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An ecological framework for improving child and adolescent health

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ABSTRACT

The rise in non-communicable disease as a principal cause of premature mortality and a continuing failure to address health inequalities requires a critical examination of prevailing paradigms in health. In this paper, we offer ecology as an alternative way to view health need and as a guide to action to enhance human health and model a healthy economy. After describing the shortcomings of the prevailing biophysical approach to health, we describe an ecological approach to health that brings to the forefront social and environmental determinants and empowers health workers together with their communities to achieve a health-affirming society and economy.

There are shifting paradigms framing the way we understand what health is, how we view health need and how we identify the conditions necessary to maximise health.¹ A paradigm is the intellectual and conceptual framework within which research, service design and professional practice are modelled and enacted. Paradigms change when the paradoxes evident within them become so numerous, or so profound, that the boundaries of the paradigm cannot hold.² We find ourselves at such a point now.

Since the European Enlightenment, beginning at the end of the eighteenth century, we have equated progress with reason and physical material science and we have elevated medicine to be one of the finest examples of this progress.³ Scientific medicine delivered, progressing from a focus on the alleviation of symptoms to an understanding of the anatomy, physiology and pathology of the human body and the mechanisms of physical disease. It has contributed to reductions in morbidity and to the extension of life expectancy. But there are paradoxes in contemporary health. One paradox is that health inequalities are entrenched and worsening.^{4–6} While physical bioscience is continuing to progress, not everyone is benefiting. Nor is the earth becoming more supportive to human life. A second paradox is that, despite continuing advances in biotechnology and pharmaceuticals, parameters of human health are beginning to level out and in some populations decline. This latter paradox seems to be affecting populations in the financially wealthier countries which spend more on health and which are accessing more biotechnical advances.⁶

Many children in the more materially wealthy countries are not expected to have as long a healthy life span as recent previous generations as a result of increasing morbidity linked to obesity, respiratory disease, allergies and mental illness.^{7–9} The

plateauing of human health and longevity, and in some cases its decline, is to do with the rise in non-communicable disease. In 2018, the WHO reported that 70% of all deaths worldwide are attributable to non-communicable diseases, nearly half of which are premature and in individuals of working age.¹⁰ This shift towards non-communicable disease as the leading cause of death has been described as the ‘fifth phase of the world’s epidemiological transition’¹¹ (see [table 1](#)).

These non-communicable diseases are often called ‘lifestyle’ disease. Such a label can be misused. It suggests the primacy of individual agency, with lifestyle being something chosen. It dismisses the role of health inequalities, of political policy, of business including advertising and of the politics and economics of austerity. Patterns of non-communicable diseases are predominantly socially and environmentally determined. Obesity is more prevalent in poorer children. Poorer children grow up in areas where their air is more polluted and so have more respiratory disease and allergies.^{10 12} Mental health issues are more prevalent in unequal societies.⁹

The physicians of 400 years ago looked at patients, saw symptoms and tried to alleviate them without understanding the pathologies that existed at a deeper level. We do something similar today. We look at our society and see symptoms of disease, such as obesity, physical inactivity, loneliness, poverty, violence and we offer solutions that we hope will minimise the symptom, without looking at a deeper level into the values, structures and organisation of the society that led to the symptoms emerging. Ecology gives us a framework of analysis to remedy this shortcoming. It offers us a macroscope to look widely, supplementing the microscope that looks within.^{13 14}

Ecology is a holistic science addressing relationships between individuals, species, communities and their environment. Following Darwin (1809–1882), ecology was used as a frame to discuss the interdependence of species and the importance of habitat in the ‘web of life’. The ecological view of health has its antecedents in the sanitarian vision of the nineteenth century reformers, as with John Snow (1813–1858) removing the pump handle in London’s Broad Street to tackle cholera. Edwin Chadwick (1800–1880) recognised that the particular demands of promoting the health of people in the rapidly growing towns of the industrial revolution depended on maintaining links with the agricultural ecosystem. Enlightened Victorian industrialists, such as Titus Salt (1803–1876) in Bradford and Joseph Rowntree (1836–1925) in York were pioneers of healthy suburban communities.^{3 14}

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Table 1 The fifth epidemiological transition in human health^{11 26 27}

Timeline for epidemiological transitions	Main characteristics	Main features affecting mortality and morbidity
First epidemiological phase ²⁶ 'Most of human history'	Pestilence and famine	Infections and malnutrition
Second epidemiological phase ²⁶ 19th and earlier 20th century	Industrialisation and urbanisation	Initial rise in pestilence and famine and then a fall. Reductions in pandemics, better food supplies, reductions in infant and child mortality
Third epidemiological phase ²⁶ mid-20th century	Degenerative diseases	Peak of cardiovascular disease
Fourth epidemiological phase ²⁷ Second half 20th century	Delayed degenerative disease	More chronic conditions and death in older age
Fifth epidemiological phase ¹¹ 21st century	Obesity and inactivity	Rising epidemic of non-communicable disease across all ages

Ecology as a study of human society developed alongside sociology from the early twentieth century. Simmel, in 1903, linked the physical characteristics of cities with the social characteristics of their inhabitants.¹⁵ Park, in 1936, looked at the interdependence of human societies at a spatial and cultural level.¹⁶ Hawley in the 1950s identified the importance of functionally differentiated social institutions developing adaptive mechanisms to attain and sustain equilibrium.¹⁷ Charles-Edward Winslow's definition of human health in 1920 included factors that are resonant today, including the contribution of organised community efforts, education, early diagnosis, preventative treatment of disease and the importance of everyone having an adequate standard of living.¹⁸

More recent contributions to understanding ecological health have included an emphasis on mobilising for joint action. At a supranational level, the European Union's 'Health in All Policies' initiative includes policies concerning food and exercise but also broader determinants such as education and the distribution of economic resources.¹⁹ At the level of local action, Hunter has argued, 'We need to identify assets rather than deficits and look for, and build upon, positive patterns of health and that working with people to create tipping points for change should become the focus for public health leaders'.²⁰

Ecology focuses on understanding what contributes to healthy human being. This field of study and practice has been given the name of 'salutogenesis', a term derived from the Latin for health, 'salus', and introduced by the social scientist, Aaron Antonovsky (1923–1994).²¹ Moulding a salutogenic environment and culture facilitates the development of a sense of coherence to personal life within a wider context. This approach was the inspiration behind the UK's Sure Start early intervention programme, a government initiative, started in 1989, with the aim of giving children the best possible start in life through improvement of childcare, early education, health and family support, with an emphasis on outreach and community development. There had been similar initiatives in the USA and Australia, both named 'Head Start', and in Canada via Ontario's 'Early Years Plan'.

Ken Wilber, a philosopher and writer on integrated systems, says that humans understand and interpret life from four perspectives, namely a personal individual point of view, a collective cultural point of view, an isolated objective view of things in themselves and from a view that sees things as being part of something bigger. He calls these as the four quadrants of knowledge²²: individual subjectivity, collective subjectivity, reductive objectivity and collective objectivity (table 2).

The essence of ecology is the relationships of the parts to the whole and so, developing Wilber's schema, human ecology can be considered under four subheadings: physical ecology (the human body as a functional whole), mental ecology (our mind, thoughts and feelings), social ecology (the culture within which we grow and live) and environmental ecology (the physical environment where we live, work and play). Health in each of these areas requires health in the others, as pointed out by Felix

Guattari, who has written perceptively about human ecology, though he omitted the physical.²³

Adopting an ecological holistic approach to health requires that we, in whatever field of healthcare we work, understand and help facilitate the health of these four ecologies of human being.

PHYSICAL ECOLOGY OF THE BODY

A healthy physical ecology of the body requires physical play, fun, exercise and adventure for children with playgrounds, car-free streets, green space, woods and communal sport as regular parts of life. Achieving this may involve addressing parental anxieties about outdoor play, including an acceptance of the cuts and grazes of growing up, and considering concerns about 'stranger danger'. An ecological approach to food requires the positive encouragement of affordable healthy food, steps to inhibit the ubiquity of unhealthy food and help in addressing knowledge and confidence in parents to develop and sustain a healthy diet.

ECOLOGY OF THE MIND AND MENTAL HEALTH

The ecology of the mind is pivotal to human self-esteem, dignity and resilience.¹⁰ It affects identity and helps the child embark on a life that the child sees as worth living, contributing to and being healthy for. Perhaps more than for any other aspect of the growing child, there is the need to foster an environment of care, love, responsibility and respect by supporting relationships with family roots, with people of other backgrounds and with the wider world. The field of mental ecology emphasises the pursuit of a healthy mental state, rather than a deficit approach that starts with controlling or treating mental ill-health.

ENVIRONMENTAL ECOLOGY

This is the branch of ecology that we are most likely to be familiar with. It includes the landscape of our cities, the architecture of our buildings and links us to the health of our air and our earth, the biosphere. Air pollution from nitrous oxides and microparticulates is recognised to be a major factor in childhood respiratory disease, but car-dominated streets are also inhibiting physical activity and exploration by children. Children playing happily and safely on the streets is seen by some as an indicator species of a healthy urban environment. Greening of the

Table 2 Four quadrants of human knowledge and human experience²²

	Subjective	Objective
Individual	Personal thoughts The personal psyche Subjectivity	Any material body or thing in itself Reductive science Non-contextual objectivity
Collective	Intersubjectivity Our collective culture Sociology	Interobjectivity, Networks, systems theories Environmentalism

environment encourages outside activities and is supported by the recognition of biophilia, the human need for and love of contact with nature. Caring for and regenerating our sickening biosphere also shows the young that we care for their future.

SOCIAL ECOLOGY

Social ecology engages with the culture and value systems of any society. Two crucial aspects of this are the media and money. The young should be encouraged to critique the messages that news headlines and advertising are telling them about our values and our society. Even more important is the role of the economy and specifically of profit. An economy that is impoverishing the futures of so many of our young is dysfunctional and pathogenic. Money, the key token of the modern economy, has become an important vector for disease, since it is making so many of us and so many governments do things that have dire consequences for personal, environmental and social health. Since the 1980s, deregulation of financial institutions has meant a replacement of the idea of value with price. The pursuit of profits and search for bargains distorts consumption and fosters the exploitation of cheap labour and of our earth. The deregulation of financial institutions, the prioritisation of private capital and sustained austerity in public provision have resulted in an exacerbation of health inequality and a drastic withdrawal of funds from public services, including child development programmes. This is evidenced in the UK by cuts to Sure Start.²⁴ The role of money in the health economy needs to be understood at a much deeper level than as a simple and all too often erroneous accounting tool. Money should be a tool for promoting social equality which improves so many parameters of health⁴⁻⁶ and not for promoting and exaggerating class-based inequality. The sociodemographic index, introduced to analyse the global burden of disease, provides a vivid picture of the health consequences of inequality.²⁵

TRANSLATING AN ECOLOGICAL UNDERSTANDING INTO ACTION

An ecological framework to health requires participatory research and social action. These can serve to mobilise communities to explore how they can live, work, eat and play in more health-affirming ways. In a way analogous to how some clinicians are emphasising the importance of working with individual patients for care that is personal and encourages co-responsibility for the management of illness, so an ecological model of health empowers health carers and health institutions to cooperate with communities to explore, understand and address the potential pathogenic properties of their local areas, features such as heavy local traffic, concreted gardens, lack of open public space and to work together on how to change these for the better. As an example, research can be directed towards recording car throughput, cyclists, wildlife, children playing on the street in a locality. Through active participation with local populations, dialogue is opened up, the nature of human health is explored and addressed and links with local government and local enterprises are encouraged. Understanding and addressing the ecological aspects of health promotes communication, collaboration and collective responsibility.

CONCLUSION

An ecological holistic perspective to health provides a platform for explaining why a healthy society and a healthy environment are important for the present and future physical and mental health of all. It is a perspective that can inform communities and empower health workers to engage with the social, economic and environmental determinant of health. The next phase of

human health requires such an approach, an approach that helps us model a wholesome, cooperative economy supportive of our children and their future.

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