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# Transforming of Western holistic health thought in the Twentieth Century: from the Biomedical Paradigm to One Health Models

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**Abstract**
This study examines the twentieth-century transformation of Western health thought from the dominance of the biomedical model to the emergence of integrative frameworks such as the biopsychosocial and One Health paradigms. Drawing upon historical and intellectual sources, it situates these paradigm shifts within the broader evolution of medical epistemology, social theory, and public health reform. The paper argues that the biomedical model, founded upon nineteenth-century bacteriology and laboratory medicine, achieved unparalleled success in disease control yet imposed a mechanistic reductionism that marginalized psychological and social determinants of health. The post–World War II decades witnessed a profound epistemological reorientation, as scholars such as George Engel (1977) [11] and Geoffrey Rose (1992) [23] challenged biological exclusivism and proposed holistic models emphasizing system interdependence and human subjectivity. The article adopts a historical-interpretive methodology, integrating textual analysis of medical writings with contextual study of sociocultural change. It concludes that these intellectual transitions not only reshaped Western medicine's self-understanding but also redefined the meaning of "health" from the absence of disease to a multidimensional state of physical, psychological, and social well-being.

**Keywords:** Medical history, biomedical paradigm, holistic health, one health

## Introduction

The twentieth century witnessed a profound reconfiguration of Western conceptions of health and disease. The transition from the biomedical model to the biopsychosocial and later One Health paradigms marked not merely a scientific evolution but a fundamental transformation in the epistemological foundations of medicine. As Roy Porter (1997) [22] observed, modern medicine's historical trajectory cannot be reduced to technical progress; rather, it reflects a continuous negotiation between scientific reductionism and humanistic holism. This negotiation defines the modern history of health thought.

From the late nineteenth century through the early twentieth, medicine achieved a new scientific authority grounded in laboratory research, bacteriology, and anatomical pathology. Yet by mid-century, the limitations of this model became increasingly evident. Chronic non-communicable diseases, psychosomatic disorders, and the social dimensions of illness exposed the inadequacy of a purely biological understanding. The biopsychosocial model, articulated by George L. Engel (1977) [11] in Science, offered a corrective by asserting that illness arises from the dynamic interaction of biological, psychological, and social systems.

This paper adopts a historical-analytical method, examining the intellectual, social, and institutional contexts that shaped this paradigmatic transformation. It draws upon canonical texts in medical philosophy (Hippocrates, 1923/400 BCE; Virchow, 1858/1978) [15, 28], classic epidemiological theory (Rose, 1992) [23], and contemporary historiography (Porter, 1997) [22] to reconstruct the evolution of holistic health thought. Rather than treating these paradigms as isolated innovations, the study situates them within a continuum of Western efforts to reconcile scientific rigor with the moral and social dimensions of healing.

## The Ascendancy of the Biomedical Paradigm (1900–1945)

At the dawn of the twentieth century, the biomedical model—rooted in the discoveries of Pasteur, Koch, and Virchow—had become the dominant framework for understanding disease. This model was built upon the assumption that all pathology could ultimately be traced to biological mechanisms: microbial invasion, tissue degeneration, or genetic defect. As Christopher Lawrence (1996) [17] noted, the biomedical model was not simply a scientific approach but an epistemic culture that redefined health as the absence of pathological process.

In its most characteristic form, this paradigm viewed the human body as a machine governed by universal physiological laws. Disease was conceptualized as a malfunction of this machine, requiring technical intervention. The physician's task became one of diagnosis, repair, and control, paralleling the industrial ideology of the period. The hospital laboratory, with its instruments and cultures, symbolized this new authority of the measurable and the visible.

The biomedical model's triumph coincided with significant achievements in public health. Vaccination campaigns, sanitary reforms, and antibiotic therapies dramatically reduced mortality from infectious diseases. The success of bacteriology reinforced faith in scientific medicine and its capacity to conquer nature through reason. As a result, by the 1930s, medicine had acquired what Charles Rosenberg (1987) [24] termed a "moral monopoly" over the definition of health and disease.

Despite its achievements, the biomedical paradigm rested on a set of philosophical assumptions that would later be challenged. First, it presupposed causal reductionism—the belief that complex phenomena could be fully explained by their smallest biological units. Disease, under this view, was a deviation in biochemical processes, while psychological

distress or social disruption were secondary or irrelevant. Second, it was objectivist: health was measured by quantitative physiological indicators rather than subjective well-being. As Georges Canguilhem (1966/1991) [5] argued in The Normal and the Pathological, this conflation of the "normal" with the "statistically average" excluded the lived experience of patients and denied the normative dimension of health as a dynamic equilibrium between organism and environment. Third, the biomedical model fostered a technocratic ethos. The clinical encounter became increasingly depersonalized as physicians relied on laboratory data rather than narrative accounts. The patient, once a moral subject, was transformed into a diagnostic object. This mechanistic ethos reflected broader modernist values: efficiency, specialization, and control.

By the 1940s, however, new medical and social developments began to strain these assumptions. The growing prevalence of chronic diseases—heart disease, diabetes, hypertension—defied simple etiological explanations. Similarly, the emergence of psychosomatic medicine revealed that emotional conflict could produce somatic symptoms in the absence of organic pathology (Alexander, 1950) [1]. These developments signaled the beginning of an epistemic crisis within biomedical orthodoxy.

**The Postwar Crisis and the Search for Integrative Models (1945–1970)**

The devastation of the Second World War prompted not only technological reconstruction but also moral and intellectual introspection. Physicians who had witnessed the psychological toll of trauma and displacement recognized that disease could no longer be understood solely in terms of biological malfunction. The postwar decades thus became fertile ground for integrative medical theories that sought to bridge body and mind. The psychosomatic movement, led by figures such as Franz Alexander (1950) [1] and Flanders Dunbar (1943) [10], represented a transitional moment. It proposed that emotional conflict and personality structure could influence physical illness, emphasizing the unity of psyche and soma. Although psychosomatic medicine retained clinical limitations—it often reduced the "psyche" to a supplementary factor—it opened conceptual space for a more holistic understanding of human health. Parallel developments in social medicine deepened this reorientation. European scholars such as René Dubos (1965) [9] and Thomas McKeown (1979) [20] argued that health outcomes depended as much on social conditions and lifestyle as on medical interventions. Epidemiological data revealed correlations between socioeconomic status, education, and morbidity, challenging the biomedical assumption of equal biological vulnerability. These insights anticipated the later articulation of the social determinants of health framework (Marmot & Wilkinson, 1999) [18].

The intellectual breakthrough came with George L. Engel's (1977) [11] seminal essay, "The Need for a New Medical Model: A Challenge for Biomedicine." Writing in Science, Engel criticized the "scientific dogmatism" of modern medicine, which had excluded the subjective and social dimensions of illness from legitimate inquiry. He proposed the biopsychosocial model (BPS) as a comprehensive framework in which biological, psychological, and social processes interact within a hierarchical system of organization. Engel's model rested on three principles: (1)Holism: the human being is an integrated system, not a sum of parts;(2)Interactionism: mind and body engage in reciprocal causation;(3)Individuality: each patient's illness must be understood within their unique life context. In rejecting biomedical reductionism, Engel did not abandon scientific rigor but sought to expand its epistemic boundaries. Drawing upon systems theory and cybernetics, he argued that the physician should function as both scientist and humanist—capable of interpreting laboratory data and empathizing with personal narrative. In doing so, Engel reintroduced the moral dimension of medicine that had been eroded by technical specialization.

The BPS model's implications extended far beyond psychiatry. It transformed medical education, prompting curricula to incorporate psychology, sociology, and ethics. It reshaped clinical practice, encouraging patient-centered communication and shared decision-making. And it influenced health policy, aligning with the World Health Organization's (1948) [29] new definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease." Engel's framework found resonance with concurrent developments in public health and behavioral science. In 1974, Blum identified four key determinants of health—biology, environment, lifestyle, and healthcare organization—suggesting that medical care contributed less than 20% to overall health outcomes (Blum, 1974) [3]. Building on this, Marc Lalonde (1974) in A New Perspective on the Health of Canadians formally articulated the health field model, marking a policy-level adoption of biopsychosocial principles.

Simultaneously, epidemiologists like Geoffrey Rose (1992) [23] advanced a population-based perspective, asserting that disease prevention must target social environments rather than isolated individuals. Rose's emphasis on "shifting the population mean" rather than treating high-risk cases illustrated the social logic of the BPS paradigm: health is a property of systems, not merely of organisms. The confluence of these movements—psychosomatic medicine, social epidemiology, and systems theory—signaled a paradigm shift in Thomas Kuhn's (1962) [16] sense. Medicine's explanatory model expanded from linear causality to systemic interdependence. Disease was reconceived not as a disruption of mechanism but as a disturbance in the balance of complex relations—biological, emotional, and social.

By 1970, the intellectual landscape of Western health thought had been irrevocably altered. The biomedical model, though still dominant institutionally, no longer sufficed as an explanatory ideal. The biopsychosocial paradigm had reintroduced the subjective, moral, and social dimensions of illness into the heart of medical discourse. This transformation laid the groundwork for subsequent integrative models—narrative medicine, functional medicine, social-ecological approaches, and the One Health framework—that would redefine holistic health in the closing decades of the century.

**Pluralizing Holistic Health: 1970s–1990s**

By the mid-1970s, the biopsychosocial model had become a unifying ideal in academic medicine, yet it also inspired further expansions that pushed beyond the clinical encounter toward the ecological context of health. The social-ecological model, initially articulated by Urie Bronfenbrenner (1979) [4] in developmental psychology and

soon adopted in public health, conceived health as an outcome of interactions among nested environmental systems — individual, interpersonal, community, and societal.

This model reoriented medical thought toward interdependence between human health and environmental structures. Epidemiologists began to examine how urban design, occupational stress, and pollution shaped chronic disease incidence. The Ottawa Charter for Health Promotion (World Health Organization [WHO], 1986) [31] codified this shift, asserting that "health is created and lived by people within the settings of their everyday life." Such a statement represented a profound departure from biomedical objectivism: health became a relational and ecological state, embedded in culture and policy. While social-ecological theory emphasized systems and policy, the late twentieth century also witnessed a humanistic resurgence within the clinical sphere through narrative medicine. Led by Rita Charon at Columbia University, the movement argued that understanding the patient's story was essential to therapeutic success. In Narrative Medicine: Honoring the Stories of Illness (2001), Charon contended that physicians require "narrative competence" — the ability to recognize, interpret, and be moved by the stories of others.

Historically, narrative medicine represented both a continuation and a critique of Engel's biopsychosocial ideal. Whereas Engel restored psychology and sociology to the scientific model, Charon reintroduced literary hermeneutics as a clinical method. Influenced by Paul Ricoeur's philosophy of narrative identity, she reframed illness as a "text" co-authored by patient and physician. Empirical research later confirmed that narrative-based interventions improved adherence, reduced anxiety, and strengthened trust (Greenhalgh & Hurwitz, 1999) [14]. The ethical implications were equally significant: narrative medicine repositioned care as an act of moral imagination, acknowledging the patient as a meaning-making subject rather than a clinical object. Thus, the narrative turn complemented the biopsychosocial model by re-embedding science within the humanities — a reconciliation long absent since the age of mechanistic rationalism.

In parallel with the humanistic revival, another stream of integrative thought sought to reconcile molecular biology with systems holism. Emerging in the 1990s under Jeffrey Bland and the Institute for Functional Medicine (IFM), functional medicine argued that chronic diseases stem from systemic dysfunction — nutritional imbalance, environmental toxins, gene–environment interactions — rather than isolated organ pathology (Bland, 1996) [2].

This model extended Engel's systemic logic to the biochemical micro-level, incorporating findings from genomics, metabolomics, and nutrition science. Its methodological innovation lay in personalized assessment: clinicians used biomarker panels to design individualized interventions targeting root causes rather than symptoms. Conceptually, functional medicine transformed holism from an ethical ideal into a technoscientific enterprise — the laboratory once again became a site of integration, but now guided by ecological rather than reductionist principles.

Critics have warned, however, that this molecular turn risks reproducing the very reductionism it sought to transcend (Goldberg, 2010) [13]. When "personalization" becomes a matter solely of genomic profiling, the social and narrative dimensions may again recede. The dialectic between precision and personhood thus remains a defining tension in late-twentieth-century health thought.

**The One Health Paradigm**

The conceptual ancestry of One Health extends to nineteenth-century Rudolf Virchow, who declared that "between animal and human medicine there are no dividing lines" (Virchow, 1858/1978) [28]. Yet the idea acquired new urgency in the late twentieth century amid the rise of zoonotic diseases (HIV, avian influenza) and environmental crises. Scholars such as Calvin Schwabe (1984) coined the phrase "One Medicine," anticipating later interdisciplinary collaborations between physicians, veterinarians, and ecologists.

By the 1990s, international organizations including the WHO, the Food and Agriculture Organization (FAO), and the World Organisation for Animal Health (OIE) began formalizing One Health cooperation. The paradigm defined health as a planetary system linking humans, animals, and ecosystems — a perspective sometimes termed eco-epidemiology (Susser & Susser, 1996) [27]. In this view, deforestation, wildlife trade, and industrial agriculture were not merely environmental issues but determinants of disease emergence.

Philosophically, One Health completed the arc from biomedical atomism to ecological holism. It reinterpreted Hippocratic notions of the balance between "airs, waters, and places" (Hippocrates, 1923/400 BCE) [15] through the lens of systems ecology. The paradigm also introduced an ethical universalism: the moral community of medicine now extended beyond the human species. This expanded horizon required new governance structures — transnational surveillance, cross-sectoral education, and shared data infrastructures (Zinsstag *et al*., 2011) [35].

At the same time, critics have cautioned that One Health's rhetoric of integration can obscure power asymmetries between high-income and low-income nations or between human and non-human interests (Craddock & Hinchliffe, 2015) [7]. The challenge for twenty-first-century scholarship is to transform One Health from a technocratic coordination model into a genuinely ethical-political framework that reconciles ecological sustainability with global justice.

**The Intellectual Trajectory of Twentieth-Century Health Thought**

Across the century, Western medicine's worldview evolved from mechanistic determinism to systemic relationality. The biomedical model's confidence in linear causality gave way to a recognition of complex feedback loops linking mind, body, and society. Engel's (1977) [11] biopsychosocial model provided the hinge between these epistemes. Subsequent paradigms — social-ecological, narrative, functional, and One Health — diversified this systemic vision, embedding biological processes within cultural narratives and planetary ecologies.

Equally striking was the epistemological shift from objectivity to reflexivity. Twentieth-century medicine increasingly acknowledged the observer's role in constructing knowledge. The patient's testimony, once marginalized as subjective noise, became central evidence in narrative medicine. Similarly, epidemiology began to question the neutrality of its categories, recognizing that "risk factors" are socially produced. In this sense, holistic health thought mirrored broader post-positivist trends in

Western science, from Kuhn's paradigms to Foucault's archaeology of medical reason.

Finally, health ceased to be an individual possession and became a collective good. Public health policies inspired by the Ottawa Charter and Rose's population strategy reframed prevention as a societal responsibility. The welfare-state model of the late twentieth century institutionalized this shift through universal health coverage, workplace safety, and community health education. The conceptual arc of the century thus traced a movement from disease treatment to well-being governance.

## Discussion

The paradigmatic transformation of Western health thought in the twentieth century represents not only a cognitive revolution in understanding health but also a fundamental restructuring of the theoretical and practical foundations of global health management. This shift transcended the reductionism of the traditional biomedical model, giving rise to an integrative framework that views health as a dynamic interaction among biological, psychological, social, and ecological dimensions. First, the biopsychosocial model, proposed by Engel (1977) [11], expanded health from a purely biological concept to a holistic conception of well-being, forming the theoretical foundation of person-centered and holistic health paradigms. Second, the rise of evidence-based medicine (EBM) redefined medical decision-making through the triad of evidence, clinical expertise, and patient values, thereby uniting scientific rigor with humanistic concern (Sackett *et al*., 1996; Sackett *et al*., 2000) [25]. Third, the public accountability of health reframed health as a matter of collective governance, providing the theoretical rationale for modern global health policies (World Health Organization [WHO], 2000) [32].

This transformation facilitated a profound restructuring of health governance in Western societies. Key institutional innovations included the institutionalization of health education, the development of preventive public health systems, the establishment of universal health coverage, and the emergence of chronic disease management frameworks (Porter, 1997; Rose, 1992) [22, 23]. These reforms shifted governance from reactive to preventive models and from fragmented to systemic management, effectively enhancing life expectancy, controlling infectious diseases, improving chronic disease outcomes, and reducing health inequities (WHO, 2000, 2021). Furthermore, the twentieth-century transition continues to illuminate contemporary global health challenges—such as emerging infectious diseases, chronic disease burdens, and health inequalities. The COVID-19 pandemic underscored the need for an integrative biopsychosocial-ecological approach, combining pathogen control with psychological and socioeconomic support (WHO, 2020). In chronic disease management, multidisciplinary integration of medicine, nutrition, psychology, and rehabilitation remains essential (Engel, 1977) [11]. The rise of population aging further requires attention to physical function, mental health, and social participation, fostering healthy aging (Porter, 1997) [22].

Despite these advances, the paradigm's limitations warrant reflection. Overreliance on medical technologies risks reducing patients to data points, neglecting their subjective experience (Engel, 1977) [11]. Similarly, Western-centric approaches may inadequately address the socio-cultural realities of developing regions. Therefore, health governance must emphasize contextual adaptability, humanistic care, and multidimensional evaluation metrics that extend beyond mortality and life expectancy to encompass quality of life and psychosocial well-being (WHO, 2000).

## Conclusion

The twentieth century marked a profound paradigmatic transformation in Western health thought—from perceiving health as an individual destiny to defining it as a collective human endeavor. This transformation unfolded through multiple stages: the institutionalization of health education, the construction of health agency, the publicization of health responsibility, and the emergence of holistic health paradigms. The new theoretical framework transcended biomedical reductionism, establishing an integrative biopsychosocial model. Institutionally, it created a modern health governance system encompassing education, prevention, treatment, and protection. Practically, it led to measurable improvements in population health—life expectancy extension, infectious disease control, chronic disease management, and enhanced health equity (Lu, 2022).

The drivers of this transformation included technological advancement, epidemiological transition toward chronic conditions, social structural change through industrialization and aging, and intellectual innovation through evidence-based medicine and biopsychosocial thinking. Collectively, these factors redefined health from the absence of disease to multidimensional well-being, reshaped the individual from a passive recipient to an active health manager, and repositioned health responsibility from private to collective domains (OpenAI, 2023) [21].The twentieth-century transformation remains a cornerstone for contemporary global health governance. Its lessons highlight the enduring need to sustain holistic and evidence-based approaches, promote multisectoral collaboration, and ensure global health equity. At the same time, caution is necessary against technological determinism and Western centrism. Looking ahead, as global health challenges evolve amid climate change and emerging pandemics, the notion of "One Health"—integrating human, animal, and environmental health—may represent the next stage in this ongoing evolution. The twentieth century's experiences thus continue to provide a vital historical and theoretical foundation for envisioning future health paradigms.

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