

The Social-Structural Determinants of Health

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Beyond Genetics

By

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and Aida Wisecup

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For the supportive family and friends who have never given up on me,
who cheered for me the loudest, for the coffee talks and check-ins, for my
best friend who made the friendship bracelets, and for my two tin men.
Love you always!

*I'll always be your "Brown Eyed Girl", "Sweet Potato Pancake",
and "Little Bee" because you,
"Saw Me Born First."*

Jessica R. Corno

This project has not only been unconventional, but truly transformative.
Collaborating across disciplines has reminded me of those casual
encounters that blossom into lifelong and meaningful relationships where
you can't ever remember that person not being in your life. For this
reason, I dedicate this book to my most precious "twin friend"
Mary Nevius. Thank you for your endless support, quiet strength
and boundless love. You have been a guiding light throughout each
challenge I've faced, and for that,
I love and treasure you deeply.

Aida Wisecup

To my grandfather—
You were my first patient, and my greatest teacher.
In caring for you, I learned that every patient is more than a diagnosis...
They are someone's family, someone's story.
Your life and your lessons live in every word I write
and every truth I seek.

Sofie Hass

TABLE OF CONTENTS

Chapter One.....	1
The Social Context of Biological Pathways	
Chapter Two	13
Social and Cultural Environment and Health	
Chapter Three	34
The Study and Analysis of Health Disparities	
Chapter Four.....	55
Transportation as a Barrier to Access	
Chapter Five	80
Life-Course Variables: Age, Income and Healthcare	
Chapter Six	99
The Development of Health, Education, and Industries Technology: Post-COVID Considerations	
Chapter Seven.....	118
Religion as a Factor in Health and Wellness	
Chapter Eight.....	133
The Long-Term Generational Impact of Redlining	
Chapter Nine.....	147
Uncovering the Myths of Race and Genetics	
Chapter Ten	161
Conclusion and Future Directions	

CHAPTER ONE

THE SOCIAL CONTEXT OF BIOLOGICAL PATHWAYS

Introduction

Today more than ever, society is faced with the unequivocal question of developing a better understanding of the interconnectedness between social forces, environmental experiences, and the development of mental and physical health and well-being. Post COVID-19 considerations have led to an unprecedented need to establish a more interdisciplinary understanding of the role that social construction has on health and illness, and the diverse set of ways that our social world plays in the identification, treatment and experience of various diseases and health related conditions. Social life is intricately linked to quality-of-life variables related to health, both mental and physical. Thus, we recognize the invaluable contribution to the field of medicine made by a comprehensive understanding of health, wellness and social functioning as a byproduct of the study of the human body and mind. However, we posit that this knowledge would be incomplete without examining the close relationship between health, wellness, and those aspects of social environment that create conditions that can either strengthen or undermine the wellbeing of individuals, groups of people, and entire communities – the social-structural determinants of health.

The human organism is a complex phenomenon that undoubtedly cannot be fully understood from a single conceptual definition or discipline. Biological pathways to human behavior have a long-standing history of exploring the connection between physiological and genetic variables that collectively influence and shape various aspects of our thoughts, actions, and lives in general. Of particular focus in the research literature are those neurobiological processes that influence brain structure and function, variations in body chemistry responsible for controlling mood and reactivity, as well as genetic and heritable origins of traits related to motivational behaviors and excitability.

Our goal in this reader is to continue to pave the way along a path of research that has developed to assess health and wellbeing from a more multi-dimensional perspective of social-structural variables. We will begin our discussion by reiterating the importance of biological pathways in the study of the human organism and social interaction, then attempt to use this foundation in our understanding of its social context.

Neurophysiology, Biochemistry and Social Impairment

Studies drawing a link between biological traits and human behavior have attempted to link predispositions to aggression, impulsivity, and intelligence, for example, to criminal offending. These studies look for common biological traits such as elevated levels of male sex hormones, certain disrupted patterns of brainwaves, and low blood glucose levels, as possible predictors of criminal offending. **Hypoglycemia**, a condition that occurs when blood glucose drops below the level necessary for the body to function effectively, leads to corresponding behavioral traits of irritability, confusion, and lack of proper judgement. Several studies show that individuals who suffer from this condition, have increased outbursts of assaultive behavior, aggression, and violence.¹ Moreover, studies have also found a higher incidence of hypoglycemia in repeat violent offenders.² Researchers note that there are profound functional implications of poor glucose metabolism and uptake to the brain, as glucose derived energy and nutrition is essential for the maintenance of the health of brain cells and brain physiology. A disturbance of glucose metabolism can lead to various physiological conditions of disease within the brain itself, as well as affect the entire functioning of the human organism.³

Researchers at Florida State University examined the relationship between levels of **monoamine oxidase (MAO)** and anti-social behavior in teenagers. MAO, an enzyme found throughout the body, balances chemicals in the brain that are responsible for mood regulation. MAO is measured in the blood and is commonly referred to as platelet MAO. Their study revealed that driving under the influence of alcohol as well as reckless driving were strongly correlated with the traits of impulsivity and agreeableness, personality traits that were associated with low platelet MAO activity.⁴

A growing body of literature within the study of biological pathways to variations in human behavior and functioning has focused on the relationship between the chemical composition of the brain and response to environmental stimuli. **Neurotransmitters** are chemical compounds within the brain which control and activate emotions and drives as well as

regulate mood. These tiny compounds allow us to see the big picture of variability in individuals' abilities to manage stress, deal with pressure, and seek thrill and excitement.⁵ In a study on the effects of neurotransmitters called **serotonin**, responsible for the regulation of emotions such as anger and sadness, researchers at the University of Cambridge used volunteers with normal serotonin levels that were altered through the manipulation of diet. The study revealed that the subjects with low levels of serotonin within the brain had a more difficult time communicating emotions from one region of the brain to the other, and a subsequent decrease in the ability to control an emotional response to anger inducing stimuli.⁶

Genetic Influences on Individual Variations in Social Outcome

The study of genetics has also given us a wide-ranging understanding of heritable traits that significantly impact the social functioning of human beings. Various studies of both identical and fraternal twins have revealed a significant relationship, for example, between behavioral traits such as social engagement, mental pursuits, and prosocial behaviors.⁷ Moreover, traits such as loneliness and extraversion, were found to have moderate to high heritability and can impact quality of life as well as the development of relationships.⁸ Further, in the vast majority of studies comparing anti-social traits in identical twins, who are genetically exact, versus fraternal twins, identical twins were more likely to exhibit similar patterns of social functioning than fraternal twins, with psychiatric problems such as conduct disorder and anti-social personality disorder being more common amongst identical twins.⁹ **Monozygotic** or **identical twins** are the product of a single egg and sperm and therefore are 100% genetically similar. **Dizygotic** or **fraternal twins**, on the other hand, are the product of two eggs and two sperm and have the same genetic similarity as any two siblings (approximately 50%).

Developments in the field of **behavioral genetics**, the study of the role of genetics in human behavior has brought us a plethora of research on the configuration of chromosomes and how certain variations can occur which lead to corresponding genetic anomalies. **Chromosomes** are thin, threadlike structures made out of protein and consist of DNA molecules that carry genetic information from one cell to another. Human beings possess 23 pairs of chromosomes, with one pair determining the individual's sex: XX for females, and XY for males. Disruption to chromosome patterns can lead to certain conditions such as **Down's syndrome**, which is caused by an extra non-sex chromosome, or **Klinefelter's syndrome**, caused by males

having an extra X chromosome. A rare condition in males occurs when they have an extra Y chromosome, producing what is known as **XXY syndrome**, which has been linked in some studies to a higher incidence of violence, aggression, and criminality.¹⁰

Psychological and Psychiatric Aspects of Social Functioning

A significant body of research literature has documented an integral role played by human development and the psychological and psychiatric impact the human mind has on the way we think, act, react to others and function in a social context.¹¹ Our mental health is intricately linked to how well we adapt to the environment around us. Thus, traits closely associated with personality can be directly related to our ability to lead productive, healthy lives. Characteristics of individuals such as impulsivity, agreeableness, conscientiousness, self-confidence, and sensation-seeking can dictate, motivate, and drive our mind and behavior. The complexity of the human mind has led scientists to uncover its study through a focus on the conscious and unconscious layers of mental processes that affect personality. Notably, the study of personality has focused on a variety of maladaptive, pathological disturbances within the human mind that affect our ability to reason effectively, adapt to negative stimuli, socialize with others, and process information.

Social welfare, physical and emotional health and wellbeing are largely a byproduct of the way we interact with circumstances in our immediate social environment. How we deal appropriately with frustration, disappointment, anger, and other negative states of cognition is known as **adaptation**.¹² Adaptation takes on many forms and can involve biological modification of our sensory organs, mental and cognitive pathways that have been formed based on past developmental experiences, and conscious social strategies that are learned behaviors. Conversely, **maladaptation** represents ways that we inappropriately or inadequately deal with negative environmental stimuli. These can be reactions to stress, anxiety, fear, jealousy and other emotional states in a manner that leads to conflict, depression, self-harm and social isolation. Sources of maladaptation can be rooted in the developmental pathways of personality, as well as the presence of mental health disorders.

Neuropsychiatric disorders have been identified as being at least partially responsible for social dysfunctions. Impairment to cognition has been examined within the context of mental disorders that disrupt the normative pathways to thinking, processing stimuli, and understanding and

manipulating information. Individuals with **bipolar disorder**, for example, experience periods of elation which makes them feel unusually euphoric and “on top of the world”. This often leads to irrational decisions and risky behaviors such as gambling, making large purchases and binge drinking. Once the stage of elevated mood passes, the individual begins to experience feelings of guilt and remorse, followed by depression and a feeling of hopelessness.¹³ Individuals with severe psychotic disorders such as **schizophrenia** experience disorganized thoughts, confusion, unfounded paranoia, hallucinations, and social withdrawal.¹⁴ Their faulty thought processes, originating in the mind, makes it very difficult to function on a daily basis, maintain relationships, keep a job, and carry out adult responsibilities and obligations. Impairment to social functioning has also been linked in research studies to **autism**, a neurodevelopmental disorder that effects the individual’s ability to communicate with others and react to sensory stimulation.¹⁵ Individuals with autism spectrum disorder have difficulty with social communication and interaction, making it hard to converse with others, recognize verbal cues, and understand simple directions. Behavioral disturbances such as self-harm, adherence to rigid rituals and routines, and odd movement patterns are common, leading to social withdrawal and isolation.

Health Outcomes and Social Functioning

Health and wellness have been increasingly linked to measurable differences in social outcomes amongst populations of individuals with different socio-demographic traits. Social functioning can be a difficult and often elusive term to define. From the standpoint of society, we often see this term illustrated as the absence of certain physiological disorders and diseases that disrupt our health and ability to function normally. Some may be obvious conditions such as those discussed above, which produce significant impairment in social functioning. However, the totality of healthcare involves an expansive study of the human body, its physical and mental condition, and the plethora of ailments that can reduce individuals’ quality of life and ability to engage in work, enjoy social activities, and interact with family and friends. Very often, however, the constructs of physiology and structural pathologies are disconnected from the study of environmental dynamics that affect the trajectory and outcome of health, healthcare, and social functioning.

A growing body of literature has emerged to address this gap in research. The goal of this reader is to provide a comprehensive approach to the science of the human body from the broad understanding of its context

within the socio-structural variables that impact health and wellbeing. Throughout this text, we call for an approach that recognizes variations in social functioning between different demographic groups and populations which are interconnected with social and structural determinants of health and healthcare delivery.

A Biosocial Approach to the Human Life-Course

For decades, the study of the human organism has revolved around a parallel of disciplines that fail to interface biological aspects of development with variations in environmental experiences. Researchers began to advance a **biosocial approach** to the study of human behavior that acknowledges the interaction between social environment and variations in individual constitutions as contributing factors in how people act and react. For decades now, scientists have been advocating for an understanding of the underlying pathways and processes that dictate the course of human development across the life course which accounts for the interplay between both social and biological phenomena. Thus, the biosocial approach can be defined most broadly as one that draws upon the disciplines of biology, medicine, social and behavioral science, treating them as fields designed to be mutually inclusive and informative.¹⁶ It is imperative to recognize the importance of this approach when studying the trajectory of human development and the determinants of health and well-being.

Identifying human biological and physiological measures within a social-structural context will provide us with a more clear and comprehensive study of those contexts which are hindering the progress of individuals as well as those that are more beneficial with regard to well-being.¹⁷ The methods, scope and validity of knowledge from this standpoint contributes significantly to advance human biology through a more accurate lens of contextual elements that have a profound impact on the life course across time and throughout generations.

Trends and variations in the outcome of health and wellbeing from the standpoint of biomedicine are explored as components that are ‘inside’ the human body and brain. These include a study of the diverse set of cycles and processes that occur which contribute to the growth, development, and sustenance of the organism from birth to death. At the beginning of this chapter, we noted the various biochemical, genetic, physiological, and neurological interactions that take place within the human body that can impact the outcome of health and social functioning. These are just a few examples of the complex and multidimensional nature of human development. However, this understanding would be incomplete without

the bigger picture of socio-structural forces that help to identify and explain variations in the human life course¹⁸. Throughout the remainder of this chapter, we posit that these dynamic biomedical functions be reexamined within a context that looks ‘outside’ of the human body to consider the vast complexity of social phenomena that contribute to the order of life, the choices people make, and the availability of resources. We advocate for the integration of biomedical studies with a study of the social context of group interaction, family dynamics, neighborhood structure, and the realm of norms, institutions, and hierarchies that organize and arrange the social world around us.

Variations in the type and distribution of social phenomena from individual to individual, group to group and place to place led the inquiry of a paradigm of theoretical literature and research known as the sociological perspective. The **sociological perspective** examines how the social environment around us influences and shapes our thoughts, attitudes, behaviors, and life chances.¹⁹ To this extent, we can see society as an intersection between aspects of various social institution, social structures, and cultural norms.²⁰ Thus, human beings are seen as actors in a social world, and as social beings, we are not in a vacuum of individual traits that shape our biological and psychological selves, but rather are in a state of interaction as social beings immersed in the various contexts of culture and society. The value of this approach lies in its ability to see individuals and society as a whole, recognizing the larger picture of social forces that shape and dictate the course of biological traits and psychological characteristics that are unique to individuals. By recognizing the role of social forces in our lives, those structures and institutions that impact our personal and social functioning, we can better inform those areas in need of change in order to promote equity and provide a lens of deeper understanding and insight into questions and matters of health and well-being.

A multi-disciplinary approach to the study of health-related issues endeavors to change the landscape of scholarship and discourse.²¹ The ultimate search for betterment of health and wellness is a universal goal in just about every society. This, positions the discipline of sociology to incorporate the study of human biology into the study of social stratification, access to resources, and social mobility. Likewise, the field of medicine would benefit exponentially from a more diverse and interdisciplinary approach to the study of health by identifying biological processes that may be both rooted in socio-structural and demographic sources as well as become the determinants of group stratification and differential treatment outcomes over the life course.²²

A Biosocial Life Course Framework for Human Development

One of the earliest and most impactful studies to introduce to us the merging disciplines of public health and social science is the National Health and Nutrition Examination Study (NHANES), first conducted in 1971.²³ This survey is conducted by the National center for Health Statistics and is designed to assess and track over time, health and nutritional data of adults and children in the United States. A variety of demographic and socioeconomic information is collected through survey questionnaires and interviews. In addition, physical, medical, and dental components are assessed through interviews and examinations and laboratory testing.

A prevalent theme throughout this text, therefore, centers upon the identification of social forces that drive inequalities over the course of life and from generation to generation, impacting educational achievement, interpersonal relationships, social interactions, and health. In chapters to come, we will take a closer look at these social forces as we attempt to understand the human life course from a biosocial perspective within the context of social stratification and health processes.

A life course framework allows us to understand the dynamic and ongoing changes in social roles, and social interactions across multiple layers of context over time, that influence and shape what life looks like for individuals' physical and mental health and stability, as well as their social and economic functioning.²⁴ This framework is imperative to developing an integrative understanding of how life outcomes and circumstances at any given point are a product of previous interactions between biosocial forces and interchanges across human development. According to scholars, "the life course paradigm is an effective framework for studying how social exposures get "under the skin" to affect physiological function depending on the intensity of the exposure, the life stage in which the exposure occurs, and the duration of exposure (as well as the life stage in which physiology is measured)."²⁵

Moving forward in our text, we want to lay the foundation for our study of the social-structural determinants of health within the context of four life course models. First, there is what is referred to as a *sensitive period* model which examines the role of timing and the effects of certain developmental markers that would have a more profound impact on health outcomes than other stages of life.²⁶ This essentially means that certain socio-structural exposures during these times in the developmental cycle can produce changes in the biological organism that can be irreversible. This may include both structural and functional changes that manifest at a later stage

of development.²⁷ Consider, for example, the complex and interconnected relationship between poverty and mental health, and the dynamics of interaction between the two during the experience of divorce and the subsequent interaction between poverty and mental health within this context.²⁸

A second life course model that we want to reference is the *accumulation model*, where the total amount of exposure to life course stressors is what matters most. Thus, this model acknowledges the role of social disadvantage on health and wellness as it persists over time.²⁹ This model helps us see the bigger picture of life stressors such as poverty, educational inequality, and social position appearing at different stages in the life cycle and creating a cumulative effect of disadvantage that creates unfair health outcomes between different populations and between social groups within the same population. These variations in health outcomes can be the outcome of exposure to a single recurrent stressor over different stages of development, or multiple stressors during various stages over the life course.

A third life course model that provides insight into the role of social exposure and health related outcomes is known as the *pathway model*. This model helps us identify those risks that are correlated with prior social exposures at certain stages of the life cycle. For example, studies show that the use of illegal drugs such as marijuana and cocaine is significantly related to previous use of nicotine. Notably, among U.S. adults 18 to 34 years of age who had ever used cocaine, 87.9% had smoked cigarettes before using cocaine, 5.7% began using cigarettes and cocaine at the same time, 3.5% used cocaine first, and 2.9% had never smoked cigarettes.³⁰ Likewise, the pathway model facilitates our understanding of intergenerational cycles of addiction and other social determinants of health whereby we see a connection between early life conditions of disadvantage and stress as predictors of future health outcome and disease.

A final life course model considers the role of *social mobility* and its effect on positive and negative health changes throughout the life course. This model examines the mutual link between health and transitions in social and economic status whereby adversity has both a cause-and-effect relationship. Without a true understanding of social mobility, it is difficult to discern whether health outcomes are social determined by structural and behavioral variables such as education, work environment, exercise, and diet or, whether social advantage and upward mobility are a product of healthy lifestyles and choices.³¹ Social mobility therefore directs our attention to the symbiotic connection between socioeconomic status and

health when considering the role of intervention and behavior modification as mitigating variables in healthcare delivery.

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CHAPTER TWO

SOCIAL AND CULTURAL ENVIRONMENT AND HEALTH

Health and Wellness from A Holistic Approach

The study of health and wellness precludes the consideration of many variables when approaching the topic of patient care. Traditionally, healthcare delivery has centered upon the patient, their symptoms, family history, presentation, diagnosis, and intervention. Over many decades and today more than ever, we are seeing the complexity of symptomology, which can make the diagnosis and treatment of patients far from a straightforward task. Modern medicine has teamed up with various other disciplines to approach healthcare delivery to include medical as well as non-medical aspects to create a conceptual model of patient care built upon a diverse and more complete set of criteria in therapeutic and preventative care.

The term holistic wellness approaches the synthesis of mind, body, spirit, and environment to achieve a multidimensional balance in one's life.¹ This very often means an exploration of various aspects of social, physical, mental and occupational wellness experiences that mold the very fiber of a person's outlook, attitude, and personal ability. Holistic wellness thus operates on the premise that treating individual problems and concerns is more readily feasible and possible through the revitalization of the person as a whole. We must therefore embrace the essence of Aristotle's "the whole is more than the sum of its parts" and transcend an understanding of the human body as a collectivity of systems that produce individual outputs and outcomes, to study the interconnectedness of these systems and how they interest not only with one another, but with every aspect of a person and their individual circumstances, experiences and relationships.²

The literature presents us with clear and compelling evidence that health is determined by multiple factors including inherited traits, lifestyle choices, socioeconomic status, and the physical environment.³ More recently, a growing body of research has emerged to further assess the interconnection

between socio-demographic, health, and variables such as social bonds, networks of support, culture, and job stress. Notably, these variables are seen as complex processes that intersect with other social determinants of health over the life-course to influence health outcomes. In a study comparing the dental health and lifestyle behaviors of people from different socio-economic classes, Hashmat et al (2023) found a significant relationship between dental health and socioeconomic status, with income and education impacting healthy and active lifestyles in young children and adults and therefore represent risk factors for poor oral health.⁴ In a longitudinal analysis evaluating the association between modifiable lifestyle factors and peripheral artery disease (PAD) among individuals with type 2 diabetes (T2D), researchers found, after a median 13.5 years of follow-up documenting 628 incident cases of PAD, that a favorable lifestyle was associated with lower risk of PAD among individuals with T2D, independent of genetic predisposition to PAD.⁵ Additionally, a study by Wuni et al (2023) identified 122 significant interactions between genetic and lifestyle factors on cardiometabolic traits.⁶

We can clearly see that the impact on health by social and cultural variables spans temporal dimensions, including critical life stages and cumulative exposure effects, as well as spatial dimensions, encompassing various levels of exposure. These settings where social and cultural factors intersect to exert influence on health outcomes are commonly referred to as the social and cultural environment, best understood within the context of a life course model of health and wellness.

A Life-Course Model of Health and Wellness

It is imperative from the outset that the social determinants of health be recognized as affecting health across various levels over the course of a lifetime. For instance, poverty can be viewed as an influence on health that operates at different levels, whether within families or within the neighborhoods in which individuals reside. Additionally, these various levels of influence may coincide and interact to shape health outcomes. For example, the adverse health effects of growing up in poverty may be intensified if the family also resides in a disadvantaged community where poverty is prevalent, as opposed to a middle-class neighborhood. Let us examine, for example, the dynamics of interplay between disparities in employment opportunities, social culture, and health risk. On a simplistic level, it would be easy to attribute poverty and health disparity to some illusive notion of generational culture of “laziness” or “lack of motivation” coupled with the lack of job opportunity. However, an examination of these

components by researchers found the relationship to be less than straightforward. In a study by MacDonald et al (2020), researchers conducted a qualitative evaluation involving 20 families residing in severely deprived neighborhoods in the UK. They conclude that in some families, poverty appears deeply entrenched, defying simplistic attributions solely to job scarcity or a supposed 'culture of underclass', finding their ongoing struggles connected to circumstances that were rooted in a longstanding nexus of external socio-economic pressures that have persisted across generations. This includes factors such as diminishing job opportunities, a contracting and stringent welfare system, punitive criminal justice practices, substandard education, and the gradual deterioration of working-class communities.⁷

Moreover, socio-demographic variables may impact an individual's health differently and independently at different stages of life, such as during pregnancy, infancy, childhood, or old age. In a seminal study by Deguen et al (2022), researchers conducted a longitudinal, systematic review of exposome, a term coined to describe the sum total of environmental exposures encountered by an individual over their lifetime, and how these exposures influence biology and health.⁸ The study examined various published reviews on the interplay between socioeconomic status (SES), environmental nuisances, and health outcomes. These reviews typically consider socio-economic indicators such as education, income levels, and neighborhood environment, aiming to shed light on how these factors interact and contribute to various health outcomes. The analysis underscored the unequal distribution of vulnerability to environmental nuisances, with the most economically disadvantaged bearing a disproportionate burden of health effects, suggesting the formalization of the concept of social exposome when targeting high-risk populations in policy development and interventions.

The importance of a life-course model of health and wellness therefore lies in its ability to emphasize and illuminate that health outcomes are shaped not only by current circumstances but also by experiences and exposures throughout an individual's life. This perspective recognizes that various social factors, such as socioeconomic status, education, family dynamics, and community environments, interact dynamically across different stages of life to influence health trajectories. It highlights the importance of understanding how early life experiences, such as prenatal conditions and childhood upbringing, can have lasting effects on health outcomes in later life. Moreover, it acknowledges the significance of critical life transitions and cumulative exposures in shaping health disparities across populations. By adopting a life course approach, researchers and

policymakers can better identify opportunities for intervention and prevention strategies aimed at promoting health equity across the lifespan. With this understanding, let us turn to an examination of the intricate interplay between the social and cultural environment and its profound impacts on health outcomes.

The Intersection of Social and Cultural Environment and Health

Positive health requires a knowledge of man's primary constitution and of the powers of various foods, both those natural to them and those resulting from human skill. But eating alone is not enough for health. There must also be exercise, of which the effects must likewise be known. The combination of these two things makes regimen, when proper attention is given to the season of the year, the changes of the wind, the age of the individual, and the situation of his home. If there is any deficiency in food or exercise, the body will fall sick.

-Hippocrates

The Ancient Greek Physician Hippocrates recognized early on the multi-dimensional aspect of human health as an outcome of many divergent variables. While the ‘combination’ of these factors has emerged, developed and changed over the years, the early recognition of this dynamic in ancient medicine continues to push us in the direction of knowledge and inquiry into the various factors determining health outcomes for the human being, in different times, eras, civilizations and settings.⁹ Over the centuries of developing modern medicine to what it is today, we have acknowledge the multitude of dimensions that shape the trajectory of health, including the genetic inheritance, personal behaviors, access to quality healthcare, and the broader external environment such as the quality of air, water, and housing conditions. Moreover, decades of research have underscored the intricate connections between health and various social and cultural factors.¹⁰ While certain social variables like socioeconomic status (SES) have long been recognized for their influence on health outcomes, understanding of others, such as family support, social bonds, community networks and employment tension and strain, has only recently evolved over the past few decades. The remainder of this chapter aims to provide an overview of these social determinants of health, delineating approaches to measurement and synthesizing empirical evidence linking each variable to health outcomes. Let’s take a closer look by examining key indicators of health emerging from the socio-cultural variables of SES, workplace environment, social networks of support, and race/ethnicity.

Socioeconomic Status and Health

A longstanding tradition in the sociological literature has recognized socioeconomic status as generally comprised of education, income, occupation, and wealth.¹¹ While measures of socioeconomic status (SES) are often correlated, they each provide unique insights into an individual's social position and can impact health outcomes through distinct mechanisms. For instance, income may influence access to healthcare services and resources, while education could shape health behaviors and knowledge about preventive care. Similarly, occupational status might affect exposure to occupational hazards and stress levels, thus impacting health outcomes differently from other SES indicators. Recognizing these distinct pathways underscores the importance of considering multiple dimensions of SES when examining health disparities and designing interventions to address them effectively. The relationship between socioeconomic status and health is well-established and multifaceted. Individuals with higher SES typically experience better health outcomes compared to those with lower SES. Several factors contribute to this relationship.

Health Literacy

The National Institute of Health (NIH) has defined *health literacy* as comprised of personal health literacy and organizational health literacy.¹² *Personal health literacy* is the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others. *Organizational health literacy* is the degree to which organizations equitably enable individuals to find, understand, and use information and services to inform health-related decisions and actions for themselves and others. A significant body of research has established a strong association between health literacy, education and various health outcomes, notably, across the life course. Lower educational attainment has been consistently linked to poorer health outcomes, including higher mortality rates, increased morbidity, unhealthy behaviors, and greater functional limitations. This relationship between education and health extends across different stages of life, from childhood to old age, highlighting the enduring impact of educational disparities on overall health and well-being. In a study analyzing the relationship between literacy and the rate of infant mortality, researchers found a significant association between maternal education level and infant mortality rates. Specifically, attending primary education

was associated with a 28% decrease in the odds of infant mortality compared to infants born to mothers who were illiterate. Furthermore, attending secondary education and above was linked to a 45% reduction in the odds of infant mortality compared to the same reference group. These results underscore the critical role of maternal education in influencing infant health outcomes, with higher levels of education being associated with lower rates of infant mortality.¹³

Health behaviors

Recent studies of factors affecting health behavior have reflected an increasing consensus that disparities in overall health behaviors are significantly shaped by sociological, nonmedical factors that interact with physiological components to shape the course of experiences and outcomes that have unfolded over the life course in various contexts. Health behaviors can be seen as actions taken by individuals that can either be intended or unintended, that affect their own personal health as well as the health of others.¹⁴ Some examples of health behaviors include smoking, alcohol consumption, nutrition, exercise, recreation, sleep habits, health seeking behaviors and adherence to medical advice and treatment. Studies have documented a correlation between SES and health behaviors, shifting focus from individual level attribution of disparities in health behaviors to an examination of group dynamics of interaction that are the outcome of societal organization and institutionalized structures of inequality and ideological differences. Notably, individuals from disadvantaged socioeconomic backgrounds are more likely to be obese, smoke, and have mental health issues, and are less likely to seek medical care and attention for chronic health conditions.¹⁵ Moreover, the influence of their socioeconomic circumstances on health behavior begins in early childhood and impacts the long-term outcome of adulthood, old age, morbidity, and mortality.¹⁶ Conversely, individuals with higher SES are more likely to engage in health-promoting behaviors and have access to healthier environments, such as safe neighborhoods and recreational facilities.

Access to healthcare

Another factor establishing a significant relationship between SES and health and wellness is the existing disparities in access to healthcare resources such as health insurance, medical check-ups and preventative care services. The lack of availability and affordability of healthcare resources to individuals in poor, rural communities has resulted in a greater incidence

of challenges with mental health, substance abuse, and physical and sexual health amongst this population.¹⁷ The disparities in access to healthcare can be seen as multidimensional layers of discrepancy that not only involve access to facilities to detect and treat health conditions, leading to better overall health outcomes, but also to a discrepancy in the *utilization* of healthcare in underprivileged communities across the United States. Thus, individuals with lower SES often experiences barriers to accessing healthcare services, including transportation, cost, and lack of trust in available healthcare services and resources, impacting their quality of health over the life course and increasing their risk of declining health over the aging process. A study examining the relationship between wealth and healthy aging, the ‘wealth-health gradient’ documents that individuals with lower SES experience more disease over the life span, including dental disease, functional impairment, chronic disorders, and disability.¹⁸ We will explore these interrelated dynamics in greater detail in chapters to come.

Environmental exposure

Another important variable in the relationship between SES and health is the invariable exposure to environmental hazards such as pollution, unsafe housing conditions, and lack of access to clean water and nutritious food experienced by individuals and families living in poor, deteriorated and disadvantaged neighborhoods. Researchers note a significant gap in the extent to which neighborhood environments meet the needs of residents through design, operation, and regulation.¹⁹ These detrimental environmental factors can contribute to adverse health outcomes, including respiratory illnesses, malnutrition, and chronic diseases. In a study by Larsen et al (2023), researchers explored the relationship between environmental toxins, cancer risk, and the social and economic distribution of poverty and disadvantage. Their findings suggest that exposure to chemical toxins is not equitably spread across space, with a greater risk of exposure to carcinogens commonly concentrated among socially and economically disadvantaged populations, leading to higher risk of cancer.²⁰

Psychosocial factors

A final component in the relationship between SES and health and wellness revolves around psychosocial factors that include the experience of chronic stress, access to social support networks, leisure, and mental health burden.²¹ Individuals with lower SES experiences greater incidences of unemployment, low job satisfaction, financial strain, and social

deprivation. A systematic review of the literature finds a strong correlation between financial stress and depression, with the relationship being stronger among populations with low income and wealth.²² In addition, studies have documented the relationship between psychosocial factors and their impact on both physical and mental health and wellbeing, establishing a critical role in shaping health disparities between advantaged and disadvantaged individuals over the life course. A study in Switzerland explored the association between social and family support, self-esteem, and self-efficacy with different dimensions of chronic stress in a sample of 1405 employed and unemployed adolescents. Researchers found that unemployed adolescents showed higher stress levels overall, with higher levels of social and psychological resources generally linked to lower stress levels, supporting the conclusion on differential associations of social and psychological resources with various facets of chronic stress in the context of employment and unemployment during adolescence.²³

We have seen here that SES plays a critical role in shaping health disparities, with individuals from lower SES backgrounds facing greater risks of poor health outcomes across the lifespan and at multiple levels of social organization. Addressing socioeconomic inequalities and improving access to resources and opportunities are essential steps toward achieving health equity for all populations. We turn now to another aspect of the social and cultural environment which creates disparities in health outcomes amongst individuals.

Workplace Environment and Health

The psychosocial environment of a workplace encompasses two major components, organizational culture, and organizational structure. *Organizational culture* refers to the shared values, beliefs, norms, attitudes, and behaviors that characterize an organization and guide the way people within the organization interact with each other and with external stakeholders. It encompasses the unwritten rules and social dynamics that shape the work environment and influence how employees perceive their roles, make decisions, and collaborate with others.²⁴ *Organizational structure* refers to the framework of roles, responsibilities, relationships, and hierarchies within an organization. It defines how tasks are divided, coordinated, and controlled to achieve the organization's goals effectively.²⁵ Job satisfaction has long been an indicator or measure of the level to which employees feel happy and fulfilled by various aspects of their work, such as their daily routines, schedules, working conditions, interactions with colleagues and supervisors, as well as their perceived opportunities for

promotion and compensation. Inherent to job satisfaction and most integral to dimensions of health and well-being is the concept of job stress. Indeed, job stress has been linked to the onset of various health conditions, thereby accounting for a sociocultural dimension of disparities in the distribution of health and wellness amongst certain populations of individuals.²⁶

Various studies have linked job stress to the onset of cardiovascular disease, mental illness, and certain musculoskeletal disorders. Chronic job stress has often been linked to various aspects of organizational structure such as long work hours, high job demands, and low control over work tasks.²⁷ A combination of these exposures coupled with work environments that have poor organizational culture has been found to increase the risk of hypertension, coronary artery disease, and heart attacks. Notably, an extensive review of the literature confirms a strong association between chronic stress and cardiovascular disease despite heterogeneity in study design, stressor type, measurement of stress, outcomes, assessment of confounders, and subject demographics.²⁸ Moreover, research studies confirm a positive relationship between the prolonged exposure to stress hormones like cortisol and adrenaline and their contribution to inflammation, high blood pressure, and other cardiovascular risk factors.²⁹

Chronic job stress can also have significant implications for mental health, contributing to conditions such as anxiety disorders, depression, and burnout.³⁰ High levels of job demands, low job control, interpersonal conflicts, and a lack of support from supervisors and colleagues are common stressors in the workplace that can negatively impact mental well-being. Additionally, work-related stress can spill over into other areas of life, leading to strained relationships, sleep disturbances, and reduced overall quality of life. While these relationships can often be reciprocal, studies have shown consistent findings to suggest that the domain of work well-being has a more direct impact on personal well-being. In a study using longitudinal data with a clear temporal sequence of cause and effect, researchers found that well-being in social relationships and self-purpose were both impacted by work-related well-being.³¹ Moreover, a study by Mensah (2021) examining a cross sectional data set from the 2015 6th European Working Conditions Survey on 14,603 men and 15,486 women from 35 countries in Europe revealed that job stress had a direct negative effect on mental well-being among workers in Europe.³²

Another important psychosocial aspect of the workplace environment that is intertwined with wellness and health outcomes is related to the nature and framework of job duties and responsibilities. Jobs that involve repetitive tasks, heavy lifting, pushing, or pulling, awkward postures, or prolonged periods of sitting can lead to musculoskeletal disorders such as

back pain, neck pain, carpal tunnel syndrome, and tendonitis. Moreover, stress can exacerbate these conditions by increasing muscle tension, reducing blood flow to affected areas, and impairing the body's ability to recover from strain and injury. In a study of automotive factory workers, researchers designed a study that included 200 automotive industry workers who were diagnosed with a work-related musculoskeletal disorder by physical and radiological examination in the physical therapy and rehabilitation outpatient clinic in the past year. Findings revealed that the most common diagnosis was low back disorder (66.5%), followed by neck and shoulder (58%) and upper extremity (23%) disorders. Moreover, there was a statistically significant increase in the occurrences of shoulder-neck diseases, upper extremity, and low back-lower extremity diseases in workers with inappropriate posture, and workers who exerted heavy effort or performed repetitive motions were statistically more likely to experience upper extremity disorders as well as low back extremity disorders.³³

Social Networks of Support and Health

Sociologist Emile Durkheim recognized early on the interconnectedness of wellbeing with social integration through social networks and social support, arguing that individual pathology was a function of social dynamics.³⁴ One of the earliest conceptual models linking social integration to health examined the role of social ties and networks of support as a predictor of mortality from a variety of causal variables of death. Findings consistently showed that individuals with bonds to close friends and family, are married, and affiliate in religious organizations and are members of community groups, have lower mortality rates than those who do not experience these types of social interactions.³⁵ Moreover, the psychological literature has established the pivotal development of attachment to others at critical stages of the life course to fulfill a universal human need for close bonds of affection, survival, and protection. *Attachment theory*, proposed by John Bowlby, highlights the importance of early attachment experiences in shaping an individual's emotional and social development throughout life. Moreover, attachment and social bonds continue to play a crucial role in shaping interpersonal dynamics and emotional well-being through the life-course.³⁶

The concept of developing attachment to others, creating bonds with society, and having access to a strong network of social support can provide a variety of pathways that impact the trajectory of health outcomes. Indeed, these connections provide both tangible (such as assistance with practical needs) and intangible (such as emotional support and companionship)