

# Mitigating Adverse Health Effects of Chronic Illnesses on Work Outcomes: A Conceptual Framework

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## Abstract

The paper offers a comprehensive framework for linking health outcomes and their determinants to work outcomes through understanding how health, workplace and institutional environment affect work outcomes. Its goal is to identify the complex determinants of work ability and both favourable and adverse work outcomes. Work ability is determined by health and quality of life outcomes, which are influenced by both modifiable and non-modifiable health factors as well as macro, mezzo and micro-level incentives to improve health outcomes including job demands, and workplace support. Work outcomes-oriented improvement strategies also support work retention and return to work.

## Keywords

health determinants, health outcomes, work ability, work outcomes, health and work outcomes-oriented improvement incentives

## 1 Introduction

The ability to retain employment or achieve faster return to work (RTW), particularly for individuals with chronic illnesses or disabilities, is an increasingly important topic in an aging society, requiring prolonged labour market participation. The increasing prevalence of long-term health conditions, an aging workforce, and fluctuating job demands have highlighted the importance of maintaining work ability.

The goal of this paper is to develop a conceptual framework that shows the links between health determinants, health outcomes, work ability and work outcomes, and their interplay with incentives aimed at improving work outcomes that are essential for extending productive working lives. This framework is useful for designing research on how individuals, organizations and policy makers can improve long-term employability and productivity in the face of health challenges.

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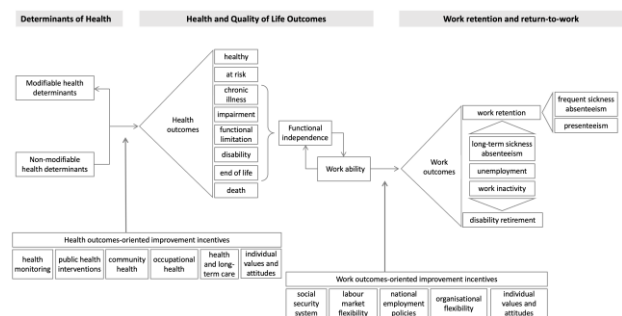


Figure 1: Mitigating adverse health effects of chronic illnesses on work outcomes: a conceptual framework

## 2 Determinants of Health, Adverse Health and Work Ability Effects, and Work Outcomes

### 2.1 Determinants of Health

Health status is fundamentally determined by the conditions in which we are born, grow, live, and age [1]. These conditions, known as health determinants, factors, or drivers, operate at various levels and in different contexts. In examining health determinants, we follow the WHO [2] framework, distinguishing between individual, socioeconomic, sociocultural, and environmental factors.

**Individual factors** include personal attributes that impact health, such as attitudes, knowledge, genetics, etc. Knowledge about healthy food choices, recommended physical activity levels, and the correct interpretation of food labels also plays a critical role [3]. This knowledge is often associated with health literacy that is an independent factor of self-assessed health, and low health literacy contributes to health disparities [1], [4].

Attitudes can also positively or negatively influence health, as argued by the theory of reasoned action [5], showing that attitudes and subjective norms predict behavioural intentions, which, in turn, predict actual behaviours. The value individuals place on health is pivotal; those who prioritize health are more likely to make it a priority over other demands, such as time, money, and competing life priorities [3], [6], [7].

Genetics is another key individual factor affecting health. Family history is recognized as one of the strongest risk factors for common diseases, including cancer, cardiovascular disease, diabetes, autoimmune disorders, and psychiatric illnesses [8].

**Social factors** are sociocultural and socioeconomic. Sociocultural factors include influences from family, peer pressure, media, religion, and culture. Family heavily influences choices related to religion, friendships, and media exposure, particularly in childhood. Family also plays a crucial role in shaping attitudes towards health and decisions on protective and risky behaviours. Peer influence operates similarly; social support and integration are highly protective against mortality, with their impact on health comparable to or exceeding that of traditional behavioural risk factors such as smoking, high alcohol consumption, lack of exercise, and obesity. Traditional and social media is increasingly recognized as a commercial determinant of health [9], influencing health through public relations, advertising, and economic pressures [10].

Socioeconomic factors include employment, education, and income. Employment status and occupation significantly impact health by influencing living and working conditions, levels of physical activity, and stress [3]. People at work may face hazards owing to chemicals, biological agents, physical factors, adverse ergonomic conditions, allergens, safety risks, and psychosocial factors. More than 100 occupational diseases are classified [11]. Working conditions are linked to an increased risk of developing work-related illness [12] and depressive disorders [13]. New psychosocial and physical stressors contribute to health disparities. Evidence suggests that better job quality provides protective effects against musculoskeletal disorders, mental health issues, and general health problems [14], and enhances labour productivity, notably when employees are healthy [15].

Income is also strongly associated with health outcomes [16]. Low income can restrict access to health services, whereas higher income allows for better living conditions and access to healthcare. Higher income often sets expectations for subsequent generations regarding education, employment, and income although positive association between income and health may flatten or even reverse at the highest income levels [17].

**Environmental factors** encompass both geographical location and access to health services and technology. Natural and built environments play significant roles in health, with some environmental characteristics contributing to chronic diseases [3]. A review of 133 diseases by Prüss-Ustün [18] established that nearly a quarter of the global disease burden could be prevented by reducing environmental risks.

Individual, social, and environmental factors interact in influencing health outcomes. Education—a key socioeconomic factor—directly influences individual factors like knowledge and skills. Additionally, a person’s environment is often shaped by their employment and income, which are linked to the number of hours spent at work. In some cases, the living environment can restrict educational and employment opportunities, further impacting health. People living in rural or remote areas are more likely to experience poorer health outcomes, due to limited access to health services and education and employment opportunities. Sociocultural factors also play a significant role; for instance, not speaking the native language can hinder educational success and makes it more challenging to navigate the healthcare system. This interconnectedness underscores the importance of considering the combined effects of individual, social, and environmental factors in shaping health outcomes [3].

## 2.2 Modifiable and Non-modifiable Risk Factors

To improve health outcomes, it is crucial to understand which of the above explained health determinants are in or out of an individual’s control. Modifiable factors can be changed and controlled to a certain extent, such as skills (individual), peers and religion (sociocultural), employment, education, income (socioeconomic) and geographic location and related access to health services (environmental). Some factors are more easily changed than others. Also, the degree to which a person is able to change them varies from person to person [3]. Non-modifiable health determinants include genetics (individual), and family, media and culture (sociocultural). While you can’t change these factors, it’s important to be aware of them.

The degree of control individuals can exert over their health varies across our lifespan [3]. Control increases until adulthood and decreases in older adulthood. The changing influence of determinants through life stages varies from person to person [19]. Further, modifiable factors often require support, such as access to healthcare or financial resources, to be effectively managed. When individuals lack such support, the potential to modify their health outcomes diminishes, contributing to the feeling of powerlessness in improving their health [20].

## 2.3 Health Outcomes-oriented Improvement Incentives

The term “morbidity” is commonly used to describe the burden of suffering, in terms of impairment or disability, caused by an illness or health condition. Addressing chronic illness morbidity aims at the best achievable state of health that encompasses all dimensions of physical, mental, and social well-being [21].

Strategies designed to help individuals live well should include a broad array of activities targeting primary, secondary, and tertiary prevention for all persons, with or without a chronic illness. Accordingly, public health mechanisms aimed at preventing undesired health outcomes (primary prevention such as vaccination, tobacco cessation, physical activity promotion, healthful eating, injury prevention) can also help people with a chronic illness or disability to live more healthfully. Health monitoring using real-time data plays a significant role in influencing health outcomes, by enabling early detection of health conditions, facilitating continuous management of chronic diseases, and improving overall patient care [22].

Health and long-term care mechanisms that prevent or delay complications, build coping skills, improve function, or alleviate pain and suffering may serve a dual purpose: (i) reducing the magnitude of illness burden over an individual’s remaining years of life; (ii) reducing and/or delaying the development of additional complications or comorbidities in a way that serves to compress the period of morbidity until later in life [21]. Further, occupational health services improve health outcomes of the active population. Progress in the field of occupational and environmental medicine has led to a better understanding of the most efficient strategies for recognizing a wide variety of work-related ailments [23].

## 2.4 Impact of Health Outcomes on Functional Independence and Work Ability

All above-mentioned incentives are aimed at improving adverse health outcomes and thereby maintaining functional independence and, consequently, work ability. Functional independence can be viewed narrowly as the ability to perform basic activities of daily living (eating, dressing, hygiene, transferring) [24]; or more broadly as the ability to perform instrumental activities of daily living (performing chores, managing finances, taking medication, using transportation) [25] that enable an independent life. Research shows that functional independence has a strong impact on work outcomes [26], [27].

Functional independence is strongly linked to an individual's work ability defined as a holistic concept encompassing both personal health and the work environment's role in enabling or hindering an individual's ability to work [28]. The concept refers to an individual's capacity to remain employed and perform work-related activities, especially in the context of chronic diseases, aging, or disabilities [29].

Work ability is influenced by a range of factors including health status, workplace accommodations, and social support systems [30]. Physical health (mobility, endurance) and mental well-being (cognitive functioning, emotional resilience) are the most important factors to maintain work ability [31]. In addition, job demands, its physical and psychosocial (cognitive, emotional) demands, significantly influence an individual's ability to work effectively and productivity [32]. Workplace factors (organisational support, ergonomics, flexibility) play a crucial role in enhancing or diminishing work ability, especially for those with chronic conditions or disabilities [33]. Social and occupational factors (age, training opportunities, work-life balance) also impact work ability [34].

## 2.5 Work Outcomes and Work Outcomes-oriented Improvement Incentives

Work ability has a notable impact on work outcomes. If chronic illnesses result in an individual's prolonged sickness absenteeism, unemployment or work inactivity, work retention and RTW are favourable work outcomes. RTW refers to the process of reintegrating employees back into the workplace after an absence due to illness or injury. Besides work ability, RTW also depends on several patient's pull and push factors, from meaningfulness of work to being offered an adjusted work environment [35]. Successful RTW initiatives focus on assessing and improving work ability, ensuring that the work environment and job demands align with the employee's current health status. RTW outcomes are enhanced by flexible work arrangements, gradual reintegration programs, and workplace accommodations that mitigate the impact of health conditions [36], [37]. By

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addressing both organisational factors and individual health needs, RTW programs can prevent adverse work outcomes such as long-term absenteeism, presentism, unemployment and disability retirement [28], [29], [33], [36]. They can also mitigate short-term adverse effects of chronic illnesses such as frequent shorter sick leaves and presenteeism [26].

While employer organisations and their support of occupational health programs play an important role in improving work outcomes, other factors also mitigate adverse effect of reduced work ability on work outcomes. Flexibility is not important just in employer organizations, but also on the labour market at large, which involves labour code, industrial relations and active labour market policies (ALMPs) that include various measures, from training to job search assistance, subsidies, supported employment opportunities and programs to support entrepreneurial activities. Such measures enable occupational horizontal and vertical mobility [39], [40]. Other national employment policies, besides ALMP, may be important to facilitate (via regulation) and promote inclusive workplace practices and ensure that individuals are not excluded from job opportunities [41]. Lastly, passive supports as well as social security at large are relevant. Social security systems, including sick leave policies and disability insurance, provide essential financial support to individuals who are temporarily or permanently unable to work due to illness [41].

## 3 Conclusion

The paper proposes a conceptual framework that shows complex links between health determinants, health outcomes, work ability and work outcomes and their interplay with various incentives aimed at improving both health and work outcomes. It highlights the significance of modifiable and non-modifiable health factors that influence adverse health effects of chronic illnesses and the resulting functional independence, work ability and work outcomes. It emphasises the role of supportive work environments, health-oriented policies, and mechanisms that facilitate retention and RTW. The research highlights that improving work outcomes requires a complex approach involving individual, social, and environmental interventions, as well as policies that promote inclusive employment practices. This framework serves as a valuable tool for understanding how health and workplace factors interplay to improve long-term employability, particularly in aging populations or individuals with chronic conditions. It can serve as a foundation for future empirical research, literature review and policy preparation.

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