

**Programme:** Msc In Public Health and Social Care In Practice

**Student Name:** Pinalkumari Dhansukhbhai Patel

**Student Numbers:** 2529442

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**Lecturer's Name:** Itse Olaoye

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## **Task 1: Social Epidemiological Analysis**

### **Title: Age and health inequalities**

#### **Introduction**

Age-related health inequalities in the UK refer to systematic differences in health outcomes and access to healthcare in different age groups, which particularly affect older adults aged 65 or above. This population is the key target group due to increased vulnerability to functional limitations, chronic illness and social isolation. Older individuals are at higher risk of conditions like cardiovascular disease, diabetes and many more, which can impact their quality of life (Aïdoud *et al.*, 2023). Several factors contribute to the health inequalities, including socioeconomic disadvantage and limited access to resources, which restrict their healthcare access. Besides that, ageism within the healthcare system can lead to under-treatment or even delay the diagnosis. This assessment focuses on identifying the health inequality issues that the older population face in the UK.

### **CONTEXTUAL BACKGROUND AND UNDERLYING FACTORS**

#### **3 DISEASE/ILLNESS RATES**

##### **HIGHER RATES OF CARDIOVASCULAR DISEASE AMONG THE ELDERLY GROUP**

Cardiovascular disease (CVD) is a leading cause of death among older adults in the UK. Approximately 47,000 people die from CVD each year under the age of 75, and more than 8 million people live with this disease condition (British Heart Foundation, 2026). The risks related to CVD increase with age due to several factors like hypertension, reduced mobility and long-term exposure to unhealthy lifestyles. According to the British Heart Foundation (2025), CVD is a primary driver of health inequalities in the older population, with individuals in the most deprived areas being four time likely to die prematurely.

##### **National Response**

“NHS Long Term Plan” aims to prevent strokes and attacks and prioritises reducing health inequalities (NHS England, 2025). Early screening and lifestyle intervention can reduce the risks of developing CVD.

##### **Supporting organisations**

The NHS Health Check programme offers free screening for adults aged 40-74 years to detect early signs of heart disease (NHS England, 2025). The NHS sets out to address CVD through a screening program, and the goal is early diagnosis and risk reduction among older adults.

### **TYPE 2 DIABETES MELLITUS (T2DM)**

T2DM disproportionately affects older adults in the UK. More than 5.8 million people in the UK live with T2DM, and 18% older population has this condition (Diabetes UK, n.d.). Older adults are at greater risk due to a sedentary lifestyle and socioeconomic deprivation. According to Au-Yeung (2024), individuals living in the deprived areas have a higher prevalence (3.7%) of T2DM, which shows socioeconomic deprivation on diabetes.

#### National Response

The “NHS Diabetes Prevention Programme” targets individuals at high risk and promotes lifestyle changes to prevent onset (NHS England, 2023). On the other hand, Diabetes UK adopted the “Tackling Inequity Strategy” to tackle unfairness in diabetes care and access to treatment (Diabetes UK, n.d.). Prevention through diet and physical activity is essential to managing T2DM.

#### Supporting organisations

The NHS diabetes program aims to raise awareness and promote self-management. This can reduce complications related to T2DM in the older population.

### **HIGH DEMENTIA RATE AMONG ELDERLY PEOPLE**

Dementia is an age-related health inequality which affects mostly people aged 65 and over. There are 982,000 people in the UK living with dementia, and it is expected to rise by 1.4 million by 2040 (Alzheimer's Society, 2024). People in lower socioeconomic groups in the UK have risks of developing dementia, and they also have limited access to care.

#### National Response

“National Dementia Strategy” aims to improve the diagnosis rate (Department of Health, n.d.). Furthermore, John's Campaign promotes the rights of family carers to support dementia patients in hospitals (John's Campaign, n.d.). Early diagnosis and community support can address this issue.

#### Supporting organisations

John's campaign focuses on dementia by providing support services. It aims to improve care for older adults.

### **3 SOCIAL ISSUES**

#### **SOCIAL ISOLATION AND LONELINESS**

Older adults are at high risk of social isolation due to retirement and reduced mobility. In the UK, more than 1.4 million people report feeling lonely, which is linked to depression and cognitive decline (Age UK, 2024a). It is required to strengthen community engagement and improve social care services, which can promote an inclusive environment to reduce loneliness.

##### **National Response**

The campaign to End Loneliness (n.d.) works to raise awareness related to social isolation. The NHS also support social prescribing to connect older adults to local activities (NHS, England, 2023).

##### **Supporting organisations**

The goal of this campaign is to use community initiatives to build social connections among older adults (Campaign to End Loneliness, n.d.). NHS further focuses on conducting research to address health inequalities and inform inclusive public health policies. These strategies can improve their wellbeing.

#### **DIGITAL EXCLUSION**

It can be stated that digital exclusion disproportionately affects older adults and limits their access to online healthcare and information. More than 27% of people aged 65 and over in the UK lack digital skills, which creates barriers to telehealth services (Age UK, 2024b). Digital literacy training can manage this gap and improve their healthcare access.

##### **National Response**

The Good Things Foundation (n.d.) runs digital inclusion programmes among older adults to improve their skills. At the same time, the NHS introduced initiatives to make digital services user-friendly (NHS, England, 2023).

##### **Supporting organisations**

The NHS develop preventive programmes to reduce age-related health disparities and promote early intervention for the older population. It can help to bridge the digital literacy gap.

#### **FINANCIAL INSECURITY AND POVERTY**

Many older adults face financial issues due to rising living costs in the UK. Approximately 18% of pensioners in the UK live in relative poverty. It limits their access to nutritious food and healthcare.

##### **National Response**

The UK Government provides the “Winter Fuel Payment” to support older adults to afford heating (GOV. UK, 2025). Age UK also offers financial advice for better income security.

#### Supporting organisations

Age UK works to raise awareness of poverty among older adults and aims to improve wellbeing and access to care (Age UK, 2024a). This can improve their pension schemes and reduce inequalities.

### **CONCLUSION**

Older adults in the UK experience significant health inequalities driven by age-related conditions like CVD, diabetes and dementia, along with social issues such as loneliness, digital exclusion and poverty. These factors exacerbate vulnerability and can limit access to care. National organisations and policies have played an important role in addressing the disparities and promoting equity and wellbeing for the ageing population.

## **TASK 2: EPIDEMIOLOGICAL ANALYSIS**

### **Topic: Epidemiological Investigation And Management Of Type 2 Diabetes In Birmingham**

#### **INTRODUCTION**

Type 2 Diabetes Mellitus (T2DM) is a long-term communicable condition, which is mainly characterised by insulin resistance resulting in elevated blood glucose levels. It is largely associated with risk factors including obesity, physical activity, poor diet and socio-economic deprivation (Kyrrou et al., 2020). The impact of T2DM extends beyond physical health and affects cultural and social dimensions of life. Socially, individuals living with T2DM experience reduced productivity and financial burden due to long-term treatment and contribute to a higher disease burden. On the other hand, culturally, particularly South Asian populations in the UK have a higher genetic predisposition and are even influenced by dietary practices rich in carbohydrates and fats (Iqbal, 2023). These cultural patterns are combined with barriers to healthcare access. The prevalence rate of T2DM among adults in Birmingham increased from 6.6% to 8.73% in 2021 (Au-Yeung *et al.*, 2024). This disease condition is associated with severe complications like cardiovascular disease, kidney failure, hypertension and many more.

Globally, T2DM has become a major health challenge due to its increased prevalence rates. It affects more than 830 million people in 2022, with prevalence nearly doubling over the past decades (World Health Organization, 2024). The rapid rise highlighted its growing burden in both high-income and low and middle-income countries. Whereas, in the UK, nearly 1.3 million living with T2DM, where the major risk factors include age, family history and ethnicity (Diabetes UK, 2020). Additionally, millions remain undiagnosed, which indicates a hidden burden. The prevalence of T2DM in England is 7.08%, but across Birmingham, the prevalence is higher, which is 8.73% (APC Formulary, n.d.). Overall, the high prevalence combined with severe long-term health complications clearly stated that T2DM is a critical health problem which requires targeted epidemiological investigation.

#### **PUBLIC HEALTH MEASURES**

The public health measures to address T2DM in the population of Birmingham, following the 3P's approach, are described below.

Prevention focuses on early identification through NHS Health Checks, screening high-risk adults and a diabetes management programme, which are supported by NHS England (NHS England, 2023). On the other hand, protection involves reducing complications through a

structured care plan, access to medication and regular monitoring alongside the community-based interventions. This helps in targeting the vulnerable population, especially the ethnic minority and deprived groups. Here, the promotion emphasised managing lifestyle changes through public awareness campaigns, physical activity and initiatives which encourage a healthier food environment. Furthermore, support from Diabetes UK also helps in improving self-management and health literacy (Diabetes UK, 2020). Together, these elements aim to reduce incidence rates. Improve the disease control and, at the same time, minimise long-term complications within the target population.

### **KEY DETERMINANTS AND RISK FACTORS**

The key determinants and risk factors of T2DM in Birmingham include socio-economic deprivation, as it limits access to healthy food. Obesity and physical inactivity are the modifiable risks linked to urban lifestyles. Apart from that, ethnicity influences the disease incidence rate among the South Asian population due to genetic predisposition. A study by Au-Yeung et al. (2024) showed that approximately 4.9% of Asian people who attended the Birmingham NHS health checks suffered from diabetes. Along with that, age, poor diet high in sugar and family history increase susceptibility to this disease condition.

### **IDENTIFYING THE AFFECTED POPULATION**

Health needs assessment in Birmingham highlighted a disproportionate burden of T2DM compared to the national average. For instance, the studies at Queen Elizabeth Hospital, Birmingham, identified 22% diabetes prevalence, which is higher than the local prevalence of 11% (Manley, 2026). On the other hand, the “University of Birmingham” found that 15% of patients showed the signs of pre-diabetes and programs such as “Birmingham Own Health” have been implemented to support the patients with poorly controlled diabetes (University of Birmingham, 2025). Additionally, individuals with a family history of diabetes are at-risk groups. People from lower socio-economic backgrounds also faced increased risks due to limited access to healthcare, which indicated the implementation of targeted intervention priorities.

### **MONITOR THE INCIDENCE**

Monitoring the incidence of T2DM in Birmingham mainly relies on various public health surveillance systems. Routine surveillance systems, including “National Diabetes Audit”, which is coordinated by NHS England, collect data on diagnosis, outcomes and treatments across the secondary and primary care (NHS Digital, 2024). Apart from that, population-based monitoring is conducted by using the datasets of the “Office for National Statistics”, which can provide demographic and mortality data (ONS, 2023). At the same time, it helps in tracking the trends and inequalities. An important role is played by the primary care record to identify

new cases and even monitor the prevalence. Apart from that, the Health Needs assessment further supports targeted surveillance by identifying high-risk groups. Screening programs such as “NHS Health Checks” detect undiagnosed cases (NHS England, 2023). It is commissioned by Birmingham City Council to free checks for adults aged 40-74 years to identify early signs of diabetes, and more than 90,000 people were invited annually in 2023. Together, these systems can enable continuous monitoring and early detection for diabetes control.

### **DETERMINE THE PUBLIC HEALTH IMPACT**

Using the epidemiological data, the impact of T2DM in Birmingham can be evaluated through incidence, prevalence, mortality and morbidity trends. High prevalence indicates a significant burden of this health issue on individuals as well as the healthcare systems. In the short term, the conditions can lead to symptoms like fatigue, increasing infections and frequent urination, which adversely influence daily functioning and productivity (Davies *et al.*, 2026). On the other hand, it increases the demand for primary care services and medical interventions. In the long-term, it can be stated that poorly managed diabetes results in complications such as cardiovascular disease, kidney failure, amputations and neuropathy (Yachmaneni *et al.*, 2023). These health complications contribute to increased disability, hospital admission and premature mortality. The wider public health impact mainly includes economic costs due to long-term treatment and even the loss of workforce productivity, which can widen the health inequalities. Epidemiological analysis can prioritise interventions and allocate resources to reduce the burden in the population.

### **DESIGN OF A HEALTH INTERVENTION PROGRAMME**

An appropriate intervention programme to manage T2DM in Birmingham should focus on adopting a community-based multi-level approach. This intervention programme can include targeted screening through NHS Health Checks, weight management, physical activity initiatives and culturally tailored lifestyle education for high-risk groups, which can be delivered in the community centre. Further, collaboration with NHS England and Diabetes UK can enhance the self-management support. Apart from that, using digital tools like mobile health apps can be used to monitor the blood glucose level and encourage behaviour change (Wang *et al.*, 2020). Evaluation of this intervention can measure process, impact and outcome indicators. The short-term impacts include improved awareness, screening uptake and behavioural changes. Whereas the long-term outcomes include better glycaemic control,

reduced incidence and fewer complications. However, continuous feedback is essential to ensure that the program remains responsive and equitable.

## **UNDERSTANDING OF STRENGTHS AND WEAKNESSES**

The epidemiological approach to T2DM in Birmingham has various strengths. It mainly relies on large-scale datasets from sources like national audits and enables accurate estimation of prevalence and incidence. Furthermore, it supports the identification of high-risk groups like deprived communities and ethnic minorities. Using the longitudinal data can help in tracking trends over time and even evaluate the effectiveness of programmes and policies (Yachmaneni *et al.*, 2023). Nevertheless, there are some weaknesses in this approach/. The epidemiological data can underestimate the burden due to undiagnosed cases in terms of the particularly marginalised population. Besides that, routine datasets can contain inconsistencies or inaccuracies, which can affect reliability. Apart from that, quantitative approaches often fail to evaluate the complex social, cultural and behavioural determinants which can influence the risks of developing T2DM (Manley, 2026). Most studies are cross-sectional or observational, which can limit the ability to establish the causality of the risks. Therefore, these limitations can reduce the depth of understanding required for context-specific interventions.

## **CONCLUSION**

It is concluded that T2DM represents a growing public health challenge in Birmingham, which is driven by a combination of behavioural, socio-economic and demographic factors. This epidemiological process is essential to identify the scale of the problem, highlight the population at risk and assess the determinants within the community. Through application of the surveillance system, population data and health needs assessment, it is required to monitor the possible trends and at the same time, evaluate the effectiveness of public health strategies. Use of the prevention, promotion and protection approach demonstrated the effectiveness of early detection, community engagement and lifestyle modification to reduce the disease burden. However, some challenges like health inequalities, underdiagnosis and limitations remain. Therefore, it is essential to develop a multi-sectoral approach that combines epidemiological evidence with sensitive interventions to reduce incidence, promote health equity and improve outcomes within the population.

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