VALUING NATURE PROGRAMME

Demystifying Health

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1. Introduction

Health is a basic element of life which is often taken for granted. We think little of it until it is threatened by injury or disease yet it is perhaps the most fundamental determinant of whether or not we can make the most of the opportunities available to us for a good life. Although we are healthier than we have ever been in history, good health is not equitably distributed. Protecting and promoting health is one of the most important roles of the state, healthy people are happier and more productive, able to take part in and contribute to their communities, but efforts to promote good health and deal with poor health is one of the biggest costs societies face. How we think about and define health and the factors which determine health has far reaching consequences for us all.

This brief demystifying paper introduces the concept of *health,* reviewing some common understandings of the idea and its usages, introducing key theories and schools of thought. The paper focuses on health in the UK, how it is protected, promoted and improved, and how we assess and measure health. The paper briefly considers how the concept of health relates to other similar linked ideas such as wellbeing and quality of life. It is written from a predominantly western, developed world view point and is targeted at the very wide variety of people and institutions whose activities and interests intersect with or may have some impact on health but who are not necessarily health professionals.

2. What is health?

There are many definitions and understandings of health, it is a *'concept which has inspired endless theorising and dispute through the centuries'* [1]. In 1948 the World Health Organisation (WHO) agreed a definition of health, suggesting that it is a *'state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'*. This definition, which recognised that health was a state of not just physical, but also mental and social wellbeing has been enormously influential, guiding policy, practice and research in the post-war period. In 1986 the WHO agreed the Ottawa Charter, which expanded on the 1948 definition to include the statement *'To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living.'* This addition to the 1948 text reflected the growing influence of the social model of health and the awareness that health can be considered to be both a result, as well as a component and resource, of the dynamic interplay between our opportunity and ability to live a good life.

Some of the many ways in which people think about the concept of health

- Health as normality

- Health as the absence of disease

- Health as a balance, homeostasis, equilibrium

- Health as a contextual status (e.g. a person may have a chronic condition but reports good health)

- Health as function (health is being able to undertake the things you want or need to do, ability vs dis-ability)

- Health as fitness

- Health as resilience

- Health as a feeling

- Health as thriving or flourishing

- Achieving good health as an occupation or practice (e.g. fighting cancer)

- Health as stock or capital, a resource

In recent years, however, the WHO definitions have been challenged with some suggesting that achieving a state of *complete* physical, mental and social wellbeing is unrealistic, probably unobtainable and excludes people with chronic conditions and disabilities [2–4]. More recent understandings have approached health as a complex adaptive system and focus on resilience and capacity to self-manage in the face of social, physical and emotional challenges. Health, in these approaches, is usually considered to be a dynamic state, one that is not fixed nor absolute, and one that is constantly responding to environmental, social, biological, emotional and cognitive conditions or states [5, 6].

Two key models of health

The biomedical model conceptualises health as an objective, observable and crucially measurable state primarily concerned with the presence of a disease, bodily function, and capacity to undertake tasks. This is the approach to health that has long underpinned the health sciences and health services.

The social model reflects a wider understanding of health and positions the concept as a reflection of the wholeness of the human experience. The model suggests that notions of health are socially or culturally 'constructed' (i.e. an idea or understanding that has been jointly constructed by people in a society rather than an external 'objective truth') and are inherently political [1, 7].

Typically, we think of three key domains of health:

1) physical or physiological, relating the biomechanical functioning of the human body,

2) mental, psychological or emotional, and

3) social, relating to how we connect with others.

Often these are considered in isolation and as distinct from each other. However some argue that defining these domains as separate is unhelpful as they are inherently dependant on each other [8]. Health can also be thought of at different scales, from the cellular and organ scale, to that individual, and then beyond to family units, communities and then societies. Health at each of these scales is interrelated and interactive.

Health is a relative and highly subjective state. For instance, a person with a chronic disease or condition can report 'good' health. This may be because they have the condition under control and are able to undertake all the activities they want and need to do, and that they feel 'well'. Similarly, assessments of health may be contextual to the stage in the life course, a person of 90 may have several conditions but, for their age, consider themselves to have good health. Equally valid, and potentially diverging, assessments of health can be made by the individual themselves, or by a third party (e.g. a doctor) [9].

Relationships between health and the related concepts of wellbeing and quality of life

A key term which is often paired with health is 'wellbeing'. Wellbeing is, like health, a complex term with many different conceptualisations, however it can be broadly understood as *'an overall evaluation that an individual makes of his or her life in all its important aspects'* [10] and as a *'state of equilibrium or balance that can be affected by life events or challenges'* [11]. Although distinct concepts, health and wellbeing are inherently interrelated and interdependent; health is thought to be a component of wellbeing and wellbeing a component of health. Some definitions of health (such as the WHO Ottawa and the Meikirch [3] models), explicitly link the two concepts. For example, the Meikirch model states *'health is a state of wellbeing emergent from conducive interactions between individuals' potentials, life's demands, and social and environmental determinants'* [3]. The UK's Office for National Statistics (ONS), on the other hand, include health as a component of wellbeing *'An individual's health is recognised as an important component of their well-being'.*[i] The ONS collects information on both subjective and objective measures of physical and mental health to help monitor national wellbeing and has shown a strong correlation between how people rate their health and their personal wellbeing.

'Quality of life' is a term which is used to describe the influence of all aspects of an individual's life, which can include their health, on how they feel. Health Related Quality of Life (HRQoL) is more specific and is a *'multi-dimensional concept that includes domains related to physical, mental, emotional, and social functioning. It goes beyond direct measures of population health, life expectancy, and causes of death, and focuses on the impact health status has on quality of life'.*[ii]

i https://www.ons.gov.uk/visualisations/dvc364/dashboard/index.html#section3

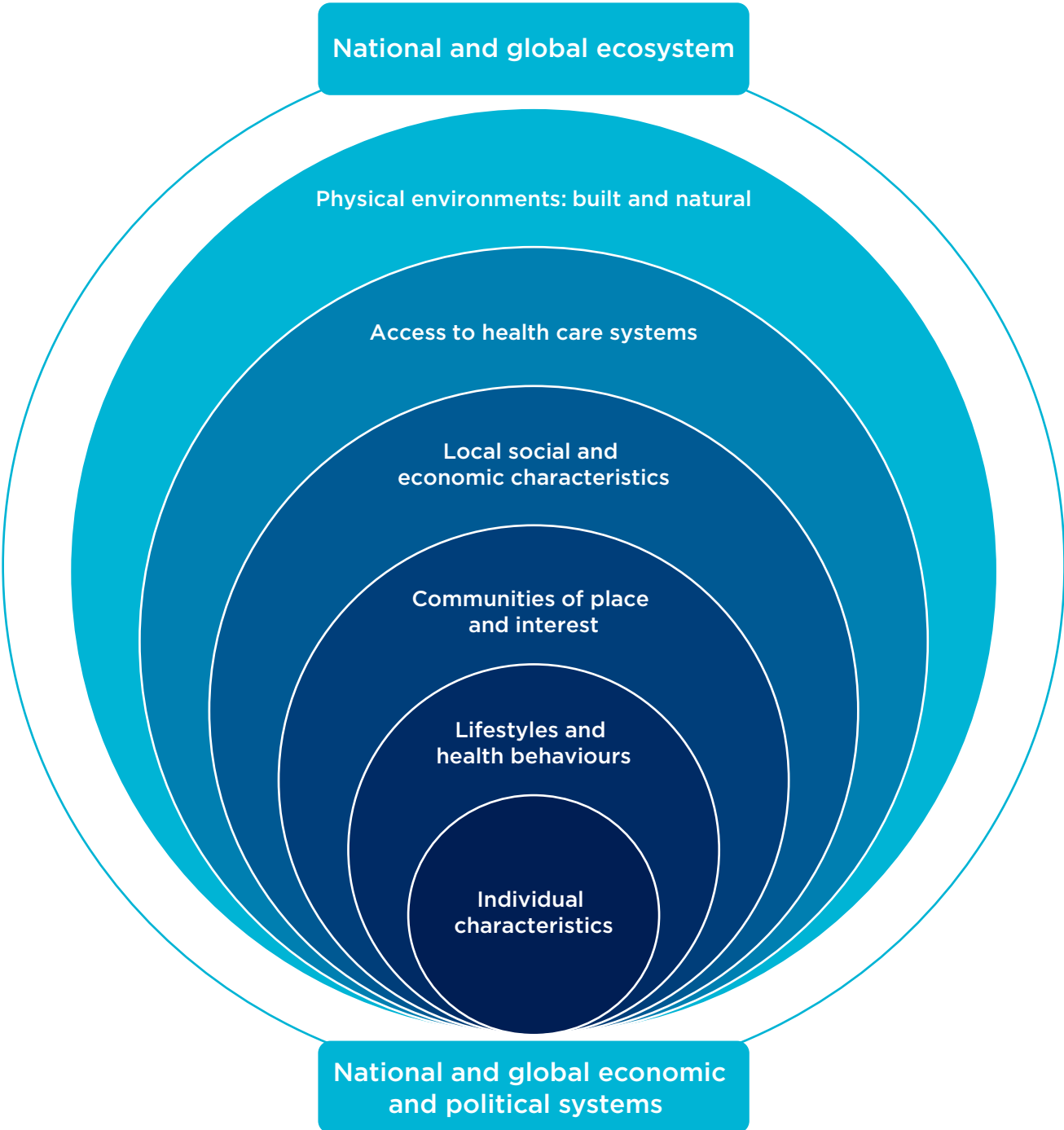ii https://www.healthypeople.gov/2020/about/foundation-health-measures/Health-Related-Quality-of-Life-and-Well-Being

3. What determines health?

The ways in which people have thought about and identified the determinants of health is strongly influenced by the model of health to which they ascribe. However, most agree that at the most fundamental level, health is (partly) determined by the function of the body (cells, organs and so on) and by the availability and quality of basic resources for life such as adequate air, water, food and shelter [12]. Beyond these fundamentals, and as the discussion of the different models of health suggests, health is more than just bio-mechanical-chemical phenomena, it is also determined by and reflects the socio-economic, structural, cultural and physical environments and conditions in which we live, as well as by our behaviours, attitudes and activities [13] **(Figure 1).** Health is *'created and lived by people within the settings of their everyday life; where they learn, work, play and love'* [14].

The relative contribution of the different determinants of health is difficult to ascertain – not least because they are often inherently interrelated and vary considerably between individuals and contexts – however several attempts have been made. The Robert Wood Foundation (US based) estimated that structural and socio-economic factors account for around 40% of variation in health, health behaviours 30%, clinical care 20%, and the environment 10%. The persistence of inequalities in health demonstrates just how 'extraordinarily sensitive' to wider socio-economic circumstances health states are [16]. Health is also a result of complex accumulations of risk over the life course, with some health outcomes having their origins in utero [17].

Figure 1. Determinants of health (Adapted from [15]).

National and global ecosystem

Physical environments: built and natural

Access to health care systems

Local social and
economic characteristics

Communities of place
and interest

Lifestyles and
health behaviours

Individual
characteristics

National and global economic
and political systems

The role of the natural environment in determining health

The natural environment is a fundamental and basic determinant of health and, arguably, has an influence on all other determinants either directly or indirectly. As Kretsch and Keune [18] noted the natural environment has *'been connected to virtually all areas of health science and policy and to the delivery of health services, and is relevant to health risk prevention, health promotion the three core areas of public health intervention'*.

The natural environment supports health through the provision, or regulation, of the basic resources for life such as water, air and foodstuffs. The natural environment provides a resource for health improvement, for instance through the provision of pharmacological opportunities or as a setting for physical activity. Greener living environments have been repeatedly linked to multiple health outcomes, in particular through influencing mental health [19]. The natural environment can also threaten health; risks include zoonotic disease and extreme weather events, as well as the consequences of anthropogenic environmental management and exploitation such as the use of pesticides or deforestation.

There are a number of different frameworks, such as Ecosystem Services, OneHealth and EcoHealth, Planetary Health, and Ecological Public Health, which have been used to explain and illustrate the linkages between natural environments and health. Whilst they share commonalities the underpinning conceptualisations and models of health vary.

4. How healthy are we?

There has been a steady improvement in health outcomes since the industrial revolution. Many of the infectious diseases which killed significant numbers in previous generations have (in the West and increasingly so elsewhere in the world) largely been eradicated or can be adequately managed and therefore account for relatively low proportions of poor health or death. Likewise, and again especially so in the developed West, better living and working conditions have significantly improved health outcomes.

As a result non-communicable diseases (NCDs) have now overtaken infectious disease and are the primary cause of poor health and death [13].

The leading causes of years of life lost (premature death) in the UK in 2013 iii

1. Ischaemic heart disease
2. Lung cancer
3. Cerebrovascular disease
4. Chronic obstructive pulmonary disease (COPD)
5. Alzheimers disease
6. Lower respiratory infections

iii https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/460510/15TL1323Changes_in_health_in_England_global_burden_disease_2013.pdf

NCDs are typically chronic and the result of inadequate access to the resources and conditions for good health as well as the accumulation of risk relating to genetic, physiological, environmental and behavioural factors over the life course. Whilst improved understanding of the causes and management of NCDs have helped reduce attributable premature death rates over the past 50 years, the numbers of people living with NCDs and chronic conditions are on the rise [20]:

- Cancer diagnoses are rising, in 2016 approximately 828 new cases were diagnosed each day in England [21]

- In the UK nearly 20% of people showed symptoms of anxiety or depression, an increase of 15% since 2013 [22]

- Approximately 5.4 million people receive treatment for asthma in the UK iv

- Since 1996 the number of people diagnosed with diabetes has more than doubled from 1.4 million to 3.3 million and by 2025 it is thought that the number will rise to over 5 million [23]

iv https://www.asthma.org.uk/about/media/facts-and-statistics/

The rise in NCDs is partly attributable to people living longer and the increased risk of poor health in older age.

Despite the increasing numbers of people living with NCDs, and reflecting the idea that health status can be relative and subjective, surveys show that most people consider themselves to be in good health: in the 2011 census just over 81% of people in England, Wales and Scotland reported that their health was either 'Very good' or 'Good'.

Inequalities in health

Health is not evenly distributed through society and varies between peoples and places. Older people tend to have poorer health then younger people, women have a longer life expectancy than men, and mortality rates tend to be lower in rural than urban areas [24]. Beyond these broad groups we find further variation in health outcomes. This variation is associated with socio-demographic factors such as education and employment and with broader socio-economic status. We see these socio-demographic and socio-economic inequalities in many different health outcomes. For instance, there is a strong association between socio-economic status and both life expectancy and healthy life expectancy (expected years of life in good health). People with the 'lowest' socio-economic status experience the worst health and people with the 'highest' socio-economic status experience the best health. This association does not just exist at the extremes of socio-economic status, instead it effects everyone regardless of social position; health outcomes are linearly associated with socio-economic status, this is often referred to as the social gradient in health [25].

Across the UK there is a gap of almost 20 years in life expectancy between the most and least deprived areas, and people living in the most deprived areas spend almost 20 fewer years in 'good health' compared to those who live in the least deprived areas. Differences between areas according to deprivation can be stark [26, 27]. There is a 28 year gap in life expectancy between two areas of Glasgow (Calton, where male life expectancy is 54, and Lenzie, where life expectancy is 82) [27]. The cost of inequalities in health are substantial, both in years of life lost as well as costs to the economy.

The causes of inequalities in health (in the West) relate to the inequitable distribution of structural and material living, educational and work conditions and opportunities, inequities in access to social, economic and environmental capital, and, to a lesser extent, to differing lifestyles and behaviours between social groups [1, 28, 29]. Marmot et al. [27] attribute inequalities in health to the *'unequal distribution of income, goods, and services, globally and nationally and the consequent unfairness in the immediate, visible circumstances of people's lives – their access to health care, schools, and education, their conditions of work, and leisure, their homes, communities, towns or cities – and their chances of leading a flourishing life'.* Inequalities in health start in the womb and are magnified through the lifecourse.

5. 'Health' is an ethical and political subject

Health is a fundamental right. The Helsinki declaration, for instance, affirmed WHO members' commitment to ensuring *'equity in health and recognize that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition'.* [v] Good health and wellbeing is also a Sustainable Development Goal (Goal 3).

The concept of health is, however, not a neutral subject, how we think about and define health has consequences for health policy, service delivery, and funding. Different schools of theory have addressed the ethical and political aspects of health in different ways. Some, such as feminist schools of thought, have addressed the power dynamics in health promotion and protection and in relation to rights around decision making [30]. Others have critiqued the dominance of certain models and approaches to health, for instance *'knowledge based upon the biomedical model empowered health professionals' authority over the body and how the body itself might be understood'* [31]. Social justice and fairness are important discourses relating to health inequalities.

Examples of the everyday moral, ethical and political facets of health

- The 'duty' to try to live healthily

- Metaphors of 'fighting' disease and illness, disease as evil

- The cultural associations between poor health and moral weakness

- Socially acceptable ill-health and socially unacceptable ill-health (e.g. physical vs mental health)

- Appropriate and timely uptake of health services (including avoiding over-use but not leaving it until it is too late)

- Outcries over the funding of treatments for 'lifestyle' related conditions such as obesity

One of the most contested elements of 'health' is determining who, or what, has responsibility for promoting and maintaining good health. It is often argued that the individual should and does have responsibility for their own health. There is much variation within this position, and for some individual responsibility relates to the freedom to make 'unhealthy' choices, for others this responsibility relates to avoiding placing an undue burden on their family or on wider society. Other schools of thought suggest that individuals' ability to take responsibility is limited by their individual capacity and by the social, material and environmental circumstances in which they live or work. In this case, it is argued that the community or society should take responsibility for ensuring that citizens are protected from harms and can lead healthy lives. Some argue that *'a balance between societal and personal responsibility for health and wellbeing has to be maintained to protect those who have limited opportunities to "use their biologically given and personally acquired potentials" or to entertain their rights of healthy living standards'* [5].

6. How we protect, promote and improve health

There are three key domains of societal health strategies **(Figure 2)**. These are broadly distinct areas of activity however there are many ways in which they overlap. The language and terminology used in relation to each of these three key domains is not necessarily consistent between settings.

Figure 2. The three basic health strategies
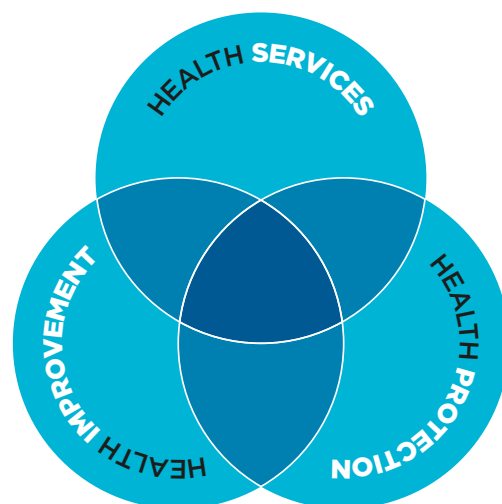
Health improvement and health protection

Health improvement and health protection (alongside health service improvement, not discussed here) are both strategies of 'public health'.

Health improvement refers to a suite of activities which aim to promote better health at the individual through to population level. Strategies to improve health can take place at the individual level, with initiatives such as stopping smoking advice at the pharmacy through to population or societal scale interventions such as the smoking ban. The breadth of these activities reflect the social, structural and environmental determinants of health [vi]. Health improvement also includes surveillance and monitoring of specific diseases and risk factors. Typically, health improvement will be led by public health departments (at both a national and local level) but is a cross departmental activity, touching on the remits of other departments such as education, housing and social care.

Health protection refers to activities which aim to protect individuals, communities and populations from both acute and chronic hazards such as infectious disease incidents and outbreaks and from environmental hazards such as chemicals, poisons and radiation. It also encompasses emergency response services and environmental health hazards. Again, health protection is usually the responsibility of a public health department, however it also is a cross departmental activity. For instance, environmental protection agencies contribute directly to health protection.

Health improvement and protection is clearly not solely the domain of the health services. Kevin Fenton, Senior Advisor at Public Health England, argued that:

> *'...given our understanding of the social, economic, environmental and commercial determinants of health, it is critical that tackling NCDs is not seen solely as the responsibility of the health sector, but engages a coalition of sectors and partners, at national and local levels...this means that an effective strategy for NCDs requires concerted action...on the many underlying influences that drive them (such as housing, employment, transport, income and environment).'* [vii]

Many bodies contribute towards health protection and improvement; from governmental departments, both national and local, to private and 3rd sector organisations. This co-responsibility for health is evident in the policies of governmental departments such as environment and transport, as well as in the aims of such disparate non-governmental bodies such as the *Wildfowl and Wetlands Trust* to the *Town and Country Planning Association.* Recognition of this plurality of contribution and responsibility has led to initiatives such as the cross-cutting theme of health in the international Sustainable Development Goals and 'Health in All Polices' [viii] strategies, and the more local Joint Strategic Needs Assessments, where the needs of local communities are identified to inform collaborative health and wellbeing strategies [32].

vi http://www.fph.org.uk/what_is_public_health

vii https://publichealthmatters.blog.gov.uk/2014/02/27/tackling-the-epidemic-of-non-communicable-diseases/

viii http://www.who.int/healthpromotion/frameworkforcountryaction/en/

Strategies to improve public health

Despite the UK enjoying some of the best health outcomes across the globe we still face significant challenges such as rising rates of NCDs and inequalities in health outcomes. The need to find effective strategies to address poor health is acute.

Many of the most problematic health challenges are the result of complex pathways meaning that effective intervention strategies take account of the multiple, often up-stream, social, structural and environmental determinants of health [13, 33]. The King's Fund identified nine key areas of evidence based activity, some of which would not traditionally be recognised as health interventions, that could improve health. Examples range from providing free child care in early years, through to developing an asset-based community development approach to reducing loneliness and social isolation [34].

Although many health improvement actions have been shown to improve health risk factors and outcomes and, in some cases, to be cost effective [35] some of the most potentially effective approaches, such as structural and regulatory changes, are politically challenging. It is arguably politically easier for governments to address single lifestyle factors and behaviours such as smoking than it is to address more fundamental determinants such as social mobility.

Inequalities in health are one of the most intractable issues faced in health promotion. Efforts to improve population health can result in worsening of inequalities in health because health interventions can raise the mean but exacerbate the gap between groups. This is typically because those with the poorest health often face the greatest challenges to accessing and benefiting from the materials and resources for health [2, 25].

Six evidence based recommendations for up-stream strategies to tackle inequalities in health from the Marmot Review [36]

1. give every child the best start in life
2. providing education and life-long learning
3. adequate employment and working conditions
4. having enough money to lead a healthy life
5. providing healthy and sustainable environments
6. taking a social determinants approach to prevention: acting on the 'causes of the causes'

Differing levels of 'health literacy' – the ability to understand, respond to and make use of health information and services – can also contribute to inequalities in health. Between 43% and 61% of English working age adults routinely do not understand health information [37].

Individual and community level factors which limit the effectiveness of health interventions [ix]

- Higher poverty rates, which can make it difficult for participants to access services or programmes

- Difficulties in accessing a programme or resource, including limited affordable, reliable, or public transportation options

- Demanding, inflexible and unpredictable work hours or unemployment

- Low availability of health programmes due to economies of scale affecting coverage

- Lack of access to the target of the intervention such as healthy food intake (food deserts) or physical activity options

- Low health literacy levels and differing perceptions of health

- Cultural and social norms surrounding health behaviours

- Linguistic and educational disparities

[ix]   https://www.ruralhealthinfo.org/community-health/health-promotion/1/barriers

Health services

Health services, including both state provision (the NHS) as well as private and 3rd sector providers, are responsible for providing direct care for patients, their families and communities[x]. The WHO explain that health services encompass *"the whole spectrum of care from promotion and prevention to diagnostic, rehabilitation and palliative care, as well all levels of care including self-care, home care, community care, primary care, long-term care, hospital care, in order to provide integrated health services throughout the life course'.* Health services are typically organised into the three tiers:

Primary care is often the first point of contact for people in need of healthcare, and may be provided by professionals such as GPs, dentists and pharmacists.

Secondary care, which is sometimes referred to as 'hospital and community care', can either be planned or elective care such as a cataract operation, or urgent and emergency care such as treatment for a fracture.

Tertiary care usually refers to highly specialised treatment such as neurosurgery, transplants and secure forensic mental health services. [xi]

Since 1998 health and social care has been a devolved responsibility of the four countries of the UK. The structure and organisation of state health services (such as the NHS and public health departments), flow of funds and decision-making points (including commissioning of services), and polices and strategies is different in each of the UK's countries (England, Scotland, Wales and Northern Ireland). [xii]

[x] http://www.who.int/
topics/health_services/en/

[xi] http://nhsproviders.org/
topics/delivery-and-performance/
the-nhs-provider-sector

[xii] http://www.assembly.wales/
research%20documents/15-020%20
-%20the%20organisation%20of%20
the%20nhs%20in%20the%20uk%20
comparing%20structures%20in%20
the%20four%20countries/
15-020.pdf

The socio-economics of health

Health is one of the most crucial factors underpinning economies [5, 38]. Healthy people are more productive and are able to take part in and contribute to economies. On the other hand, promoting good health and dealing with poor health is one of the biggest costs societies face.

The costs of poor health

The costs of poor health to society are substantial: ill-health related to poor diet cost the NHS (UK wide) £5.8 million, physical inactivity £0.9 billion, smoking £3.3 billion, alcohol £3.3 billion, and overweight and obesity cost £5.1 billion [39]. The Institute for Financial Studies estimates that in 2015–16 the UK public sector spent approximately £220billion on the health, social care and benefits given to people with disabilities and health conditions [xiii].

The UK currently devotes about £140billion directly to health care and promotion (e.g. excluding social care and benefits); in England the government will spend approximately £122billion on health in 2017–2018, Scotland, £13billion, Wales £7billion, and Northern Ireland £5billion [xiv]. Spending on health care in the UK was 7.3% per cent of GDP in 2014–15.

xiii https://www.ifs.org.uk/uploads/publications/budgets/gb2017/gb2017ch5.pdf

xiv https://fullfact.org/health/what-is-the-nhs-budget/

xv http://www.health.org.uk/blog/economic-case-preventing-ill-health

The costs of health are rising due to population growth, demographic shifts, the burden of non-communicable diseases, and the demand to provide the increasingly effective treatments which can improve and extend people's lives. The vast majority (~95%) of the UK's health budget is devoted to medical treatment services, approximately just 4% of the UK health budget is spent on prevention. The average NHS spend per head in England (2013–14) was £1,742, compared to an average of £49 per head for public health spending. According to the British Medical Association this balance of resource needs to shift, suggesting that 40% of the burden on health services in England, for example, could be avoidable if greater attention was devoted to tackling the causes of poor health' [xv].

7. How is health assessed and evaluated?

Approaches to assessing and measuring health and health outcomes are inherently related to the ways in which it is understood and conceptualised [1]. Chatterji et al. [40] highlighted the importance of ensuring conceptual clarity; '*our characterization of health ought to be consistent with basic consensus points about the nature of health, or else what we end up characterizing, though potentially both operationalized and measurable, may not be health in any ordinary sense: based on the intuitive understanding of health that most societies have*'. Conceptual clarity is fundamental for ensuring that the evidence produced is appropriate to answer the question/s being asked and the answers sought. As highlighted previously understandings of health vary significantly. This plurality poses a challenge for trans-disciplinary research, but also for the onwards application of research findings regardless of how they were produced. The growth in use of co-production (e.g. between practitioners and researchers) and of Public and Patient Involvement or Engagement (PPI and PPE) in research (as well as in services design and delivery) has, for example, helped overcome some of the cultural differences in understandings of health.

Broad health research strategies

There are a number of key primary research approaches which are used to better understand different aspects of health and to contribute to evidence-based health care and improvement. Not all approaches are suitable to understand different aspects of health.

Key types of health research

- Basic and applied medical and clinical research
- Health services research
- Health technology development and assessment
- Epidemiology and population health research (the health outcomes of groups of individuals, including the distribution of such outcomes within and between groups and spatially)
- Public and preventative health research
- (Complex) Health intervention research
- Evidence synthesis and systematic reviews (e.g. processes that underpin the assessments made by the National Institute of Health and Care Excellence)
- Ethnological and anthropological explorations of the lived experience of health, illness and disability

Almost all branches of science, from engineering, town and country planning to ecology and micro-biology can and do contribute to a better understanding of health.

Measuring health

There are a number of basic families of health state and outcome measures (within each family there are often many individual domain specific measures):

- Population morbidity and mortality, life expectancy, survival rates
- Presence of disease or illness in the individual
- Experience of symptoms and illness
- Quality of life measures
- Psychological and physiological functioning and ability to carry out normal activities
- Physical fitness
- Self-reported health status
- Qualitative approaches to the lived experience of health or illness
- Health behaviours (e.g. diet, smoking, physical activity)
- Risk factors (including genetic risk) [xvi]
- Contact with and use of the health system
- Health and care spend and other economic outcomes

Health metrics are tools with which we can capture some form of population measure of health state, disease, injury, death or disability. Typically they assess prevalence or incidence of an outcome. Key example of metrics includes:

- Global Burden of Disease metrics (and linked to the Sustainable Development Goals)
- World Bank health nutrition and population metrics [xvii]

To facilitate comparison of health outcomes and between different areas of health care (e.g. survival rates against drug use) common summary measures have been developed. Examples include the Quality Adjusted Life Year (QALY), Healthy Year Equivalent (HYE) and the Disability Adjusted Life Year (DALY). These *'encapsulate the impact of a treatment on a patient's length of life and also the impact on their health-related quality of life, which is recognized as a key indicator of treatment outcomes'* [41]. For instance, the National Institute for Health and Clinical Excellence (NICE) in the UK require the production of QALYs for health technology assessment. These common measures are also used to evaluate the cost-utility of a treatment, intervention or service against a set threshold of cost-effectiveness. NICE's threshold for funding treatments is typically between £20,000 and £30,000 per QALY. Cost benefit and cost consequence analyses are also used by bodies such as NICE to judge whether or not health interventions are value for money [xviii].

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Further reading or sources

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