Lifestyle Medicine

for the 21st Century

WLMO
World Lifestyle Medicine Organisation

EUROPEAN LIFESTYLE MEDICINE COUNCIL

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Goals of invited international contributors:

1. To describe 'What is Lifestyle Medicine', including where it fits locally, regionally, globally, and the common applications, the 'how to', of Lifestyle Medicine (LM).
2. How LM in the 21st century, as described above, contributes to the evolution of conventional medicine, healthcare, and health equity.

Both above goals take cognisance of the context of the differing world healthcare systems and cultures.

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1

What is Lifestyle Medicine?

Lifestyle Medicine (LM) is an evidence-based medical discipline that **treats, prevents, and reverses chronic disease** using mainly six pillars of active intervention which include eating a whole-food, plant-predominant diet, getting adequate physical activity, promoting restorative sleep, managing stress, avoiding risky substances, and creating positive social connections.

Clinicians certified in lifestyle medicine use evidence-based, prescriptive lifestyle change to address the root causes of chronic conditions such as heart disease, type 2 diabetes, obesity, and other lifestyle related disorders. Intensive lifestyle interventions can often reverse these conditions, reducing or eliminating the need for patients to use medications, surgery, or undergo other procedures.

A wider definition includes the upstream determinants of health such as social, economic, cultural, and environmental factors which drive the pandemic of non-communicable diseases. It also refers to the need to develop skills to support behaviour change, and the utilisation of a range of models of care, including health coaching, social prescribing, and health technology.

Notably, in terms of defining Lifestyle Medicine, the WHO, in a recent *Frontiers* report[1], positions Lifestyle Medicine alongside conventional medicine, stating that it aligns with modern scientific understanding.

Value Proposition of Lifestyle Medicine

A lifestyle medicine approach to population care addresses up to 80% of chronic diseases and can both arrest and slow the progression of the decades-long rise in the incidence and prevalence of such chronic conditions and their burdensome costs. Patient and provider satisfaction often results from a lifestyle medicine approach that strongly aligns the field with the quintuple aim of better health outcomes, lower often affordable cost, improved patient satisfaction, improved provider well-being and advancement of health equity.

Lifestyle medicine is the foundation for a redesigned value-based and equitable healthcare delivery system. As the world's foremost entity representing the field of lifestyle medicine, the **World Lifestyle Medicine Organisation** is a galvanised force for change; members are united in their desire to identify and eradicate the root causes of chronic disease, with the clinical outcome goal of health restoration. Alongside recognition of the multiple global pandemics, the WLMO promotes lifestyle medicine as the first and optimal treatment option for all people, mitigating much of the non-communicable, chronic disease epidemic.

Key Points

- There is evidence that behavioural change techniques to support people to make healthy lifestyle changes can improve health outcomes.
- Simple lifestyle advice alone may not address health inequalities. Lifestyle medicine does not only describe a policy or population level approach, rather it is a specific, personalised, effective tool in the consulting room, shaped by research into wider determinants of health and lifestyle improvements, where some people may require more support than others.
- Health care professionals want to support their patients with behaviour and lifestyle change but receive very little training to do so.
- Health care professionals may find that understanding how healthy lifestyle practices impact their own health could help them to deliver better care.
- Individuals are increasingly self-monitoring and seeking advice on how to care for themselves through lifestyle changes. Health technology's place in this needs to be addressed.
- There is a need to provide good quality sources of education, care and information about this approach for both the public and clinicians.
- There is a need to determine new models of care which effectively address psychosocial and cultural differences around the world.
- The World Lifestyle Medicine Organisation has a role in advocating and lobbying decision-makers in policy, industry, education, and other settings to acknowledge and address lifestyle and social determinants of health.

The sustainable goals and focus of LM are to promote healthier living in salutogenic environments and facilitate healthier lifestyle choices. It requires education and training at both professional and public levels but avoiding the *victim blaming* of individuals whose lifestyles are influenced by circumstances beyond their control. These circumstances include the upstream determinants of health such as socio-economic factors, cultural factors, and environmental factors. This will involve genuine cultural partnerships, co-design of lifestyle intervention programmes and shared decision-making.

1.1 Defining Lifestyle Medicine, its width and breadth, and exploring where it fits

Lifestyle medicine describes how health and well-being can be enhanced with daily habits and health practices (including the six pillars) that include healthy eating (Food as Medicine), which is plant-predominant and free of ultra processing, adequate physical activity, restorative sleep, stress management, maintaining positive social connections, and avoiding harmful substances.

Lifestyle medicine is a distinct medical discipline. But its principles are foundational for all specialties and transcend prevention to treat, slow progression and reverse chronic disease using the current six pillars, and behaviour-change skill sets that include motivational interviewing, positive psychology, and cognitive behavioural therapy. Lifestyle medicine is an integral part of local health care delivery, regional health systems and networks, and global efforts to develop and adapt evidence-based clinical practice guidelines, for which nearly all diseases and conditions benefit from attention to lifestyle as a first line, or adjuvant, management strategy. The benefits of a biopsychosocial, cultural, and spiritual approach will improve both mental, physical, and social health.

There are several ways to apply lifestyle medicine to managing chronic disease.

First, all clinicians should have foundational knowledge and a basic skill set to counsel patients about the six lifestyle medicine pillars. Every patient encounter should pay attention to the pillars and other determinants of health, with the intent of identifying root causes of chronic conditions and promoting healthy lifestyle behaviours.

Clinicians, trained and qualified in lifestyle medicine, may dedicate their practice focus to lifestyle medicine as a platform for behaviour change that promotes evidence-based, lifestyle strategies to promote health, wellness, and longevity. Healthcare professionals with substantial lifestyle medicine experience, often resulting in LM qualification, can reverse chronic diseases like type 2 diabetes or coronary artery disease with lifestyle therapeutic change, working through multidisciplinary clinics or health systems.

The need for lifestyle medicine in the 21st century is **more pressing than ever.**

A study of global disease burden in 195 countries concluded that dietary factors accounted for 11 million deaths in 2017 from non-communicable disease, along with 25 million disability-adjusted life years (DALY's)[2]. The impact of smoking was exceeded by dietary factors, which were responsible for 22% of global deaths observed, with 3 million deaths attributable to excess sodium intake, 3 million to low intake of whole grains, and 2 million to low intake of fruits. Additional research from the same group of 195 countries found that an optimised, whole food plant-predominant diet could increase life expectancy by 11-13 years at age 20 years, 8-9 years at age 60 years, and about 3.5 years at age 80 years[3].

Within the United States, the CDC estimates that 50 to 80% of all chronic disease is caused by unhealthy nutrition, lack of physical activity, tobacco use, and excess alcohol consumption. Moreover, 60% of US adults have at least one chronic condition and 40% have two or more, with a rising prevalence of obesity, heart disease, diabetes, stroke, and Alzheimer's disease.

Historically, we have witnessed a global decline in infectious diseases (IDs), primarily due to public health interventions, alongside an inexorable rise in non-communicable diseases (NCDs). However, we are now facing a syndemic—where both IDs and NCDs are converging and compounding each other's impact.

The COVID-19 pandemic has focused an intense spotlight on how healthy lifestyle behaviours can mitigate adverse outcomes and, conversely, how unhealthy behaviours increase morbidity and mortality. Obesity, for example, increases the risk of adverse outcomes for adults with COVID-19 infection by 2.3 for respiratory failure, 5.0 for ICU admission, and 1.7 for death[4]. Similarly, mortality from COVID-19 is substantially higher for patients with uncontrolled diabetes, liver disease, respiratory disease, hypertension, and chronic heart disease[5,6]. In contrast, eating a plant-based diet reduces both the risk of getting COVID-19[7], overall, and of developing moderate-to-severe infection[8].

Courtesy of World Obesity

With an increasing global focus on health disparities, lifestyle medicine has assumed relevance for under-represented minority populations and areas with reduced access to healthcare and/or limited resources to support efficient and effective healthcare delivery. The prevalence of many chronic diseases, including obesity, hypertension, type 2 diabetes, and cardiovascular disease, are variable in different settings in various countries of the world, however, are disproportionately higher in minority populations, because of sociocultural and economic factors, including concerns related to accessibility and affordability of healthy whole foods (food deserts, food apartheid).
A 2023 WHO report reveals that 86% of all premature deaths from NCDs occur in low-and medium-income countries (LMIC), and of all NCD deaths, 77% are in LMIC countries[9]. Promoting healthy, and culturally acceptable behaviour change through lifestyle medicine in these populations, and in resource-challenged environments, is critical for reducing the incidence and prevalence of chronic disease and for equity in health outcomes.

Lifestyle Medicine has evolved from a grass-roots movement of patients and health care professionals who want to address the underlying causes of ill health.

Lifestyle Medicine describes an approach and offers consultation tools for health care practitioners and professionals to use in the consulting room one-on-one with patients or to use with group consultation models both in-person and virtually.

Lifestyle Medicine is based on 3 principles:

1. Supporting Improvements in the socio-economic Determinants of Health

Lifestyle medicine recognises that health behaviours are heavily influenced by socio-economic factors, therefore, it is not enough to simply give "lifestyle advice". Although most clinicians have, or may feel they have, little influence on the socio-economic factors affecting their patients, they can use behavioural change methods and some social interventions to support people to make the lifestyle changes they choose. If these methods are tailored to people's "activation level" for example, through use of Patient Activation Measures (PAM), there is some evidence we can support people to improve their health outcomes despite the inequalities they face[10].

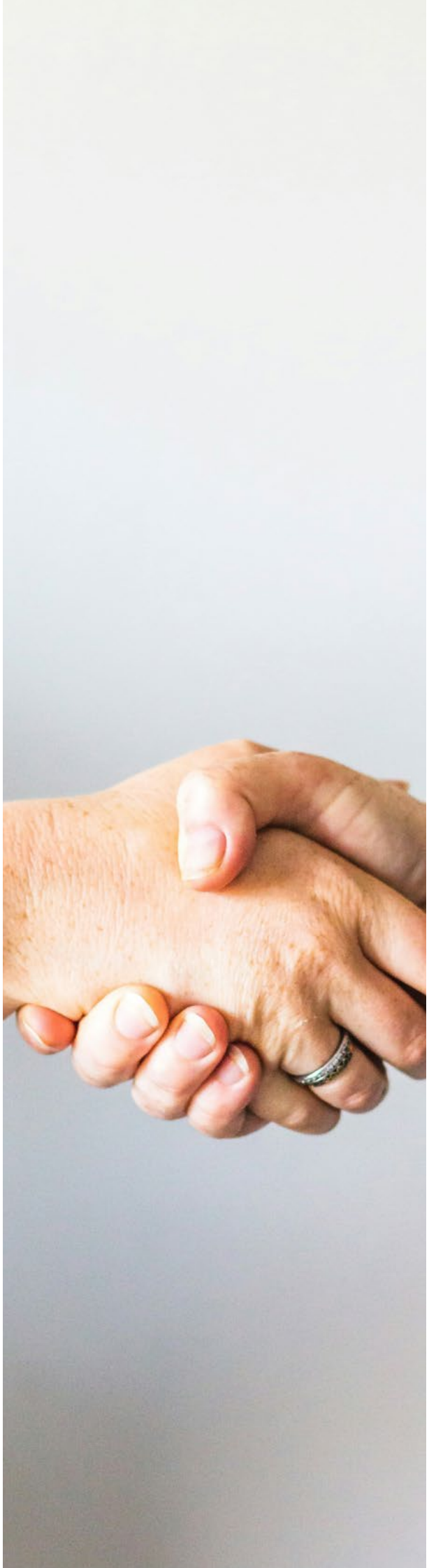
Lifestyle medicine can be used alongside medications and surgical procedures as an additional tool in the consulting room. Clinicians practicing lifestyle medicine can work to support their patients, but they will need policy and public health interventions to shift current focus away from individual responsibility[11] to address the social, cultural, economic, and environmental factors which impact on individual choice. There is a need for healthcare practitioners to have awareness around the critical role of these factors and that a failure to recognise their impact can lead to a "citizen shift" or "lifestyle drift" in policy and blame in the consulting room[12].

The Social Ecological Model of Change highlights the need to respond to more than the individual at the clinic visit. That individual is influenced by their own attitudes and beliefs but also their immediate surrounding environment, at work and at home, their neighbourhood, the community, the country in which they live, and the rules and regulations in the areas where they work and live. These different influences on the patient need to be addressed.

2. Skills to use of proven behavioural change techniques to support a healthy lifestyle

Lifestyle Medicine calls for rethinking of the traditional doctor-patient relationship - from one where the clinician acts solely as an expert information provider, to one that includes the role of a behaviour change facilitator. This is needed because we now know that giving simple lifestyle advice such as "eat less and move more" is often ineffective and may worsen health inequalities[13,14].

To be effective in supporting lifestyle change, lifestyle medicine uses knowledge of behavioural science to work with patients. This way we can work with people and their values to support problem solving and equip them with skills to make the changes they want to make.



Some of these techniques have been shown to be at least 80% more effective in supporting behaviour change than traditional advice giving[15] and include:

- Brief interventions
- Person-centred care
- Motivational interviewing
- Cognitive behavioural therapy techniques
- Health coaching
- Social prescribing
- Group consultations
- Use of Patient Reported Outcome Measures such as the Patient Activation Measure
- Optimisation of the built and lived environment to support behaviour change.

Lifestyle Medicine clinicians balance an expert approach of "telling and selling" what is on their agenda for the patient, such as "Quit smoking to prevent a second heart attack", with a collaborative approach that co-creates solutions aligned with the patient's own priorities, such as, "Quit smoking so that my grandchildren will not refuse to get into my car." Both are powerful motivators to quit smoking. One comes from the patient and speaks to his love and motivation to be connected to his family.

A lifestyle medicine clinician needs to understand how to connect with the patient to elicit both the medical and the emotional information which will add to a patient's motivation to adopt and sustain healthy behaviours.

3. Knowledge of the 6 pillars of Lifestyle Medicine

FIGURE 1 PILLARS OF LIFESTYLE MEDICINE

Graphic: Courtesy of Polish Society of Lifestyle Medicine

1.2 Where does LM fit in the practice of medicine today?

Lifestyle medicine is an **interdisciplinary field** comprised of medicine, social science, public health, epidemiology, sociology, nutrition, sports and exercise medicine, and behavioural science.

It shares similarities with other medical specialties, but it is distinct from:

- Public Health
- Preventive Medicine
- Population Health Management
- Rehabilitation Medicine
- Sports and Exercise Medicine
- Behavioural Medicine
- Ecological/sustainable medicine
- Holistic medicine
- Alternative or Complementary medicine
- Integrated medicine
- Functional medicine

For details on how lifestyle medicine may complement or differ from these approaches see Appendix 2.

In its simplest form, lifestyle medicine describes how health and well-being can be enhanced with daily habits and health practices that include plant-predominant eating, adequate physical activity, restorative sleep, stress management, positive social connections, and avoiding risky substances.

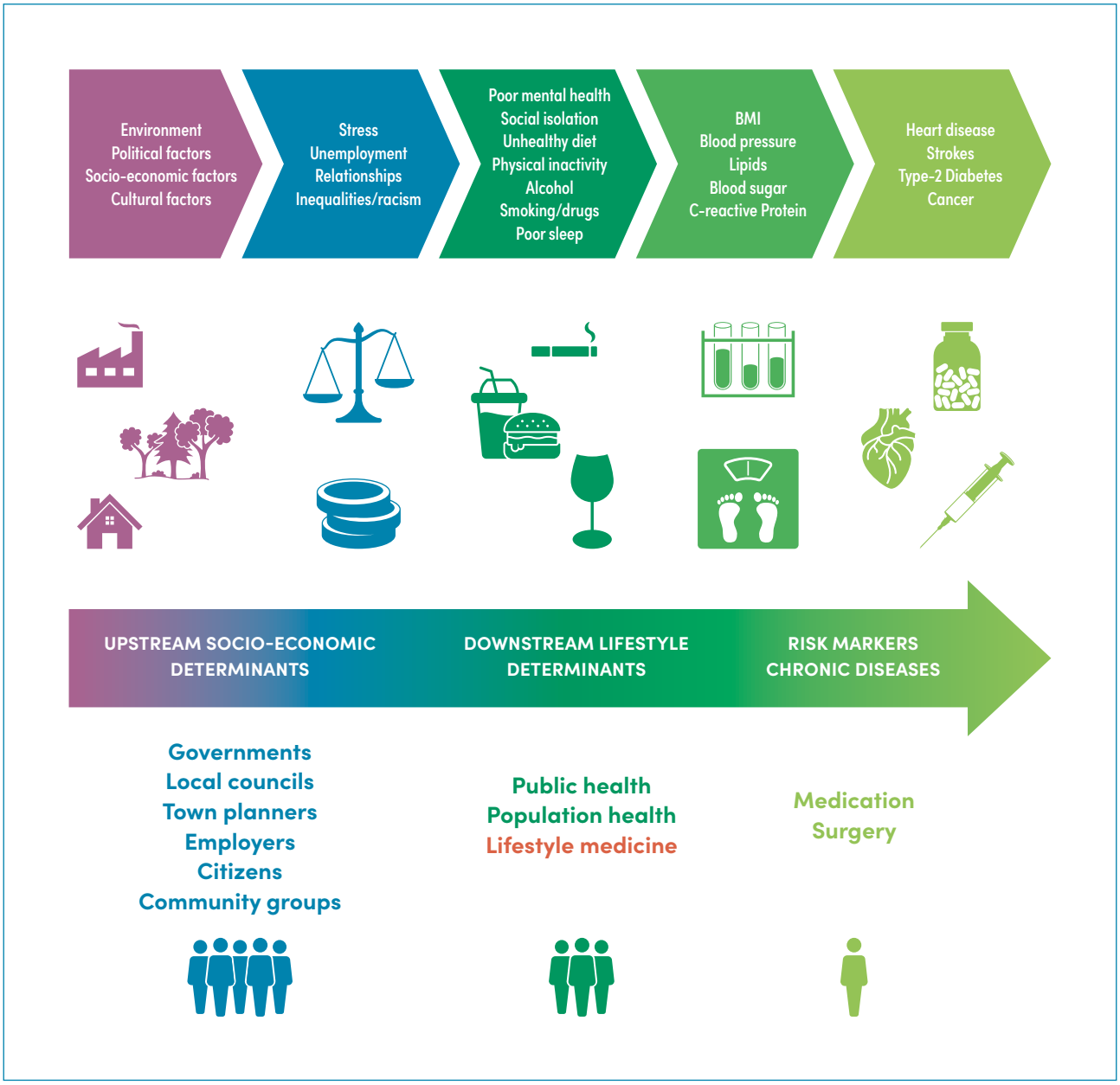
Viewed in this context, the principles and practice of lifestyle medicine are an integral part of the foundation of conventional, mainstream medical practice. Rather than disease management, lifestyle medicine's clinical outcome goal is health restoration, helping providers find joy and meaning in their clinical practice despite an increasingly stressful healthcare environment, while also enhancing the lives of their patients, friends, colleagues, and families.

One frequent question is how lifestyle medicine differs from preventive medicine. While there is some overlap, preventive medicine focuses on the health of individuals, communities, and defined populations, with a goal of protecting, promoting, and maintaining health and well-being to prevent disease, disability, and death. Similarly, the 6 pillars of healthy behaviour that comprise lifestyle medicine can prevent disease and death.

Lifestyle medicine goes beyond prevention, however, by emphasising evidence-based interventions to treat and reverse existing chronic disease, while empowering patients and families to adopt and sustain optimal lifestyle behaviours that also reduce the incidence and severity of future disease.

The graphic below shows where lifestyle medicine's individual or small group approach works alongside the population level approaches of public health to influence more upstream determinants of health in the consulting room.

FIGURE 2 A HIERARCHY OF CHRONIC DISEASE DETERMINANTS



Source: British Society of Lifestyle Medicine (Dr Ellen Fallows)

1.3 The international perspective – the nuances of LM

Lifestyle medicine now has an international spread. These National organisations all share the goals of researching, teaching, and spreading the practice of lifestyle medicine. However, their vision and approach may vary depending on the country's unique social and cultural context. See Appendix 3.

The international appeal and relevance of lifestyle medicine as a field of specialisation is apparent from the growing interest in gaining certification through the American Board of Lifestyle Medicine (ABLM), its international arm, the International Board of Lifestyle Medicine (IBLM), the British Society of Lifestyle Medicine (BSLM) Core Accreditation programme and the Australasian LM accreditation programme. All offer maintenance of Certification programmes.

Since the ABLM launched the first certification exams in 2017, 8000 physicians and professionals from 92 countries have certified. In person exams are held in 18 countries annually (February 2025).

In the UK more than 1500 physicians and other healthcare professionals have qualified in Lifestyle Medicine, either through the ABLM/IBLM Certification (850) or more recently the BSLM Core Accreditation (650) which has been adopted and locally adapted by seven countries around the world.

An international set of standards provides reliability and consistency in the field of lifestyle medicine and hence accreditation of programmes and qualifications around the world is a World Lifestyle Medicine Organisation (WLMO) function.

The World Lifestyle Medicine Organisation represents the convergence of Lifestyle Medicine professional associations from around the world, uniting under one banner for the purpose of collaboration, shared knowledge, and best practices, and to convey the power of the lifestyle medicine story more compellingly—a story of health, hope and healing for one and all.

Lifestyle Medicine leaders of all nations are working together to decrease the global pandemic of non-communicable disease.

The World Lifestyle Medicine Organisation is a coalition of worldwide non-profit, legally constituted national and regional Lifestyle Medicine societies that promote evidence-informed approaches to **preventing, managing, and reversing non-communicable diseases.** It currently has 43 member countries (February 2025) with representation from each continent.

https://wlmo.org/

The WLMO promotes Education, Advocacy and Research in the field of Lifestyle Medicine by providing a supportive platform and engagement with appropriately constituted national and regional Lifestyle Medicine organisations.

The WLMO accredits Lifestyle Medicine courses, programmes and qualifications, which are based solely in science and using up-to-date evidence, throughout the world, to ensure that the learning around the principles and pillars of Lifestyle Medicine is standardised, whilst acknowledging cultural, socio-economic and environmental differences.

WLMO believes in shared decision-making, equality of representation, and a celebration of the diversity that makes us so strong as an organisation.

The WLMO vision is of a world with the best possible health outcomes for its diverse citizens.

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2

How will Lifestyle Medicine contribute to evolving 21st century science, health, healthcare, and equity challenges?

2.1 Context and epidemiological background

Current evidence for the effectiveness of LM: From Prevention to Remission

Prevention

The INTERHEART study[16] found that lifestyle factors such as smoking, psychosocial contributors, fruit and vegetable consumption, alcohol consumption and regular physical activity with other conditions such as obesity and type-2 diabetes, accounted for over 90% of the risk of having a first heart attack.

The Million Women study[17] found that regular consumption of low to moderate amounts of alcohol increases the risk of many cancers leading to the World Cancer Research Programme concluding that "between 30-50% of all cancer cases are estimated to be preventable through healthy lifestyle and avoiding exposure to occupational carcinogens, environmental pollution"[18].

EPIC[19] was one of the largest studies of its kind, with 500,000 people followed over 15 years, found that a Mediterranean diet is associated with reduced mortality and incidence of cardiovascular disease and cancer.

The Lyon Diet Heart study[20] found that people had a 50-70% lower risk of further cardiovascular disease if they followed a Mediterranean diet.

The PREDIMED study[21] found that older people at high risk of heart disease were less likely to have a heart attack if they followed a Mediterranean diet with extra olive oil or nuts.

The Diabetes Prevention Program (DPP)[22] trial demonstrated that lifestyle modification for at-risk people is cheaper and more effective than metformin. The DPP is the first of its kind and has been rolled out as NHS (UK) pilots[23].

Treatment

Many NHS hospitals already use lifestyle-based programmes to support treatment of long-term conditions successfully, but they have yet to be scaled-up to their full potential:

Pulmonary Rehabilitation involves health education and exercise training that is successful in improving health outcomes and has been recommended as a key part of treatment for people with lung conditions[24]. It has also been found to be effective in improving mood in those with chronic obstructive pulmonary disease[25]. However, is only offered in a minority of hospitals to mainly younger patients likely reflecting a lack of referral[26].

Cardiac Rehabilitation involves exercise, support with stress management and health education. These have been shown to reduce risk of death, risk of hospital admissions and improve psychological wellbeing and quality of life, however the up take is only between 20-50%[27]. One of the barriers was the lack of clinicians endorsing cardiac rehab and inviting patients whilst still in hospital.

Chronic Pain Rehabilitation uses exercise and techniques such as cognitive behavioural therapy that have been shown to improve quality of life to support people to live well despite the pain they are in as well as reducing the pain itself[28].

Prehabilitation before surgery is being trialed in a few hospitals for example the "Get Set 4 surgery" programme at St Georges NHS Hospital[29]. This uses the teachable moment of the need for surgery to support and motivate people to improve their lifestyle. There is growing evidence that this approach will be effective[30].

Most National Health Service (NHS) interventions in the UK involve exercise and simple health education/advice but have not yet incorporated behavioural change techniques to support improvements in the other lifestyle areas of diet, social connections, connection with nature, management of stress, improvement of sleep etc. For example, the DASH study found that high fruit and veg diets can be used to treat blood pressure. Appropriate support to improve diet quality has the potential to be used to manage and reverse hypertension in some patients[31].

Intensive Lifestyle medicine interventions are not yet available to NHS patients but have been found to reverse disease processes and result in remission in some studies in specific groups of patients.

Remission

These studies have demonstrated the possibility that intensive lifestyle intervention programmes have the potential to be more than just prevention or an adjunct to treatment but could reverse disease processes to result in remission:

The DiRECT study[32], demonstrated type 2 diabetes remission for up to 2 years following a dietary intervention (involving meal replacement shakes with a stepwise re-introduction of food). This study led Professor Taylor to describe Type-2 diabetes as a "bad case of food poisoning" in his book "Life Without Diabetes"[33].

The Lifestyle Heart Trial[34], demonstrated that cardiovascular disease may be reversed using an intensive lifestyle program. The control group, receiving usual care showed progression of their arterial narrowing, resulting in more than twice as many cardiac events as the intervention group whose coronary arterial disease regressed.

The SMILES trial[35], demonstrated depression remission through a dietary intervention for moderate to severe depression and that this could be more effective than anti-depressant treatment.

A Paradigm Change for Medicine:

Epigenetics and "Metaflammation"

When James Watson co-discovered the DNA double helix, he stated "now we know in large measure our fate is in our genes". The Human Genome Project[36] lead Francis Collins stated that by 2020 we would have new gene-based "designer drugs for diabetes, hypertension, mental illness (...) every tumour will have a precise molecular fingerprint", we are no longer awaiting such drugs but are moving away from this "genetic determinism". Advances in basic science suggest that Watson was wrong; our fate is not entirely in our genes. We have discovered that our genes can be switched on and off by our lifestyle through "epigenetic" factors that are mainly lifestyle factors.

Similarly, "telomere" DNA areas discovered by the Nobel prize winner Dr Elizabeth Blackburn, shorten with each cell division, and determine how fast cells age and when they die. They shorten faster with stress, poor sleep, poor diet, and inactivity[37]. Dr Blackburn's team has discovered that telomeres can lengthen too if lifestyle factors are improved[38].

The mechanisms behind how lifestyle switches on and off genes are starting to become clearer. "Immunometabolism" is an emerging field that investigates this process by studying the way that energy generating processes in the body affect the immune system. It is hypothesised that lifestyle factors can cause "metaflammation" that causes long-lasting metabolic and epigenetic cellular reprogramming[39].

2.2 Too much medicine, overdiagnosis

The British Medical Journal's (BMJ) **Too Much Medicine initiative** aims to highlight the threat to human health posed by overdiagnosis and the waste of resources on unnecessary care.

The concept is presented in the article *Focusing on overdiagnosis as a driver of too much medicine* and echoed in a position statement by the Royal Australian College of General Practitioners:

"'Too much medicine' is a broad term, encompassing the concepts of over-diagnosis, over-detection, over-treatment, over-utilisation, disease mongering, medicalisation, false positives, misdiagnosis, and diagnosis creep."

Overdiagnosis is the diagnosis of "disease" that will never cause symptoms or death during a patient's ordinarily expected lifetime. Overdiagnosis is a side effect of screening for early forms of disease.

Lifestyle medicine addresses chronic medical conditions which have as their common aetiology, a disruption of everyday lifestyle behaviours that interfere with prevention and effective treatment of underlying pathophysiologic processes of disease. Despite this common disrupting mechanism, lifestyle-related conditions have been largely approached through pharmaceutical and procedural treatments rather than lifestyle behavioral treatments owing to a variety of factors.

With older and ageing populations, patients often experience multiple chronic diseases at the same time, many of them lifestyle related. Individual chronic disease guidelines often recommend pharmaceutical interventions as a key treatment, resulting in patients being prescribed multiple regular medications for their different diseases[40].
For example, it would not be uncommon to see a patient with heart failure, Type 2 Diabetes, and breast cancer treated with medication prescriptions according to the guidelines of each[41] even though lifestyle behavioural treatments in exercise and nutrition prescriptions can greatly alter, in common, the course of all conditions. Guidelines may arise out of research, controlling for co-factors thereby selecting out coexisting chronic conditions, but when put into practice in patients with multiple co-existing conditions, can easily

result in polypharmacy, unexpected drug interactions, and multiple side effects. The problem with polypharmacy and overtreatment has reached a level of awareness in older patients with a reported prevalence of polypharmacy ranging from 4% to 57% depending upon the definition used. It is high in elderly people but was also non-negligible in younger subjects such as the middle-aged[40]. Shared decision-making between patients and clinicians has been proposed as means to mitigate overtreatment and polypharmacy; yet when professionals and patients wish to do less rather than more pharmaceutical or procedural treatments, or to apply a common lifestyle treatment, the system within which care is delivered and received, can make this challenging to achieve[42].

An additional challenge is the growth of the pharmaceutical and medical device industries. The global pharmaceutical manufacturing market size was valued at USD 405.52 billion in 2020 and is expected to grow at a compound annual growth rate (CAGR) of 11.34% from 2021 to 2028[43]. Furthermore, according to Precedence Research, the global medical devices market size is expected to hit around USD 671.49 with a CAGR of 5.2% from 2020 to 2027[44].

The global rise of these markets is in part due to a thirst for innovation and technology by providers and consumers alike as well as by provider time restraints, insufficient lifestyle medicine training, and direct-to-consumer advertising. In effect, lifestyle treatment has been supplanted at great cost by a next step approach with pharmaceuticals and procedures.

To effectively tackle the network of conditions associated with lifestyles it is crucial for healthcare systems, providers, and patients to **adopt a new approach known as lifestyle medicine.**

This approach empowers individuals by emphasising education and supporting changes and sustainable modifications to their lifestyles.

By fostering an environment that promotes shared decision making and **aligning healthcare practices with evidence-based lifestyle interventions** we can pave the way for a healthier future.

This future would prioritise addressing the causes of diseases while reducing reliance on pharmaceuticals and medical procedures. It will also include the art and science of deprescribing.

The Future Healthcare Landscape

The future of lifestyle medicine appears promising and holds great potential in shaping the healthcare landscape. Here are some potential developments and trends that may influence the future of lifestyle medicine.

Integration into Mainstream Healthcare: As the evidence supporting lifestyle interventions continues to grow, lifestyle medicine is likely to become more integrated into mainstream healthcare. Healthcare providers may incorporate lifestyle medicine principles into their practices to prevent, manage, and treat chronic diseases.

Personalised Lifestyle Medicine: Advancements in genetics, gene sequencing, CRISPR (Clustered Regularly Spaced Short Palindromic Repeats), digital health technologies, and data analytics may lead to the development of personalised lifestyle medicine approaches. Tailoring interventions to individual genetic profiles, lifestyle habits, and health conditions can optimise outcomes and improve patient adherence.

Expansion of Digital Health Solutions: The rise of digital health platforms, mobile apps, and wearable devices will likely continue to support lifestyle behaviour changes. These technologies can offer personalised coaching, real-time monitoring, and feedback to empower individuals in managing their health.

Increasing Awareness and Education: With growing awareness of the impact of lifestyle on health, there will likely be increased emphasis on educating healthcare professionals, the public, and policymakers about lifestyle medicine approaches and their benefits.

Collaboration between Disciplines: Lifestyle medicine's holistic approach encourages collaboration between various healthcare disciplines, including physicians, dietitians, pharmacists, exercise physiologists, psychologists, and public health experts. Interdisciplinary teams will work together to address lifestyle-related health issues comprehensively.

Healthcare Policy and Insurance Incentives: As evidence accumulates on the cost-effectiveness of lifestyle medicine interventions, policymakers and insurance companies may incentivise and support lifestyle-based preventive strategies.

Focus on Mental Health and Well-being: Lifestyle medicine will likely place greater emphasis on mental health and well-being, recognising the strong interplay between mental and physical health. Stress reduction, mindfulness, and behavioural health interventions may gain more attention.

Community-Based Initiatives:
Community-based lifestyle medicine programs and initiatives may gain traction, promoting healthy behaviours in local communities and encouraging social support networks. Already Social Prescribing is being adopted more widely in the UK. There will be a more joined-up approach to our community assets.

Research Advancements:
As intimated earlier in this document ongoing research in lifestyle medicine will continue to explore new areas, refine existing interventions, and identify novel strategies to address emerging health challenges. Growth of lifestyle medicine research into emerging areas such as intensive lifestyle medicine programmes for severe diseases. For example, fasting mimicking diets in oncology and ketogenic diets in schizophrenia.

Integration in Medical Education:
Medical schools and other healthcare training programs may incorporate comprehensive lifestyle medicine education into their curriculum, equipping future healthcare professionals with the knowledge and skills to promote lifestyle-based care.

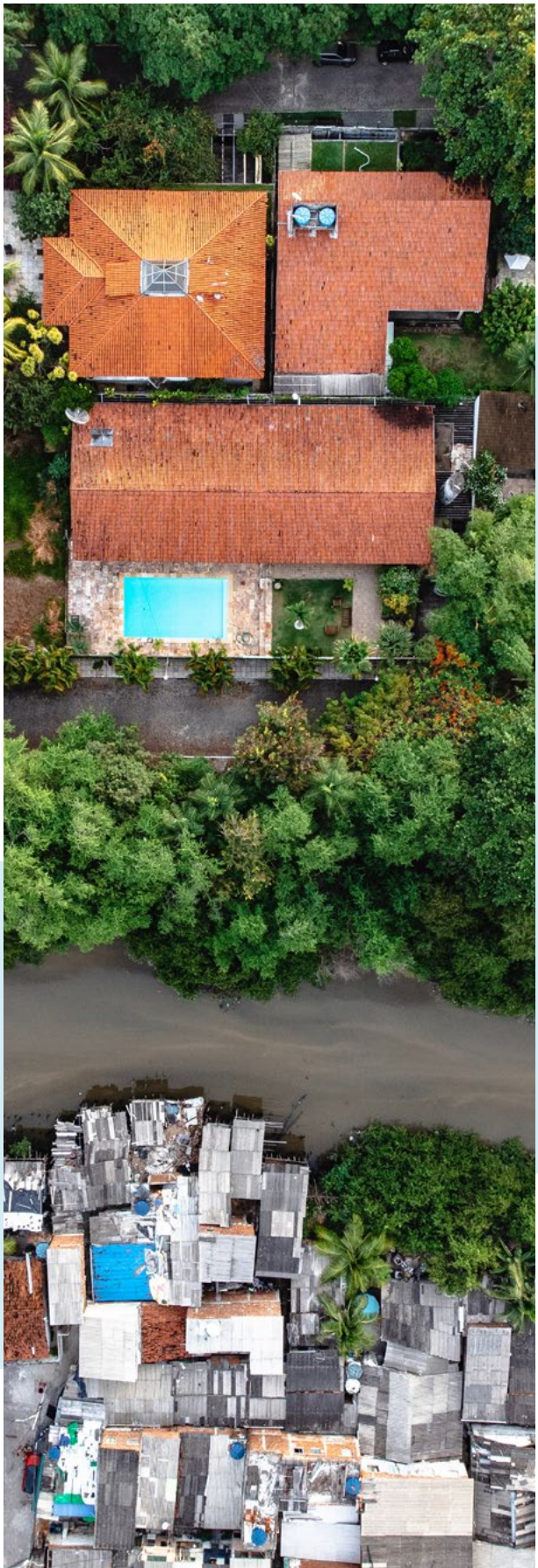
Preventive Approach in Chronic Disease Management:
Lifestyle medicine's preventive approach may play a significant role in managing chronic diseases, reducing the need for intensive medical interventions and hospitalisations.

New models of care:
In workplaces, schools, community.

Collaborative initiatives globally:
Overall, the future of lifestyle medicine looks promising as more attention is directed toward preventive healthcare and addressing the root causes of chronic diseases. Emphasising the importance of lifestyle interventions in improving health outcomes can lead to a healthier population, reduced healthcare costs, and an improved quality of life for many individuals. The World Lifestyle Medicine Organisation (WLMO) is a driving force which plays a key role in leading these endeavours. By working in collaboration with healthcare experts, researchers, policymakers and individuals who have the power to make improvements, our global health and overall wellbeing will be addressed.

2.3 The socio-economic determinants of health and LM benefits

The article "Inequalities in Health: The Psychosocial Environment" published in The BMJ[45] discusses how socio-economic factors, particularly relative living standards, significantly influence health outcomes in developed countries. Mortality in these nations appears to be influenced more by relative living standards than by absolute ones, supported by several key pieces of evidence. First, **mortality correlates more strongly with income inequality within a country than with absolute income differences between countries.** Second, countries with smaller income gaps, and consequently lower levels of relative deprivation, tend to have the lowest national mortality rates. Third, long-term increases in life expectancy seem largely unrelated to sustained economic growth.



While both material and social factors play a role in health disparities, the emphasis on relative standards suggests that **psychosocial pathways may be particularly significant.**

In Britain during the 1980s, income inequality increased faster than in other countries, leading to nearly a quarter of the population living in relative poverty. The impact of higher relative deprivation and weaker social cohesion may already be reflected in mortality trends among young adults.

The existence of large and growing socio-economic disparities in health shows how sensitive health outcomes are to these circumstances.

Mortality differences within Britain, depending on social classification, can be **twofold, threefold, or even fourfold.**

This discussion highlights some of the main mechanisms driving these disparities.

Understanding the root causes of health inequalities requires distinguishing between the effects of relative and absolute living standards. Socio-economic gradients in health are tied to both social position and material circumstances, each influencing health outcomes, with questions about which plays a larger causal role. The health disadvantage of the less affluent may primarily stem from the direct physiological consequences of poor material conditions—such as inadequate housing, poor nutrition, and air pollution.

Alternatively, it could be more influenced by the psychosocial effects of social standing. These psychosocial factors, including increased exposure to risky behaviors like smoking, drinking, or overeating in response to stress, likely contribute to health disparities.

Most of the direct impacts are likely linked to the physiological consequences of chronic mental and emotional stress. Evidence from various studies suggests that psychosocial influences related to social position are responsible for much of the observed health inequality. If this interpretation is accurate, it would have profound implications for public policy and our understanding of how socio-economic differences affect human biology.

Recommended resources:

Health Profile for England: 2017: Social determinants of health (https://www.gov.uk/government/publications/health-profile-for-england/chapter-6-social-determinants-of-health)

2.4 Successes and challenges in the spread of Lifestyle Medicine approaches

1. To provide clinicians with Lifestyle Medicine skills and knowledge

Lifestyle approaches are advised in all major healthcare guidance. Health care professionals want to know more but current medical training provides little teaching in this area. LM can redress this balance.

"There is a lack of knowledge and understanding of the basic evidence for the impact of nutrition and physical activity on health among the overwhelming majority of doctors. This has its roots in the lack of early formal training."

Letter to the Medical Schools Council and General Medical Council from doctors including Dr David Haslam (Chairman of the National Obesity Forum) and Sir Richard Thompson (past president of the Royal College of Physicians)

A "lifestyle first" approach is advised in major UK national guidelines:

NICE Cardiovascular disease guidelines: "discuss the benefit of lifestyle modifications" before offering statin medication treatment for primary prevention.

NICE + European Society of Cardiology guidelines: lifestyle modification is the first step in management of type-2 diabetes and blood pressure[46].

SIGN asthma guidelines: advise improvement in physical training, smoking cessation, healthy eating and weight loss.

NICE behavioural change guidelines: recommend the use of these interventions to support lifestyle change for those with obesity, type-2 diabetes and cardiovascular disease[47].

World Health Organisation guidelines for prevention of dementia: advise addressing "lifestyle-related risk factors, such as physical inactivity, tobacco use, unhealthy diets and harmful use of alcohol"[48].

Doctors' demand for lifestyle medicine is growing. In 2004, over half of clinicians surveyed said they would give advice about diet, 40% would give advice about smoking but still less than 8% would talk about relaxation or physical exercise[49]. GPs in 2017, agreed that physical activity promotion was part of their role but over half didn't know the UK recommended activity guidance[50].

Over 90% of medical students and doctors felt that nutrition was important in health and that doctors had a key role in nutritional care[51] but when dietary counselling occurred, it was of poor quality[52] and 36% of clinicians were not aware of any lifestyle guidelines for cancer survivors[53].

A survey carried out among >2000 European GPs in 2005 suggested that despite a strong feeling that they should advise patients about lifestyle, GPs' knowledge and practice of the evidence-based recommendations for lifestyle interventions was lacking[54].

Hospital medical teams are starting to realise the potential of lifestyle interventions in the emerging practice of "prehabilitation" where patients are supported to make lifestyle changes prior to surgery[55].

Nurses lack confidence to give lifestyle advice and support, particularly regarding lifestyle for cancer patients[56] with less than 6% of patients recalling any discussion of lifestyle factors with their primary care nurses[57].

Health coaches and social prescribing link workers are being introduced into NHS primary care as part of the new Primary Care Network roles in England to help deliver person-centred supported self-care[58]. These new roles will need training in the skills to support people with lifestyle changes as well as knowledge about the effectiveness of particular lifestyle changes.

Medical schools currently provide little lifestyle medicine education despite student demand. **Only 56% of medical schools teach about the guidance for physical activity[59] and final year medical students significantly underestimate the health benefits of physical activity[60]. Similarly, over 70% of surveyed doctors and students reported less than 2 hours of nutrition training in their medical education with only a quarter of doctors feeling that they were confident in their knowledge[51].**

Lifestyle Medicine Interest Groups (LMIGs) started in the US at Harvard Medical School in 2008 and formalised in 2009 provide an effective way to introduce the pillars of lifestyle medicine to medical students without interrupting or interfering with the core curriculum. The LMIGs meet at lunchtime or in the evening, which offers a great opportunity to share a whole food plant-based meal with the students. There are "Taste of Lifestyle Medicine" micro-grants offered through American College of Lifestyle Medicine that provide $500 of funding for a healthy meal for these LMIG events. The LMIG are led by students and a faculty advisor. They follow a parallel curriculum which offers the foundational evidence and guidelines for the lifestyle medicine pillars[61].

Research demonstrates that these one-hour lectures can have a significant impact. After one LMIG presentation on behaviour change including basics in motivational interviewing and transtheoretical model of change, students not only increased their knowledge but also their confidence in counselling about lifestyle related topics[62]. Time spent with medical students on lifestyle medicine principles and practice is time well spent.

The core curriculum in medical schools is already packed with information on pharmacology, physiology, biochemistry, anatomy, histology, and other pre-clinical courses required to pass the licensure examinations to practice medicine in the US. To retrofit the curriculum to include lifestyle medicine, faculty members are collaborating to incorporate the pillars in the courses that already exist.

For example, faculty can add information about exercise prescription to a case study of a patient with heart disease or diabetes. Many medical schools are working to thread lifestyle medicine throughout all four years of medical school. The American College of Lifestyle Medicine's Medical Education Task Force created a credentialling system for medical schools to adhere to and encourage more schools to teach lifestyle medicine principles and practices to their students[63]. The American College of Lifestyle Medicine offers a Lifestyle Medicine Residency Curriculum as an adjunct to residency training. Many residency programs across the US have adopted it, and there is currently one LM fellowship program available.

The time to learn about lifestyle medicine is as early as possible. There are colleges in the US that teach lifestyle medicine courses, and some have lifestyle medicine tracks for Bachelor's Degrees. To help faculty members teach lifestyle medicine to pre-medical students, nursing students, and others in healthcare professional training, ACLM has created a Lifestyle Medicine 101 Curriculum to be freely available and downloaded to any faculty worldwide who is interested.

It is available on the website at https://www.lifestylemedicine.org/lm101.

There have been over 200 faculty downloads from 25 different countries indicating the worldwide interest in lifestyle medicine. Other resources that can help faculty to teach lifestyle medicine include both the *Culinary Medicine Syllabus* and the *Introduction to Lifestyle Medicine Syllabus* which have been downloaded over 5,000 times each and have spread to many countries.

The rapid growth in the LM Community since its foundation, growing conference attendances and demand for qualifications, reflect demand for education and skills in lifestyle medicine. We need to deliver a range of educational options to suit both undergraduate medicine and clinicians delivering health care. As lifestyle medicine is a team-orientated discipline, there are physicians, nurses, advanced practice providers, nutrition specialists, pharmacists, exercise specialists, health coaches, therapists, and many other allied healthcare providers who are seeking training in lifestyle medicine.

2. To support health care systems

Lifestyle Medicine can help relieve the healthcare workforce crisis by providing health care professionals with education about self-care and a more sustainable way to practice medicine that has the potential to reach for remission of long-term conditions.

- A healthy workforce has been found to deliver better care.
- Lifestyle Medicine teaches techniques that make it easier for clinicians to work with their patients.
- For decades research has demonstrated that providers preach what they practice. If physicians exercise, they are more likely to counsel on exercise. If they do aerobic exercise, they are more likely to counsel on aerobic exercise, and if they don't do strength training, they usually don't counsel on it[64].

Lifestyle medicine is **cost-effective** and can be delivered in **real-life practice.** It helps patients and providers alike.

It is well known that staff health and well-being significantly impact the effectiveness of care[65]. The latest workforce survey in England suggests almost half of doctors were suffering poor mental health made worse by their work[66]. Clinicians with an understanding of the evidence behind lifestyle medicine will not only raise awareness of the importance of their own self-care but will encourage a more supported self-care approach with patients.

One of the strongest predictors of healthy lifestyle discussions in a consultation is that **the clinician themselves practices healthy behaviours[67,68].**

Group Consultations have been in existence since the early 20th century. The origins of group consultations began in the history of Medicine as far back as 1905, when Joseph Pratt, widely regarded as the forerunner in this modality of patient care, started group psychotherapy sessions for his poor tuberculosis patients[69].

Dr Edward Noffsinger introduced Group Consultations, one of lifestyle medicine's key tools, to improve the practice of medicine for both clinicians and patients. Following his experiences as a patient, he felt that his clinicians *"were as tired out, pushed and victimised by the system as I was. They tried to do the best they could for me; yet it seemed that the healthcare system itself was somehow broken, so that it was serving neither my physicians nor myself very well*[70]*."*

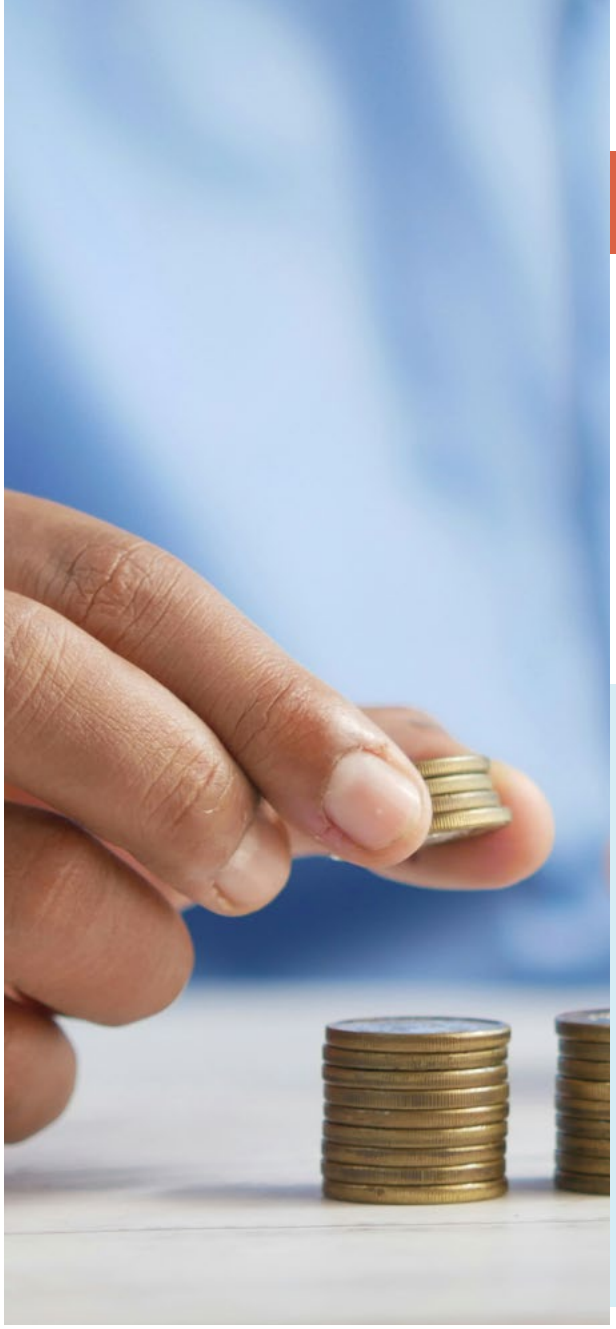
When people play a more collaborative role in managing their health through lifestyle medicine practices such as supported self-care and person-centred care, they are more likely to stick to their treatment plans and less likely to use emergency hospital services[71].

Lifestyle medicine tools can be practiced using cost-effective tools such as **group consultations** which allow for up to 15 patients to be seen in an hour and have been shown to be better than 1:1 care for type-2 diabetes[72] and have been shown to deliver cost-efficiencies[73]. In the US Group Consultations are known as Shared Medical Appointments.

Lifestyle medicine approaches are often cheaper than their pharmaceutical or surgical alternatives. For example, a lifestyle intervention in the Diabetes Prevention Program cost almost $1000 less when compared to the use of metformin in preventing diabetes over 10 years[74]. The cost of delivering type 2 diabetes remission in the DiRECT meal replacement trial was clearly cost-effective at a one-off £1,223, compared to £2,564 per patient per year for a lifetime of type-2 diabetes care in the NHS[75].

Group interventions in lifestyle medicine have been utilised for almost a decade. Progress has been noted in increased steps per day, increased servings of fruits and vegetables per day and quitting smoking after a four-week lifestyle medicine group intervention[76]. Some US group interventions are paid out of pocket and are in the $20 per session range with 8-12 patients in a group at a time. Others are funded by philanthropy and are provided free for patients. With COVID-19, these lifestyle medicine group interventions have moved from in person to online and preliminary reports reveal the sessions are effective, well-attended, and patients report high satisfaction[77].

The growth of Group Consultations in the UK is fast and effective – and the introduction of virtual Group Consultations is increasingly recognised as a powerful tool of Lifestyle Medicine.



The demands of practice can mean that clinicians are often rushed and feel they don't have the time to use a lifestyle medicine approach. It is possible to deliver training that can improve real-life practice as has been seen with the Making Every Contact Count training in delivering brief behavioural change[78].

Using tools such as person-centred care and group consultations will mean that this approach can be not just cost-effective but realistic and practical for busy clinicians.

3. To reduce the impact of COVID-19

The pandemic has brought a new urgency to the link between lifestyle and poor health. The LM Community will provide education for new and more effective leaders in modern medicine who can support patients with lifestyle changes.

Unhealthy lifestyle behaviours in combination accounted for up to 51% of the population attributable fraction of severe COVID-19 while **adopting simple lifestyle changes could lower the risk of severe COVID-19 infection[79].**

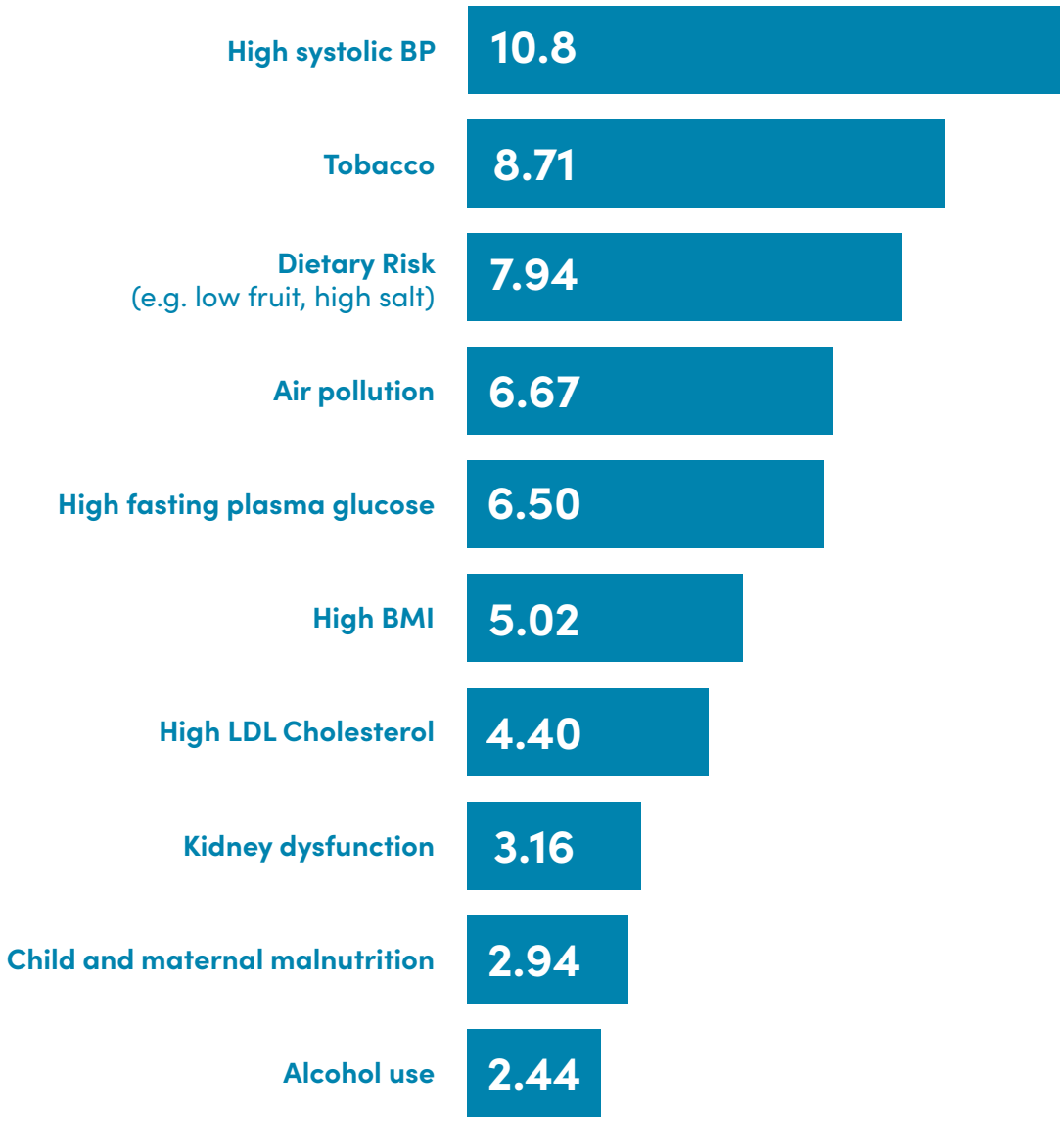
COVID-19 has occurred on the backdrop of a pandemic of chronic disease that reflects the global burden of disease that puts smoking and diet amongst the top 3 risks (see table 1 below). 460 people die a day of cardiovascular disease in the UK and almost all these deaths are thought to be premature and preventable[80]. These "two pandemics"[81], or syndemic, come together for those with obesity, diabetes and cardiovascular disease to increase the risk of contracting coronavirus and suffering poor outcomes[82,83,84,85]. Supporting people to make lifestyle changes can reduce their risks.

Efforts to reduce the spread of COVID-19 have increased stress, social isolation, inactivity, and consumption of processed food[81]. This increases the risk of adverse outcomes of COVID-19 and can contribute to worsening chronic diseases. With the UK seeing some of the highest COVID-19 related mortality rates in Europe[86], there is no doubt that UK health care needs more than ever to embrace a lifestyle medicine approach that addresses the root causes of ill health.

The COVID pandemic may bring people in contemplation into preparation about managing their weight as it has been demonstrated that obesity significantly increases the risk of both hospitalisation and death from COVID-19[87,88]. Adopting and sustaining healthy habits including routine exercise, nutritious whole food plant-based eating, sound sleep, social connections, stress resiliency, and quitting smoking all have benefits to our immune system's functioning[89].

FIGURE 3 GLOBAL BURDEN OF DISEASE 2019

Risk factors associated with deaths (millions) **worldwide** (M+F, all ages)



Source: Global Burden of Disease Study 2019[90]

4. To respond to patient demand for support to lead a healthy lifestyle

Patients want less paternalistic and more person-centred health care. The LM Community can provide education and a trusted source of knowledge for patients who want to know what they can do to live healthier lives without relying on burdensome medication regimes. Patients want to improve their health through lifestyle changes[91].

Patient generated health data is being used more often to inform and guide lifestyle change. Patients are not often given the option to discuss lifestyle change in detail or asked about their own goals. When patients are given lifestyle support in a medical consultation, it is often of poor quality. Patients often find they need to use less trusted resources for advice about lifestyle. Patients want a more compassionate, holistic health care service that listens to their needs.

When given a choice, **patients often want support to use lifestyle as a way of managing their health.**

In one study, patients were presented with a choice between a preventive medication or lifestyle change, 90% expressed preference for lifestyle change[87]. Similarly, another study found that patients were found to be well motivated to follow advice on diet and lifestyle, but "many felt they had received insufficient information about their disease and prescribed treatments." and that the "reasons behind the lifestyle and dietary advice had not been adequately explained, and that dietary advice was vague"[92].

Patients trust health care professionals and want this support and advice from their clinicians. For example, cancer patients in particular, say they would welcome lifestyle advice from their health care professionals[93,94,95]. As far back as 1987, over 60,000 patients were asked if their General Practitioner (GP) should ask about lifestyle factors, the majority agreed they should, and GPs were seen as a credible source of this lifestyle advice[96]. Patients prefer to get their lifestyle advice from clinicians, but most often have to turn to the internet, friends, family or magazines[97]. For example, the most googled health question in 2019 was "how to lower blood pressure?"[98]. There are risks with using the internet as a source of lifestyle advice, with over 70,000 websites providing health information back in 2001, a significant amount of poor-quality information has been found[99].

However, online health information has been found to improve eating habits and increase exercise and relaxation and is more often used by the wealthy and IT literate[100]. The LM Community will work to ensure that this information is not just available to the wealthy and will form a trusted resource to which the public can turn.

The use of patient generated health data, for example from home blood sugar monitoring or smart phones is growing, suggesting that patients find it useful to have control over their health data. For the best health outcomes, this data should be used with behaviour change techniques[101] as suggested in a lifestyle medicine approach. As this technology enables people to self-monitor and self-treat, people are looking for trusted advice about the options available to them, rather than being told what to do or have a professional do something to them[102]. However, less than 50% of people with diabetes for example, were given the opportunity to discuss their own goals for self-management in their medical consultations[103].

Patients are coming together to push for a more holistic and compassionate health care system. They are asking that we move from a reductionist medical care approach, so that we consider the wider issues that ill health effects such as stress, mood, social connection, meaning and purpose. For example, National Voices, a coalition of charities that "stands for people being in control of their health and care"[104], has published several papers asking for more work on prevention, supported self-care and person-centred care[105]. Professor Eric Topol has described the democratisation of healthcare that is now overdue, in his book "The Patient Will See You Now"[106].

Holistic Patient-Centred Care: Likewise, Victor Montori of "The Patient Revolution"[107] describes that "industrial healthcare sees patients as a way to achieve business goals resulting in accidental cruelty, burn out and an absence of care" and we must move to support patient goals in a more holistic way. The LM Community will provide training for clinicians to provide a more holistic health care system.

Patients' Advocacy for Holistic Healthcare: In recent times, there has been a notable shift in patients' perspectives towards healthcare, advocating for a more holistic and compassionate approach. Rather than adhering solely to a reductionist medical care model, patients are highlighting the importance of considering broader aspects of well-being that are affected by illness. This paradigm shift encompasses factors like stress, mood, social connections, and finding meaning and purpose in one's health journey.

Collective Movement for Change:
A noteworthy example of this collective movement for change is the initiative led by National Voices (UK), a coalition of charitable organisations that stands for empowering individuals in controlling their health and care decisions. Their advocacy emphasises the need for a stronger focus on prevention, supported self-care, and person-centered care. This shift aims to acknowledge that health is not just about treating specific medical conditions but also about promoting overall well-being.

The Role of the Lifestyle Medicine (LM) Community: Within this evolving landscape, the Lifestyle Medicine community has a pivotal role to play.

Lifestyle Medicine recognises **the importance of addressing all dimensions of health,** incorporating not just the physical aspects but also psychological, social, and emotional well-being. As part of this movement, the LM community is committed to **providing training for clinicians to adopt a more comprehensive approach to healthcare.**

This training equips healthcare professionals with the tools and knowledge to deliver holistic care, emphasising the interconnectedness of various health determinants.

In conclusion, the advocacy of patients and the broader healthcare community for a holistic and compassionate healthcare system signifies a transformative shift in healthcare philosophy. This movement aligns well with the principles of Lifestyle Medicine, and as this approach gains prominence, it has the potential to reshape healthcare practices and policies, resulting in a more patient-centered, compassionate, and effective system. The LM community's dedication to training healthcare professionals in this paradigm further underscores the commitment to delivering healthcare that addresses the full spectrum of patient well-being.

5. To turn the tide of long-term conditions and health inequalities

This rise in long-term conditions follows rising health inequality. The LM Community can teach clinicians to support patients to prevent, treat and reverse long-term conditions, despite the inequalities they face. There is an epidemic of chronic disease in the world. These are strongly associated with lifestyle factors. A population health approach can target lifestyle medicine to address health inequalities.

5.1 Tackling the epidemic of chronic disease

Chronic diseases are on the rise around the world and strongly associated with lifestyle factors such as inactivity, poor diet, stress, and smoking.

Unhealthy diets, physical inactivity, and **obesity** contribute the most to the amount of time spent living with ill health.

Simple lifestyle advice in public health campaigns often only reaches or can be acted upon by those who least need it, risking worsening health inequalities[108].

Those who are socio-economically deprived are likely to face far greater barriers to healthy behaviours such as living in a "food desert", being far from any safe green space or suffering stress and isolation. Lifestyle medicine can be used in a personalised approach that collaborates with people to improve their health despite the inequalities they may face.

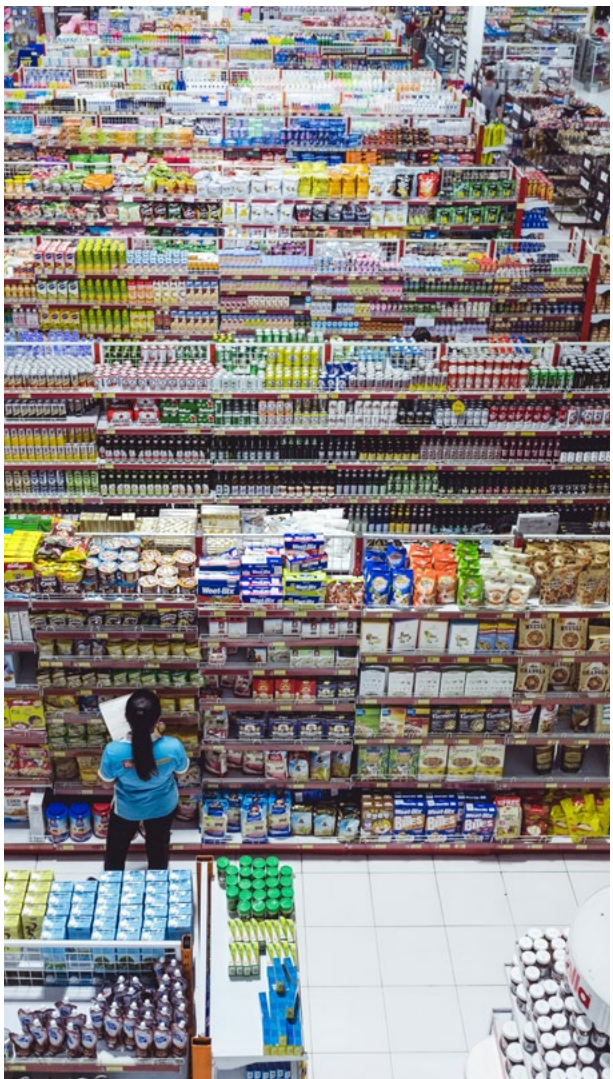
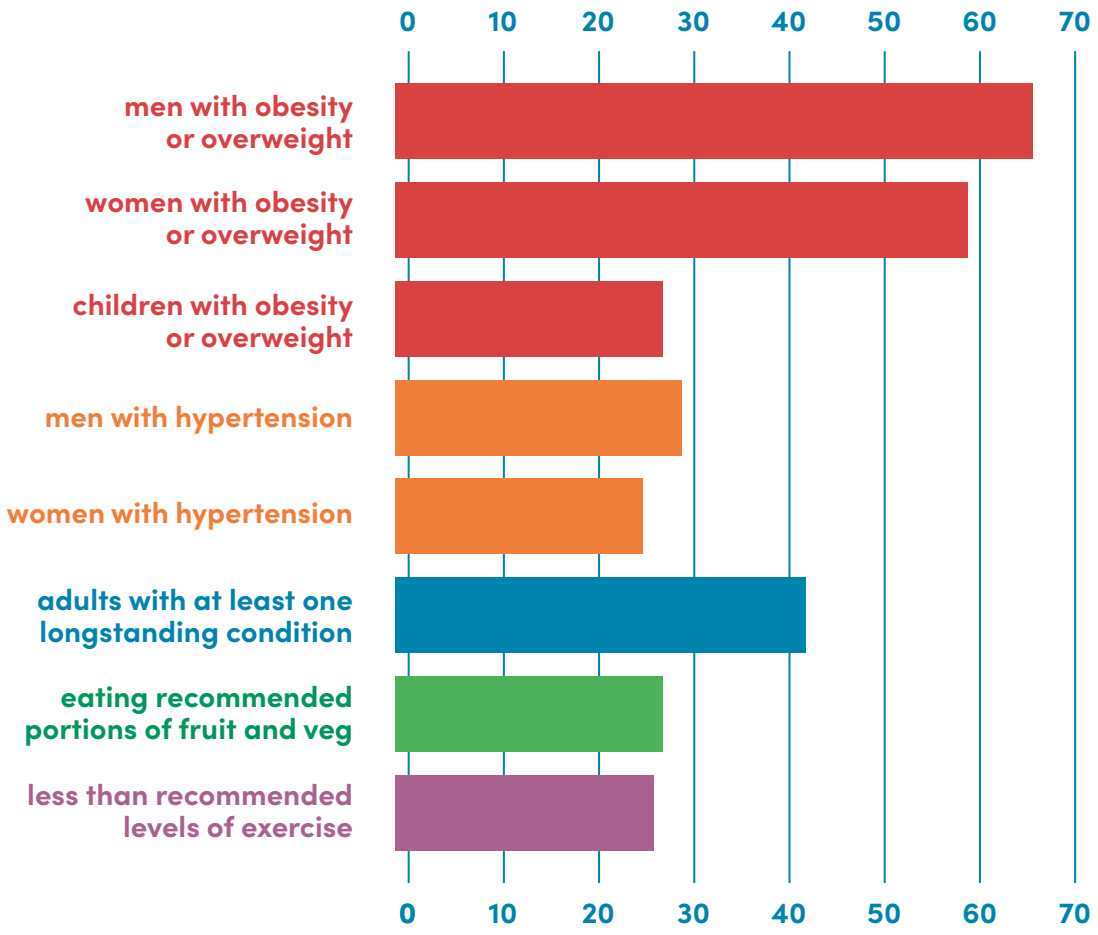


FIGURE 4 KEY HEALTH STATISTICS FROM THE UK 2018

Prevalence of Health Indicators in the UK Population (%)



Source: Health Survey for England 2022

5.2 Health inequalities and socio-economic barriers

We need to address health inequalities by targeting lifestyle medicine with a population health approach and tools such as Patient Activation Measures (PAM).

5.3 Behavioural support for healthier lives

A lifestyle medicine approach teaches the use of proven behavioural support tools such as group consultations, health coaching, and person-centred care which can support people despite these challenges.stress, and smoking.

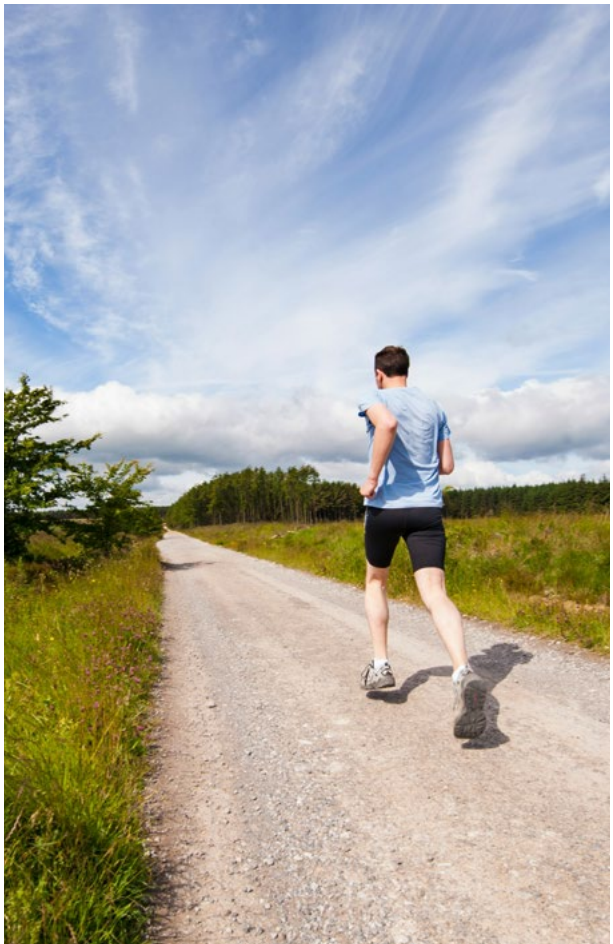
Lifestyle medicine should be used with a **population health approach** which uses data to target support where it is most needed to tailor solutions for people and their communities.

5.4 Population health approach and tools

Patient Activation Measures can help to tailor the support people require. It measures how much confidence and knowledge someone has about their health as well as the relevance and importance they give it along with the control they feel they may have over it. Is not just a reflection of a person's income, culture, or age[10] and is a much better predictor of health outcomes than known socio-demographic factors[109].

5.5 Role of Policy and Government integration

The challenges of tackling population health require a shift in Governments' approach, principally by integrating equity and health in all policies and shifting to a wellbeing economy[110].



5.6 Cultural sensitivity and local context

Globally diverse cultural landscape requires an approach to lifestyle medicine that is **sensitive to local contexts and practices.** Customising interventions to resonate with cultural norms and traditions can **enhance their effectiveness and acceptability among various populations.**

In conclusion, the adoption of lifestyle medicine principles in the world holds immense potential to address the rising tide of chronic diseases and health inequalities. By considering socio-economic barriers, utilising population health strategies, and aligning with policy shifts towards a wellbeing economy, lifestyle medicine can contribute significantly to healthier and more equitable various societies across the world.

Solutions

1. Equity

Investment in the wellbeing of populations (e.g. low income families, caregivers, people with disabilities). 'Sure Start' centres in the UK, child tax credit expansion in the US, 'Everyone In' policy for rough sleepers, universal credit. Invest in primary and social care to address unmet healthcare needs.

2. Adopt a "health in all policies" approach

To include housing, employment, energy, social security, transport, justice. Health professionals working with policy makers in public, private and third sector institutions at geographical levels. Examples include provision of public transport and improved infrastructure for walking and cycling.

3. Create a new economic model

A radical solution is creating a wellbeing economy - equitable distribution of benefits and resources within planetary boundaries. This means prioritising human and ecological wellbeing over economic growth. We need to identify, investigate, and evaluate alternative economic models.

4. Adopt a public education lifestyle medicine curriculum

To teach teens in middle school and high school about the powers of exercise, nutrition, sleep, stress reduction, social connection and the avoidance of risky substances and educate students from all cultures, socio-economic backgrounds, races, and religions in all schools, public and private, a course in health and wellness that focuses on the principles and practices of lifestyle medicine with a specific focus on the needs, desires, and interests of teens.

The American College of Lifestyle Medicine has collaborated with paediatricians, lifestyle medicine experts, and teens to publish a Teen Lifestyle Medicine Handbook. They have also co-created a full curriculum that is downloadable through the ACLM website. With tools like this, the hope is that schools can adopt this curriculum in an elective or a core course immediately. The material has been piloted and has been proven to be feasible, engaging and well received by teens[111].

6. To reduce the harm from a focus on pharmaceutical treatments

The LM Community can provide clinicians and patients with additional options to medicines and procedures for long term conditions.

> *"The absolute benefit made by each additional medicine is likely to reduce when a person is taking multiple preventative medicines; often referred to as the, law of diminishing returns'. Conversely, the risk of harms is likely to increase the more medicines a person takes."*
>
> *National Institute of Health and Care Excellence UK*

The number of prescriptions for each person in England has increased by over 50% in a decade[112] with almost a quarter of 70-year-olds taking over 5 medications[113]. The Academy of Medical Royal Colleges has set up "Choosing Wisely"[114] to prevent the harms of too much medicine. Likewise, NHS England medical director, Sir Bruce Keogh suggested that as many as 1 in 7 operations and medical treatment in the NHS were unnecessary and may not have improved the health of patients[115].

In the US over the past 40 years, mortality from heart disease fell >40%, almost half of the reduction can be attributed to reduction in lifestyle risk factors[116] rather than pharmaceutical or surgical interventions. However, most doctors are not aware of this contribution and over-estimate the benefits of medications[117]. Patients make similar over-estimations. For example, those who started medications for blood pressure and cholesterol were more likely to gain weight, consume more calories and fatty foods, and be less physically active than those who did not start medications[118,119].
A more recent US study[84], however, presents a less favourable picture, indicating that recent trends in cardiovascular disease (CVD) outcomes may be worsening.
In parallel, there is growing concern that "the more we push drug solutions, the further we get from effective, sustainable treatment of long-term conditions"[120].

Some pharmaceutical companies have come to the same conclusion; that the answers to long-term conditions are not always drug interventions. With a 99% failure rate for new Alzheimer's medications for example[121], Pfizer pulled out of the race to find drug candidates in 2018[122] which was followed in 2019 by *The US Alzheimer's Association International Conference* stating that "lifestyle factors are the best and only bet now for reducing dementia risk"[123]. Similarly, there is concern that the emergence of concepts such as precision medicine and use of expensive genomics are "headed down the wrong road" and distract us from what already works[124].

The LM Community will redress the balance of health care knowledge of the benefits and harms of medications and surgery and compare these with those of a more holistic lifestyle medicine approach. There are many other organisations (Deprescribing[125], Too much medicine[126], Sustainable healthcare[127]) who are calling for a move away from this "focus on pathology, clinical states or markers of disease rather than quality of life or wellbeing"[128] as stated by the "Rethinking Medicine" team who are supported by NHS England and the Royal College of General Practitioners.

7. To support good quality lifestyle medicine research

The WLMO will advocate for and support those who research lifestyle approaches to improve health as there is evidence that patients want this to be a priority despite most research budgets being spent on drug interventions.

> *"We are failing to change unhealthy behaviours, particularly those related to diet quality, caloric intake, and physical activity, in part due to inadequate policy attention and funding for public health and behavioural research."*
>
> *Professor Christopher Murray, Author of The Global Burden of Disease Studies*

There is a mismatch between patients' agendas for health research and where the funding flows. Trials into pharmaceutical interventions make up over half of clinical trials, but when patients are asked, they would prefer less than a fifth of trials investigated these options[129]. Patients' top priorities for cancer research included management of practical, social, and emotional issues including diet, peer support and stress. These priorities were placed above research into treatments such as chemotherapy or surgery[130]. The charitable James Lind Alliance has surveyed patients to ask about the top 10 priorities for health research; the top-10 for type-2 diabetes and hypertension were all lifestyle related[131].

A chronic lack of funding to investigate effective, practical lifestyle medicine approaches in medicine has resulted in a research base that is in its infancy.

For example, many diet trials would not satisfy the essential standards used for drug trials[132]. This is thought to have arisen from inadequate nutrition research infrastructure and lower budgets versus drug studies[133]. However, drug trial standards have also "created a strong precedent for reductionist, nutrient focused approaches for dietary research, guidelines and policy"[134] that may not be appropriate for such a complex issue as diet.

2.5 How to assess the quality of evidence for LM and where are the research gaps

Currently, there is a lively discussion in the peer-reviewed literature about **the nature of evidence supporting specific recommendations pertaining to lifestyle medicine.**

The majority of current systems for evaluating scientific evidence places results from randomised clinical trials (RCTs) above other study designs. However, while they are well-suited to conventional medical treatment such as pharmacotherapy and specific procedures, they are subject to specific biases and may not serve to address questions concerning the lifetime effects of health behaviours.

This led to publishing in 2019 "Hierarchies of evidence applied to lifestyle medicine (HEALM)" with the aim to *"characterize strength of evidence tools in recent use, identify their application to lifestyle interventions for improved longevity, vitality, or successful aging, and to assess implications of the findings"*[135].

Lifestyle Medicine is a field that focuses on using evidence-based lifestyle interventions to prevent, manage, and treat chronic diseases. Since research in this field is continually evolving, here are some important research topics in lifestyle medicine that are relevant today and for the future.

Impact of Diet on Chronic Diseases: Investigating the effects of different dietary patterns (e.g., Mediterranean, plant-based, ketogenic) on various chronic conditions such as cardiovascular disease, diabetes, obesity, and cancer.

Physical Activity and Health Outcomes: Studying the relationship between physical activity levels and health outcomes, including the prevention of chronic diseases, improvements in mental health, and overall well-being.

Stress Management and Mindfulness: Researching the effectiveness of stress reduction techniques, mindfulness practices, and meditation in improving health outcomes and reducing the risk of stress-related diseases.

Sleep and Health: Exploring the impact of sleep duration and quality on chronic disease risk, mental health, and overall health.

Behaviour Change Interventions: Investigating effective strategies for promoting and sustaining lifestyle behaviour changes, including dietary changes, increased physical activity, smoking cessation, and reducing sedentary behaviour.

Role of Social Support: Understanding how social support networks and community engagement influence lifestyle choices and impact long-term health outcomes.

Environmental and Socio-economic Factors: Examining the influence of environmental factors (e.g., pollution, access to healthy food) and socio-economic status on lifestyle-related health disparities.

Personalised Lifestyle Medicine: Researching the role of genetics, epigenetics, and individual variations in response to lifestyle interventions for tailoring personalised treatment plans.

Integrative Approaches: Investigating the integration of lifestyle medicine with conventional medical treatments to optimise patient care and outcomes.

Digital Health and Mobile Applications: Assessing the effectiveness of digital health technologies, mobile applications, and wearables in promoting healthy behaviours and improving health outcomes.

Workplace Wellness Programms: Evaluating the impact of workplace wellness initiatives on employee health, productivity, and overall job satisfaction.

Lifestyle Medicine in Special Populations: Studying the application of lifestyle medicine principles in specific populations, such as children, adolescents, elderly individuals, and individuals with chronic mental health conditions.

Long-term Sustainability of Lifestyle Changes: Examining factors that contribute to the long-term sustainability of lifestyle changes and identifying barriers to adherence.

Cost-Effectiveness of Lifestyle Interventions: Analysing the economic impact of lifestyle medicine interventions compared to traditional medical treatments in terms of healthcare costs and patient outcomes.

Public Policy and Advocacy: Investigating the role of public policy and advocacy in promoting lifestyle medicine at the community, national, and global levels. The role of new models of care, group consulting, social prescribing and collaborative care.

These research topics represent just a fraction of the vast potential within the field of Lifestyle Medicine. Continued research in these areas can help shape evidence-based practices and policies that promote healthier lifestyles and prevent chronic diseases.

Useful resources:

Catalogue of Bias (https://catalogofbias.org)
helping to detect bias in research studies

Critical Appraisal tools (https://www.cebm.ox.ac.uk/resources/ebm-tools/critical-appraisal-tools)
helping to appraise the reliability, importance and applicability of clinical evidence

2.6 Supporting patients to make personalised, informed healthcare choices and use of the LM toolbox

Below are presented some examples of LM Assessment/Options including validated and unvalidated (but useful in practice) LM Assessment tools:

Exercise:

International Physical Activity Questionnaire – Short Form

https://youthrex.com/wp-content/uploads/2019/10/IPAQ-TM.pdf

Diet:

Food Frequency Questionnaire for Vegans & Total Vegetarians

https://pmc.ncbi.nlm.nih.gov/articles/PMC4113754/

Alternative Healthy Eating Index Score

https://pubmed.ncbi.nlm.nih.gov/12450892/

Sleep:

Sleep Quality Scale

https://www.med.upenn.edu/cbti/assets/user-content/documents/Sleep%20Quality%20Scale%20(SQS).pdf

Sleep Disorders Questionnaire

https://www.albertadoctors.org/media/g5dienpu/sleep-disorders-questionnaire.pdf

Stress:

Perceived Stress Scale (PSS-10)

https://www.das.nh.gov/wellness/docs/percieved%20stress%20scale.pdf

Social Connections:

The Social Connectedness Scale – Revised

https://youthrex.com/wp-content/uploads/2019/10/The-Social-Connectedness-Scale-Revised.pdf

Substance Use:

Adult Substance Use Survey
Alcohol Use Disorders Identification Test (AUDIT) CAGE

https://auditscreen.org

The PAVING Wheel Questionnaire goes into the six pillars plus purpose, energy, attitude (positive psychology), goal setting and more. A link to the full questionnaire co-created with Harvard Health Publications is available here:

https://cpd.partners.org/sites/default/files/media/2022-03/PAVING%20Wheel.pdf

A general information about evidence-based medicine tools can be found here:

https://www.cebm.ox.ac.uk/resources/ebm-tools/critical-appraisal-tools

FIGURE 5 PAVING STEPSS WHEEL

Source: Courtesy of Dr Beth Frates (https://www.pavingwellness.org/)

Implementation of Lifestyle Medicine Strategies for Wellbeing

The implementation of Lifestyle Medicine strategies including built environments and service design in healthcare, communities, workplaces, schools, and other settings have the potential to either hinder or facilitate health and wellbeing interventions. Hence, optimising these "micro-environments" that healthcare professionals work with and in can not only lead to improved patient outcomes, but also improved patient experiences, job satisfaction, reduced burnout rates, and reduced health care costs.

To date, the implementation of lifestyle-based approaches and innovation in service delivery has largely been 'grassroots'. These have included personalised individual and group clinical approaches including shared medical appointments, shifts in workforce delivery (such as link workers for social prescribing, health coaches, and peer support workers), health delivery in other settings (workplaces, schools, community), improved coordination of care between interdisciplinary teams, and use of digital technology including virtual care, telehealth, apps, wearables, online programms, text services, decision support software and artificial intelligence, adapted in the context of socio-economic, cultural and environmental determinants[136,137].

A "reverse-Swiss cheese model" of lifestyle-based health care has been proposed.

Lifestyle-based health care is not a single intervention but rather **several mutually supportive and interacting approaches** that involve lifestyle domains combined with models of care including interdisciplinary teams, peers and carers, health coaching behaviour change approaches, and digital technology.

The more each of these layers are cultivated and built within a person's life and environments, the greater the likelihood of preventing disease progression, enhancing resilience against adverse internal or external events, and improving mental, physical, and social wellbeing. This is illustrated by disease progression (thick black line) being mitigated by the additional layers of lifestyle approaches and implementation considerations[136].

FIGURE 6

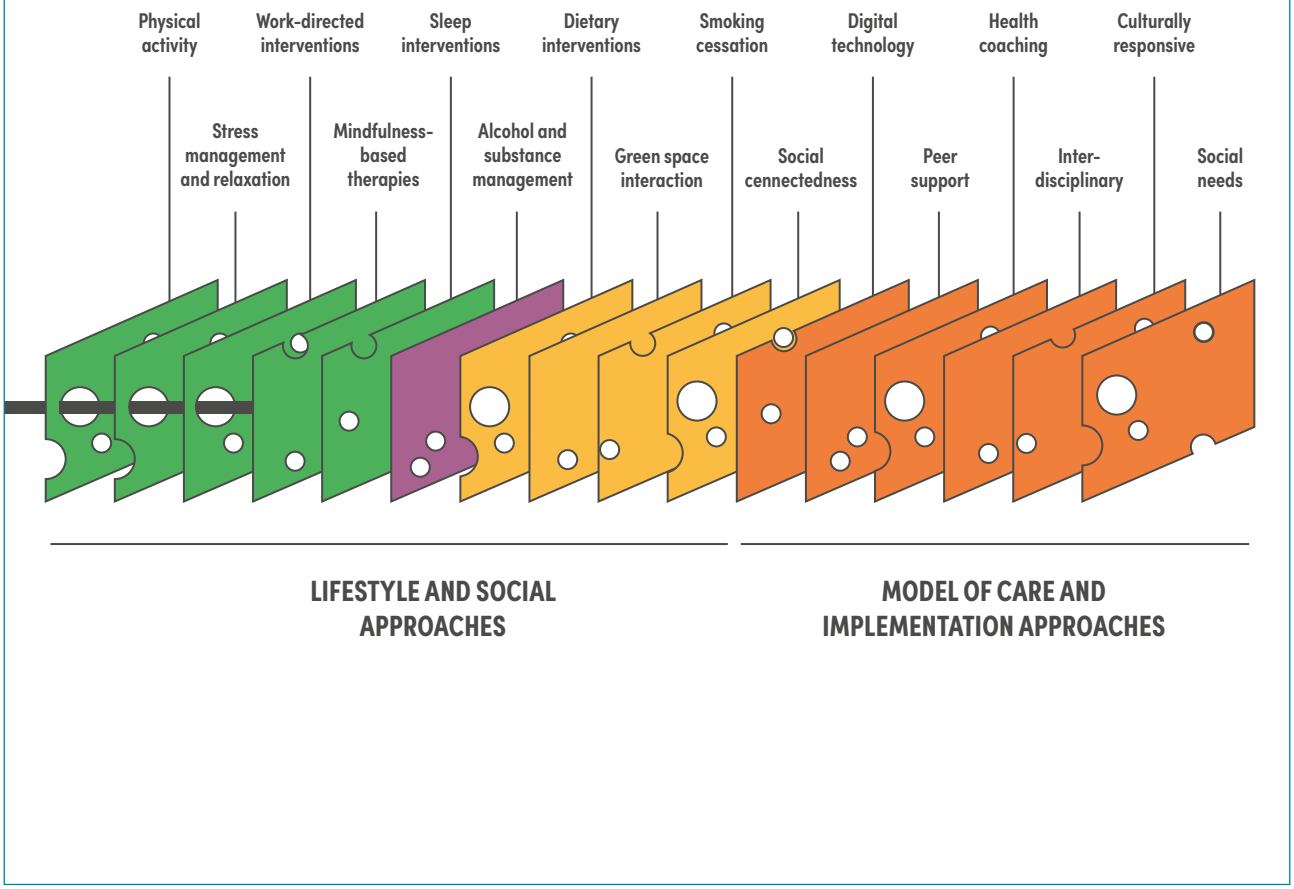
CORE IMPLEMENTATION CONSIDERATIONS, FACTORS, AND LIFESTYLE INTERVENTIONS FOR LIFESTYLE-BASED MENTAL HEALTH CARE

Source: Clinical guidelines for the use of lifestyle-based mental health care in major depressive disorder (WFSBP & ASLM), 2022[136]

There exist several barriers to the widespread implementation of Lifestyle Medicine, such as time, funding, service design, workforce, and training. A 2019 systematic review examining the extent to which nutrition is taught in medical education[138] found that 'nutrition is insufficiently incorporated into medical education, regardless of country, setting, or year of medical education'.

A study surveying UK medical students in 2019 found that 52% were unaware of the current exercise guidelines, 80% stated they had not received training in Lifestyle Medicine, 48.1% were unacquainted with motivational interviewing and 76% wanted more Lifestyle Medicine teaching[139]. Training underpins many of the other barriers, and relatively urgent improvements in undergraduate and postgraduate health professional education is indicated.

FIGURE 7 A SWISS CHEESE MODEL OF LIFESTYLE-BASED MENTAL HEALTH CARE



Source: Clinical guidelines for the use of lifestyle-based mental health care in major depressive disorder (WFSBP & ASLM), 2022[136]

References, appendices, validated tools & questionnaires

Appendix 1
Some tools of LM

Person-centred care

"A person-centred approach means putting people, families and communities at the heart of health, care and wellbeing"[140]. It is also known as personalised care. Lifestyle medicine uses person-centred techniques that ask people what is important to them about their health to support their autonomy. Techniques used in person centred care include shared decision making, care and support planning, goal setting and supported self-management. People are much more likely to make and sustain behavioural change[141] if this approach is used.

Motivational Interviewing (MI)

"Motivational interviewing uses a guiding style to engage clients, clarify their strengths and aspirations, evoke their own motivations for change and promotes autonomy in decision making"[142].

MI is founded on these principles:

- How we speak to people matters just as much as what we say;
- Being listened to and understood is essential in supporting behaviour change;
- If supported, people will come up with the best solutions to their own problems;
- People change their behaviour when they are ready and not when they are told to.

The practice of MI involves resisting the "righting reflex" with didactic advice, understanding people's reasons for change, listening to people's own solutions and empowering people to feel that they can change. It avoids arguing with people about how much they need to change or using an authoritative/expert role by offering direct advice or solutions. There is evidence to suggest that this style of consulting may be more likely to support successful behaviour change[143].

Health Coaching

Coaching has been described as a way of "unlocking a person's potential to maximise their own performance"[144] by supporting people to find their own unique solutions by focusing on the present and being goal oriented.

The key ingredients to health coaching are:

- A compassionate approach
- Active listening and reflection by using open questions
- Goal setting
- Supporting ownership and the patient generating their own ideas
- Encouraging taking small steps in the patient's chosen direction

Coaching has been found to be particularly effective in supporting people with Type 2 Diabetes[145]. Health coaching is being introduced in the NHS as a method of supporting self-care[146].

Cognitive Behavioural Therapy (CBT)

CBT recognises the link between thoughts, feelings, and actions. It aims to help people to recognise vicious cycles of negative thoughts and feelings. CBT has been shown to be effective at supporting people to lose weight, improve emotional well-being, increase activity, and improve diet[147,148].

Social Prescribing

Social prescribing takes a holistic approach to health by connecting people to community groups for practical and emotional support. It recognises that our environment and social connections play a huge role in influencing our health behaviours. Social prescribing link workers are now working in primary care as part of NHS England's long-term plan[149].

Patient Activation Measures (PAM)

PAM is a tool that allows for assessment of people's knowledge, skills, and confidence to manage their health. Research has shown that people who have greater knowledge, skills and confidence are more likely to engage in positive health behaviours and to have better health outcomes[150]. Use of PAM can help to target interventions to support lifestyle change that is appropriate to people's needs.

Group Consultations

Group consultations are a tried and tested way to deliver better quality care to patients in a cost-effective and rewarding way. 10-15 people with similar conditions come together and agree to some shared understandings and discuss a results board where they share their clinical results (having given consent). The group consultation facilitator supports the group to reflect upon what their priorities are and ask questions such as "what matters to me about my health?".

The clinician is briefed before joining the group and then reviews each patient's questions 1:1 before encouraging the group to share experiences and problem-solve together. Group consultations are proving to be a very powerful tool to support people to make lifestyle and behaviour change by delivering group support, education as well as the benefits of 1:1 attention from a clinician. There is good quality evidence that group consultations are better than a 1:1 appointment for the care of people with Type-2 diabetes[151]. There is growing evidence that group consultations also help with many other long-term conditions and that they can be used in the virtual space[152].

Appendix 2
LM as a comparator

TABLE 1 COMPARISON OF LIFESTYLE MEDICINE WITH OTHER DISCIPLINES AND APPROACHES

Area	How Lifestyle Medicine is different
Public Health focuses on prevention of ill health through organised efforts and informed choices of society, organisations (public and private), communities and individuals.	Lifestyle medicine focuses not only on prevention but treatment and reversal of ill health. It uses approaches that are tailored to the patient-clinician relationship rather than at the population level.
Preventive Medicine aims to prevent disease and avert resulting complications after its onset. It can be practiced by governmental agencies, primary care physicians and individuals.	Lifestyle medicine includes preventive medicine but also addresses the treatment and reversal of some long-term conditions. It is most often practiced by individual clinicians with their patients.
Population Health Management describes the use of large-scale population data, including data on the wider determinants of health, to inform policy decisions with the aim to support health and reduce health inequalities across an entire population.	Lifestyle medicine uses person-centred clinical data (such as Patient Activation Measures or Quality of Life scores etc.) to individualise the support that is required to prevent, treat, and reverse illness. Data from population health management can be used to target lifestyle medicine interventions for those in greatest need.
Rehabilitation Medicine describes the management of disabling diseases or injuries and their personal, interpersonal, and social consequences.	Lifestyle medicine addresses prevention as well as management and reversal of some long-term conditions.
Sports and Exercise Medicine is a medical specialty that addresses medical conditions and injuries that occur in those who wish to participate in sport or exercise. It also covers the role of physical activity in the treatment and prevention of illness	Lifestyle medicine addresses all areas of lifestyle, not just exercise but also stress, social connection, nutrition, sleep, alcohol, smoking, and recreational drug use.

Area	How Lifestyle Medicine is different
Behavioural Medicine focuses on the techniques that can be used to support health-related behaviour change.	Lifestyle medicine combines proven techniques for supporting behaviour change with the evidence for which lifestyle changes are important for health.
Alternative or Complementary Medicine use approaches that fall outside of mainstream healthcare and may not have widespread acceptance or evidence base.	Lifestyle medicine is part of mainstream medicine and forms part of major national medical guidance. It is evidence-based.
Integrated Medicine practising in a way that selectively incorporates elements of complementary and alternative medicine into comprehensive treatment plans alongside solidly orthodox methods of diagnosis and treatment.	All aspects of lifestyle medicine form part of mainstream medicine and major national medical guidance. All lifestyle medicine practice is evidence-based.
Functional Medicine uses history-taking tools to map symptoms to the categories of root processes that underlie illness. It often uses specific additional biomarker measurements.	Lifestyle medicine fits into traditional medical consulting methods with the addition of a lifestyle history and assessment. It does not often require specific additional biomarker measurement.
Ecological/Sustainable Health recognises the importance of external influences such as the environment on health and attempts to improve public health without exhausting natural resources or causing ecological damage	Lifestyle medicine focuses on the patient's relationship and their lifestyle concerns. These may result in a more sustainable health care practice.
Holistic Medicine is a whole-body approach to healthcare and often combines traditional medicine, complementary and alternative medicine.	Lifestyle medicine also takes a whole-body approach but is part of mainstream medicine and forms part of major national medical guidance. It is evidence-based.

Appendix 3
Definitions of LM

The American College of Lifestyle Medicine

Founded in 2003 with the definition: "Lifestyle Medicine is the use of a whole food, plant-predominant dietary lifestyle, regular physical activity, restorative sleep, stress management, avoidance of risky substances and positive social connection as a primary therapeutic modality for treatment and reversal of chronic disease."

The Australasian Society of Lifestyle Medicine

Defines Lifestyle Medicine as "the application of environmental, behavioural, medical and motivational principles to the management (including self-care and self-management) of lifestyle-related health problems in a clinical and/or public health setting"[153].

The British Society of Lifestyle Medicine

Founded in 2016 BSLM it has the definition of LM as: "Lifestyle Medicine is evidence-based clinical care that supports behaviour change through person-centred techniques to improve mental wellbeing, social connection, healthy eating, physical activity, sleep and minimisation of harmful substances and behaviours".

The European Lifestyle Medicine Council

States that Lifestyle Medicine requires an understanding and acknowledgement of the physical, emotional, environmental, and social determinants of disease. Hence the LM practitioner will engage with patients and operate within a boundary of evidence-informed medicine.

The Indian Society of Lifestyle Medicine

ISLM Founded in 2019 defines Lifestyle Medicine as: Lifestyle Medicine is a branch of allopathic medicine that focuses on the prevention, management, and treatment of various lifestyle diseases and health conditions through the evidence-based modification of lifestyle behaviors using appropriate lifestyle modification techniques in different settings at population, regional and individual levels.

The Institute of Lifestyle Medicine

A collaboration between Harvard Medical school and The Spaulding Rehabilitation Hospital in 2007. Their mission is "reducing lifestyle-related death and disease in society through clinician-directed interventions with patients".

The American College of Preventive Medicine

States that Lifestyle Medicine is "a medical approach that uses evidence-based behavioural interventions to treat and manage chronic diseases related to lifestyle."

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Lifestyle Medicine for the 21st Century provides the authors' exploration of Lifestyle Medicine (LM) as an evidence-based medical discipline focused on preventing, treating, and reversing chronic diseases through six core pillars: plant-predominant nutrition, physical activity, restorative sleep, stress management, avoidance of risky substances, and positive social connections.

It highlights LM's role in addressing the global burden of non-communicable diseases (NCDs), which threatens to overwhelm us all, emphasising its integration into healthcare systems, the importance of socio-economic determinants, and the need for healthcare workers' training. The document underscores LM's cost-effectiveness, its potential to improve health outcomes, and its contributions to health equity. It also discusses the challenges of overdiagnosis in conventional medicine, the importance of behavioural change techniques, and the role of digital health tools.

The World Lifestyle Medicine Organisation (WLMO) is identified as a key player in promoting global standards, education, and advocacy in LM. The document calls for policy integration, public education, and investment in social determinants to reduce health disparities and foster healthier populations.

Editor

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