UK.

1.3 National Context

Statistics on the prevalence of hearing loss and Deafness in the UK are inconsistent due to different survey techniques, subject groups, age ranges, and definitions of hearing loss. However, some observed trends help various conclusions to be drawn.

The Office for National Statistics estimates 12 million people in the UK live with a mild hearing loss or greater. An estimated 1.2 million adults have a hearing loss of 65dB or greater, and 900,000 are severely or profoundly Deaf. By 2035, it is predicted that there will be 14.2 million adults in the UK who will have a mild hearing loss or greater, an increase of around 2.2 million from 2018.[40 41] This equates to an increase from one in six people with hearing loss to one in every five. One main factor in the rise is the demographic shift due to population growth and ageing over the next century.

The Consortium for Research into Deaf Education (CRIDE) reported at least 53,954 Deaf children across the UK. Rates of hearing loss within the UK increase rapidly with increasing age. 42% of people aged 50+ are reported to have hearing loss, which increases to 71% in people aged 70 and over. Around 8 million people with hearing loss are aged 60 or over, accounting for approximately 66% of the total population with hearing loss.

There is inconclusive data on the number of BSL users in the UK. In 2011, census data showed 15,482 people in England and Wales and 12,533 people in Scotland whose primary language is BSL. There is no census data in Northern Ireland. In the GP patient survey, 188,000 people aged 18 or over in England are Deaf and use sign language.[42]

Treatment for older adults with hearing loss can make a real difference to the quality of life, reduce social isolation and risk of depression and improve independence and mobility. According to Hearing Link (2021), 6.7 million people would benefit from hearing aids, but only 2 million people wear them within the UK. Around 12,000 people wear cochlear implants.[43, 44]

1.4 Birmingham Context

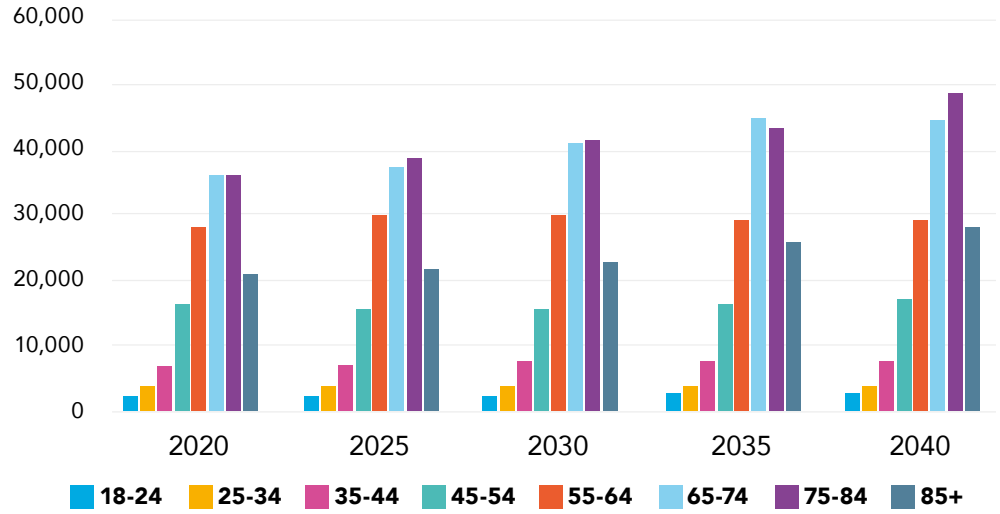
Data around hearing loss beyond childhood screening programmes is sparse. However, NHS estimates based on the prevalence of hearing loss by age indicate that as of 2020, there are 152,158 people in Birmingham with mild hearing loss or greater, and half of them are age 60 or over. The same estimates also suggest that around 11,525 people in Birmingham aged over 70 have severe or profound hearing loss. All these figures are expected to increase over the next ten years.

Data from NHS Digital, 2010, showed that 15,920 people are registered as Deaf or hard of hearing in the Metropolitan districts of the West Midlands. 8,260 (52%) of them are from Birmingham, the largest proportion compared to other metropolitan districts in the West Midlands such as Dudley, Wolverhampton and Solihull. 5,435 people are registered as Deaf, 3,430 (63%) of which are from Birmingham, constituting the largest Deaf community among the West Midlands Metropolitan districts. Birmingham remains the largest Deaf community compared to other metropolitan districts in the country. 6.0% of people registered as Deaf in the UK live in Birmingham, compared to 425 (0.75%) in Leeds and 1550 (1.76%) in Sheffield. This may be because Birmingham has a larger population compared to the other metropolitan districts.

Projecting Older People Population Information (POPPI) and Projecting Older People Population (PANSI (Projecting Adult Needs and Service Information), 2020) have predicted the numbers of Birmingham with some hearing loss and severe hearing loss. Projections were made every five years from the years 2020 to 2040. As of 2020, 104,441 of the hearing loss and Deaf community in England aged 65+ live in Birmingham, 88% of which are predicted to have some hearing loss and 12% predicted to be Deaf.

Figure 4 shows predicted numbers of those in Birmingham with some hearing loss from 2020 to 2040. The prevalence with some hearing loss is highest in age categories 55-64, 65-74, 75-84 and 85+, with numbers estimated at 27,870, 35,662, 35,837 and 20,592, respectively. Total rates are predicted to rise within the next 20 years, contributed mainly by increases in the age groups 65-74 and 75-84.

Figure 4: Predictions of people with some hearing loss in Birmingham from 2020 to 2040

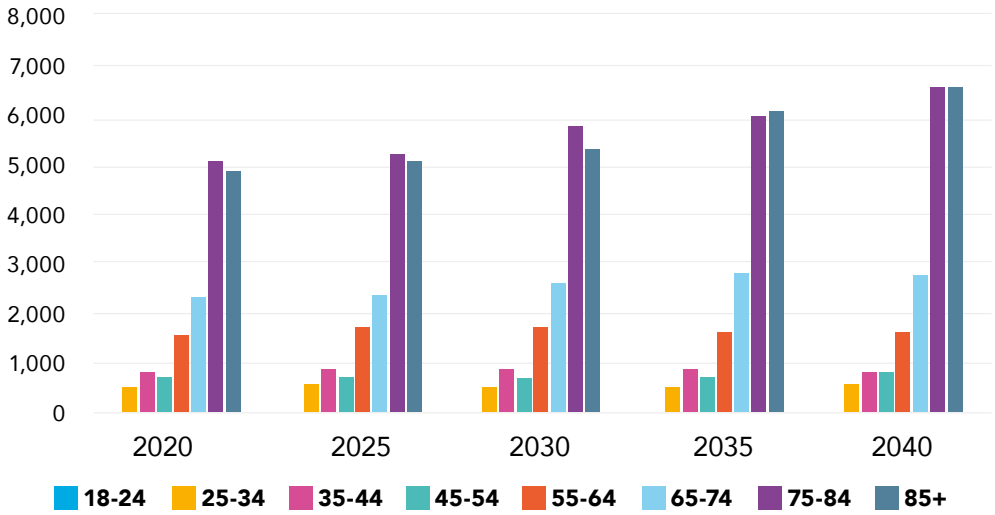


Source: NHS JSNA (Joint Strategic Needs Assessment) data tool- hearing loss

As shown in Figure 5, severe hearing loss is most heavily felt in elderly members of Birmingham's community. 2,296 people aged 85+ are affected by severe hearing loss, lower than the 5,138 people aged 75-84 and the 4,916 people aged 65-74. Total rates are anticipated to rise over the next 20 years, contributed mainly by an increasing prevalence in the two eldest age categories (75-84 and 85+).

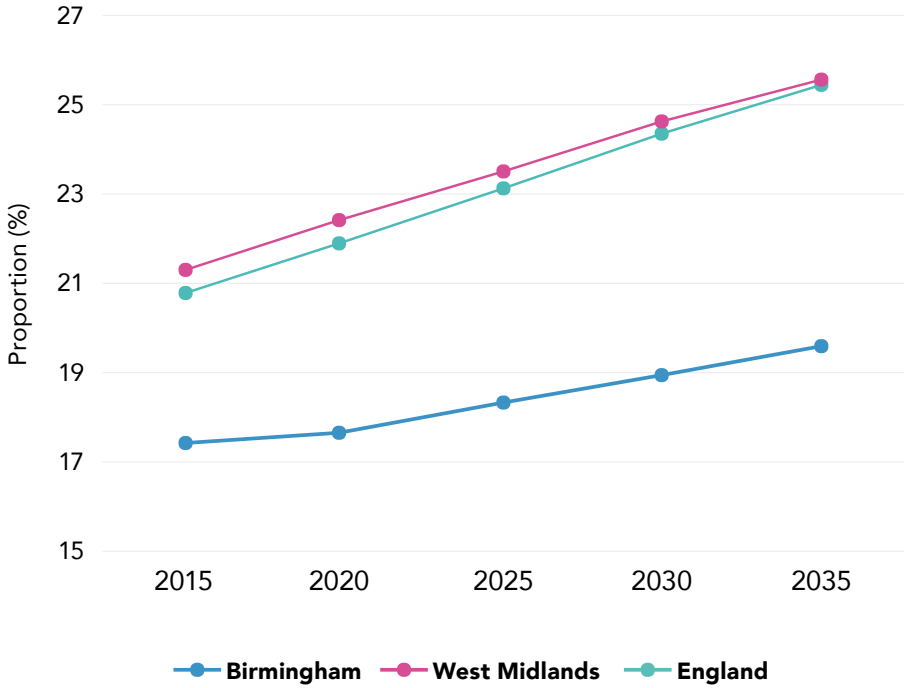
POPPI and PANSI Predictions of the total number of people with some hearing loss (149,827) in Birmingham are lower than data from the NHS, which estimated there were around 152,158 people with some hearing loss. The inconsistencies in the data sets therefore make it difficult to ascertain the magnitude of need in this population.

Figure 5: Predictions of people with severe hearing loss in Birmingham from 2020 to 2040

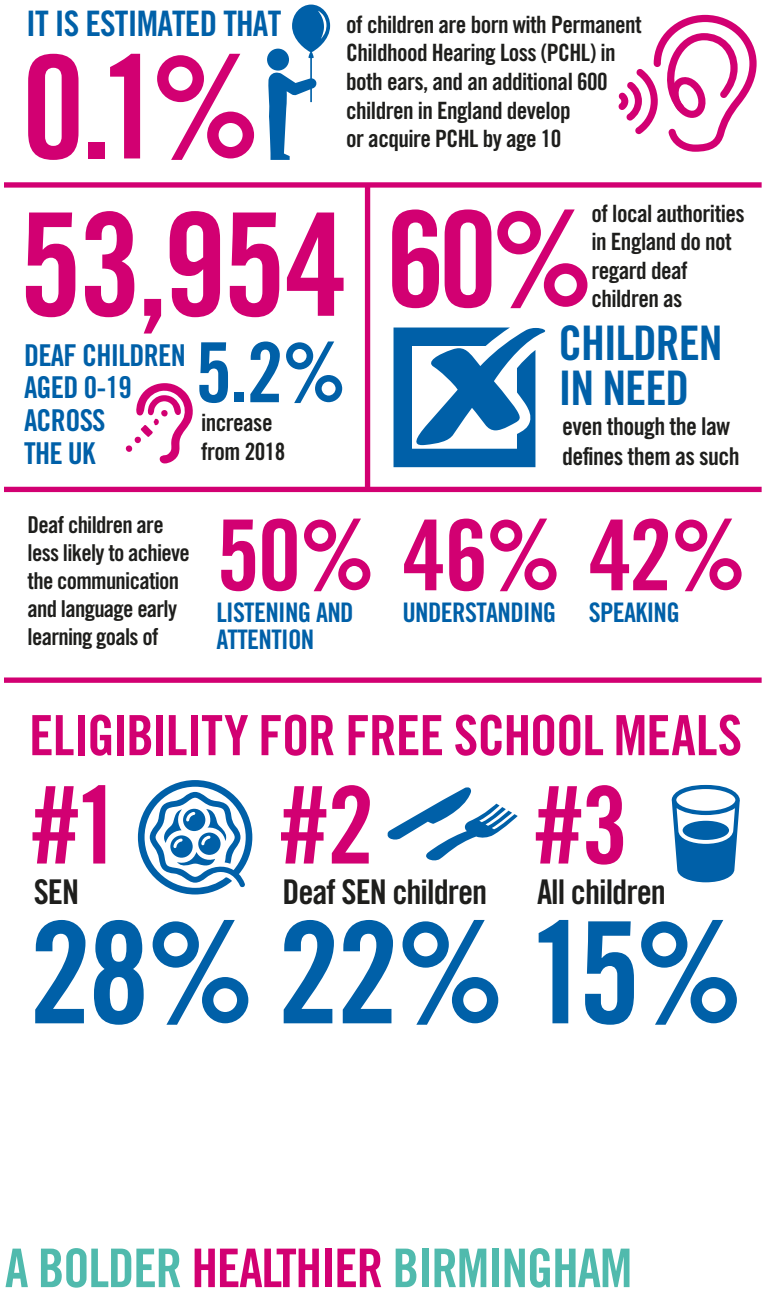


Source: Oxford Brooks University, IPC: Projecting Older People Population Information (POPPI) and Projecting Older People Population Information (PANSI) 2020.

Figure 6: Estimated prevalence of mild to profound hearing loss (25dbHL or more) in the adult population in Birmingham compared to Regional and National averages



Source: NHS JSNA (Joint Strategic Needs Assessment) data tool- hearing loss



2. Community Profile

2.1 Getting the Best Start in Life

Getting the Best Start in Life key findings

- The cause of permanent hearing loss in 25% of babies is unknown, in 25% is due to infections during pregnancy and in 50% of cases is likely to have a genetic cause.
- Many Deaf women find their pregnancies labelled as high risk due to Deafness.
- Deaf children are more than twice as likely to experience abuse and many face significant challenges to personal and social development.
- Similar to children with other disabilities, Deaf children are less likely to receive the protection and support they need when they have been abused.

2.1.1 Prevalence and General Information

Data reporting on the total population of deaf children is inconsistent. According to the Consortium for Research into Deaf Education (CRIDE) 2019, the adjusted total number of Deaf children aged 0-19 across the UK is 53,954, an increase of 5.2% from 2018. 46163 (80%) of Deaf children live in England. West Midlands has the 5th largest proportion of people registered as Deaf (10%), following London (14%), the South-West, the North-west, (12%) each and Yorkshire and Humber (11%).45 In 2019, the Joint Strategic Needs Assessment (JSNA) guide by NHS England reported a total estimate of 41,000 children and young people with hearing loss under the age of 19 in England. Around half are born with hearing loss, and the other half lose their hearing during childhood.[46]

It is estimated that 0.1 per cent of children are born with Permanent Childhood hearing Loss (PCHL) in both ears, and an additional 600 children in England develop or acquire PCHL by age 10. When children with lower levels of hearing loss and unilateral hearing loss are also included, it is estimated that the overall prevalence of hearing loss in children, of all levels in one or both ears, might be as high as 0.39%. 80% of children will experience glue ear (temporary hearing loss that usually clears up within three months) before the age of 10.[47] Temporary hearing loss, such as from glue ear, poses potential delays to communication, education and social development in children and young people. Repeated bouts of temporary hearing loss increase the potential language and educational barriers faced.[48]

Within England there are 40,217 deaf children who are on services' caseloads and therefore receive support more than once a year. The support provided can include teaching, hearing aid checks, liaising with schools etc. Of the children receiving support, 69% have temporary conductive hearing loss, which is a result of causes such as glue ear.[49]

Figure 7 below shows the number of Deaf children in England by age group. In 2019, primary-aged Deaf children constituted the largest proportion of Deaf children in the UK (42%), and ages of 16 to 19 had the smallest proportion. The available figures were not broken down to metropolitan borough level in this survey.

Figure 7: The Percentage of Deaf children in the UK by age group and schooling level

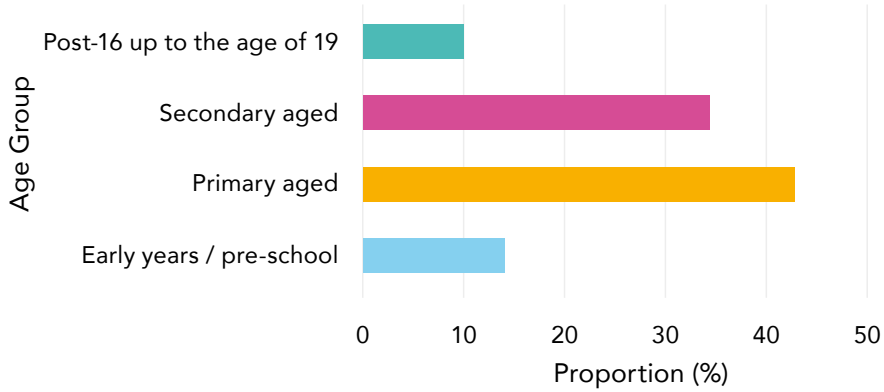


Table 2 shows the number of people registered with a Deaf Special Educational Need (SEN) in England in 2019. There are 22,344 children with a Deaf SEN in England, a 3% increase from the year 2018. The number of children in the West Midlands with a Deaf SEN was 2,588, an increase of 4% from the previous year, while the number of children in Birmingham with a Deaf SEN was 756.

The NHS New-born Hearing Screening Programme (NHSP) commissions screening for all babies in England, ideally within the first 4 to 5 weeks after they are born. On average, 1400 babies a year (approximately 27 weeks) are diagnosed with permanent Deafness. About 1 to 2 in every 1000 babies are born with permanent Deafness in one of both ears. This increases to 1 in 100 babies for those who have spent more than 48-hours continuously in a neonatal intensive care unit.[50]

From the published research, there is evidence that the diagnostic process is hugely variable for each family, e.g., some families perceived this period as a series of discrete events, while others viewed it as part of a process that had started with the first screening event. Professional communication and manner emerge as the most significant predictors of their perception of the experience. Good professional communication was marked by strong explanation, sensitivity, inclusivity and honesty. The number of days between the first audiology appointment and confirmation of the baby's Deafness ranged from 1 to 213 days (average 33 days). This could take from one to five appointments at the audiology clinic to reach this point.[51]

Amongst children who are classified as deaf in England, 3,530 have at least one cochlear implant, this amounts to roughly 8% of deaf children in England. However, cochlear implant are generally reserved for those with high levels of hearing loss (severe or profound) that did not gain sufficient benefit using hearing aids.[52]

Table 2: The number of people registered with a Deaf Special Educational Need (SEN) in England in 2019

Region	Primary	Secondary	Special	Total	Change between 2018 and 2019 (%)
England	11,486	9,465	1,393	22,344	3
Northeast	601	519	47	1,167	-0.4
Northwest	1,543	1,238	149	2,930	3
Yorkshire and the Humber	1,481	1,278	96	2,855	0.2
East Midlands	1,005	721	158	1,884	5
West Midlands	1,249	1,149	190	2,588	4
East of England	1,175	986	189	2,350	3
London	1,738	1,372	178	3,288	4
Southeast	1,550	1,287	286	3,123	3
Southwest	1,144	915	100	2,159	1

2.1.2 Maternal Health

In 2016, the Office for National Statistics reported approximately 61,800 people of childbearing age living in the UK whose main health concern was hearing loss.[53]

From the published research, there is evidence that:

- Compared to other women, Deaf and hard of hearing women have a higher risk for pregnancy and birth complications such as gestational diabetes (8.7% compared with 5.4%), pregnancy-related blood pressure disorders (6.3% compared with (4.8%), and separation of the placenta from the uterine wall (1.6% compared with 0.8%). Women from Deaf communities also have a higher proportion of caesarean delivery (32.1% compared with 28.7%) and stay in the hospital for more than 4 days after vaginal delivery (7.5% compared with 5.2%). Contributing factors to disparities include poor communication between providers and patients, which link to patients' poor adherence to treatment, and a lack of awareness of healthy behaviours. Deaf women find it difficult to communicate topics relating to health during pregnancy. Pen and paper are often used for communication, but English is often the 2nd language of Deaf women, which can sometimes be challenging.[54, 55, 56]

There is an absence of research on the experiences of the Deaf population health needs in contraception, antenatal and maternity services.

2.1.3 Infant Mortality and Live births

The UK has the highest prevalence of child mortality rates in Western Europe, with 4.9 per every 1000 births dying before the age of 5 in 2019. This is 25% higher than France, Germany, Italy, and Spain, and almost twice as high as Sweden. High infant mortality rates in the UK are linked to congenital malformations and infections. As hearing loss is also linked to congenital malformations and infections, it may be that infant mortality rates are higher in those prone to being born with hearing loss although data on this is not routinely available.[57]

From the published research, there is evidence that:

- There is an association between a family history of Deafness and perinatal problems (such as prematurity and low birth weight).[58]
- There are more adverse birth outcomes among Deaf and hard of hearing women compared to the general population. This includes preterm birth (9.2% compared with 7.1%), low birth weight (7.2% compared with 5.6%), and babies being small for their gestational age (10.3% compared with 8.6%). Infants of Deaf and hard of hearing mothers were more likely to receive a low Apgar score at 1 minute (9.8% compared with 7.5%) and at 5 minutes (2.2% compared with 1.2%).[59] An Apgar score refers to the measure of how well a newly born infant is doing.

Specific evidence on infant mortality and Deafness/hearing loss is limited to make a conclusive assessment on the health needs of infants born from Deaf mothers.

2.1.4 Childhood Vaccinations

Vaccination programmes do not collect data on sensory disabilities. Therefore, there is no evidence to understand the vaccination uptake or other themes such as knowledge and understanding of the vaccination programmes among the Deaf community.

2.1.5 Childhood Obesity

The UK Child Measurement Programme does not collect data on disability, therefore, there is no data to compare the prevalence of obesity among Deaf children with their hearing counterparts.

From the published research, there is evidence that:

- Obese adolescents are more likely to suffer from high-frequency sensorineural hearing loss and noise-induced hearing loss. The cause for this is not fully understood, although obesity is a known independent risk factor for age-related hearing loss in adults. Adipose tissue secretes hormones and pro-inflammatory mediators, which cause end-organ damage leading to hearing loss. The study also reported a clear association between paediatric obesity and otitis media conditions, with a high incidence of 83%.[60]
- An international study examined the prevalence of overweight cases in a sample of 151 Deaf children aged 6-11 years. The results showed that the prevalence of overweight Deaf children aged 6-11 years was above the national percentage for the same age and gender.[61]
- More boys were overweight (24.7%) than girls (20.4%). After age eight, girls showed a consistent decrease in BMI (Body Mass Index) with increasing age, a trend not demonstrated by boys. As a group, Deaf children show a higher prevalence of overweight than national averages.[62]

Research shows a higher prevalence of obesity among Deaf children in the UK. However, there is limited evidence to support other themes such as knowledge and understanding of healthy weight among British Deaf communities.

2.1.6 Child Poverty

There is an association between deprivation category and rates of hearing loss.[63] According to data from the NDCS, Table 3 below, more Deaf SEN children are eligible for FSM (free school meals) (22%), compared to all children (15%), but less than all SEN children (28%).[64]

Table 3: The percentage of Deaf SEN, all SEN and all children in England eligible for free school meals in 2019

	Number of children eligible for free school meals	% Of total
Deaf SEN children	4,870	22%
All SEN children	342,207	28%
All children	1,261,125	15%

Source: National Deaf Children Society (NDCS) 2020.

Table 4 below highlights the other registered needs of children where Deafness is a primary or secondary need in 2019. Where Deafness is the primary need, 61% of children have no secondary need, meaning 39% do have an identified secondary need. The most common other need is Speech, Language and Communications Needs (13%), followed by moderate learning difficulty (7%) and social, emotional and mental health (4%).[65]

Table 4: Other needs registered with children in England where Deafness was a primary or secondary need in 2019

	Where Deafness is either a primary or secondary need – number of children with another need	
	Number	% Of all Deaf SEN children
Specific Learning Difficulty	858	3%
Moderate Learning Difficulty	1,806	7%
Severe Learning Difficulty	686	2%
Profound & Multiple Learning Difficulty	211	1%
Social, Emotional and Mental Health	987	4%
Speech, Language and Communications Needs	3,601	13%
'Hearing Impairment'	94	0%
Visual Impairment	395	1%
Multi- Sensory Impairment	117	0%
Physical Disability	744	3%
Autistic Spectrum Disorder	549	2%
Other Difficulty/Disability	669	2%
SEN support but no specialist assessment of the type of need[66]	97	0%
Total where other SEN identified	10,717	39%
No secondary SEN Identified (where Deafness is the primary need)	16,733	61%
Total	**27,547**	**100%**

Source: National Deaf Children Society (NDCS). 2020.

The 2011 census did not collect information on sensory disability. Therefore, it is not possible to examine issues such as multiple deprivation for our Deaf communities.

2.1.7 Children and Social Care

Deaf children have been reported as being up to four times more vulnerable to abuse and at an increased risk of experiencing mental health compared to hearing children.[67 68] Social care teams may not be in contact with Deaf children in their area, two thirds (60%) of local authorities in England do not regard Deaf children as 'children in need.' Birmingham City Council is among the 54% of local authorities who do have specialist social workers qualified to work with Deaf children.

Other published research reports that:

- Key factors identified associated with the vulnerability of Deaf children to abuse include barriers to communications, learning on Deaf children's development of age-appropriate awareness, limited understanding and knowledge of sex and relationships, the isolation experienced through educational and other social structures, inaccessibility of many sources of support and disclosure combined with a lack of fluent communication in the family
- There are barriers for Deaf families in accessing universal services. Whilst universal services are available to Deaf children and young people, accessibility is limited by services being unable routinely to meet Deaf children's language and communication needs and general lack of Deaf awareness among staff.[69] In addition, Deaf children may not get the opportunity to speak freely as they are not seen alone because of communication requirements. Both fear and social isolation can be features of childhood and act as barriers to seeking help.[70, 71]

- The abuse of Deaf and disabled children is underreported and often hidden. There is also a range of myths and stereotypes surrounding the abuse they experience. For some, there is a concern that social workers with Deaf people were traditionally associated with sign language, and their influence may, therefore, conflict with other approaches to child language development.[72]
- There is a reported widespread lack of awareness among social care services of Deaf children's needs.73 There is also a reported lack of priority and resources for social developmental work with Deaf children, nationally, a key limiting factor in effective safeguarding and a lack of or limited professional awareness. Access to and availability of an interpreter is not straightforward, and there are associated issues, such as lack of clear responsibility for funding. This has led to many local authorities not responding to Deaf families until the highest thresholds of evidence of harm were reached.[74]

There is limited evidence around Deaf children care placements to understand how numbers of Deaf children in care compare to the children in the general population.

2.1.8 School Readiness

Early Years Foundation Stage data shows that nearly three-quarters of Deaf children in England arrive at primary school, having not achieved a satisfactory level of development in the early years. Deaf children are less likely to achieve the communication and language early learning goals of listening and attention (50%), understanding (46%) and speaking (42%) compared to children with no 'special education need' or equivalent.[75]

From the published research, there is evidence that:

- In Scotland, the challenges Deaf children face manifest in a significant attainment gap that starts early and affects Deaf learners through their school career and beyond.
- Language is usually acquired through hearing and vision together, and so Deafness has the potential to delay development. As language provides the building blocks for many skills, these delays can impact a Deaf child's life, including their emotional and social development.

There is limited evidence concerning school readiness among Deaf children to compare their readiness with hearing children or other themes around pre-school education opportunities and exposure to other learning environments.

2.1.9 Education Attainment

There is evidence of significant disparities in the educational attainment of Deaf children compared to hearing children. In the West Midlands, the average score of attainment 8 (GCSE) grades for Deaf children in the year 2019/20 was worse (41.8) than the average for England (43.6). The percentage of Deaf children achieving a grade 4 or higher in Maths and English was 58% for Deaf students, compared to 78% with no identified SEN and 71.2% for all children. The average progress of Deaf children at Key Stage 2 compared to children with the same prior attainment at Key Stage 1 was also lower in Deaf children (-0.7), but higher in children with no SEN (+0.4).[76]

- Deaf children are falling behind at school compared to other children at all ages.[77, 78, 79, 80, 81, 82]
- The attainment gap between Deaf and hearing children is evident before pupils start secondary school at 11. Fewer than half (43%) reach the expected standard for reading, writing and maths at key stage 2 (KS2) at the end of primary school, compared with three-quarters (74%) of other children. 53% of Deaf children aged seven and under reach the expected standard compared with 84% of their hearing classmates.[83] The gap between Deaf and hearing children is getting wider each year, with figures which go back to 2015 show a gap of an entire grade every year.[84]
- Three-quarters of Deaf pupils (73%) will gain five GCSEs or equivalent by the age of 19, fewer compared with 88% of hearing pupils. If English and maths are included, that figure goes down to just over half (52%) of Deaf pupils and three-quarters (76%) of their hearing classmates. 44% of Deaf pupils achieve two A-levels or equivalent, compared with 63% of hearing pupils.[85]
- Exploring education attainment by ethnicity among Deaf children, Black Deaf children have the lowest attainment scores compared to other ethnic groups. (Appendix 6.1 to 6.3). Asian Deaf children also have lower attainment than White Deaf children, which is striking given that Asian children generally have higher attainment scores than other ethnic groups. Deaf children who are eligible for free school meals or who speak English as an additional language also underachieve.[86]
- For school leavers and those recorded as hearing impaired, a higher proportion of Deaf young people leave with no qualifications. The average attainment level is 5 compared to level 6 for all school leavers. In Scotland, 16.2% of Deaf school leavers have qualifications below SCQF L3 or below, a higher proportion compared to all children (4.8%).[87]

Evidence shows disparities in education attainment between deaf and hearing children. However, there is limited understanding of the language and appropriate service provision to support deaf children.

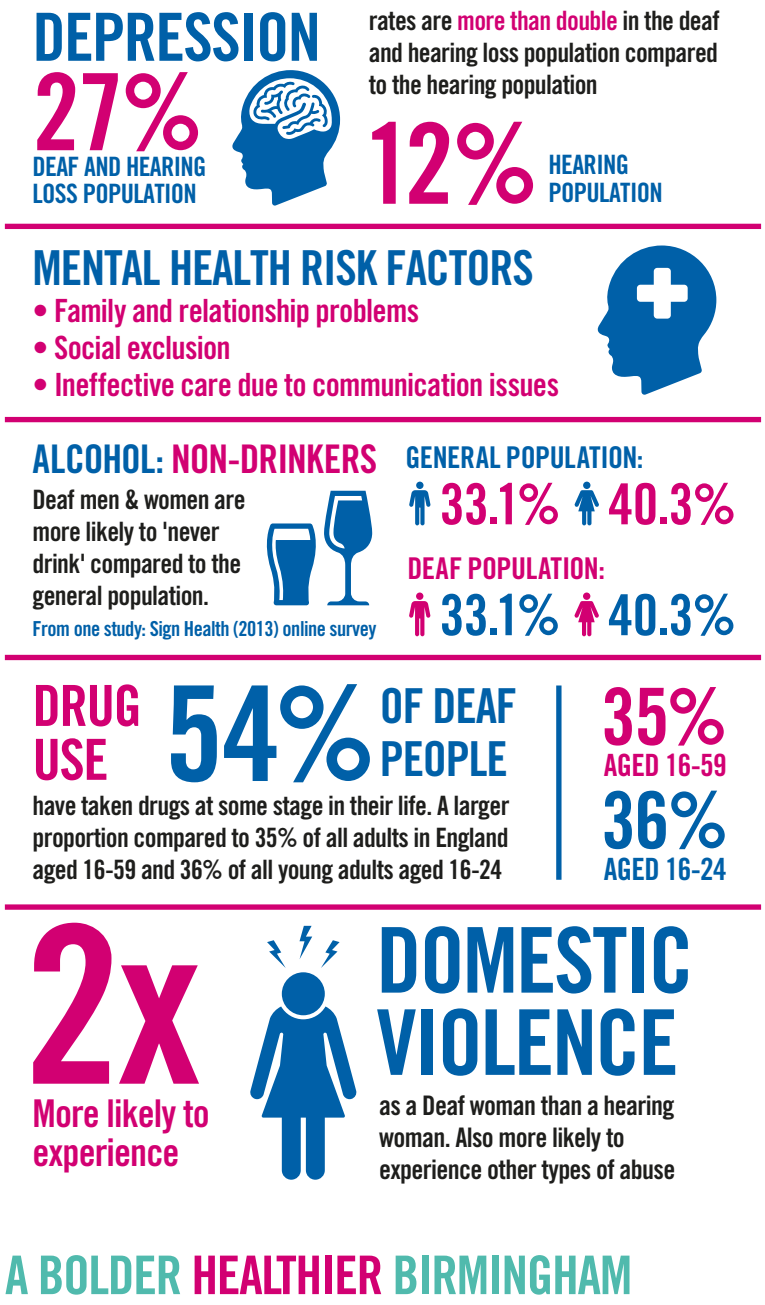
2.1.10 School Exclusions

Table 5 below shows the national school exclusion data for Deaf children with Special education needs (SEN) compared to all SEN children and All children from the year 2017/18 from the National Deaf Children's Society (NDCS). Deaf SEN lower rates on all exclusion categories than all children and SEN children.[88]

Table 5: School exclusion data within the UK for Deaf SEN, SEN and all children in the academic year 2017/18

2017/18	Number of pupils	Permanent exclusions		Fixed period exclusions		Pupil enrolments with one or more fixed period exclusion	
		Number	Rate	Number	Rate	Number	Rate
Deaf SEN children	21,746	18	**0.08**	**1,299**	**5.97**	**593**	**2.73**
All SEN children	1,129,474	3,263	**0.29**	**168,069**	**14.88**	**66,995**	**5.93**
All children	8,092,747	7,905	**0.10**	**410,753**	**5.08**	**188,503**	**2.33**

Source: National Deaf Children Society (NDCS). 2020.



A BOLDER HEALTHIER BIRMINGHAM

2.2 Mental Wellness and Balance

Mental Wellness and Balance key findings:

- People with hearing loss are more likely to develop mental health issues – for example, evidence shows that the rates of depression is double that in the Deaf community compared to the general population (24% compared to 12%).
- The estimated prevalence of mental health issues in Deaf children is 40%, a higher proportion compared to their hearing counterparts (25%).
- Alcohol use among Deaf people is lower compared to the general population (5.5 units/week for men and 3.4 units/week for women, compared to 15.9 and 7.6 for the general population).
- Smoking rates among Deaf people are lower than the general population (8% compared to 20%).
- 39-42% of Deaf people experience Physical abuse, a higher prevalence than the hearing population (13-29%).

2.2.1 Mental Health

There is evidence that mental illness may be more common amongst the Deaf population than the hearing population, and Deaf people face additional difficulties accessing services. The precise figures are inconsistent, but there is no doubt of a higher incidence of mental health problems among the Deaf compared to the hearing population. Evidence shows that the rate of depression is double that in the Deaf community compared to the general population (average 27% compared to 12%).[89] [90] [91] There is also a significant gender difference in the reported history of depression. Rates of depression were much higher in Deaf women (31%) than in Deaf men (14%).[92]

Other published research evidence that:

- Risk factors for developing poor mental health are similar in Deaf and hearing populations, e.g., family and relationship problems and feelings of hopelessness.[93] However, in addition to that, Deafness for many people contributes to social exclusion and reduced educational and employment opportunities associated with mental health status.[94] Other evidence suggests that poor communication or lack of awareness of the Deaf culture could lead to ineffective care and deterioration in health and wellbeing.[95]
- Deaf children often feel isolated in mainstream settings and unclear about fitting in with hearing classmates and the adult Deaf community. Key findings identified boredom and social isolation as a major theme reported by Deaf children.
- Suicide rates from the Deaf community are unknown. Some studies indicate higher rates than the general population, but the evidence is not compelling as the studies often feature small sample sizes. If the rate of suicidal behaviour by BSL users were no greater than that in the hearing population, we would expect approximately 5–7 suicides per year by BSL users and between 150 and 400 people harming themselves. There is no available research distinguishing between subgroups, such as those who are hard of hearing, Deafened, born Deaf, sign or do not sign. Little evidence was found to suggest that risk factors for suicide in Deaf people differed systematically from those in the general population, however, staff rated Deaf-in-patients as having a higher risk of self-harm than hearing patients. There are also higher levels of depression among Deaf people, and they are at a greater perceived risk of self-harm than those who are hearing.[96]
- As a result, based on the rates of self-harm in the general population (i.e., around 300–500 per 100,000 per year), we might expect between 27,000 and 45,000 self-harm presentations to hospitals each year by those who are Deaf or hearing impaired.

There is limited evidence around the themes such as engagement with the services, knowledge of service provision, the average length of stay in the hospital, and knowledge and management of mental health illnesses.

2.2.2 Alcohol

Overall, Deaf people drink less than the general population. Self-reported rates of weekly intake of alcohol (averages between 2 and 8 units/week) were considerably lower than the published rates in the UK's general population.[97] [98] Evidence shows that, on average, 33.1% of Deaf males and 40.3% of Deaf females do not drink at all. This is consistent with findings by Sign Health (2013) online survey, in which 34% of men and 66% of women claimed they did not drink at all (compared with 28% and 44% for males and females in the general population from the Health Survey for England, 2009).[99]

- Comparing consumption among Deaf people who drink, more Deaf people (33%) reported consuming one or two drinks in a day and 33% consuming three to four drinks in a day than those who consume ten or more drinks a day (3%). The consumption trend is the same for the hard of hearing groups.[100]
- Exploring frequency among Deaf people who drink, more Deaf people (25-26%) reported that they have 'never drunk' alcohol, drink once a month or two to four times a week, compared to those who drink four or more times a week (4%).[101]

- The common type of alcohol drink was spirits (50% Deaf, 38% had a hearing loss), followed by beer (25% Deaf and 38% hard of hearing) and wine (33% Deaf and 38% hard of hearing). 40% of those who 'ever drank' usually did so in a social club, followed by 38% drinking in a pub and 37% drinking in their own homes. Very few drank alone (7%). The majority (82%) drank with friends.[102]
- Evidence shows a lack of knowledge of alcohol units among Deaf people. Most Deaf people had not even heard of the term 'units' of alcohol and were unaware of the recommended 'safe' limits. 61% prefer to receive alcohol information directly from another person in sign language, 33% of people with hard of hearing prefer to verbally, directly from another person.[103]

Local drug and alcohol services do not collect data on a sensory disability level. As a result, it is difficult to understand the prevalence of alcohol misuse in Birmingham and nationally, quality of service provision and Deaf people's level of engagement with services.

2.2.3 Drug Use

Local drug services do not collect data on a disability level, hence there is limited evidence on the prevalence of drug use among Deaf people locally and nationally. One UK study found that eight in ten Deaf people have never been offered drugs at some stage in their life. 54% of people had taken drugs, 15% of which reported taking them with alcohol. This is a larger proportion compared to all adults in England (35% of adults aged 16 to 59 and 36% of all young adults aged 16 to 24).[104] The most used drugs were cannabis and ecstasy. Most young people reported taking drugs between the ages of 14 and 16. This evidence should be used with caution as it is over ten years, and the provision of services and attitude to engagement among Deaf people may have changed.[105]

- Deaf people are not well informed of the harms of drugs or services for drug use.[106] [107] For example, they are unaware of the levels of alcohol consumption or the dangers of sharing needles. A UK survey found that most Deaf (67%) and hard of hearing people (84%) were not aware of any services, compared to 33% and 14%, respectively, who were aware. 55% Deaf and 11% hard of hearing preferred BSL interpreters, (71% Deaf and 33% hard of hearing prefer staff with BSL skills, 10% Deaf and 56% hard of hearing prefer an induction loop system when they access the mainstream services.[108]
- Contributing factors to the increase of likelihood of Deaf people misusing drugs include social exclusion, emotional pressure, mental health problems and maltreatment in childhood (neglect, physical abuse or sexual abuse).[109]For some young Deaf people, the way to gain acceptance and recognition by their peers was through misuse of alcohol and drugs. Deaf people with learning disabilities are especially vulnerable and are more likely to be influenced to use drugs without understanding the full implications of drug taking.[110]
- There is a denial of drug use and its associated problems amongst the Deaf and hearing loss community, resulting in drug issues not being discussed openly. This can limit opportunities for young Deaf people to receive drug education, acknowledge if there is a drug problem and seek advice and support.[111]

Local drug and alcohol services do not collect data on a sensory disability level. As such, it is difficult to understand the prevalence of drug misuse in Birmingham and nationally, the quality-of-service provision and Deaf people's level of engagement with services.

2.2.4 Smoking

Smoking rates among Deaf people appear to be lower than the general population. Between 2010 and 2014, (8%) of Deaf men and (8%) Deaf women reported smoking, significantly lower rates compared to the general population (21% for men and 20% for women).[112, 113]

Smoking services do not collect data on a sensory disability level. Therefore, there is limited evidence to understand the uptake of smoking cessation services, accessibility and the quality of services for the Deaf community.

2.2.5 Domestic Violence

Deaf women are twice as likely to go through domestic violence than hearing women.[114] They are also likely to experience sexual and emotional abuse than their hearing counterparts.[115] Hard of hearing individuals reported higher rates of all types of abuse in their relationships (psychological, physical and sexual) than the Deaf community.[116]

From the published research, there is evidence that:

- 45.5% of Deaf girls and 42.4% of Deaf boys were exposed to unwanted sexual experiences as a child. Sexual abuse with physical contact occurred in 39.6% of Deaf girls and 32.8% of Deaf boys, compared to 19.2% of hearing girls and 9.6% of hearing boys. Sexual abuse which involved intercourse occurred in 39.3% of the Deaf and hard of hearing sample and 10.8% of the hearing sample.[117]
- The service provision for domestic violence help for Deaf communities in the UK remains poor. Sigh Health, an organisation that advocates for Deaf people in the UK, reported that around 80% of Deaf referrals to specialist counselling at Deaf Hope Sign Health had experienced domestic abuse. There are no other DV (domestic violence) services for Deaf women in the UK compared to hearing women, who can access 100s of organisations for available help. Most DV services are accessible only by telephone helplines which Deaf women can't access.[118]
- Reported barriers to not seeking DV help include the lack of appropriate or BSL communication with the mainstream services and general lack of awareness about DV amongst the Deaf community.[119]

The existing evidence suggests that Deaf people experience all forms of domestic abuse more than the general population, yet there are a limited number of services available to support them. However, the research focuses predominantly on sexual violence, and there is little understanding of barriers Deaf people face when trying to access services for stalking or harassment.

2.2.6 Sexual Orientation

There is limited evidence about sexual orientation exclusively for Deaf people.

From the published evidence research:

- Hearing difficulties were a greater barrier to health inclusion than sexual identity. Not all LGBT resources are accessible for Deaf or people with hearing loss. Issues experienced are often separate and only related to either LGBT or Deaf or people with hearing loss, not both simultaneously.[120]

There is limited evidence to understand the experience of Deaf people who identify as LGBT in the context of access to their view of the quality of services, support from family and the wider community.

2.3 Healthy and Affordable Food

Healthy and Affordable Food key findings:

- 72% Deaf men and 71% women were overweight or obese, compared to the general population, men 65% and 58% women.
- Based on their BMI and waist circumference measurements, nearly half of Deaf people (48%) are at high or very high risk of developing heart disease, diabetes, arthritis, and some cancers.
- Higher Vitamin D intake was associated with a 10% lower risk of developing hearing difficulties.
- Dietary patterns high in fruit, vegetable and meat consumption and low in fat reduced the risk of developing hearing difficulties by 11%.

2.3.1 Diet

There is no specific food that causes or prevent hearing loss, nor are there any which can restore hearing. However, certain foods can reduce or increase the risk of hearing loss.[121]

From the published research, there is evidence that:

- Compared to the general population, Deaf respondents consume similar portions of fruit but eat slightly more vegetables and are more likely to eat fried food and consume it more regularly.
- A higher intake of Vit B12 is associated with reduced odds of developing tinnitus by 15%. Food that is associated with the increased odds of developing tinnitus include a higher intake of calcium (20%), iron (20%), and fat (30%).[122]

- Eating fruit and vegetables or wholegrain food makes no difference in increasing the likelihood of tinnitus persistence, however, dairy avoidance increases the likelihood of 'persistent tinnitus' by 27%.[123] Other foods that are associated with reduced likelihood of 'persistent tinnitus' include non-oily fish (9%), oily fish (5%), egg avoidance (13%), and caffeinated coffee consumption makes no difference.[124]

There is limited evidence to understand the knowledge of healthy eating and portions among Deaf and hearing loss communities, nor how following certain diets could prevent or treat symptoms of hearing loss.

2.3.2 Obesity

Obesity may be linked with hearing loss due to vasoconstriction in the inner ear, whereby excessive fat tissue causes damage to the inner ear.[125] However, more research is needed to investigate if a direct relationship between obesity and hearing loss exists. There is no evidence supporting the notion that Deaf people might be of different stature to the general population. Although there is an enormous social problem about obesity in the general population, Deaf people have this problem to a greater extent.[126] Various surveys and research articles reported on the higher obesity prevalence among the Deaf community compared to the general population in the UK.[127, 128]

- More Deaf people are obese than the general population. 90% of those over 65 years were classed as overweight or obese,[129] and 50% of the participants had high body fat levels.[130] More Deaf women than men are classified as obese or overweight however the difference was insignificant.[131] Comparing mean BMIs (Body Mass Index), the mean BMI for men in HSE was 27.2, compared with 27.1 for women. In the Deaf group, the men's mean BMI was 28.1, and the average mean for women was 29.3.[132]
- More Deaf women had larger waist circumference (75.7%) than Deaf men (57.1%). Both sexes in the general population (34% and 47% for men and women respectively)[133] at least 48% of Deaf people would be placed in the "high to very high risk" of severe illness categories due to high BMI and waist circumferences. 28% alone are in the "very high risk" category.[134]
- Linking the above findings with the National Institute of Health and Care Excellence (NICE) risk estimates, Deaf people have a significantly higher risk of illness (coronary heart disease, Type 2 diabetes, osteoarthritis and some cancers - according to NICE, 2006). Higher BMI and larger waist circumference measurements mean at least 48% of Deaf people would be placed in the "high to very high risk" category. 28% alone are in the 'very high risk' category.[135]

Evidence shows Deaf people are more at risk of being obese than the general population, and the risk for Deaf women is higher than for Deaf men. However, there is limited evidence to understand their knowledge of healthy weight.

2.4 Active at Every Age and Ability

Active at Every Age and Ability key findings:

- 9.7% of people with hearing loss take part in sport once a week, which is much lower than the non-disabled population (39.9%).
- Among the Deaf, the top three reasons for being active are: enjoyment, keeping fit and socialising.
- The top 5 participation sports for those with hearing loss or Deafness in the UK are running/jogging, swimming, football, cycling and golf.
- The main barriers to physical activity are cost, concerns about a lack of fitness, concerns about communication problems and lack of confidence in taking part. Around 1 in 5 people said that communication was the main barrier that prevents them from partaking in sport.

57% of Deaf or hard of hearing people do less than 30 minutes of physical activity per week, a larger proportion compared with 40% of disabled people and 21% of non-disabled people.[136] However, only 9.7% of people with hearing loss take part in sport once a week, which is much lower than the non-disabled population (39.9%).[137]

Published research evidence found that:

- Walking and gardening are the chosen activities that most individuals with hearing loss often take up.[138, 139] When participating in sport, more people with hearing loss (75%) communicate in spoken English than British Sign Language (31%). Deaf people identified digital communication channels such as social media, internet search, and email as the most popular ways to find out about sport opportunities.[140 141] 8 in 10 said they would prefer playing in a mixed environment with Deaf and hearing people.[142, 143]

There are limitations in sensory data collection to understand the uptake of physical health activities within Deaf communities and their experiences of service provision.

In the academic year 2019/20, on average, deaf pupils achieved a grade 4 for each subject, this was

1 GRADE LESS ON AVERAGE THAN HEARING STUDENTS

34% of deaf students achieved 2 A-levels (2019/20), or equivalent compared to **55%** OF HEARING STUDENTS

of deaf participants in a UK study were working either full or part time compared to **80%** OF THE WIDER POPULATION

42%

WORKING LIFE

73% OF DEAF PEOPLE'S EMPLOYMENT OPPORTUNITIES were limited because of their hearing loss

BARRIERS AT WORK

Reasons for early retirement due to hearing loss included

- DIFFICULTIES USING THE PHONE
- COMMUNICATION CHALLENGES WITH COLLEAGUES

2.5 Working and Learning Well

Working and Learning Well key findings:

- Generally, education attainment for deaf students is lower compared to the hearing population. In 2019/20, just 34% of Deaf students achieved 2 A-levels, or equivalent, compared to 55% of hearing students, a reduction of 2% for the first time in 4-years.
- In the academic year 2019/20, on average Deaf pupils achieved a grade 4 for each subject, this was 1 grade less on average than hearing students. This has been a consistent statistic over the last 6 years.
- People with hearing loss were less likely to be employed than people with no long-term health issue or disability. They have significantly lower levels of employment – only 46% of working-age disabled people are in work, compared with nearly 80% of the wider workforce.
- 8 out of 10 people reported that the attitude of employers still presents substantial barriers to employment.

2.5.1 Adult literacy and adult education

There is evidence of significant disparities in the educational attainment of Deaf children compared to hearing children. However, there is no data about Deaf adults' education levels compared to the hearing population, and there is limited data about language proficiencies within the Deaf community in the UK.

2.5.2 Economic Activity

Hearing Loss can lead to issues within employment, difficulty in gaining employment and even early retirement.[144] The unemployment rate in the UK across all the Deaf population is four times higher than that in the hearing population.[145] Poor Deaf awareness among staff or lack of communication support may contribute to employment barriers among people with hearing loss.[146]

From the published research, there is evidence that:

- Evidence about Deaf people and unemployment is limited but consistent. Findings show a considerable proportion (73%) of Deaf people's employment opportunities were more limited because of their hearing loss. hearing Loss can force people to exit employment or retire, prevent them from fulfilling their potential, and often lead to people feeling isolated at work.[147] [148] A recent UK survey found that 42% of its Deaf participants were working either full or part-time, 42% of which had left work in the last five years. A larger proportion (49%) reported they had not retired recently (between 6 and 20 years). 66% said they retired 'early' and, of those, 41% said this was related to hearing loss.[149]
- Over three-quarters (77%) disagreed that hearing loss had made no difference to them at work.[150]
- In this survey, 46% worked in the public sector, 36% in the private sector, 10% in the voluntary sector, and 9% worked in other sectors.[151]
- Reasons for early retirement due to hearing loss included difficulties in fulfilling day to-day-tasks, such as using the phone, or communication challenges with colleagues.[152]
- Findings show that many people with hearing loss are not using equipment and support to help them in the workplace. Just under half (46%) of the population reported that employers had been very or quite helpful.[153]
- 54% of respondents in work said they were aware of the Access to Work Scheme, which provides funding to pay for practical support at work for people with a disability or health condition, which is relatively low.[154]

The census in 2011 did not collect data for employment on a sensory disability level. Therefore, there is limited evidence to understand the unemployment rates, the level of jobs, job categories that Deaf people are employed in or the proportion of those employed full or part-time.

2.5.3 Housing

The specific health and social care needs of Deaf people based on recent data are unknown. A range of unmet needs reported by Deaf people include long waits for home adaptations, long waits for social housing and living in unsuitable homes, fear of crime and feeling unsafe in parts of the city.[155]

The census 2011 did not collect data on a sensory level, therefore, there is limited evidence to understand a more up-to-date picture of the experiences of the Deaf communities in the context of housing, demography or the quality-of-service provision for those who live in social housing.

2.5.4 General Health

The recent GP Patient Survey Data in 2021 showed the widely used online services utilised by Deaf people who use sign language are booking appointments (28%), ordering repeat prescriptions (20%), online consultation (13%), and accessing medical records (6%). A lower percentage of Deaf people who communicate via sign language used online services (52%) compared to those who don't communicate with sign language.[156]

From the published research evidence:

- Research evidence highlights reduced health status in the Deaf signing population compared to the general population. The average mean state values for Deaf people are 19% lower than the general population. A UK study exploring the mean health state values of Deaf British Sign Language users found that Deaf people had 22% lower mean health values than the general population and 16% lower status found in the national health survey for England in 2017. Long-standing physical illness was negatively correlated with lower health-state values. Each time physical illness progressed, the mean health state value decreased by 0.354.[157]
- In a University of Brighton Housing Report, people who identified as Deaf were among the groups who were less likely to rate their health as good or very good (other groups are those disabled, HIV (Human Immunodeficiency Virus) positive, on low incomes and those with mental health difficulties). Deaf people reported more frequent yet less satisfactory visits to the GP. Access to general practice was a continual problem for the Deaf respondents, with communication difficulties when making appointments and accessing interpreters. Compared to the GP Patient Survey for England, Deaf patients were less able to see the doctor of their choice.[158]

Table 6: Experience of GP consultations - Deaf people compared to the general population

Experience of consultations	Deaf	General population
GP at doctor giving enough time 'good or very good' (n=298)	66	88
GP listening 'good or very good' (n=298)	61	89
GP explaining test and treatments 'good or very good' (n=299)	49	84
GP explaining test and treatments 'poor or very poor' (n=299)	23	3
Good of very good' involved in decisions about their care (n= 297)	46	77
Treated with care 'good or very good' (n=287)	61	85
Confidence and trust in the Doctor 'yes, definitely or 'yes to some extent'	79	93
GP taking patients' problems seriously (n=298)	19	n/c

Source: Deaf Health: A UK Collaborative Study into the Health of Deaf People, n/c=no comparison.[159]

Table 7: The experiences of those accessing GP services comparing people who are Deaf with sign language and people who aren't Deaf/use sign language

	Deaf with sign language – Yes	Deaf with sign language – No
Generally, is it easy to get through to someone at your GP practice on the phone?	63%	68%
How helpful do you find the receptionists at your GP practice?	88%	89%
Is it easy to use your GP practice's website to look for information or access services?	73%	75%
Are you satisfied with the GP appointment times available to you?	76%	67%
Percentage of those who rate their overall experience with a GP as good	82%	83%
Is there a particular GP that you would rather talk to? – Yes	74%	46%

Source: GP Patient Survey 2021

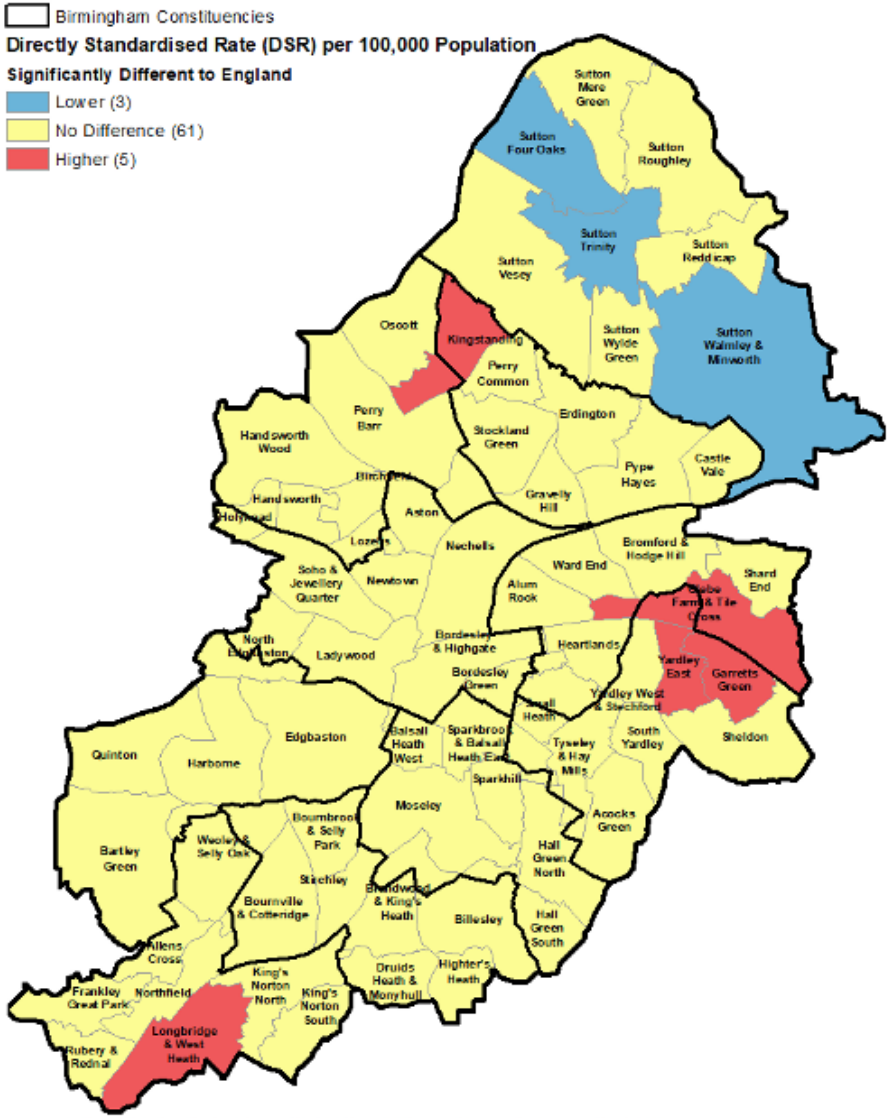
Census does not collect general health data to sensory disability level. Therefore, there is limited understanding of how Deaf people perceive their general health and compare them with the hearing population.

Emergency hospital admissions for Deafness or hearing loss

In Birmingham 2019/2020, there was a total of 201/100,000 persons admitted at the emergency health hospitals for Deafness or hearing loss, which was significantly lower/better than England's average and other core cities such as Manchester (338), Sheffield (276) and Bristol (312).

Figure 8 shows the emergency hospital admissions for Deafness and hearing loss in Birmingham by ward from 2019 to 2020, (primary coding ICD-10: H90-H91). The rates are directly standardised per 100,000 people and compared to the national average rates. The wards of Kingstanding, Longbridge & West Heath, Glebe Farm & Tile Cross, Yardley East and Garretts Green have higher rates of hospital admissions for Deafness or hearing loss. The wards: Sutton Four Oaks, Sutton Trinity and Sutton Walmsley & Minworth have lower hospital admissions rates than the rest of England.

Figure 8: Emergency Hospital Admissions for Deafness and hearing Loss by Ward 2019-2020



Soucre: National HES Inpatients data for 2019/2020 and ONS population estimates for 2019 (2021) Produced by BirminghamPublic Health Division (2021).

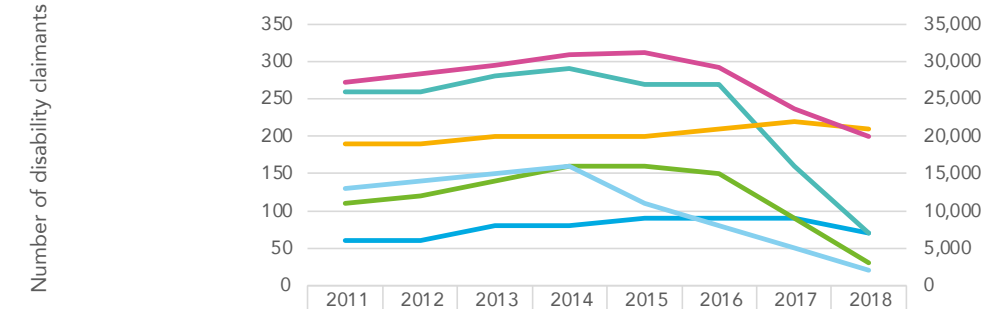
There is limited research evidence into the preserved general health of Deaf communities in the UK. The current census in 2011 did not collect 'general health' data to sensory disability level.

2.5.5 Long-standing Health Impairment, Illness or Disability

In November 2018, 23,640 people in England claimed disability allowance due to being Deaf. The rates for claiming were similar between genders (male = 50.2%, female = 49.7%). In Birmingham, 530 claimed disability living allowance due to being Deaf, 270 (50.9%) were male, and 260 (49.0%) were female.

Figure 9 shows the number of people who have been d/Deaf for five years and claiming disability living allowance. In Birmingham, there was a gradual increase of d/Deaf people aged between 0 and 64 claiming disability living allowance between 2011 and 2014. The largest proportion was from those aged 25-49, with claiming rates ranging between 70 and 260 during the eight years. The smallest proportion of claimants were aged 65 and over, with rates ranging between 60 and 70. From 2016, the number of d/Deaf people in Birmingham claiming disability living allowance fell overall, and the downward drop mirrors the regional and national trend. Since 2013, working-age adults have been moving from DLA to PIP, leading to an increase in people claiming PIP and a decrease in Disability living allowance over time.

Figure 9: People claiming disability living allowance due to having a Deaf condition for 5 years and over, in Birmingham between 2011 and 2018 by age group



	2011	2012	2013	2014	2015	2016	2017	2018
Bham 65+	60	60	80	80	90	90	90	70
Bham 50-64	110	120	140	160	160	150	90	30
Bham 25-49	260	260	280	290	270	270	160	70
Bham 16-24	130	140	150	160	110	80	50	20
Bham under 16	190	190	200	200	200	210	220	210
All ages England deafness	27,190	28,300	29,540	30,860	31,140	29,250	23,660	19,960

Source: Nomis official labour market statistics

GP patient survey data shows that the most prevalent long-term conditions among Deaf respondents included arthritis (19%), high blood pressure (17%) and a mental health condition (15%). Diabetes and breathing conditions were also prevalent (both 11%).[160]

Table 8: Information about long-term conditions amongst Deaf respondents

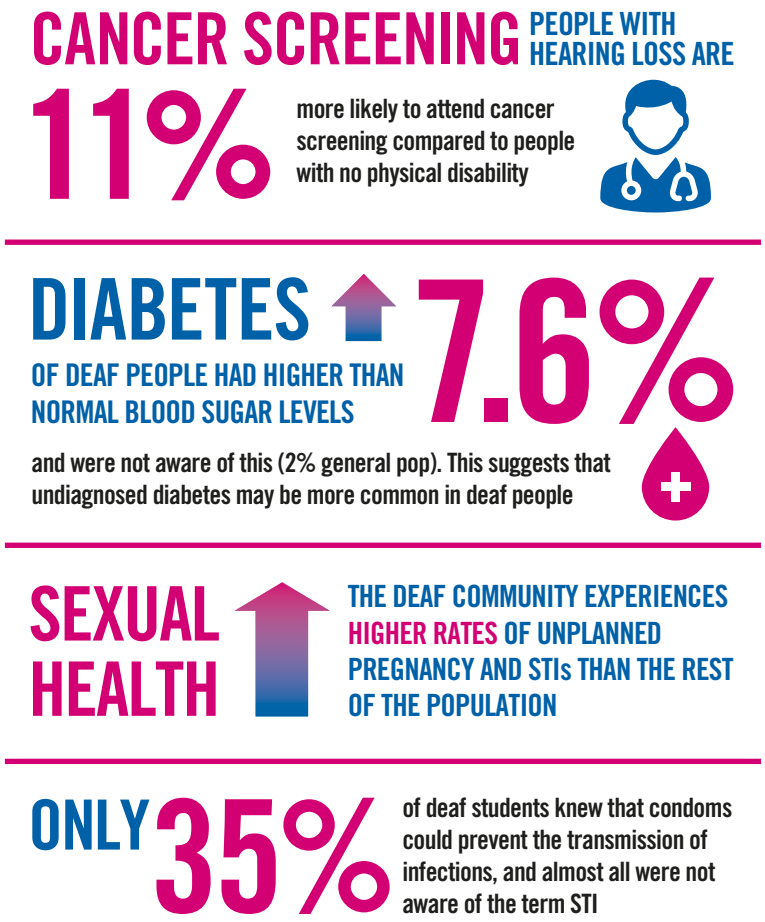
	Deaf with sign language – Yes	Deaf with sign language – No
Problems with physical mobility, for example, difficulty getting about your home	29%	12%
Those with long-term physical or mental health conditions, disabilities or illnesses?	68%	52%
Does your long-term condition affect your daily life? Those who answered yes, a lot	44%	19%
Are you confident in being able to manage your long-term condition – Those who answered yes	70%	83%

Source: GP Patient Data 2021

From published research:

- Government plans tend to consider long-term conditions in isolation and do not consider hearing loss or Deafness. As almost half (44%) of people with hearing loss are aged 70+, many people with hearing loss have age-related health conditions.[161]
- 68% of BSL users reported that they had not been provided with a sign language interpreter, while 41% have left an appointment feeling confused about their medical condition because they couldn't understand.[162]

The census did not collect data on a sensory disability level. Therefore, there is limited evidence to understand the prevalence rates of general health impairment or ill-health compared to the general population.



2.6 Protect and Detect

Protect and Detect key findings:

- People with hearing loss are 11% more likely to attend cancer screening compared to people with no physical disability.
- The lack of effective treatments is often affected by a lack of interpreters. This includes interpreters failing to show up, wasting time and hospitals failing to book them.
- Deaf participants were less likely to have heard of the HPV vaccination compared to hearing participants (65% compared with 86%), and were less likely to know that it protects against cervical cancer (32% compared with 49%).
- The rates of diagnosed diabetes are similar in Deaf people to the general population, but Deaf people generally have a worse control over their blood glucose levels.
- 7.6% of Deaf people had higher than normal blood sugar levels and were not aware of this. This suggests that undiagnosed diabetes may be more common in Deaf people compared to 2% in the general population.
- The Deaf community experiences higher rates of unplanned pregnancy and STIs than the rest of the population.
- Only 35% of Deaf students knew that condoms could prevent the transmission of infections, and almost all were not aware of the term STI.

2.6.1 Screening Programmes

The evidence shows the impact of the awareness of screening and prevention opportunities, and it seems that Deaf people are being included in these national campaigns. Access to primary care affects the health of Deaf people.[163] Overall, more Deaf people tend to engage with screening programmes than the general population or other communities with single disabilities.

Other published research evidence that:

- Those over 65 (61.1%) report having had a bowel cancer screening, while (21%) of those aged 45-64 years report this.[164] In Birmingham (53%) of the general population attended bowel cancer screening, (62%) of the West Midlands and 63.8% of the general population in the UK.[165]
- Comparing the screening attendance among those registered with a single disability and with no disability, Deaf people have the largest proportion of those who attend the screening (82%) than all other people with single disabilities, learning difficulty (73%), sight loss (77.7%), long term pain/ discomfort (79/9%), no physical disability (80.7%).[166]
- Among the Deaf women under 65 years of age, 76% reported a smear in the last three years. National figures target cervical screening of 80% in the previous five years. The figure for the Deaf women in the previous five years is 87.7%, indicating a good level of take-up, compared to the general population (78.6%).[167]
- The target in England is for all women to be invited for mammograms between 50 and 70 years. The reported success rate was 76.9% in 2010, Deaf women of 76.3%, which is close to the national average.[168]
- There was some evidence that participation in screening was lower for those with Deafness or partial hearing loss who were single compared to their married counterparts, with the likelihood of attendance being 35% lower among singles than in married people.[169]

Evidence shows that more Deaf people engage with screening programmes than the general population. However, most programmes do not collect data on a sensory disability level, meaning limitations in evidence to understand accurate uptake rates and trends that can be compared to the general population.

2.6.2 Vaccination Programmes

In England, Deaf participants aged 65 and over are more likely to have the flu jab than the general population. 87% of Deaf older adults had a flu jab in winter 2011/12, compared to 74% of the general population. For those under 65 years, the general population data concerns those considered to be at risk (where the uptake is 51.6%). It would seem likely that some Deaf participants are considered at risk (but clearly, this does not apply to all). Of those in the 45 – 64 years group, 37.5% had had a flu jab.[170]

From international research findings, there is evidence that:

- Both Deaf and hearing participants reported similar rates of 'having discussed with a doctor or health care professional about HPV' (Human Papilloma Virus) vaccine (29% Deaf and 33% hearing).
- However, the study found that Deaf people are less likely to 'have knowledge of HPV' compared to the hearing population (58% compared with 84%). Within the Deaf population, more women 'have knowledge about HPV' compared to men (66% compared with 48%). Consequently, Deaf participants demonstrated significantly lower accuracy in their 'risk perception of HPV' being linked to cervical cancer than did the hearing participants (47% compared with 78%).

- Deaf participants were less likely to 'have heard of the HPV (Human Papilloma Virus) vaccination' compared to hearing participants (65% compared with 86%), and were less likely to know that it 'HPV vaccination protects against cervical cancer' (32% compared with 49%).

There are limitations in sensory disability data collection. Therefore, there is limited evidence to understand the accurate uptake rates among Deaf communities.

2.6.3 Diabetes

The evidence on the prevalence of diabetes among Deaf communities compared to the general population in the UK is inconsistent. However, generally, Deaf people have less controlled diabetes than the general population, and Deaf men have higher rates than Deaf women.

From the published evidence research:

- Deaf patients are more likely to have undiagnosed diabetes.[171] [172] [173] Of those with raised blood sugar levels at pre-diabetic levels, more than three quarters (77.3%) were unaware of it. And of those with diabetic levels, more than a quarter (28.6%) were unaware of it (but in this case, the numbers are very small).[174] Even when the condition is diagnosed, they are less likely to be adequately treated, thereby increasing morbidity and mortality from diabetes.[175, 176]
- Some studies reported similar diagnosed type 2 diabetes rates between Deaf and hearing populations (6-7%).[177] [178] [179] Patterns for diabetes for the Deaf participants are similar to the general population, although there is a tendency for the results to be more extreme.[180] However, Deaf men are more likely to have diabetes than women. Evidence shows that the overall prevalence for self-reported and doctor-diagnosed are 6.5 and 6.7%, respectively. Exploring prevalence by gender, rates are 7.4 and 8.7% for Deaf males and 5.1 and 5.7% for Deaf females.[181, 182]
- Contributing factors for the higher prevalence of diabetes among Deaf people include inadequate access to primary care and lack of awareness and knowledge due to the unavailability of interpreters and health information published in sign language.[183]

There are limitations in evidence to understand the experiences of the Deaf population in the context of access to or engagement of services and knowledge of management of diabetes.

2.6.4 Sexual Health

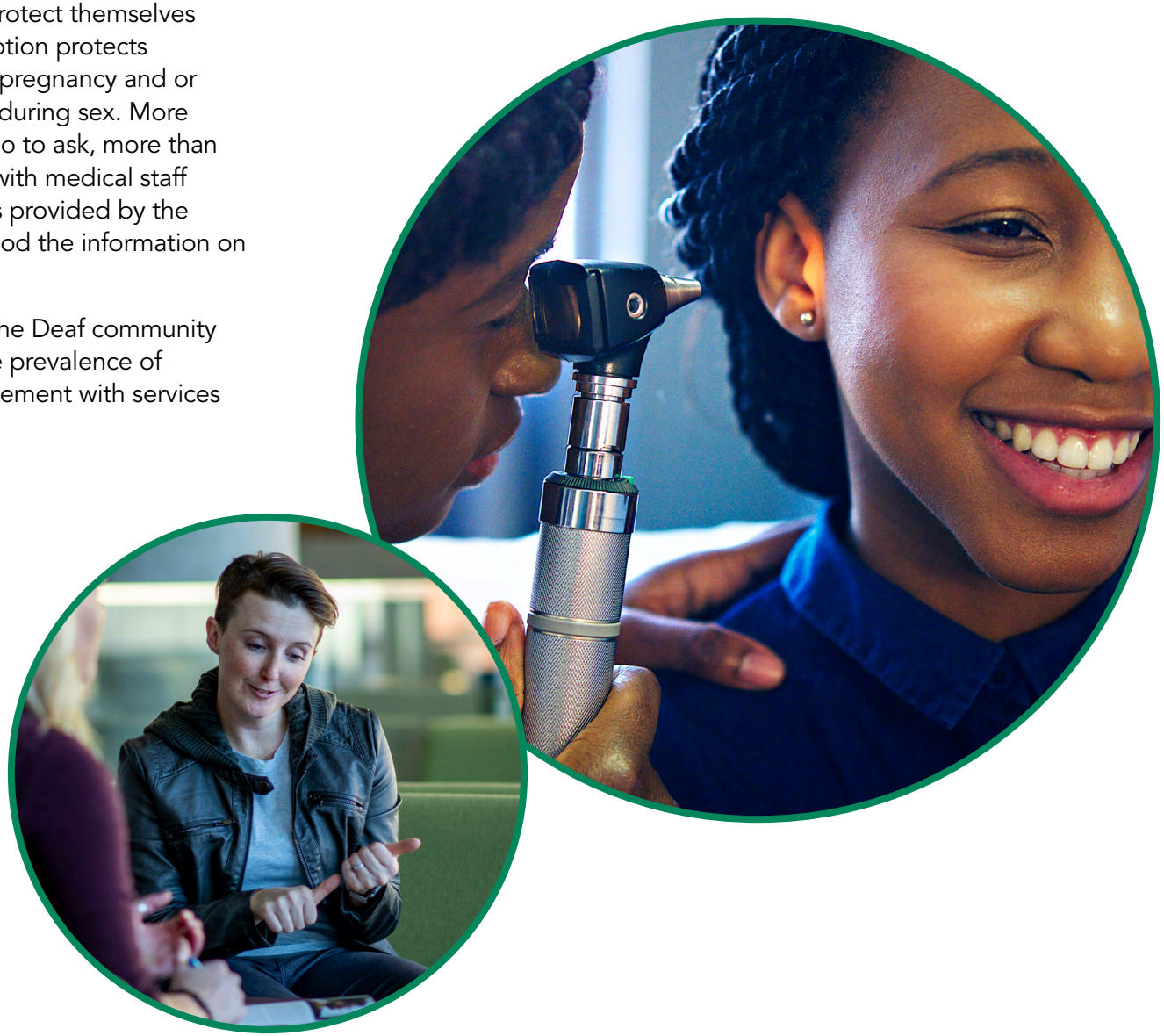
Deaf people may be more vulnerable to contracting HIV and might lack access to HIV/AIDS information, testing and treatment. Contributing factors include increased instances of multiple partners, sexual abuse and earlier sexual activity, and, in some contexts, decreased use of condoms.[184]

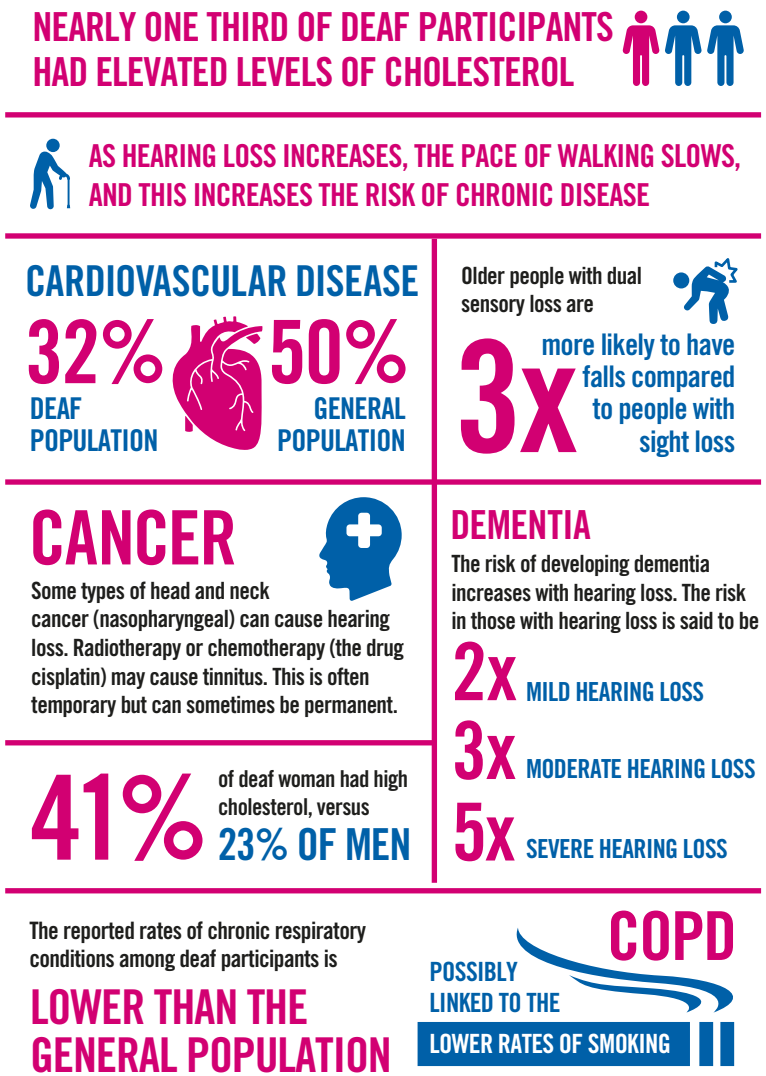
From the published research, there is evidence that:

- The survey revealed that young Deaf people lack understanding of sex and relationship education basics. 80% reported receiving sex and relationship education (SRE), 1/3 were not taught about puberty, 40% were not taught about pregnancy, and 46% were not taught about STIs (sexually transmitted infections). Factors preventing young Deaf people from getting the SRE information include the lack of inclusive visual demonstrations, limited/no access to a BSL interpreter and inadequate communication support.[185]

- Many students did not have enough information to protect themselves against unwanted pregnancy. 44% thought contraception protects from getting a cold/flu, 28% think it's to protect from pregnancy and or infections, 28% think it's to protect from getting pain during sex. More than 50% stated they do not know where to go or who to ask, more than 40% reported that they worry about communicating with medical staff and the unavailability of communication professionals provided by the doctor or the clinic. More participants (70%) understood the information on pregnancy, compared to (30%) who did not.[186]

There is limited evidence on sexual health exclusive to the Deaf community to understand the Deaf community in the context of the prevalence of STIs, access to and the provision of services, and engagement with services relating to sexual health.





2.7 Ageing Well and Dying Well

Ageing and dying well key findings:

- Hearing Loss is a major but often unrecognised long-term condition and is the leading cause of years lived with disability for those over the 70s.
- Self-reported cardiovascular disease is less common among Deaf people (7%) than among the general population (approximately 14.5%).
- However, nearly one third of Deaf participants had elevated levels of cholesterol. There were gender differences in high cholesterol prevalence, with 41% of women having high cholesterol, versus 23% of men.
- There was less than 1% of Deaf participants who had COPD, which compares to 4% of men and 5% of women in the general population.
- Hypertension was significantly greater among the Deaf participants than in the general population (47% as compared to 18%).
- Mild hearing loss doubles the risk of dementia, moderate hearing loss triples the risk, while the risk of developing dementia is five times higher in those with severe hearing loss.
- For every 10dB increase in hearing loss, there was a 1.4-fold increase in the odds of an individual reporting a fall.
- Communication difficulties and low health literacy can impede end of life care. Research suggests that people who are Deaf may have limited understanding of the available choices for end-of-life care.

Hearing is essential for healthy ageing, enabling us to communicate, retain independence, quality of life and health and wellbeing. Unaddressed hearing loss will have a significant impact on older people leading to communication difficulties, social isolation, depression, reduced quality of life and loss of independence and mobility.[187]

2.7.1 Cardiovascular Disease (CVD)

Evidence suggests that CVD prevalence in the Deaf population is lower than in the general population.[188, 189] A UK research study on the health of Deaf people reported 32% of Deaf people had CVD compared with 50% of the general population.[190] Another study tested the risk of developing CVD, reporting that 70% had a lower likelihood of having a CVD risk, 18% had a similar likelihood, and only 10% had a higher likelihood of having CVD risk than the general population.[191]

From the published research, there is evidence that:

- Of the Deaf people who have CVD, more than half (55%) of Deaf people are not receiving treatment for it.[192]
- There is limited information on CVD risk amongst Deaf people in the UK. The combination of untreated hypertension and the raised cholesterol and abnormal lipid profiles cumulatively results in an increased risk of cardiovascular events (stroke and heart attacks).[193] Recent local evidence suggests that short-term (6-months) cardiovascular health promotion does not change the estimates of CVD risk. This may be due to communication barriers to promote or educate Deaf people about CVD. Vocabulary level is challenging due to the limit in English vocabulary for many Deaf people in the UK and sign language that appears underdeveloped. There is also a lack of access to a fully accessible language learning environment. For example, at the time of publication, the word cholesterol was not in British Sign Language. This may suggest issues in conveying information that can reduce CVD risk in people whose primary language is BSL. The hearing status of parents and education may impact CVD risk-reduction and cardiovascular health promotion advice.[194]

There is limited evidence concerning CVD prevalence among Deaf people in the UK.

2.7.2 COPD (Chronic Obstructive Pulmonary Disorder) and Other Respiratory Conditions

The reported rates of chronic respiratory conditions among Deaf participants are lower than the general population, possibly linked to the lower rates of smoking.[195]

From the published research, there is evidence that:

- Asthma was reported at a similar level among the Deaf participants compared to the lifetime prevalence, i.e., 15.4% and 16.5% for men and women, respectively. Whether Deaf people are significantly different from the general population is inconclusive. In the HSE (2010) 4% of men and 5% of women had at some time been diagnosed with chronic obstructive pulmonary disease (COPD), and only one person in this study had COPD, highlighting that these serious respiratory problems are less recognised among Deaf participants than in the general population.[196]

There is limited data found on COPD and other respiratory conditions. The available findings are inconclusive to understand prevalence/incidence and other themes such as knowledge and management of the illness and services provision.

2.7.3 Hypertension

Levels of blood pressure among Deaf people are higher than the general population. Similar to the general population, there is an apparent lack of awareness of the problem, but it's more prominent among Deaf people. Difficulties in accessing routine checks and other barriers contribute to the prediction that Deaf people are less likely to have their blood pressure measured routinely than hearing people.

- The prevalence of high blood pressure is more common in the Deaf population than the general population (37% compared to 21.1%).[197] Very high blood pressure is more common among Deaf men (16%) than among Deaf women (8%).[198]
- Undiagnosed high blood pressure was more than twice as common in Deaf people, with 1 in 7 (15%) Deaf people having elevated blood pressure they were not aware of, a higher proportion compared to the general population (6%).[199] Exploring gender differences in detection rates, 44% Deaf male and 54% Deaf female had undetected hypertension, a lower proportion compared to the general population 61% (male) and 66% (female).[200]
- Of those diagnosed, nearly 2/3 (62%) were still found to have high Blood Pressure (BP), compared to 20% of the general population.[201] Evidence shows that treatment rates for Deaf people are lower compared to the general population. Overall, 36% of Deaf people have treatment for BP (32 and 40% male and female respectively), compared to a 57% overall general population, 54% (males) and 59% (females).[202, 203] This suggests that BP for Deaf people is not being properly treated or managed.[204]

There is enough evidence suggesting a higher prevalence of hypertension among Deaf people compared to the general population. However, there is limited published evidence to understand the hesitance of Deaf people to engage with services.

2.7.4 Cancer

From the published evidence research:

- Some types of head and neck cancer (nasopharyngeal) can cause hearing loss. Radiotherapy or chemotherapy (the drug cisplatin) may cause tinnitus. This is often temporary but can sometimes be permanent.[205] Many Deaf people experience challenges when accessing healthcare and communicating with healthcare professionals. Deaf patients with cancer lacked information and support.[206]

The National cancer intelligence network does not collect relevant data on a sensory disability level. Therefore, there are limitations in understanding the experiences of the Deaf population in the context of prevalence/incidence, disease management, service provision and access to health services relating to cancer in Deaf communities.

2.7.5 Dementia

Determining the number of Deaf people in the UK who might have dementia is not straightforward because the precise number of Deaf BSL users, in general, is unknown. From the general population estimates (ONS, 2012), over 65s constitute 17% of the population, rising to 23% by 2035. This suggests a population of Deaf over 65s of between 8,500 and 17,000, rising to 11,500 and 23,000 by 2035. Alzheimer's Society used a conservative estimate of 5% of the over 65s having dementia means, approximately 450 to 850 Deaf people currently live with dementia in 2012, rising to approximately 1150–2300 by 2035.[207]

From the published evidence research:

- Research shows an association between hearing loss and developing dementia, with the risk of developing dementia increasing the more severe an individual's hearing loss is.[208] [209] mild hearing loss doubles the risk of dementia, moderate hearing loss triples the risk, while the risk of developing dementia is five times higher in those with severe hearing loss.[210] Hearing Loss is the main modifiable risk factor in dementia, suggesting that eliminating the risk associated with hearing loss could reduce dementia cases by 9%.[211] Poor or insufficient in-speech are also both associated with nearly twice the increased risk of developing dementia.[212]
- There is little information about dementia in BSL, and general knowledge and awareness in the Deaf community about dementia is poor.[213, 214]
- Deaf people are less likely to be diagnosed with dementia than hearing people.[215] Direct communication between professionals and Deaf people is rare, while communication via an interpreter is more likely. This makes it difficult to spot behavioural or linguistic characteristics that might be significant in making a diagnosis.[216] It is hard to diagnose someone with dementia with hearing loss, as often the test cannot be accurately completed for those with dementia. It can be assumed that issues with understanding information are to do with an individual's diagnosis of dementia.[217]
- Although primary care services were identified as the first port of call for dementia-related concerns, there was widespread mistrust of their effectiveness because of communication and cultural competence failures.[218] Moreover, confirmed diagnosis of dementia was not viewed as a gateway to services and support because Deaf organisations, dementia-related organisations and mainstream adult services were perceived to be ill-equipped to respond to the needs of Deaf people with dementia.[219]
- The few studies on Deaf people with dementia have highlighted the linguistic challenges that interfere with interaction, such as difficulties finding signs and comprehension. When Deaf people develop dementia, the time from the first signs to diagnosis, treatment and support may be long.[220]
- Deaf people with dementia face challenges, as care in sign language is uncommon, and the options of nursing homes that use sign language are limited. Communicative isolation and deprivation of social stimulation decrease the interaction skills of Deaf people with dementia, which inevitably has a negative impact on their quality of life.[221]

Evidence highlights higher rates of dementia in Deaf older adults compared to the general population. However, there is limited information to understand the disease management and carers' views on dementia in Deaf communities.

2.7.6 Balance and Falls

Older people with dual sensory loss are more likely to have falls compared to people with sight loss by up to three times. This is due to hearing loss preventing people with sight loss from hearing information that would help them navigate their environment.[222]

From the published research, there is evidence that:

- hearing Loss is associated with slower gait speed- mild hearing loss increases the risk of falls, with moderate hearing loss leading to greater risk. 25 dB increase in hearing loss doubled the risk of having a gait speed less than 1 metre per second, a known risk factor for significant health problems including hospitalisation and death.[223] According to the British Society of Audiology report, sensorineural hearing loss from damage to the vestibular system can cause issues with balance in individuals with hearing loss.[224] More evidence from The Birmingham Speech & Hearing Associates suggests that hearing loss is often linked with dizziness or balance disorders, such as vertigo.[225] This may mean that elderly members with hearing loss have an increased susceptibility to falls and the risks of falling in older age.
- Children with hearing loss may be born with balance disorders or acquire them through illness, trauma or other conditions. Balance disorders in children with hearing loss can delay developmental milestones such as sitting unsupported and walking. Older children with hearing loss who experience balance problems may have difficulties with certain activities, such as learning to ride a bike due to imbalance.[226]

There is limited evidence to understand the prevalence/incidence of balance and falls among Deaf communities and how the rates compare with the general population.

2.7.7 End of Life

Pain and symptom management can be challenging for individuals with hearing loss during end-of-life care.[227] 40% of Deaf people report their cultural needs are not met. Only 3/5 (60%) feel that their support needs are met.[228]

More published research evidence shows that:

- When looking at a preferred place of death: 72% of BSL prefer home, 22% prefer hospice, 5% do not mind, and 5% prefer nursing home. For those who are hard of hearing: 75% prefer hospice, 12.5% do not mind, and another 12.5 prefer to at home.[229]
- People with hearing loss can find health services difficult and frustrating due to low Deaf awareness amongst staff.[230] Deaf people report interpreters aren't often present during stages at the end of life, but they perceive it as normal.[231]
- A residential care environment where there is no 'sign' communication can negatively impact the well-being of Deaf residents who have dementia and their families. Communicating in one's own and preferred language within a residential setting is the main concern as non or difficult communication leads to fear and isolation. Other reported fears relating to lack of sign communication include the potential loss of belonging, fear of isolation and lack of opportunity to communicate with other BSL users leading to mental deterioration.[232]

There is limited evidence to understand the knowledge of service provision and access to services among Deaf communities in Birmingham and nationally.

30% of Deaf people communicate with a doctor in BSL

80% WOULD LIKE TO

24.6% of Deaf patients 'definitely' have trust in their doctor

LOWER THAN THE GENERAL POPULATION

YEARS LIVED WITH DISABILITY

In 2016 sense order diseases were ranked in the top five contributory factors to overall Disability-Adjusted Life Years (DALYs).

HEARING LOSS WAS RANKED IN THE TOP 5 leading causes of YLDs (Years Lived with disability) in 84% of European countries

411 PEOPLE AGED 18+ WITH A HEARING IMPAIRMENT

received adult social care packages form Birmingham City Council

A BOLDER HEALTHIER BIRMINGHAM

2.8 Closing the Gaps

Closing the Gaps key findings:

- 80% of Deaf people want to communicate with a doctor in BSL, but only 30% manage to.
- When asked if Deaf patients have trust and confidence in their doctor, 24.6% said 'definitely yes,' which is lower than 67% of the general population. 18.3% said they had 'no confidence at all,' which is higher than the general population (4%).
- Over half of people with normal hearing found a receptionist at a GP practice to be very helpful, compared to 11% of Deaf people.

Evidence highlights the geographical and regional variation in health status trends.

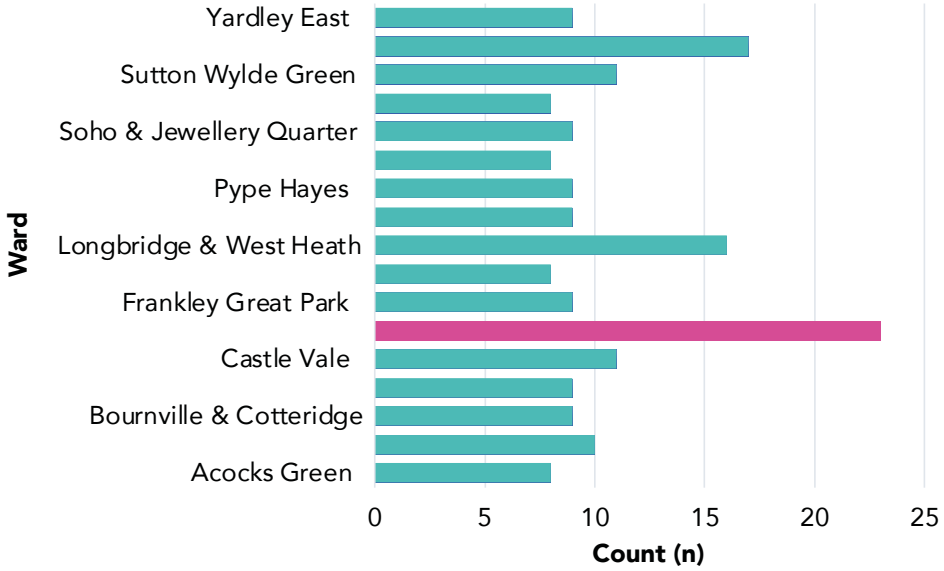
A study[233] in England used the Index of Multiple Deprivation (IMD) to measure poverty in different geographical areas to examine the regional patterns of hearing loss inequalities. Three critical patterns of findings concerning regional trends were identified: the highest prevalence of hearing was reported in the regions that had the highest prevalence of participants belonging to the most IMD deprived quintiles (39% out of the 59% of all self-reported hearing loss), more hearing loss was also reported from regions with the highest prevalence of participants belonging to the routine or manual occupations and highest prevalence of people who misuse alcohol irrespective of SEP.[234]

Exploring variation of hearing Loss by SES and gender. Evidence shows that men from lower socio-economic status groups (SES measured by income-tertile) are twice as likely to have a hearing loss than those from the highest SES. Compared to men in the highest SES groups, the odds of using a hearing aid are also lower for men in the middle and lowest SES groups (50% and 53% respectively). This gradient does not exist in women.[235]

The other most apparent was the North-South divide in the prevalence of obesity and hypertension, which mirrored the social gradient and inequality seen in the hearing population. The differences reflect a complex range of contributing factors such as poor-quality education, higher unemployment than the hearing population and subsequent poorer housing and access to facilities/services.

Figure 10 below shows that in 2021, a total of 411 people aged 18+ with hearing loss received adult social care packages from the Birmingham City Council. The largest proportion was from Erdington ward (count of 23), followed by the Weoley & Selly Oak ward [17] and Longbridge & West Heath ward [16]. Most of the wards, such as Moseley, Alum Rock, Aston and Garretts Green, have a count below 10.

Figure 10: People 18+ with hearing loss receiving adult social care packages from Birmingham City Council up to 14/07/2021 by ward



Data supplied by Adult Social Care BCC (Birmingham City Council). Note: the wards with a count less than 9 are not shown on the graph

2.8.1 Life Expectancy and Healthy Life Expectancy

Years Lived with Disability (YLD) measure the number of years lived in non-perfect health due to a particular condition. It is obtained by multiplying the condition's prevalence by a disability weight (between 0 and 1 where 0 represents a state of full health 1 represents death). YLD reflects the severity of the condition in comparison to the other conditions.[236]

In 2016 sense order diseases were ranked in the top five contributory factors to overall Disability-Adjusted Life Years (DALYs) in 50% of European countries and the top ten factors in all European countries. hearing Loss was ranked in the top five leading causes of YLDs (Years Lived with disability) in 84% of European countries.[237]

Evidence suggests a North-South divide in the prevalence of hearing Loss, with higher prevalence in the North-East. Future evidence should consider the effects of place and socio-economic factors such as high occupational noise exposure from manual occupations and differences in regions with strong and weak manufacturing industries. In addition, the local and national evidence supporting understanding of deaf people's life expectancy and healthy life expectancy does not exist because the census 2011 did not collect information at a sensory disability level.

MAJOR ELEMENTS INVOLVED IN d/DEAF INTERACTIONS WITH THE BUILT ENVIRONMENT

SPACE AND PROXEMICS
(the study of how space is used in interpersonal communication)

ACOUSTICS AND ELECTROMAGNETIC INTERFERENCES

SENSORY REACH

MOBILITY AND PROXIMITY

LIGHT AND COLOUR

2.9 Contributing to a Green and Sustainable Future

A major climate change summit in Glasgow in 2021 provided the chance to highlight inclusive communication on a global stage. UK hosted the COP26, the Climate Change Conference, in Glasgow in November, taking the opportunity to connect with people with sensory loss and launch the climate change initiative on a world stage. Electric buses and cars are designed to reduce omissions but operate silently, so they are a recognised threat to pedestrian safety in our cities and communities. The EU decided to mainstream pedestrian protection by agreeing that by 2021, all-electric cars must have an acoustic vehicle alert system, not just new models. Although this new device must be activated when a vehicle is reversing or travelling below 12mph, the driver can still deactivate it, so a problem remains. Is it sufficient to assist those with hearing problems and provide safety to Deaf pedestrians?[238]

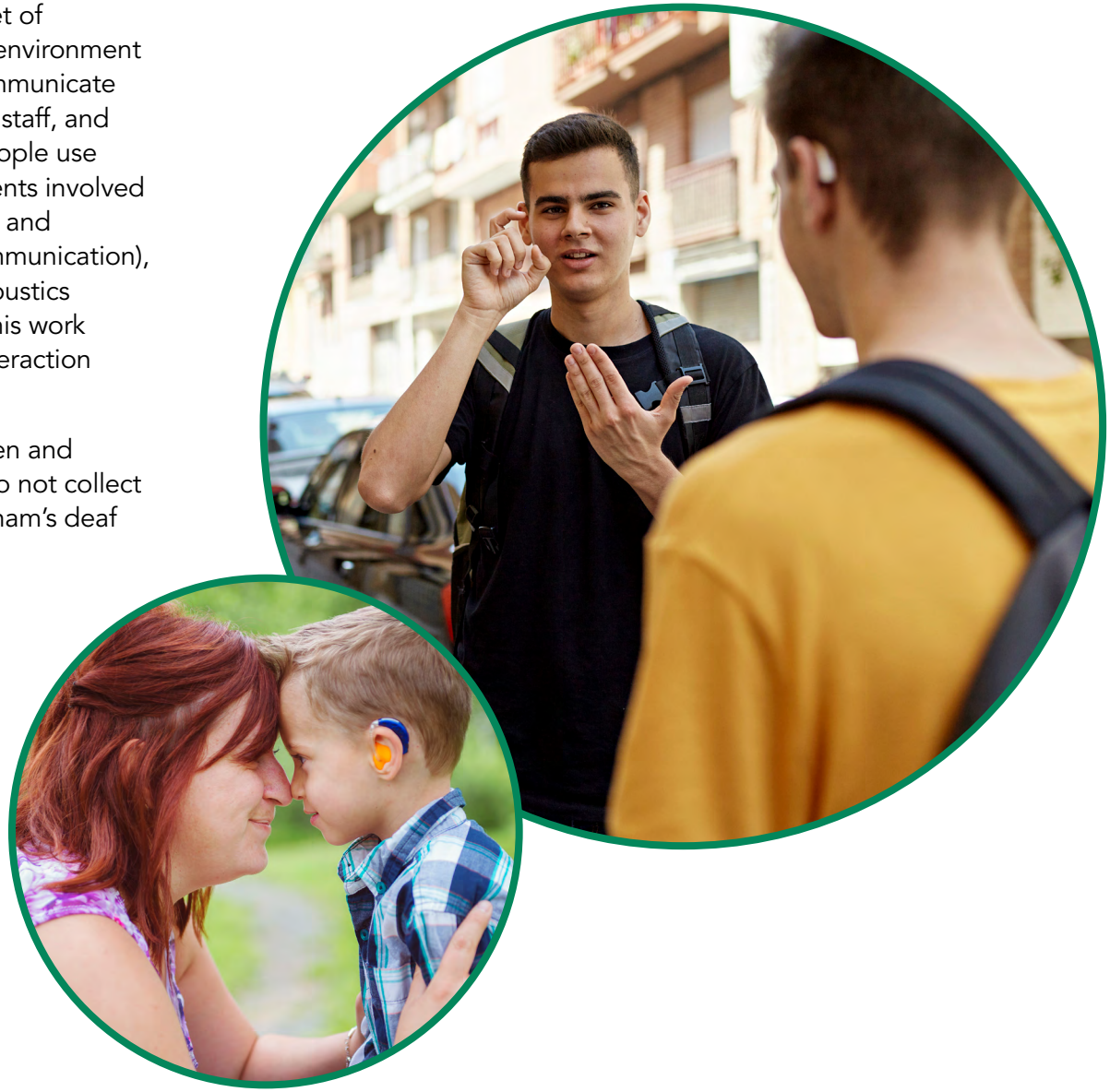
From the research findings and world news, there is evidence that:

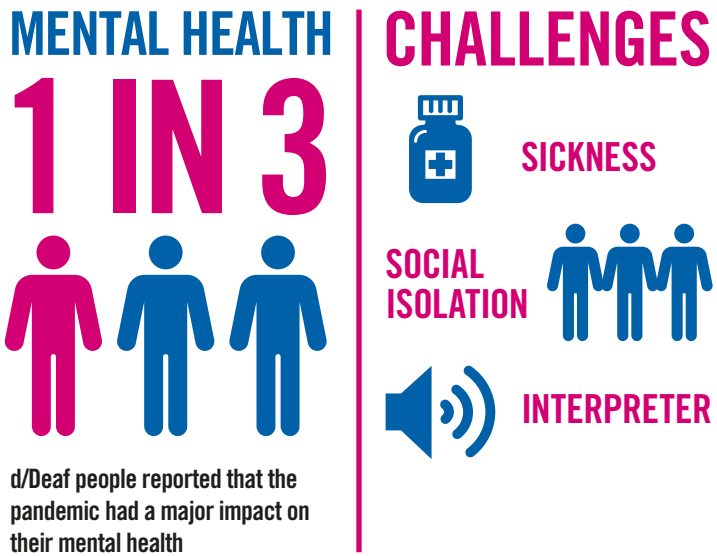
- Third Force News discusses the challenges faced by the Deaf community with changes in technology to tackle climate change. Electric cars and buses to reduce emissions are quieter, posing pedestrian safety for those with hearing loss. In addition, the shift to telephone or video communication may cause people with hearing loss to be left out, which may mean their views are left unaccounted for.[239]

- Findings about environmental justice reported that policies to mitigate the impacts of environmental degradation often do not consider disability rights. For example, during climate change-related emergencies, people who are Deaf or blind may not have equal access to information. People with disabilities should be represented in community land use and natural resource planning. Still, planners may fail to ensure people are reached and invited to the table. For these reasons, people with disabilities bring a valuable perspective to be environmental and social justice movements that broaden and enrich these movements' agendas.[240]

- In 2009, The Gallaudet University in Washington produced a set of 'DeafSpace' guideline that address those aspects of the urban environment that inhibit communication and mobility among those who communicate with their hands. They worked with university faculty, students, staff, and others to research and codify how deaf and hard of hearing people use public spaces. The resulting document details five major elements involved in deaf interactions with the built environment, including space and proxemics (the study of how space is used in interpersonal communication), sensory reach, mobility and proximity, light and colour, and acoustics and electromagnetic interferences. The social implications of this work are profound, promoting and supporting visual contact and interaction between people.[241]

There is limited evidence to understand the contribution to a green and sustainable environment among Deaf people. Local authorities do not collect demographic data at a disability level, so we cannot link Birmingham's deaf population's access to green spaces.





2.10 Mitigating the Legacy of COVID-19

Mitigating the Legacy of COVID-19 key findings:

- The biggest issues of COVID-19 for people with Deafness and hearing loss were social isolation, face masks, lack of access to healthcare, sickness or poor health and a lack of access to interpreters.
- Among the Deaf, people who identified as people of colour were more likely (compared white people) to perceive a higher risk of COVID-19 adverse consequences.
- Face masks and coverings made it harder for Deaf and young children to use any residual hearing that they may have.
- 74% of Deaf people reported difficulties accessing healthcare during the pandemic.
- 36% Deaf people had more trouble than usual getting medication during the pandemic.
- 1 in 3 reported that the pandemic had a major impact on their mental health, with most of these experiencing anxiety (61%), stress and worry (60%) and depression (35%).

50% of Deaf people report symptoms of long-COVID.[242] 80% of the Deaf community said that the pandemic had had a negative impact on their mental health.[243] Deaf and hard of hearing people who described health as poor or who had certain co-morbidities were at higher risk for underestimating COVID-19's adverse consequences.[244]

From the published evidence research:

- Deaf people were more likely to decline treatment compared with the general population. Having mild hearing loss increased the chances of declining treatment by 3.5 times. Having moderate hearing loss increased the chances of declining treatment by 14.9 times. High tinnitus annoyance increased the likelihood of declining telehealth appointments by 1.4 times.[245]
- 78% of the community felt like suitable adjustments had not been made during the pandemic, while only 11% had access to transparent masks.[246] No guidelines were given for the correct use of PPE for those with hearing aids suggesting advice is not inclusive of Deaf and hearing loss communities. Moreover, masks with ear loopholes are not suitable for those with hearing aids.[247]
- 89% worried about communicating with staff if hospitalised with COVID-19.[248] Deaf people reported they would have liked to see transparent face masks for all key workers.[249] Over three-quarters of professionals were worried about making a mistake in treatment due to communication difficulties.[250]
- Similar to many services, some organisations offering services to Deaf people temporarily closed during the pandemic. 20% reported lack of access to Deaf services/organisations.[251]
- GP consultation services changed from face-to-face to telephone and video consultation since the start of the COVID pandemic. The use of telephone consultation among Deaf rose from 30% pre-COVID to 98% at the end of survey completion. Many stated they believed it would make no difference on satisfaction/quality of care. 86% said that they would be happy to still use telephone consultation. The use of telephone consultation rose from 30% pre-COVID to 98% at the end of survey completion. 86% said that they would be happy to still use telephone consultation.[252] In the worse hearing group, performance in video calls is similar to telephone calls but worse than face-to-face. Subtitling video calls is appreciated amongst the Deaf and hearing loss community.[253]
- Deaf and hard of hearing people who identified as people of colour were more likely (compared to white people) to perceive a higher risk of COVID-19 adverse consequences.[254]
- Regarding accessibility, 78% of Deaf people found COVID-19 information shared by the government to be either partly or entirely accessible.[255] Most were more likely to get COVID-19 information from internet resources vs healthcare providers.[256] This can present issues of misinformation that may impede the safety of those with hearing loss, or Deafness
- Three-quarters of respondents were worried about their productivity by working from home.[257] Specific challenges have been noted for people who are Deaf or have hearing loss when working from home. Those with hearing loss have cited feeling embarrassment, stress or fear that it might affect their job prospects in needing adjustments for home working amid the lockdown. 56% of Deaf people were unaware of the financial support available for some people who had to isolate due to COVID-19.[258]
- Since the start of the pandemic, Deaf children had to use alternative forms of communication, such as text messages, dictation or translation apps and using face masks that have a clear panel where the mouth can be seen.[259]
- Deaf people who sign were more likely to have shielded or had someone in their home shield due to the pandemic (39% versus 26% normal hearing). Deaf people were also more likely to have avoided making a GP appointment (56% compared to 42%).[260]

Due to the lack of COVID-19 mortality statistics at a sensory disability level, there is no evidence to understand the impact of adverse outcomes among Deaf communities caused by COVID-19 in Birmingham or nationally.

3.0 Conclusion

This report has highlighted the inequalities that exist within the Deaf and hearing loss community within the UK, it has also highlighted the significant gaps in data and evidence meaning that many of these inequalities may be under-reported and poorly understood.

This Community Health Profile aims to support the Council and stakeholders to understand better the inequalities affecting the Deaf and hearing loss community.

There is consistent evidence showing that:

- There are more adverse birth outcomes occurrences among Deaf and hard of hearing women, including preterm birth.
- Deaf children are more vulnerable to abuse and are at an increased risk of experiencing mental health.
- Deaf women are twice as likely to go through domestic violence than hearing women.
- More Deaf people are obese than the general population.
- More deaf people report communication barriers and lack of knowledge about deaf people as the reasons for not engaging with health services.
- Loss of earnings is a significant component of the overall costs of hearing loss.
- There is a significant lack of standardised data collection in England meaning that inequalities affecting deaf communities is poorly understood beyond individual research studies.

4.0 Appendix

Appendix 1: Inclusion and exclusion criteria.

Age group	Language	Publication type	Availability	Time limit
Any age groups	English Language	Pieces of peer reviewed and high-quality grey literature academic or scientific literature, whether a journal article, report or documents relating to the specified health and wider determinants issues among people who are deaf or with hearing loss in the UK Publications exclusive to people who are deaf or hearing loss Publications with at least 40% Deaf and hearing Loss population sample	Full text articles include DOI/HTML links	Published literature from the year 2000

Appendix 2: Searching key words.

Age group	Language	Publication type	Availability	Time limit
General: "Deaf" OR "hearing Loss" AND "children" OR "young people" OR "youth" OR "child" OR "babies" OR "childhood" OR "infants" Specific: "Deaf" AND "vaccination" OR "vaccine" OR "measles" OR "obesity" OR "health check" OR "maternity care" OR "maternal" OR "home" "breastfeeding" OR "visits" OR "bullying" OR "fostering" OR "care" OR "social care" OR "linguistic deprivation" OR "child poverty"	General: "Deaf" OR "hearing Loss" AND "mental health" OR "mental" OR "wellbeing" OR "wellness" Specific: "Deaf" AND "mental illness" OR "depression" OR "suicide" AND "prevalence" OR "service" OR "access" OR "balance" OR "engagement" OR "hospital admission" "shame" OR "stigma" OR "stress" OR "racial harassment" OR "disability" OR "alcohol" OR "drinking" OR "abstention" OR "drinking frequency" OR "drinking intensity" OR "alcohol problem" OR "alcohol support" OR "alcohol consumption" OR "substance abuse" OR "addiction" OR "tobacco" OR "cannabis" OR "recreational drugs" OR "drugs" OR "smoking" OR drug use"	General: "Deaf" "OR "hearing Loss" AND "food" OR "diet" OR "obesity" OR "meat" OR "vegetarian" Specific: "Deaf" OR "hearing Loss" AND "common food" OR "festival food" OR "dietary laws" OR "food practices" OR "traditional food" OR "obesity" OR "physical activity" OR "overweight" OR "BMI" OR "weight" "Waist Height Ratio"	General: "Deaf" OR "hearing Loss" AND "physical activity" OR "activity" OR "exercise" Specific "Deaf" OR "hearing Loss" AND "vigorous exercise" OR "moderate exercise" OR "walking" OR "running" OR "sports" OR "cardiovascular" OR "elderly exercise" OR "health promotion"	General: "Deaf" OR "hearing Loss" AND "working" OR "education" OR "housing" OR "deprivation" OR "living" OR "economic activity" OR "general health" OR "health" OR "illness" OR "disability" OR "long term disability" OR "long-standing health" Specific: "Deaf" OR "hearing Loss" AND "apprenticeships" OR "Level 1,2,3,4 qualifications" OR "degree" OR "NEET" OR "secondary school" OR "primary school" OR "full-time education" OR "profession" OR "career choice" OR "household income" OR "homeownership" OR "Bad health" OR "learning disability" OR "hearing impairment" OR "communication impairment" OR "domestic violence" OR "abuse"

Appendix 3: Raw data table of Figure 2: Disabling hearing loss across the world of people aged 15 years and older.

Region	Percentage of disabling hearing loss
Latin America and Caribbean	9%
East Asia	22%
High income	11%
Central/Eastern Europe and Central Asia	9%
Sub Saharan Africa	9%
Middle East and North Africa	3%
South Asia	27%
Asia pacific	10%

Appendix 4: Raw Data Table of Figure 3: Global prevalence of hearing loss according to the World Bank income group (in Millions).

Income Group	Prevalence of hearing Loss (in Millions)
Lower Middle Income	150.5
Upper Middle Income	166.4
Low Income	23.4
High Income	7.5
Sub Saharan Africa	9%
Middle East and North Africa	3%
South Asia	27%
Asia pacific	10%

Appendix 5: Raw Data Table of Figure 4: Predictions of people with some hearing loss in Birmingham from 2020 to 2040.

Age Group in Birmingham Predicted to Have Some hearing Loss	2020	2025	2030	2035	2040
People aged 18-24	2,537	2,585	2,813	2,875	2,722
People aged 25-34	3,964	4,040	3,895	3,987	4,287
People aged 35-44	6,974	7,293	7,524	7,691	7,379
People aged 45-54	16,391	15,851	15,833	16,610	17,121
People aged 55-64	27,870	30,206	30,006	29,038	29,218
Total population aged 18-64	57,736	59,975	60,070	60,201	60,729

Appendix 6: Education attainment

Appendix 6.1 DoE figures on attainment for deaf children in 2019: Average attainment 8 score trend for Deaf children by ethnicity.

Year	All Deaf children	White Deaf children	Black Deaf children	Asian Deaf children
2019	38.6	39.2	32.9	37
2018	39.2	40.1	33.3	34.8
2017	37.5	38.6	32.7	35.1
2016	42.5	43.5	37.5	40.1

Appendix 6.2 DoE figures on attainment for deaf children in 2019: Gap in Attainment 8 scores between all and Deaf children, by ethnicity.

Year	Gap between all children + all Deaf children	Gap between all White children and Deaf White children	Gap between all Black children and Deaf Black children	Gap between all Asian children and Deaf Asian children
2019	38.6	39.2	32.9	37
2018	39.2	40.1	33.3	34.8
2017	37.5	38.6	32.7	35.1
2016	42.5	43.5	37.5	40.1

Appendix 6.3 DoE figures on attainment for deaf children in 2019: Attainment 8 scores in 2019 by characteristics.

Pupil Characteristics	2019 Attainment score
All children + Asian	51.2
All children + not eligible for free school meals	48.6
All children + who speak EAL (English as 2nd language) (English as 2nd language)	47.6
All children + White	46.1
All children	46.7
All children + who speak English	46.6
All children + Black	44.9
Deaf children + not eligible for free school meals	41.1
Deaf children + who speak English	40.0
Deaf children + White	39.2
All Deaf children	38.6
Deaf children + Asian	37.0
All children + eligible for free school meals	34.9
Deaf children + Black	32.9
Deaf children + who speak EAL	32.0
Deaf children + eligible for free school meals	21.3

Appendix 7: Raw Data Table of Figure 5: Predictions of people with severe hearing loss in Birmingham from 2020 to 2040.

Age Group in Birmingham Predicted to Have Severe hearing Loss	2020	2025	2030	2035	2040
People aged 25-34	467	503	480	460	509
People aged 35-44	804	826	861	845	815
People aged 45-54	709	685	680	715	737
People aged 55-64	1,541	1,681	1,677	1,621	1,620
Total population aged 18-64	3,520	3,694	3,698	3,641	3,681
Total population aged 18-64	57,736	59,975	60,070	60,201	60,729

Appendix 8: Raw Data Table of Figure 6: Estimated prevalence of mild to profound hearing loss (25dbHL or more) in the adult population in Birmingham compared to Regional and National averages.

Region	2015	2020	2025	2030	2035
Birmingham	17%	18%	18%	19%	20%
West Midlands	21%	22%	23%	24%	25%
England	21%	22%	23%	24%	25%

Appendix 9: Raw Data Table of Figure 7: The Percentage of Deaf children in the UK by age group and schooling level.

School Age Group	Percentage of Deaf Children
Post-16 to 19	10
Secondary Age	34
Primary Age	42
Early Years and Pre School	14

Appendix 10: Raw Data Table of Figure 8: Emergency Hospital Admissions for Deafness and hearing Loss by Ward 2019-2020.

Constituency	Ward	Directly Standardised Rate
Sutton Coldfield	Sutton Mere green	No Difference
Sutton Coldfield	Sutton Roughley	No Difference
Sutton Coldfield	Sutton Four Oaks	Lower
Sutton Coldfield	Sutton Vesey	No Difference
Sutton Coldfield	Sutton Trinity	Lower
Sutton Coldfield	Sutton Reddicap	No Difference
Sutton Coldfield	Sutton Wylde Green	Lower
Sutton Coldfield	Sutton Walmley and Minworth	Lower
Erdington	Kingstanding	Higher
Erdington	Perry Common	No Difference
Erdington	Stockland green	No Difference
Erdington	Erdington	No Difference
Erdington	Gravelly Hill	No Difference
Erdington	Pype Hayes	No Difference
Erdington	Castle Vale	No Difference
Perry Barr	Oscott	No Difference
Perry Barr	Perry Barr	No Difference
Perry Barr	Handsworth Wood	No Difference
Perry Barr	Handsworth	No Difference
Perry Barr	Lozells	No Difference
Perry Barr	Birchfield	No Difference
Ladywood	Nechells	No Difference
Ladywood	Aston	No Difference
Ladywood	Newtown	No Difference
Ladywood	Soho and Jewellery Quarter	No Difference
Ladywood	Holyhead	No Difference
Ladywood	North Edgbaston	No Difference
Ladywood	Ladywood	No Difference
Ladywood	Bordesley and Highgate	No Difference
Ladywood	Bordesley Green	No Difference
Hodge Hill	Alum Rock	No Difference
Hodge Hill	Ward End	No Difference
Hodge Hill	Bromford and Hodge Hill	No Difference
Hodge Hill	Shard End	No Difference
Hodge Hill	Heartlands	No Difference
Hodge Hill	Small Heath	No Difference
Hodge Hill	Glebe Farm and Tile Cross	Higher
Edgbaston	Edgbaston	No Difference
Edgbaston	Harborne	No Difference
Edgbaston	Quinton	No Difference
Edgbaston	Bartley Green	No Difference
Yardley	Yardley East	Higher
Yardley	Garretts green	Higher
Yardley	Sheldon	No Difference
Yardley	Yardley West and Stechford	No Difference
Yardley	South Yardley	No Difference

Constituency	Ward	Directly Standardised Rate
Yardley	Tyseley and Hay Mills	No Difference
Yardley	Acocks Green	No Difference
Hall Green	Balsall Heath West	No Difference
Hall Green	Sparkbrook and Balshall Heath East	No Difference
Hall Green	Sparkhill	No Difference
Hall Green	Moseley	No Difference
Hall Green	Hall Green North	No Difference
Hall Green	Hall Green South	No Difference
Selly Oak	Weoley and Selly Oak	No Difference
Selly Oak	Bournbrook and Selly Park	No Difference
Selly Oak	Bournville and Cotteridge	No Difference
Selly Oak	Stirchley	No Difference
Selly Oak	Brandwood and King's Heath	No Difference
Selly Oak	Druids Heath and Monyhull	No Difference
Selly Oak	Billesley	No Difference
Selly Oak	Highter's Heath	No Difference
Northfield	Allens Cross	No Difference
Northfield	Northfield	No Difference
Northfield	Frankley Great Park	No Difference
Northfield	Rubery and Rednal	No Difference
Northfield	Longbridge and West Heath	Higher
Northfield	King's Norton North	No Difference
Northfield	King's Norton South	No Difference

Appendix 11: Raw Data Table of Figure 9: People claiming disability living allowance due to having a Deaf condition for 5 years and over, in Birmingham between 2011 and 2018 by age group.

Age group	2011	2012	2013	2014	2015	2016	2017	2018
65 and Over	60	60	80	80	90	90	90	70
50 to 64	110	120	140	160	160	150	90	30
25 to 49	260	260	280	290	270	270	160	70
16 to 24	130	140	150	160	110	80	50	20
Under 16	190	190	200	200	200	210	220	210
All Ages Across England	27,190	28,300	29,540	30,860	31,140	29,250	23,660	19,960

Appendix 12: Raw Data Table of Figure 10: People 18+ with hearing loss receiving adult social care packages from Birmingham City Council up to 14/07/2021 by ward.

Ward	Count
Yardley East	9
Sutton Wylde Green	11
Soho & Jewellery Quarter	9
Pype Hayes	9
Longbridge and West Heath	16
Frankley Great Park	9
Castle Vale	11
Bournville & Cotteridge	9
Acocks Green	8

Appendix 13: List of Organisations supporting the Deaf and hearing Loss community

Organisation	Background	Region	Contact Address
East Birmingham & Solihull Hard of Hearing Club	For people who have experience/d issues with hearing loss.	Local	The Baptist Church, Timberley Lane, Shard End, Birmingham B34 7EH alma@usrussells.co.uk
BID Services	BID Services is a charity working with children and adults with hearing loss, sight loss or both.	UK	BID Services (Head office) Deaf Cultural Centre, Ladywood Road, Birmingham B16 8SZ info@bid.org.uk
National Deaf Children's Society	Leading charity for deaf children.	UK	Birmingham and District Deaf Children's Society B42 2HW birmingham@ndcsgroup.org.uk
British Deaf Association	Support people with inclusive information, services, and support.	UK	St John's Deaf Community Centre, 258 Green Lanes, London N4 2HE bda@bda.org.uk
Birmingham Deaf Community Group	Community group, offering support and advice.	Birmingham	N/A
Deaf Plus	Provide information and advice to community.	Birmingham	508/509 Greenhouse, Custard Factory, Gibb Street B9 4AA Trent.S.Beasley@deafplus.org
Hear Together	Support people with hearing loss across UK.	UK	info@heartogether.org.uk
The Sign Life	Work to gain equal access, support for hearing impaired.	Birmingham	info@thesignlife.co.uk
RNID	Aim to make life inclusive for those with hearing loss.	UK	information@rnid.org.uk
Islam for the Deaf	Community centre for the hearing impaired of Islam faith.	Birmingham/ UK	132 Bradford Street, Digbeth Birmingham West Midlands B12 0NS
Royal Association for Deaf People	Offer support services and wellbeing support for those with hearing impairments.	UK	info@royaldeaf.org.uk
UK Deaf Sport	Work towards ensuring physical activity is inclusive and inspire people with hearing difficulties to get involved in physical activity and sport.	UK	N/A
Deaf and Equal	aimed at sectors that have a poor reputation for discriminating against Deaf people by either refusing access or refusing to provide information in an accessible format.	UK	4 Arundel Close, Passfield, Liphook, Hampshire GU30 7RW
UK Hearing Conservation Association	Aim to prevent and educate on hearing loss in UK	UK	28 Rushwood Park, Standish, Wigan WN6 0GH enquiries@hearingconservation.org.uk

Organisation	Background	Region	Contact Address
Hearing Dogs for Deaf People	Train dogs to alert deaf people to sounds they cannot hear, work to reduce loneliness	UK	The Grange, Wycombe Road, Saunderton, Princes Risborough, Buckinghamshire HP27 9NS info@hearingdogs.org.uk
Sign Health	Provide Psychological Therapy, Domestic Abuse Support and Social Care services.	UK	CAN Mezzanine Ltd, 49-51 East Road, London N1 6AH
Hawthorn Primary School	Provide Hearing Resource Base to assist parents, families and students on language and communication skills.	Local	Hawthorn Primary School, Hawthorn Rd, Birmingham, West Midlands B44 8QR enquiry@hawthorn.bham.sch.uk
Percy Shurmer Primary Academy – Deaf Learning Base	Provide Hearing Resource Base to assist parents, families and students on language and communication skills.	Local	Longmore Street, Balsall Heath, Birmingham, B12 9ED contactus@percyshurmeracademy.org
Bournville School – Hearing Impaired Resource Base	Provide Hearing Resource Base to assist parents, families and students on language and communication skills.	Local	Bournville School, Hay Green Lane, Birmingham, West Midlands, B30 1SH post@bournville.fmat.co.uk
Bordesley Green Girls' School and Sixth Form	Provide Hearing Resource Base to assist parents, families and students on language and communication skills.	Local	Bordesley Green Road, Birmingham, West Midlands B9 4TR
Small Heath Leadership Academy	Provide Hearing Resource Base to assist parents, families and students on language and communication skills.	Local	Small Heath Leadership Academy, Muntz Street, Small Heath Birmingham B10 9RX info@smallheath.staracademies.org
Longwill School	Provide Hearing Resource Base to assist parents, families and students on language and communication skills.	Local	Longwill School, Bell Hill, Birmingham, West Midlands B31 1LD enquiry@longwill.bham.sch.uk
Braidwood School	Provide Hearing Resource Base to assist parents, families and students on language and communication skills.	Local	Braidwood Trust School for the Deaf, Bromford Road, Birmingham, West Midlands B36 8AF enquiry@braidwood.bham.sch.uk

5.0 Acknowledgements

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6.0. References

1 *World Health Organisation. World report on hearing 2021 [Available from: https://www.who.int/publications/i/item/world-report-on-hearing.*

2 *Deafax. What are big D and little D? 2021 [Available from: https://www.deafax.org/single-post/2016/06/08/what-are-big-d-and-little-d.*

3 *NHS England. Joint strategic needs assessment guidance 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

4 *Health and Safety Executive. Noise induced hearing loss in Great Britain 2021 [Available from: https://www.hse.gov.uk/statistics/causdis/deafness/index.htm.*

5 *National Institute for Health and Care Excellence. hearing Loss in adults 2019 [Available from: https://cks.nice.org.uk/topics/hearing-loss-in-adults/.*

6 *National Institute for Health and Care Excellence. What causes hearing loss? 2019 [Available from: https://cks.nice.org.uk/topics/hearing-loss-in-adults/background-information/causes/*

7 *National Institute for Health and Care Excellence. What causes hearing loss? 2019 [Available from: https://cks.nice.org.uk/topics/hearing-loss-in-adults/background-information/causes/.*

8 *MESHGuides. Understanding hearing loss 2021 [Available from: http://www.meshguides.org/guides/node/1948?n=1933.*

9 *British Society of Audiology. A useful set of audiology and hearing loss frequently asked questions 2021 [Available from: https://www.thebsa.org.uk/public-engagement/faqs/.*

10 *NCBI. hearing Loss and deafness: Normal hearing and impaired hearing. Institute for Quality and Efficiency in Health Care, . 2017.*

11 *Healthy Hearing. Understanding high-frequency hearing loss. Available from: High-frequency hearing loss: What is it and how is it treated? 2020 [Available from: https://www.healthyhearing.com/report/52448-Understanding-high-frequency-hearing-loss#:~:text=Treatment%20options%20for%20high%2Dfrequency%20hearing%20loss&text=Typically%2C%20the%20best%20type%20of,that%20you%20still%20hear%20naturally.*

12 *Audiology Research. Low frequency hearing loss: Symptoms, causes and treatments 2022 [Available from: https://www.audiologyresearch.org/low-frequency-hearing-loss/.*

13 *MESHGuides. Understanding hearing loss 2021 [Available from: http://www.meshguides.org/guides/node/1948?n=1933.*

14 *Healthy Hearing. Understanding high-frequency hearing loss. Available from: High-frequency hearing loss: What is it and how is it treated? 2020 [Available from: https://www.healthyhearing.com/report/52448-Understanding-high-frequency-hearing-loss#:~:text=Treatment%20options%20for%20high%2Dfrequency%20hearing%20loss&text=Typically%2C%20the%20best%20type%20of,that%20you%20still%20hear%20naturally.*

15 *NHS. Overview. hearing Loss 2018 [Available from: https://www.nhs.uk/conditions/hearing-loss/.*

16 *World Health Organisation. Deafness and hearing loss 2021 [Available from: https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss#:~:text=Over%205%25%20of%20the%20world's,will%20have%20disabling%20hearing%20loss.*

17 *son S, Attrill M, Critchley T, Clements D, Hornsby J, Mullen C, et al. Safeguarding Deaf Children: A Multi-agency Focus on Actions for Change. Practice. 2018,30(3):163-86.*

18 *Deafax. What are big D and little D? 2021 [Available from: https://www.deafax.org/single-post/2016/06/08/what-are-big-d-and-little-d.*

19 *NHS. Overview. hearing Loss 2018 [Available from: https://www.nhs.uk/conditions/hearing-loss/.*

20 *Deafax. What are big D and little D? 2021 [Available from: https://www.deafax.org/single-post/2016/06/08/what-are-big-d-and-little-d.*

21 *NHS. Overview. hearing Loss 2018 [Available from: https://www.nhs.uk/conditions/hearing-loss/.*

22 *NHS. Ménière's disease 2020 [Available from: https://www.nhs.uk/conditions/menieres-disease/.*

23 *World Health Organisation. Deafness and hearing loss 2021 [Available from: https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss#:~:text=Over%205%25%20of%20the%20world's,will%20have%20disabling%20hearing%20loss.*

24 *Deafness Research UK. Deafness - the facts 2009 [Available from: https://www.attend.org.uk/sites/default/files/deafness-the-facts.pdf.*

25 *Hearing Link. Untreated hearing loss costs UK £25.5b per year, new report claims 2019 [Available from: https://www.hearinglink.org/news/201903/untreated-hearing-loss-costs-uk-25-5b-per-year-new-report-claims/.*

26 *Hear-it.org. Evaluation of the social and economic costs of hearing impairment 2006 [Available from: https://www.hear-it.org/sites/default/files/multimedia/documents/Hear_It_Report_October_2006.pdf.*

27 *Hearing Link. Untreated hearing loss costs UK £25.5b per year, new report claims 2019 [Available from: https://www.hearinglink.org/news/201903/untreated-hearing-loss-costs-uk-25-5b-per-year-new-report-claims/.*

28 *NHS England. Joint strategic needs assessment guidance 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

29 *Deafness Research UK. Deafness - the facts 2009 [Available from: https://www.attend.org.uk/sites/default/files/deafness-the-facts.pdf.*

30 *Centres for Disease Control and Prevention. How people with hearing loss learn language 2020 [Available from: https://www.cdc.gov/ncbddd/hearingloss/language.html.*

31 *Centres for Disease Control and Prevention. How people with hearing loss learn language 2020 [Available from: https://www.cdc.gov/ncbddd/hearingloss/language.html.*

32 *Brodie A, Smith B, Ray J. The impact of rehabilitation on quality of life after hearing loss: a systematic review. Eur Arch Otorhinolaryngol. 2018,275(10):2435-40.*

33 *Centres for Disease Control and Prevention. How people with hearing loss learn language 2020 [Available from: https://www.cdc.gov/ncbddd/hearingloss/language.html.*

34 *ear-it.org. Evaluation of the social and economic costs of hearing impairment 2006 [Available from: https://www.hear-it.org/sites/default/files/multimedia/documents/Hear_It_Report_October_2006.pdf.*

35 *World Health Organisation. Deafness and hearing loss 2021 [Available from: https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss#:~:text=Over%205%25%20of%20the%20world's,will%20have%20disabling%20hearing%20loss.*

36 *Wilson S, Attrill M, Critchley T, Clements D, Hornsby J, Mullen C, et al. Safeguarding Deaf Children: A Multi-agency Focus on Actions for Change. Practice. 2018,30(3):163-86.*

37 *World Health Organisation. World report on hearing 2021 [Available from: https://www.who.int/publications/i/item/world-report-on-hearing.*

38 *Medline Plus. Age-related hearing loss 2021 [Available from: https://medlineplus.gov/ency/article/001045.htm.*

39 *Hear-it.org. Evaluation of the social and economic costs of hearing impairment 2006 [Available from: https://www.hear-it.org/sites/default/files/multimedia/documents/Hear_It_Report_October_2006.pdf.*

40 *Hearing Link. Facts about deafness and hearing loss 2021 [Available from: https://www.hearinglink.org/your-hearing/about-hearing/facts-about-deafness-hearing-loss/.*

41 *RNID. Facts and figures 2021 [Available from: https://rnid.org.uk/about-us/research-and-policy/facts-and-figures/.*

42 *BSL Zone. Research into the Deaf audience in the UK, 2015 [Available from: https://www.bslzone.co.uk/application/files/9114/5320/1729/Exec_Summary_-_Research_into_the_Deaf_Audience_Jan_2016.pdf.*

43 *Hearing Link. Facts about deafness and hearing loss 2021 [Available from: https://www.hearinglink.org/your-hearing/about-hearing/facts-about-deafness-hearing-loss/.*

44 *Consortium for Research in Deaf Education. 2019 UK-wide summary. CRIDE report on 2018/2019 survey on educational provision for deaf children 2019 [Available from: https://www.ndcs.org.uk/media/6550/cride-2019-uk-wide-report-final.pdf.*

45 *Consortium for Research in Deaf Education. 2019 UK-wide summary. CRIDE report on 2018/2019 survey on educational provision for deaf children 2019 [Available from: https://www.ndcs.org.uk/media/6550/cride-2019-uk-wide-report-final.pdf.*

46 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

47 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

48 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

49 *Consortium for Research in Deaf Education. 2019 UK-wide summary. CRIDE report on 2018/2019 survey on educational provision for deaf children 2019 [Available from: https://www.ndcs.org.uk/media/6550/cride-2019-uk-wide-report-final.pdf.*

50 *Gov.uk. NHS screening programmes: information for GPs and practice staff 2021 [Available from: https://www.gov.uk/guidance/nhs-screening-programmes-information-for-gps-and-practice-staff.*

51 *Tattersall H, Young A. Deaf children identified through newborn hearing screening: parents' experiences of the diagnostic process. Child Care Health Dev. 2006,32(1):33-45.*

52 *Consortium for Research in Deaf Education. 2019 UK-wide summary. CRIDE report on 2018/2019 survey on educational provision for deaf children 2019 [Available from: https://www.ndcs.org.uk/media/6550/cride-2019-uk-wide-report-final.pdf.*

53 *All4Maternity. Inequalities AND unreasonable adjustments: Are D/deaf women being given a detrimental care pathway in the name of risk assessment? 2020 [Available from: https://www.all4maternity.com/inequalities-and-unreasonable-adjustments-are-d-deaf-women-being-given-a-detrimental-care-pathway-in-the-name-of-risk-assessment/?print=pdf.*

54 *Jackson M. Deafness and antenatal care: Understanding issues with access. British Journal of Midwifery. 2011,19(5):280-4.*

55 *Merida Associates BS, Birmingham City Council, . Seldom Heard conversations about pregnancy. Deaf and hard of hearing community. 2021*

56 *Mitra M, McKee MM, Akobirshoev I, Valentine A, Ritter G, Zhang J, et al. Pregnancy, Birth, and Infant Outcomes Among Women Who Are Deaf or Hard of Hearing. Am J Prev Med. 2020,58(3):418-26.*

57 *Tambe P, Sammons HM, Choonara I. Why do young children die in the UK? A comparison with Sweden. Archives of Disease in Childhood. 2015,100(10):928.*

58 *Kubba H, MacAndie C, Ritchie K, MacFarlane M. Is deafness a disease of poverty? The association between socio-economic deprivation and congenital hearing impairment. Int J Audiol. 2004,43(3):123-5.*

59 *Mitra M, McKee MM, Akobirshoev I, Valentine A, Ritter G, Zhang J, et al. Pregnancy, Birth, and Infant Outcomes Among Women Who Are Deaf or Hard of Hearing. Am J Prev Med. 2020,58(3):418-26.*

60 *Cho SWK, T. . Implications of childhood obesity for the otorhinolaryngologist. ENT J. 2019,12(1):31-4.*

61 *Dair J, Ellis MK, Lieberman LJ. Prevalence of overweight among deaf children. Am Ann Deaf. 2006,151(3):318-26.*

62 *Dair J, Ellis MK, Lieberman LJ. Prevalence of overweight among deaf children. Am Ann Deaf. 2006,151(3):318-26.*

63 *Kubba H, MacAndie C, Ritchie K, MacFarlane M. Is deafness a disease of poverty? The association between socio-economic deprivation and congenital hearing impairment. Int J Audiol. 2004,43(3):123-5.*

64 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

65 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

66 *National Institute for Health and Care Excellence. hearing Loss in adults 2019 [Available from: https://cks.nice.org.uk/topics/hearing-loss-in-adults/.*

67 *Medline Plus. Age-related hearing loss 2021 [Available from: https://medlineplus.gov/ency/article/001045.htm.*

68 *The University of Manchester. Social care services are failing deaf children, says report 2010 [Available from: https://www.manchester.ac.uk/discover/news/social-care-services-are-failing-deaf-children-says-report/.*

69 *The University of Manchester. Social care services are failing deaf children, says report 2010 [Available from: https://www.manchester.ac.uk/discover/news/social-care-services-are-failing-deaf-children-says-report/.*

70 *Wilson S, Attrill M, Critchley T, Clements D, Hornsby J, Mullen C, et al. Safeguarding Deaf Children: A Multi-agency Focus on Actions for Change. Practice. 2018,30(3):163-86.*

71 *Activity Alliance. UK Deaf Sport supports Deaf Awareness Week 2018 [Available from: https://www.activityalliance.org.uk/news/3988-uk-deaf-sport-supports-deaf-awareness-week.*

72 *Young A, McCracken W, Tattersall H, Bamford J. Interprofessional working in the context of newborn hearing screening: Education and Social Services compare challenges. J Interprof Care. 2005,19(4):386-95.*

73 *The University of Manchester. Social care services are failing deaf children, says report 2010 [Available from: https://www.manchester.ac.uk/discover/news/social-care-services-are-failing-deaf-children-says-report/.*

74 *Wilson S, Attrill M, Critchley T, Clements D, Hornsby J, Mullen C, et al. Safeguarding Deaf Children: A Multi-agency Focus on Actions for Change. Practice. 2018,30(3):163-86.*

75 *National Deaf Children's Society. Right from the start. A campaign to improve early years support for deaf children 2016 [Available from: https://www.ndcs.org.uk/media/1283/right_from_the_start_campaign_report_final.pdf.*

76 *National Deaf Children's Society. NDCS note on Department for Education figures on attainment for deaf children in 2020 (England) 2021 [Available from: NDCS note on Department for Education figures on attainment for deaf children in 2020 (England).*

77 *National Deaf Children's Society. Deaf children from ethnic minority groups 2021 [Available from: https://www.ndcs.org.uk/media/6795/ndcs-literature-review-deaf-children-from-ethnic-minority-groups-final.pdf.*

78 *National Deaf Children's Society. Just a third of deaf students achieve two A-levels 2021 [Available from: https://www.ndcs.org.uk/about-us/news-and-media/latest-news/just-a-third-of-deaf-students-achieve-two-a-levels/.*

79 *Leicestershire Centre for Integrated Living. Deaf pupils in England struggle at every stage of school 2019 [Available from: http://www.lcil.org.uk/news/items/deaf-pupils/.*

80 *National Deaf Children's Society. Deaf pupils failed by education system for fifth consecutive year 2020 [Available from: https://www.ndcs.org.uk/about-us/news-and-media/latest-news/deaf-pupils-failed-by-education-system-for-fifth-consecutive-year/.*

81 *National Deaf Children's Society. Deaf pupils achieve an entire GCSE grade less for sixth year running 2021 [Available from: https://www.ndcs.org.uk/about-us/news-and-media/latest-news/deaf-pupils-achieve-an-entire-gcse-grade-less-for-sixth-year-running/.*

82 *British Deaf Association Scotland. Submission to the Scottish Parliament. Attainment of school pupils with a sensory impairment 2015 [Available from: https://bda.org.uk/wp-content/uploads/2017/03/BDA_Scotland_-_Education_Submission_Report-April-2015.pdf.*

83 *Weale S. Deaf pupils in England struggle at every stage of school, report finds: The Guardian,, 2019 [Available from: https://www.theguardian.com/society/2019/aug/13/deaf-pupils-in-england-struggle-at-every-stage-of-school-report-finds.*

84 *National Deaf Children's Society. Deaf pupils achieve an entire GCSE grade less for sixth year running 2021 [Available from: https://www.ndcs.org.uk/about-us/news-and-media/latest-news/deaf-pupils-achieve-an-entire-gcse-grade-less-for-sixth-year-running/.*

85 *Weale S. Deaf pupils in England struggle at every stage of school, report finds: The Guardian,, 2019 [Available from: https://www.theguardian.com/society/2019/aug/13/deaf-pupils-in-england-struggle-at-every-stage-of-school-report-finds.*

86 *National Deaf Children's Society. Deaf children from ethnic minority groups 2021 [Available from: https://www.ndcs.org.uk/media/6795/ndcs-literature-review-deaf-children-from-ethnic-minority-groups-final.pdf.*

87 *British Deaf Association Scotland. Submission to the Scottish Parliament. Attainment of school pupils with a sensory impairment 2015 [Available from: https://bda.org.uk/wp-content/uploads/2017/03/BDA_Scotland_-_Education_Submission_Report-April-2015.pdf.*

88 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

89 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

90 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

91 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

92 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

93 *SignHealth. Deaf people and suicide 2007 [Available from: https://signhealth.org.uk/wp/wp-content/uploads/2019/07/suicide_leaflet_v8.pdf.*

94 *National Institute for Mental Health in England. Mental health and deafness. Towards equity and access SignHealth, 2005 [Available from: https://signhealth.org.uk/wp-content/uploads/2020/10/Towards-Equity-and-Access.pdf.*

95 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

96 *SignHealth. Deaf people and suicide 2007 [Available from: https://signhealth.org.uk/wp/wp-content/uploads/2019/07/suicide_leaflet_v8.pdf.*

97 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

98 *SignHealth. Research into the health of deaf people 2013 [Available from: https://signhealth.org.uk/wp/wp-content/uploads/2019/07/SignHealth-Deaf-Health-Survey-Report-1.pdf.*

99 *SignHealth. Research into the health of deaf people 2013 [Available from: https://signhealth.org.uk/wp/wp-content/uploads/2019/07/SignHealth-Deaf-Health-Survey-Report-1.pdf*

100 *FMR Research. Final report: Drug and alcohol issues affecting those with a sensory impairment in Greater Glasgow. 2002 [Available from: https://www.stor.scot.nhs.uk/handle/11289/579549.*

101 *FMR Research. Final report: Drug and alcohol issues affecting those with a sensory impairment in Greater Glasgow. 2002 [Available from: https://www.stor.scot.nhs.uk/handle/11289/579549.*

102 *FMR Research. Final report: Drug and alcohol issues affecting those with a sensory impairment in Greater Glasgow. 2002 [Available from: https://www.stor.scot.nhs.uk/handle/11289/579549.*

103 *FMR Research. Final report: Drug and alcohol issues affecting those with a sensory impairment in Greater Glasgow. 2002 [Available from: https://www.stor.scot.nhs.uk/handle/11289/579549.*

104 *Office for National Statistics. Drug misuse in England and Wales: year ending March 2020 2020 [Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/articles/drugmisuseinenglandandwales/yearendingmarch2020#:~:text=For%20the%20year%20ending%20March%202020%2C%204.6%25%20of%20adults%20aged,9.9%25%20(around%20622%2C000).*

105 *Drug Wise. Drug education for deaf and young people 2004 [Available from: https://www.drugwise.org.uk/wp-content/uploads/deafpeopleBriefing.pdf.*

106 *FMR Research. Final report: Drug and alcohol issues affecting those with a sensory impairment in Greater Glasgow. 2002 [Available from: https://www.stor.scot.nhs.uk/handle/11289/579549.*

107 *Drug Wise. Drug education for deaf and young people 2004 [Available from: https://www.drugwise.org.uk/wp-content/uploads/deafpeopleBriefing.pdf.*

108 *FMR Research. Final report: Drug and alcohol issues affecting those with a sensory impairment in Greater Glasgow. 2002 [Available from: https://www.stor.scot.nhs.uk/handle/11289/579549.*

109 *Drug Wise. Drug education for deaf and young people 2004 [Available from: https://www.drugwise.org.uk/wp-content/uploads/deafpeopleBriefing.pdf.*

110 *Drug Wise. Drug education for deaf and young people 2004 [Available from: https://www.drugwise.org.uk/wp-content/uploads/deafpeopleBriefing.pdf.*

111 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. Access to primary care affects the health of Deaf people. Br J Gen Pract. 2015,65(631):95-6.*

112 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

113 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

114 *University of Lancaster. Deaf hope from SignHealth 2018 [Available from: http://wp.lancs.ac.uk/cedr/files/2018/09/Deaf-Hope.pdf.*

115 *Wakeland E, Austen S, Rose J. What is the prevalence of abuse in the deaf/hard of hearing population? The Journal of Forensic Psychiatry & Psychology. 2018,29(3):434-54.*

116 *Wakeland E, Austen S, Rose J. What is the prevalence of abuse in the deaf/hard of hearing population? The Journal of Forensic Psychiatry & Psychology. 2018,29(3):434-54.*

117 *Wakeland E, Austen S, Rose J. What is the prevalence of abuse in the deaf/hard of hearing population? The Journal of Forensic Psychiatry & Psychology. 2018,29(3):434-54.*

118 *University of Lancaster. Deaf hope from SignHealth 2018 [Available from: http://wp.lancs.ac.uk/cedr/files/2018/09/Deaf-Hope.pdf.*

119 *University of Lancaster. Deaf hope from SignHealth 2018 [Available from: http://wp.lancs.ac.uk/cedr/files/2018/09/Deaf-Hope.pdf.*

120 *Switchboard. LGBTQ+ D/deaf and hard of hearing access to healthcare 2018 [Available from: https://www.switchboard.org.uk/wp-content/uploads/2018/10/Deaf-LGBTQ-Report-FINAL.pdf.*

121 *Hearing Health Foundation. How nutrition affects our hearing 2018 [Available from: https://hearinghealthfoundation.org/blogs/how-nutrition-affects-our-hearing.*

122 *Dawes P, Cruickshanks KJ, Marsden A, Moore DR, Munro KJ. Relationship Between Diet, Tinnitus, and Hearing Difficulties. Ear Hear. 2020,41(2):289-99.*

123 *Dawes P, Cruickshanks KJ, Marsden A, Moore DR, Munro KJ. Relationship Between Diet, Tinnitus, and Hearing Difficulties. Ear Hear. 2020,41(2):289-99.*

124 *Dawes P, Cruickshanks KJ, Marsden A, Moore DR, Munro KJ. Relationship Between Diet, Tinnitus, and Hearing Difficulties. Ear Hear. 2020,41(2):289-99.*

125 *Dhanda N, Taheri S. A narrative review of obesity and hearing loss. International Journal of Obesity. 2017,41(7):1066-73.*

126 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

127 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

128 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf*

129 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

130 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

131 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

132 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

133 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

134 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

135 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

136 *Activity Alliance. UK Deaf Sport supports Deaf Awareness Week 2018 [Available from: https://www.activityalliance.org.uk/news/3988-uk-deaf-sport-supports-deaf-awareness-week.*

137 *Uk Deaf Sport. UK Deaf Sport NDSO pack 2016 [Available from: https://www.activityalliance.org.uk/assets/000/000/238/1919_NDSO_Inserts_UKDS_Web_updated_28.9.17_original.pdf?1506608788#:~:text=UK%20Deaf%20Sport%20(UKDS)%20is,perform%20on%20the%20world%20stage.*

138 *UK Deaf Sport. UK Deaf Sport information sheet 2018 [Available from: https://ukdeafsport.org.uk/wp-content/uploads/2017/04/16849-EFDS-UK-Deaf-Sport-Information-Sheet_Accessible-PDF-FINAL.pdf.*

139 *Slfirst. Deaf and hard of hearing people call for more accessible activities in new research 2015 [Available from: http://slfirst.co.uk/deaf-sport/sport/deaf-and-hard-of-hearing-people-call-for-more-accessible-activities-in-new-research/.*

140 *UK Deaf Sport. UK Deaf Sport information sheet 2018 [Available from: https://ukdeafsport.org.uk/wp-content/uploads/2017/04/16849-EFDS-UK-Deaf-Sport-Information-Sheet_Accessible-PDF-FINAL.pdf.*

141 *Slfirst. Deaf and hard of hearing people call for more accessible activities in new research 2015 [Available from: http://slfirst.co.uk/deaf-sport/sport/deaf-and-hard-of-hearing-people-call-for-more-accessible-activities-in-new-research/.*

142 *UK Deaf Sport. UK Deaf Sport information sheet 2018 [Available from: https://ukdeafsport.org.uk/wp-content/uploads/2017/04/16849-EFDS-UK-Deaf-Sport-Information-Sheet_Accessible-PDF-FINAL.pdf.*

143 *Slfirst. Deaf and hard of hearing people call for more accessible activities in new research 2015 [Available from: http://slfirst.co.uk/deaf-sport/sport/deaf-and-hard-of-hearing-people-call-for-more-accessible-activities-in-new-research/.*

144 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

145 *House of Commons. Memorandum submitted by the Royal National Institute for Deaf People (RNID) (EDP 39) 2003 [Available from: https://publications.parliament.uk/pa/cm200203/cmselect/cmworpen/401/3020503.htm.*

146 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

147 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

148 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

149 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

150 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

151 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

152 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

153 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

154 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

155 *NHS. Brighton and Hove joint strategic needs assessment 2013 [Available from: http://www.bhconnected.org.uk/sites/bhconnected/files/jsna2013.pdf.*

156 *GP Patient Survey. Analysis tool 2022 [Available from: https://www.gp-patient.co.uk/subgroups.*

157 *NHS. Brighton and Hove joint strategic needs assessment 2013 [Available from: http://www.bhconnected.org.uk/sites/bhconnected/files/jsna2013.pdf.*

158 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

159 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

160 *GP Patient Survey. Analysis tool 2022 [Available from: https://www.gp-patient.co.uk/subgroups.*

161 *RNID. Joining up. Why people with hearing loss or deafness would benefit from an integrated response to long-term conditions 2021 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Joining-Up-long-term-conditions-report.pdf.*

162 *RNID. Joining up. Why people with hearing loss or deafness would benefit from an integrated response to long-term conditions 2021 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Joining-Up-long-term-conditions-report.pdf.*

163 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

164 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

165 *Office for Health Improvement & Disparities. Public health profiles 2022 [Available from: https://fingertips.phe.org.uk/search/mental%20health#page/3/gid/1938133251/pat/15/par/E92000001/ati/6/are/E12000004/iid/93495/age/164/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1/page-options/car-do-0.*

166 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

167 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

168 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

169 *RNID. Hidden disadvantage. Why people with hearing loss are still losing out at work 2014 [Available from: https://rnid.org.uk/wp-content/uploads/2020/05/Hidden-Disadvantage-full-report.pdf.*

170 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

171 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

172 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

173 *Diabetes.co.uk. Deaf people at higher risk of type 2 diabetes 2015 [Available from: https://www.diabetes.co.uk/news/2015/feb/deaf-people-at-higher-risk-of-type-2-diabetes-99113596.html.*

174 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

175 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

176 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

177 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

178 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

179 *Diabetes.co.uk. Deaf people at higher risk of type 2 diabetes 2015 [Available from: https://www.diabetes.co.uk/news/2015/feb/deaf-people-at-higher-risk-of-type-2-diabetes-99113596.html.*

180 *National Institute for Mental Health in England. Mental health and deafness. Towards equity and access SignHealth, 2005 [Available from: https://signhealth.org.uk/wp-content/uploads/2020/10/Towards-Equity-and-Access.pdf.*

181 *Health and Safety Executive. Noise induced hearing loss in Great Britain 2021 [Available from: https://www.hse.gov.uk/statistics/causdis/deafness/index.htm.*

182 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

183 *Diabetes.co.uk. Deaf people at higher risk of type 2 diabetes 2015 [Available from: https://www.diabetes.co.uk/news/2015/feb/deaf-people-at-higher-risk-of-type-2-diabetes-99113596.html.*

184 *Gov.uk. Deafness and HIV/AIDS: a systematic review of the literature 2010 [Available from: https://www.gov.uk/research-for-development-outputs/deafness-and-hiv-aids-a-systematic-review-of-the-literature#links.*

185 *Watkins G. D/deaf people's access to sexual health support and information Sahir House 2018 [Available from: https://sahir.org.uk/wp-content/uploads/2018/06/Deaf-peoples-access-to-sexual-health-support-final-report.pdf (page now deleted).*

186 *Watkins G. D/deaf people's access to sexual health support and information Sahir House 2018 [Available from: https://sahir.org.uk/wp-content/uploads/2018/06/Deaf-peoples-access-to-sexual-health-support-final-report.pdf (page now deleted).*

187 *NHS England. What works: hearing loss and healthy ageing 2017 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/hearing-loss-what-works-guide-healthy-ageing.pdf.*

188 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

189 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

190 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing Deaf community in the UK compared with the general population: A cross-sectional study. BMJ open. 2015,5:e006668.*

191 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

192 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

193 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

194 *Patel JV, Gill PS, Chackathayil J, Ojukwu H, Stemman P, Sheldon L, et al. Short-term effects of screening for cardiovascular risk in the deaf community: a pilot study. Cardiol Res Pract. 2011,2011:493546.*

195 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. Access to primary care affects the health of Deaf people. Br J Gen Pract. 2015,65(631):95-6.*

196 *Kyle J SH, Allsop L, Ridd M, Emond A. Deaf Health. Analysis of the current health and access to health care of Deaf people in the UK 2013 [Available from: http://deafstudiestrust.org/wp-content/uploads/2020/04/Deaf-Health-Final-Part1.pdf.*

197 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

198 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. Access to primary care affects the health of Deaf people. Br J Gen Pract. 2015,65(631):95-6.*

199 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

200 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. Access to primary care affects the health of Deaf people. Br J Gen Pract. 2015,65(631):95-6.*

201 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

202 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

203 *Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. Access to primary care affects the health of Deaf people. Br J Gen Pract. 2015,65(631):95-6.*

204 *SignHealth. A report into the health of deaf people in the UK 2014 [Available from: https://signhealth.org.uk/wp-content/uploads/2019/12/THE-HEALTH-OF-DEAF-PEOPLE-IN-THE-UK-.pdf.*

205 *Macmillan Cancer Support. Hearing after neck and head cancer treatment 2021 [Available from: https://www.macmillan.org.uk/cancer-information-and-support/impacts-of-cancer/hearing-after-head-and-neck-cancer-treatment.*

206 *Leadbeater MW, D.Hall, S. . Improving cancer survivorship in the deaf community: an evaluation of a bespoke cancer information event. Cancer Nursing Practice 2021.*

207 *Young A, Ferguson-Coleman E, Keady J. Understanding dementia: effective information access from the Deaf community's perspective. Health Soc Care Community. 2016,24(1):39-47.*

208 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

209 *RNID. hearing Loss and dementia: how are they linked? 2021 [Available from: https://rnid.org.uk/hearing-research/our-research-projects/hearing-loss-and-dementia-how-are-they-linked/.*

210 *RNID. hearing Loss and dementia: how are they linked? 2021 [Available from: https://rnid.org.uk/hearing-research/our-research-projects/hearing-loss-and-dementia-how-are-they-linked/.*

211 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

212 *Stevenson JS, Clifton L, Kuźma E, Littlejohns TJ. Speech-in-noise hearing impairment is associated with an increased risk of incident dementia in 82,039 UK Biobank participants. Alzheimers Dement. 2021.*

213 *Young A, Ferguson-Coleman E, Keady J. Understanding dementia: effective information access from the Deaf community's perspective. Health Soc Care Community. 2016,24(1):39-47.*

214 *RNID. hearing Loss and dementia: how are they linked? 2021 [Available from: https://rnid.org.uk/hearing-research/our-research-projects/hearing-loss-and-dementia-how-are-they-linked/.*

215 *Young A, Ferguson-Coleman E, Keady J. Understanding dementia: effective information access from the Deaf community's perspective. Health Soc Care Community. 2016,24(1):39-47.*

216 *Social Care Institute for Excellence. Dementia and sensory loss: Deafness 2020 [Available from: https://www.scie.org.uk/dementia/living-with-dementia/sensory-loss/deafness.asp.*

217 *Alzhemier's Society. Sight and hearing loss with dementia 2021 [Available from: https://www.alzheimers.org.uk/about-dementia/symptoms-and-diagnosis/sight-hearing-loss.*

218 *Ferguson-Coleman E, Keady J, Young A. Dementia and the Deaf community: knowledge and service access. Aging Ment Health. 2014,18(6):674-82.*

219 *Ferguson-Coleman E, Keady J, Young A. Dementia and the Deaf community: knowledge and service access. Aging Ment Health. 2014,18(6):674-82.*

220 *Rantapää M, Virtanen IA, Pekkala S. Supportive interaction between formal caregivers and Deaf people with dementia. Educational Gerontology. 2021,47(8):369-82.*

221 *Rantapää M, Virtanen IA, Pekkala S. Supportive interaction between formal caregivers and Deaf people with dementia. Educational Gerontology. 2021,47(8):369-82.*

222 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

223 *Hear-it.org. Evaluation of the social and economic costs of hearing impairment 2006 [Available from: https://www.hear-it.org/sites/default/files/multimedia/documents/Hear_It_Report_October_2006.pdf.*

224 *British Society of Audiology. Hearing and balance 2021 [Available from: https://www.thebsa.org.uk/public-engagement/hearing-balance/.*

225 *BSL Zone. Research into the Deaf audience in the UK, 2015 [Available from: https://www.bslzone.co.uk/application/files/9114/5320/1729/Exec_Summary_-_Research_into_the_Deaf_Audience_Jan_2016.pdf.*

226 *NHS England. Joint strategic needs assessment guidance 2018 2018 [Available from: https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf.*

227 *Hodson M, Ede J, Dean R. P166 When English isn't your first language: supporting deaf people in end of life care. BMJ Supportive and Palliative Care. 2013,3.*

228 *DeafLink. End of life research 2016 [Available from: https://www.deaflink.org.uk/sites/default/files/uploads/documents/2018/02/End%20of%20Life%20Report%20-%20Deaflink%20only.pdf.*

229 *DeafLink. End of life research 2016 [Available from: https://www.deaflink.org.uk/sites/default/files/uploads/documents/2018/02/End%20of%20Life%20Report%20-%20Deaflink%20only.pdf.*

230 *Hodson M, Ede J, Dean R. P166 When English isn't your first language: supporting deaf people in end of life care. BMJ Supportive and Palliative Care. 2013,3.*

231 *DeafLink. End of life research 2016 [Available from: https://www.deaflink.org.uk/sites/default/files/uploads/documents/2018/02/End%20of%20Life%20Report%20-%20Deaflink%20only.pdf.*

232 *Hunt R OR, Young A, . Deaf older people's preferences for residential care 2011 [Available from: https://www.research.manchester.ac.uk/portal/en/publications/deaf-older-peoples-preferences-for-residential-care(fb5617ae-d8cb-4886-a7c1-cc85c2fa2f66)/projects.html.*

233 *Tsimpida D, Kontopantelis E, Ashcroft DM, Panagioti M. Regional patterns and trends of hearing loss in England: evidence from the English longitudinal study of ageing (ELSA) and implications for health policy. BMC Geriatrics. 2020,20(1):536.*

234 *Tsimpida D, Kontopantelis E, Ashcroft DM, Panagioti M. Regional patterns and trends of hearing loss in England: evidence from the English longitudinal study of ageing (ELSA) and implications for health policy. BMC Geriatrics. 2020,20(1):536.*

235 *Scholes S, Biddulph J, Davis A, Mindell JS. Socioeconomic differences in hearing among middle-aged and older adults: cross-sectional analyses using the Health Survey for England. BMJ Open. 2018,8(2):e019615.*

236 *Hear-it.org. Evaluation of the social and economic costs of hearing impairment 2006 [Available from: https://www.hear-it.org/sites/default/files/multimedia/documents/Hear_It_Report_October_2006.pdf.*

237 *Hear-it.org. Evaluation of the social and economic costs of hearing impairment 2006 [Available from: https://www.hear-it.org/sites/default/files/multimedia/documents/Hear_It_Report_October_2006.pdf.*

238 *TFN. Deaf ambition for 2021 2021 [Available from: https://tfn.scot/opinion/deaf-ambition-for-2021.*

239 *TFN. Deaf ambition for 2021 2021 [Available from: https://tfn.scot/opinion/deaf-ambition-for-2021.*

240 *Global Green Grants Fund. Why the environmental justice movement must include people with disabilities 2019 [Available from: https://www.greengrants.org/2019/03/18/disability-and-environment/.*

241 *O'Connell KA. Designing a city for the deaf: Bloomberg UK,, 2012 [Available from: https://www.bloomberg.com/news/articles/2012-03-27/designing-a-city-for-the-deaf#xj4y7vzkg.*

242 *SignHealth. Results from our 2nd pulse survey of the impacts of the pandemic on the Deaf community 2021 [Available from: https://signhealth.org.uk/health-wellbeing/results-from-our-2nd-pulse-survey-of-the-impacts-of-the-pandemic-on-the-deaf-community/.*

243 *SignHealth. Results from our 2nd pulse survey of the impacts of the pandemic on the Deaf community 2021 [Available from: https://signhealth.org.uk/health-wellbeing/results-from-our-2nd-pulse-survey-of-the-impacts-of-the-pandemic-on-the-deaf-community/.*

244 *Moreland CJ, Paludneviciene R, Park JH, McKee M, Kushalnagar P. Deaf adults at higher risk for severe illness: COVID-19 information preference and perceived health consequences. Patient Education and Counseling. 2021,104(11):2830-3.*

245 *Hodson M, Ede J, Dean R. P166 When English isn't your first language: supporting deaf people in end of life care. BMJ Supportive and Palliative Care. 2013,3.*

246 *Grote H, Izagaren F, Jackson E. The experience of D/deaf healthcare professionals during the coronavirus pandemic. Occup Med (Lond). 2021,71(4-5):196-203.*

247 *Williams IJM. Covid-19: lack of guidance on PPE for hearing impaired doctors. Bmj. 2020,370:m2831.*

248 *SignHealth. How has coronavirus impacted deaf people? 2020 [Available from: https://signhealth.org.uk/wp-content/uploads/2020/09/Coronavirus-Impact-Survey-Results.pdf.*

249 *Naylor G, Burke L A, Holman J A. Covid-19 Lockdown Affects Hearing Disability and Handicap in Diverse Ways: A Rapid Online Survey Study. Ear Hear. 2020,41(6):1442-9.*

250 *Grote H, Izagaren F, Jackson E. The experience of D/deaf healthcare professionals during the coronavirus pandemic. Occup Med (Lond). 2021,71(4-5):196-203.*

251 *SignHealth. How has coronavirus impacted deaf people? 2020 [Available from: https://signhealth.org.uk/wp-content/uploads/2020/09/Coronavirus-Impact-Survey-Results.pdf.*

252 *Saunders GH, Roughley A. Audiology in the time of COVID-19: practices and opinions of audiologists in the UK. Int J Audiol. 2021,60(4):255-62.*

253 *Naylor G, Burke L A, Holman J A. Covid-19 Lockdown Affects Hearing Disability and Handicap in Diverse Ways: A Rapid Online Survey Study. Ear Hear. 2020,41(6):1442-9.*

254 *Moreland CJ, Paludneviciene R, Park JH, McKee M, Kushalnagar P. Deaf adults at higher risk for severe illness: COVID-19 information preference and perceived health consequences. Patient Education and Counseling. 2021,104(11):2830-3.*

255 *SignHealth. How has coronavirus impacted deaf people? 2020 [Available from: https://signhealth.org.uk/wp-content/uploads/2020/09/Coronavirus-Impact-Survey-Results.pdf.*

256 *Moreland CJ, Paludneviciene R, Park JH, McKee M, Kushalnagar P. Deaf adults at higher risk for severe illness: COVID-19 information preference and perceived health consequences. Patient Education and Counseling. 2021,104(11):2830-3.*

257 *Saunders GH, Roughley A. Audiology in the time of COVID-19: practices and opinions of audiologists in the UK. Int J Audiol. 2021,60(4):255-62.*

258 *SignHealth. Results from our 2nd pulse survey of the impacts of the pandemic on the Deaf community 2021 [Available from: https://signhealth.org.uk/health-wellbeing/results-from-our-2nd-pulse-survey-of-the-impacts-of-the-pandemic-on-the-deaf-community/.*

259 *National Deaf Children's Society. Face masks and communication - coronavirus info for families of deaf children 2021 [Available from: https://www.ndcs.org.uk/blog/face-masks-and-communication-coronavirus-info-for-families-of-deaf-children/.*

260 *GP Patient Survey. Analysis tool 2022 [Available from: https://www.gp-patient.co.uk/subgroups.*