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Task 1: Social Epidemiological Analysis

Title: Ethnicity and Health Inequalities in the United Kingdom

Introduction

About 18% of the UK population belongs to the ethnic minority groups South Asian, Black, Chinese and Mixed backgrounds, and all these populations are the victims of disproportional inequalities caused by socioeconomic deprivation, structural racism, healthcare barriers and biological risks, and this necessitates a specific intervention to deliver equity (Office for National Statistics, 2024).

Contextual Background and Underlying Factors

Disease/Illness Rates

1. Primary Disease More Mortals Cardiovascular Disease.

South Asians show a major death rate among coronary heart disease patients in comparison to White British groups, and the Black population-group exhibits higher rates of death among people with stroke disabilities (King's Fund, 2023). Studies reveal that Black African and Caribbean populations are disproportionately affected by hypertension and the prevalence rates among these groups are as high as four times higher than in White populations in certain age categories (Frontiers in Cardiovascular Medicine, 2024). These differences exist even after the adjustment of socioeconomic factors which may imply multifaceted interplay of genetic predisposition, environmental stressors and access to health care.

2. Infant and Mother Deaths Inequality.

The maternal mortality rates demonstrate high ethnic disparities. In 2020-2022, Black women had been three and a half times more prone to die away throughout pregnancy or within six weeks of childbirth than White women, whereas Asian women experienced a probability of 1.7 times (MBRRACE-UK, 2024). Blacked women are found to be 1.5 times more susceptible to and 6 times more susceptible to developing pre-eclampsia overlying chronic hypertension (Institute of Race Relations, 2024). These differences are based on various elements such as lack of services of interpreters, communication gaps, discrimination in the maternity facilities and late identification of complications.

3. Increased Admission Rates of the Infectious Disease.

The current statistics show that hospital admissions because of infectious diseases were hugely higher among eight out of 15 ethnic groups than among White British populations, with five of them recorded to have 1.25 and above rates (UK Health Security Agency, 2025). These inequalities are indicators of various vulnerabilities such as congested living situations, job-related occupational risks in frontline jobs, and barriers to health care.

Social Issues

4. Healthcare Access Barriers

There is systematic discrimination of ethnic minorities in access of primary care. It is analysed that neighbourhoods with a high population of ethnic minorities have 34 general practitioners per 100,000 residents, which is 29 percent lower than the predominantly White British neighbourhoods (48 to 100,000) (Institute of Race Relations, 2024). The barriers are administrative barriers, the lack of knowledge about the healthcare systems, language barriers, which affect one out of four ethnic minority patients, and immigration consequences, which are feared by one out of eleven (Doctors of the World, 2024).

5. Socioeconomic Deprivation

The census data illustrate that ethnic minority groups in the top 10% of the English neighbourhoods are disproportionate. This poverty includes unemployment, lack of proper housing, food insecurity and lack of educational opportunities. The overlap of ethnicity and socioeconomic status builds upon disadvantages. According to research, more than one million citizens died living in a deprived region between 2011-2019, and ethnic minorities were overrepresented (Institute of Health Equity, 2024). The austerity measures, which started in 2010, made about 148,000 people die in excess and this problem was disproportionately felt by ethnic majority populations.

6. Mental Health Inequalities

There are also significant disparities in mental health provision in the Black African, Black Caribbean, and Black-mixed groups in the area with worse detention rates under the Mental Health Act, over-affiliations within inpatient treatments, and less utilisation of community-based interventions (Devonport et al., 2023). The mental health disparities experienced by Gypsy, Roma, and Traveller communities are particularly severe along with a drastic lack of access to receiving adequate services (NHS Race and Health Observatory, 2023).

National Response to lessen Health Inequalities.

Inequality in Health Dashboard.

In 2023, the Office for Health Improvement and Disparities introduced the Health Inequalities Dashboard, which offers extensive surveillance of health disparities at the level of ethnicities, the level of deprivation, and geographical locations. The tool helps policymakers and healthcare commissioners in determining areas of priority and how much they have achieved in terms of alleviating inequalities. The dashboard also has various indicators such as infant mortality,

prevalence of obesity, prevalence of smoking and services accessibility which are disaggregated according to ethnicity so that intervention is targeted.

Race and Health Observatory, NHS.

Having been set up to research and respond to ethnic disparities in health, the Observatory undertakes research, formulates evidence-based advice and collaborates with NHS agencies to execute anti-racist procedures. The Observatory reported extensively on matters of mental health disparities in Gypsy, Roma, and Traveller populations and developed models on reducing disparities in maternal mortality in ethnic minority women.

Organisations that support the Chosen Group.

Race and Health Observatory, NHS.

The NHS race and health observatory is an essential national agency that aims at researching and treating inequalities on ethnic health in the NHS. Its main objectives are a thorough research of the underlying causes of health disparities, the development of evidence-based interventions, and assistance of NHS organisations in the systemic changes. The Observatory also generates much report research that focuses on particular health statuses, performs nationwide data research to determine inequality patterns, and collaborates with ethnic minority groups to make their voices heard in policy-making decisions.

Research areas that the organisation works in include maternal health disparities, mental health inequalities and the outcome of cardiovascular diseases among ethnic groups. It informs medical professionals in practise with evidence-based advice on how to offer culturally competent care, minimise unconscious bias, and enhance the communication with culturally diverse patients. The Observatory makes significant steps toward health equity by spreading the more awareness of structural racism in the healthcare system and lobbying policy changes.

Conclusion

In the UK, ethnic health disparities are caused by deprivation, racism, accessibility as well as disease risk factors, and they result in disparities in cardiovascular disease, maternal mortality, infections, mental health, and outcomes. Dashboards and observatories are beneficial but to achieve equity, then anti-racist policy, culturally competent, accessible offerings and community collaborations are essential.

Task 2: Epidemiological Analysis

Managing Hypertension and Stroke in Adults in Birmingham: An Epidemiological Approach

Introduction

Definition and Consequences.

The life threat to many people in Birmingham is hypertension being over 130/80 mmHg that contributes to stroke, disability, decreased life quality, and early mortality. The first cause of severe disability in the UK is stroke, which is as a result of a broken blood supply supply to the brain. The main preventable risk factor is hypertension which causes approximately 50 percent of all strokes (British Heart Foundation, 2024).

Prevalence and Incidence

Every year in the UK, 100,000 strokes are caused, 34,000 people die of it, and the number of stroke admission has grown by 28 per cent since 2004 (British Heart Foundation, 2024). The prevalence of hypertension among adults was 47.7 with the percentage of the population with controlled blood pressure was as low as 20.7 (CDC, 2024). The prevalence rate of cardiovascular disease is higher in Birmingham, and the admission rates in it are higher than that of England (UK Health Security Agency, 2024).

Public Health Measures (3 P's)

Primary Prevention

Primary prevention focuses on prevention of hypertension by the interventions in the population. The salt reduction programmes aim at curbing excess sodium consumption whereby the WHO proposes up to 5gms/day as the maximum intake, whilst UK consumption is higher. Healthy diets, physical activity, and smoking cessation are the ways of promoting health via the use of public health campaigns to reduce cardiovascular risks and promote healthier behaviours.

Secondary Prevention

Secondary prevention is aimed at preventing hypertension at early stages and its treatment to avoid stroke. The NHS Health Cheques scheme provides cardiovascular risk programmes to adults between 40 and 74 years every five years. High blood pressure is monitored by general practise registers and the Quality and Outcomes Framework encourages GP practises to manage blood pressure and assist with the medication adherence.

Tertiary Prevention

The goal of tertiary prevention is to reduce post stroke disability and recurrence. The integrated stroke delivery networks offer coordinated care including thrombolysis and thrombectomy of the acute stroke. Rehabilitation services handle impairments whereas secondary prevention is aimed at blood pressure control, antiplatelet therapy and lifestyle changes, lowering mortality, disability and recurrence of stroke.

Important Determinants and Risk Factors.

Hypertension and stroke risk are conditions that are closely dependent on several related activities. Among the risk factors that can not be modified one can have advancing age with the percentage of 23.4 in adults between 18-39 and 71.6 in adults over 60 years (CDC, 2024), sex (male), and genetic predisposition, specifically Black and South Asian people show much higher rates of hypertension prevalence. Having family history of cardiovascular disease puts an individual at high risk.

The risk factors to be changed include poor dietary habits that are characterised by high amounts of sodium, saturated fats, and processed foods with the absence of fruits and vegetables. Exercise

lacks and it is also a contributing factor to obesity, hypertension and diabetes. Hypertension is directly predisposed by obesity in a variety of ways. High volume of alcohol activates high blood pressure. Smoking ruins blood vessels and gives rise to stroke (British Heart Foundation, 2024). Poor sleep and stress (talent of constant stress) led to the development of hypertension. Poor diet, lack of access to healthcare, and environmental stressors are some of the risk exposures brought about by the socioeconomic deprivation.

Health Needs Assessment and epidemiological Studies.

The epidemiological studies of the population in Birmingham would utilise various systems to specify the population that is affected and at risk. Disaggregated prevalence estimates based on standardised blood pressure measurements of representative samples would be determined using cross-sectional surveys. This would include undiagnosed HBP, which is approximated at 8-9% throughout English Integrated Care Boards (OHID, 2024).

Long-term studies on hypertensive patients would measure effect of stroke and determine any form of progression. A case-control study which compares patients with stroke to matched controls would elucidate the association with several risk factors unique to the population of Birmingham. The mapping of geographic information system would provide visualisation of spatial clustering of high-risk populations, used to inform specific interventions.

Surveillance Systems and Monitoring.

Sentinel Stroke National Audit Programme (SSNAP).

SSNAP is a detailed stroke care quality surveillance programme in which a majority of the hospital stroke nurses in England report the data (90 percent and above). This clinical audit follows patients in their path of admission to discharge and evaluates the fulfilments to evidence-based care standards. In the case of Birmingham, SSNAP allows one to recognise deficiencies in care quality, compare it to national standards, and track the progress of the improvement efforts (HQIP, 2024).

Current Cardiovascular Disease Profiles.

In a similar manner, the Office of the Health Improvement and Disparities has CVD profiles that report CVD surveillance on the local authority's level. The profiles are used to monitor the prevalence of hypertension, diagnoses, and treatment coverage and control success. In the case of

Birmingham, profiles indicate the anticipation of prevalence of undiagnosed hypertension, hospital admission of stroke and cardiovascular disease, premature deaths and disparities at deprivation quintile levels (OHID, 2024).

Disease Registers General Practise Disease Registers

Quality and Outcomes Framework demands general practises which have to keep hypertension registers which would establish effective systems of surveillance of diagnosed cases. The registers permit calculating practise-level prevalence and population-level prevalence, rates of the treatment and the success rate of the blood pressure control.

Population Health Managing Pages.

Population health management platforms: Integrated Care Systems are now using more and more population health management systems that interconnect various data such as general practise records, hospital admissions, and social care data. As it is given in these platforms, risk stratification can be developed, with the opportunities of identifying the most vulnerable patients that are at high risk of cardiovascular diseases to engage in some proactive measure.

Precise Health Impact Assessment.

Some short term effects of uncontrolled hypertension and stroke in Birmingham are overcrowding of the emergency rooms, acute hospital beds and burdensome demand of intensive rehabilitation services. Economic costs include such items as the costs of acute care, the expenses on productivity due to disability and early mortality, informal costs imposed on the families. Examples of social impacts are low quality of life, psychological trauma and disruption of community.

There are long-term implications which are huge. The survivors of stroke experience chronic disability which is related to mobility, communication, thinking, and autonomy. About 1.4 million stroke victims among the UK residents survive with more than a half permanently disabled (British Heart Foundation, 2024). This gives constant healthcare requirements, social care fine and grains and financial strains. The second common form of dementia, which is referred to as vascular dementia, affects at least 180,000 people in the United Kingdom and is often a sequela of stroke or chronic small vessel disease caused by untreated hypertension.

These effects are heightened in the city of Birmingham, which has a wide range of ethnicity. Communities in the United States of America which have a higher burden of disability include black and South Asian communities that suffer increased levels of hypertension and stroke (UKHSA, 2024).

Strategy of Health Intervention Programme Design.

Community-Based Detection Programme of Hypertension.

This intervention would bring systematic blood pressure screening in community places such as places of worship, community centres, and working places and more so in the high population of the ethnic minorities and in socioeconomically deprived places. The barriers to access would be broken by mobile screening units. Local community-based health workers would be involved in screening, health education, and referrals, which increases the cultural appropriateness and confidence.

Lifestyle Intervention Programme which is culturally adapted.

It has been shown that interventions that are culturally tailored have a higher outcome. This programme would be based on co-designed group-based sessions with the community members, which would focus on dietary change, encouraging physical activity, and managing stress in a culturally appropriate manner. The sessions would consider language favouring, integrate the use of traditional foods in healthy eating instructions, and tackle cultural perceptions regarding health and illness.

Improved Pathway of Primary Care Management.

The intervention would help with general practises that target the high-cardiovascular-risk groups by providing them with the opportunity to manage chronic illnesses safely and offer clinical pharmacist care to optimise medications and implement remote monitoring of blood pressure levels using digital tools. Home blood pressure monitors would be provided to patients with telehealth support to monitor their blood pressure more often without visiting the practise.

Intervention Evaluation of Effects.

Evaluation would be done through mixed methods that would involve both quantitative outcome evaluation and qualitative process evaluation. The key outcome measures would be the rates of

identifying hypertension rate, the achievement rate of blood pressure control (<130/80 mmHg), and the change in the stroke admission rate. The secondary outcomes would include the improvement of cardiovascular risk factors (weight, physical activity, diet quality), the rate of medication adherence, and the patterns of healthcare use.

Process evaluation would measure intervention accessibility within the target populations, especially the analysis of equity of uptake among the ethnic minorities and deprived communities. The fidelity monitoring would ensure that it is delivered. Taking the form of qualitative interviews with participants and healthcare providers, the study would look into the area of acceptability, barriers, and facilitators and use the data to improve the inform programme. The cost-effectiveness analysis would involve a comparison of the cost of interventions and savings in the healthcare caused by prevented strokes, and better blood pressure control.

Epidemiological Approach Strengths and Weaknesses.

Strengths

This is an epidemiological methodology that provides strong evidence to make decisions based on the systematic data collection and analysis. Carrying out a detailed surveillance is possible using numerous surveillance systems that can help identify trends and assess interventions. The burden in the population level considers various communities, whereby it is important to allocate resources equally. Best practise interventions are based on effective international programmes, which means that cultural appropriateness is achieved, and local inhibition is mitigated.

Weaknesses

A number of restrictions are involved such as the differences in the data quality of the various surveillance, this could either result in the underestimation of the actual prevalence of hypertension, as a result of undiagnosed cases. Disagreements in ethnic coding might cause obscuration of disparities and individuals who are not a part of the healthcare system might not be covered by surveillance systems. Causal inference is a difficult endeavour and the observed relationships are subject to confounding variables. The assessment of intervention may take long durations making it difficult to establish the value.

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