Cancer or recovery in the hands of your mind

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"You can be a victim of cancer, or a survivor of cancer. It's a mindset." (Dave Pelzer). The experience of cancer may feel as mental as it is physical. Is it only a feeling or is our mind able to influence the chance of developing a chronic and prevalent disease like cancer? This may seem like an absurd idea, involving mental superpowers, however, research might suggest differently. This raises the question of the influence of mentality in the initiation and progression (development) of cancer. Importantly, psychological mechanisms can be conceptualized as algorithms processing an individual’s environment as input and producing mental content as output. In turn, mental content affects individuals’ physical and mental condition. Environmental factors may constitute a spectrum ranging from broad social factors to psychological and biological ones. Altogether, individuals are continuously shaped by social, psychological, and biological inputs interacting with one another to assemble physical and psychological states. In the context of health, this is known as the “biopsychosocial” model (Bosch, 2020). The model combines insights from three broad fields, enabling a holistic and interdisciplinary account of health and pathology. This is a significant point to bear in mind- the model demands the collaboration of different disciplines to optimize health. Such an interdisciplinary approach may seem intuitive, however, for most of the medical history and even today, a somatic disease is developed, explained, and cured by bio-medical means alone (Bosch, 2020). Possibly, the lack of defined relationships between social, psychological, and biomedical fields accounts for the difficulty in implementing the model in practice. That is, the biopsychosocio model does not offer a precise paradigm for how the three incorporated disciplines collaborate. Thus, exploring the relationship between the three disciplines of the biopsychosocio model can result in (1) overcoming theoretical shortcomings, (2) enhancing interdisciplinary collaboration, and (3) optimizing outcomes of healthcare services. The present essay argues that psychology occupies a crucial role in solving this problem. Specifically, psychology as an interdisciplinary mediator in determining one’s state of health. Furthermore, the development of cancer is an applied example of this role of psychology, and thus will be the core illustration of the argument forwarded in this essay.

The impact of social inputs on one’s development of cancer is mediated by three psychological mechanisms: health knowledge, health behavior, and illness representations. Firstly, socioeconomic status (individuals’ belongness to a relative economic class) contributes to the development of cancer by decreased health knowledge. Among low social-economic neighborhoods, the quality of education and health supplies is remarkably low. Consequently, reduced education leads to deficits in health knowledge which account for poorer diet, less physical activity, and more substance use compared to average values (Braveman & Gottlieb, 2014). All three are known risk factors of cancer development (Schapira, 2018). In this example, the socio-economic status (social input) is mediated by health knowledge (a psychological mechanism) regarding cancer development influenced by nutrition and physical activity (biomedical inputs). Secondly, according to Husebø, Dyrstad, Søreide, and Bru (2013), perceived social norms influence one’s health behavior, ultimately determining the risk of cancer development. Specifically, the perception of norms affects individuals’ health beliefs- alternating health behavior. In their systematic review, beliefs and norm perception of heath predicted cancer patients’ adherence to physical activity, an essential factor in combating cancer. Here again, social input (norms) is converted to biomedical inputs (physical activity) through a psychological mechanism (health behavior). Thirdly, social forces as cultural viewpoints, personal experience, and communication regarding illness merge to construct representations of illnesses. Such illness representations are continuously updated by these social inputs to organize one’s beliefs about the experience, impact, effect, and outcome of an illness (Hagger & Orbell, 2010). Often, social inputs involved in the construction of these representations are unprofessional and irrational resulting in an inaccurate representation of diseases (Bosch, 2020). As a result, these socio-cognitive representations mediate social inputs concerning health outcomes thereby improving or worsening the development of cancer. To illustrate, cancer patients’ illness representations depicting cancer as chronic, uncontrollable, and with serious consequences reported worse physical and mental health, compared to cancer patients’ health with an opposite depiction (Rozema, Vollink, & Lechner, 2009). Common to all three mechanisms is the conversion of social inputs to biomedical inputs relevant to cancer development, by means of psychological mechanisms and attributes. This clarifies the interaction between social, psychological, and biomedical sciences in deeming one’s cancer development. Nonetheless, given the name and definition “bio-medical”, further clarification is vital within this diverse field to maximize interdisciplinary collaboration.

The consideration of psychological mechanisms in oncology establishes a transdisciplinary framework within the versatile field of medicine. Practically, psychology combines the different facets of knowledge within oncology, thereby creating a common framework for the disciplines in medical settings. This argument is demonstrated in three oncological sub-fields relevant to medicine: (1) Doctor-patient communication, (2) Immunology, and (3) psychopathology. To begin with, the communication between doctors and cancer patients is a crucial factor in the development of cancer (Bosch, 2020). Medical information communicated to patients and the processing and long-term implementation of such information may constitute the boundary between recovery and further cancer development. Research by Street, Makoul, Arora, and Epstein (2009) identified several pathways in which medical communication can influence cancer development. Successful communication leads to better intervention outcomes via improved patient knowledge, medical decisions, and patient agency and empowerment. As follows, the determinants of cancer development associated with medical communication are fundamentally rooted in cognitive mechanisms as information processing. Secondly, perceived stress degrades immunity which enlarges the likelihood of viral infections, a potent risk factor for cancer development (Schapira, 2018). Stress is a psychological assessment of resources perceived as insufficient for coping, which deteriorates immune functioning (Bosch, 2020). The development of cancer in medical settings remarked by confronting diagnosis and intensive interventions, causes continuous stress for most patients. Correspondingly, prolonged stress facilitates Cortisol release which diminishes white blood cells and cytokines count, thereby decreasing immunity. Furthermore, stressed individuals are more likely to engage in unhealthy habits such as poorer nutrition choices and maladaptive sleep patterns, contributing to the negative effect of stress on immunity (Glaser & Kiecolt-Glaser, 2005). As demonstrated, the interplay between immune functioning in medical settings and caner development is manifested in a psychological appraisal. Lastly, emotional instability and stress following cancer in medical settings are key aspects to the increased psychopathology in cancer patients (Ha¨rter, Reuter, Aschenbrenner, Schretzmann, Marschner & Hasenburg et al, 2001). Subsequently, mental disorders lead to negative health behavior, and decreased adherence to interventions, boosting the development of cancer (Glaser & Kiecolt-Glaser, 2005). The further development of cancer results in more stress and declined immunity functioning and intensified psychopathology. Likewise, increased stress and psychopathology hinder vital cognitive processing in medical communication discussed above. Notably, psychopathology is central in the relationship between immunology, medical interventions, and cancer development. All in all, psychological mechanisms as information processing and perceived stress play a central role in the interactions between the sub-fields of oncology in medical settings.

To conclude, the interdisciplinary role of psychology as a mediator between social and biomedical inputs and within the medical domain regarding cancer development is supported. The implications of this conclusion are vast for the biopsychosocio model, cancer development, and for the essential collaboration between different fields. Firstly, this essay introduces a fundamental adjustment to the biopsychosocio model such that the relationship between three levels of analysis is specified. Based on the discussed empirical evidence, psychology constitutes a translator of social inputs to biomedical ones. This improves the current model as it expands its testability by allowing a more accurate formulation of predictions and hypotheses regarding the development of cancer. Accordingly, the model builds on an interdisciplinary framework for the interplay between the different levels of analysis. When considering psychological mechanisms, the impact of social influence on medical inputs and outcomes clarifies. This is illustrated by various social inputs such as socioeconomic status (society level), social norms (group level), and social cognition (individual level). Likewise, within the medical study of cancer development (oncology), psychology establishes a common transdisciplinary workspace. Perceived stress, psychopathology, and information processing influence the fitness of individuals, deeming the development rate of cancer. Once such psychological mechanisms are incorporated into the collaborative work between and within social and medical sciences, interventions of cancer development can be optimized. While interdisciplinarity is essential for health optimization, theoretical models as the “biopsychosocio” theory must be rigorously examined. In return, these adjusted models may lead to future life-saving solutions by offering a holistic and interdisciplinary account of health.

**Literature**

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