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Social Determinants of Mental Health

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Social Determinants of Mental Health

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Preface

According to the World Health Organization (WHO), mental health is defined as a state of mental well-being, enabling people to cope with life stressors, to achieve their personal goals and to actively contribute to their community [1]. Mental health is a complex construct, which cannot just be explained as lack of mental disorders, lying on a continuum between physiological and pathological states.

Mental health conditions include different types of psychiatric disorders and behavioural disturbances, which are associated with significant levels of distress and impairment in social and personal functioning.

Thus, mental disorders have a complex etiopathogenesis, due to a complex interaction between the brain, human social relationships, and individual and social psychological domains. Although the etiopathogenesis of mental disorders is still not fully elucidated, paradigms that conceptualize mental disorders only as responses to genes or to adverse environmental situations or to problematic interpersonal relationships seem to be too simplistic. Establishing the superiority of a model over another is probably a useless exercise, which has led researchers and clinicians far from the identification of what really causes a given mental health problem. In this respect, mental disorders can be considered not different from other chronic diseases, such as diabetes, cardiovascular diseases, or cancer, for which the interaction between biological, physical, social, and psychological causal factors is well established [2].

In mental health, the social determinants are well-known and should represent the target for specific universal, preventive, and protective interventions aiming to prevent the onset of mental health problems, to promote positive attitudes towards mental health in the general populations [3]. The social determinants of mental health include early childhood adversities, physical and psychological violence, bullying, childhood neglect and maltreatment, lack of social and economic support, lack of social security, economic crisis, war-related traumas, belonging to minority groups, discrimination, and other forms of trauma. More recently, urbanization, pollution, and other environmental factors have also been identified as increasing the risk of developing mental health problems [4, 5].

Based on these premises, this book promoted by the Italian Society of Social Psychiatry (Società Italiana di Psichiatria Sociale, SIPS) includes contributions on the impact of social determinants on mental health, discussing the most up-to-date findings on social determinants of health and mental health. In particular, the first chapter addresses the relevance of the revised

biopsychosocial model in explaining the etiopathogenesis of mental disorders (Fiorillo et al.), which seems to be more in line with recent findings from mental health research and practice and may serve as a foundation for a more granular understanding of the most severe mental disorders. Several chapters focus on specific social determinants, including employment and socioeconomic condition (Bellomo et al.), pollution and climate change (Tortorella et al.), urbanization (Percudani), and traumatic events (Carmassi). New social determinants of mental health are considered in other chapters; in particular, the risk of novel psychoactive substances (Martinotti et al.) and the impact of new technologies and digitalization (Volpe et al.) are addressed. Of course, for each chapter, not only are the risks discussed but also opportunities for mental health professionals to reduce such risk factors and increase protective factors for the general population and for those at risk of developing mental disorders.

This book is in line with the recent WHO report, "World Mental Health Report: Transforming Mental Health for All", which highlights the need for all countries to achieve meaningful progress towards better mental health for their populations by focusing on social determinants of mental health.

We really hope that psychiatrists and other mental health professionals will find this book useful for their clinical practice and will help them to pay more attention to the psychosocial determinants of mental health in order to develop more personalized treatment plans.

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Contents

Organization of Community Mental Health Care in Italy

1

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Abstract

In Italy, the approval of the 180 Law in 1978, also known as Basaglia Law, marked the transition from an asylum-based to a community-based mental health care system. According to the law, patients with mental disorders are treated in the community, are integrated into society, and their rights and preferences on treatments are recognized. Following the Italian model, similar acts were approved worldwide. By 2000, all psychiatric hospitals in Italy had been closed and all patients discharged.

Within the Italian National Health System, the Department of Mental Health is responsible for the provision of community-based mental health care. It includes several facilities, such as psychiatric wards located in general hospitals, residential units, mental health centres, and day-hospital and day-care facilities.

The main effects of the 180 Law include the shift from a custiodialistic to a therapeutic paradigm of mental health care and the respect for autonomy and dignity of patients with mental health problems. However, after more than 45 years from its approval, several unmet needs still persist, including low staffing levels, reduced use of community facilities as long-stay services, and economic disparities between regions.

Keywords

Mental health care · Community mental health system · Mental health centres Organization of healthcare · Social inclusion Rehabilitation

1.1 Historical Perspective on Italian Mental Health Care

In 1978, the Italian Parliament approved the 180 Law -commonly known as "Basaglia Law"- named after the psychiatrist Franco Basaglia (1924–1980). This reform marked the transition from an asylum-based to a community-based mental health care system, aimed at treating patients suffering from severe mental disorders outside of the psychiatric hospitals [1, 2]. Indeed, as an effect of the application of this law, psychiatric asylums were gradually closed down. This

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law imposed the closure of Italian psychiatric hospitals in favour of a community-based approach, and it returned civil rights to patients with mental disorders. When the 180 Law was approved, the infrastructures needed for the innovations were not yet established, so a significant burden was posed on relatives and family members of patients discharged from the hospital [3]. The law allowed regions to manage independently the allocated funds for psychiatric care, resulting in variations in the level of treatment provided [4]. With the Italian reform, it was defined the procedure for issuing involuntary treatments ("Voluntary and Obligatory Health Checks and Treatments for Mental Illness"), with the following conditions that must be present: there are psychic alterations such as to require urgent therapeutic interventions that are not accepted by the patient, and there are no conditions and circumstances that allow alternative measures to be taken. This limitation of freedom takes place with a view to safeguarding another constitutional relief—that of the right to health. Any doctor can propose a compulsory medical treatment if the conditions are met. The validation of this procedure must be done by a psychiatrist of the public service and provides for a forced 7-day, renewable, hospitalization. This document is sent to the mayor's office, which makes a validation ordinance within 48 h.

On December 23, 1978, the 180 Law was included into the 833 Law, which officially introduced the National Health System (NHS) in Italy, by redefining a comprehensive public health policy. The NHS was designed as tax-funded and based on universality, equality, and equity, in order to cover the health needs of the population. Nowadays, it absorbs 6.8% of the whole gross domestic product [5], while a further 2% is voluntarily and additionally spent on private health services by individual citizens. The NHS is articulated into 139 local health trusts across the country, each caring for catchment areas ranging from 60,000 to almost 3,500,000 residents. Since health care management is administered at a regional level, disparities exist in terms of economic indicators (per capita income, wealth distribution, unemployment rate, welfare level) which reflect the diverse allocation of resources for health among the different geographic areas.

In 1978, almost 80,000 individuals with mental disorders were living in psychiatric hospitals; they were 7704 twenty years later. By 2000, all psychiatric hospitals had been closed and all inpatients discharged [6]. In order to cover all geographic areas across the country, mental health services were disseminated, with the aim to reduce admissions to psychiatric wards located in the general hospitals [7]. From this moment on, people suffering from mental disorders had recognized the opportunity to choose treatments, to keep their rights, and to feel part of the society [8, 9]. This approach soon overcame Italian borders and many countries adopted similar models of care [10].

In the period 1994–1996 and 1998–2000, two programmes called *Progetto Obiettivo Tutela Salute Mentale* defined aims and organizational features of mental health departments, including staff characteristics. In 2020, the expenditure for mental health facilities in Italy amounted to approximately 3% of the total NHS resources, by excluding services for drug abuse and intellectual disabilities. In 2022, there were 9.9 beds per 100,000 population for ordinary inpatients and day-hospital cares in general hospitals, and 52 beds per 100,000 residents in community residential facilities at a national level [11].

Because the Italian community model was implemented earlier than in the rest of the world, and relevant efforts were made to move away from the institutional model, Italy can be viewed as a laboratory to assess the quality of mental health care delivered in a community-oriented system, especially for patients with severe mental disorders [6, 12].

1.2 The Organization of Mental Health Care

1.2.1 Mental Health Department

The Mental Health Department (MHD) is the health organization responsible for providing specialist mental health care in the community, as

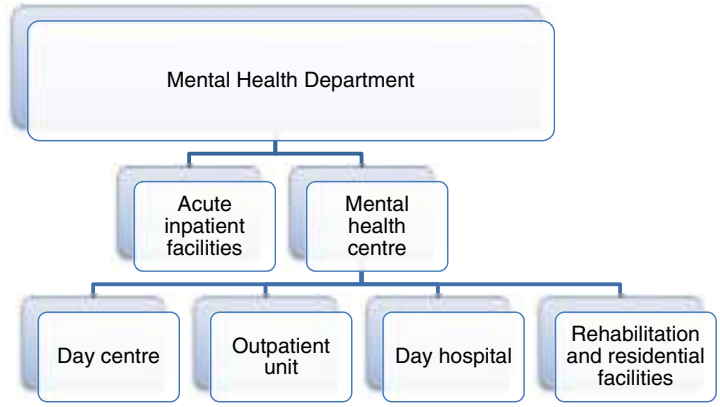

Fig. 1.1 Organization of mental health care in Italy

defined by the Progetto Obiettivo "Tutela Salute Mentale 1998–2000". MHDs include the following facilities: community mental health centres, day-care centres, general hospital psychiatric wards, and residential facilities. MHDs deal with prevention, treatment, and rehabilitation supporting mental health in a defined catchment area, by planning, organizing, and managing medical and social resources (Fig. 1.1). Moreover, MHDs promote informative campaigns and educational activities for the general population on mental health themes, in order to fight stigmatization and discrimination against mentally ill people. In addition, MHDs organize training courses for mental health professionals and research projects on the quality and effectiveness of pharmacological and nonpharmacological interventions.

1.2.2 Community Mental Health Centres

Community mental health centres (CMHCs) represent the cornerstone of the community-based system. They provide outpatient consultations and manage therapeutic and rehabilitative activities delivered by daily-care and residential facilities. Moreover, they are responsible for liaison consultations in hospital wards, patients' home assessment, and management of emergency. CMHCs are open every day for 12 or 24 h, based on regional organization. According to the PROG-CSM survey [13], the CMHC/resident ratio is about 1 CMHC per 80,460 inhabitants at national level. Each CMHC should include four psychiatrists, two psychologists, two social workers or rehabilitation therapists, and eight nurses, who provide integrated and personalized interventions for patients with severe mental disorders. The mean is about 24.8 full-time professionals per 100,000 residents, with some geographic differences (on average, 25.9 ± 11.5 professionals per 100,000 residents in Northern Italy, 28.3 ± 7.4 in Central Italy, and 23.7 ± 6.9 in Southern Italy). In 2022, almost 750,000 users accessed Italian CMHCs at least once, mainly for depression (33.2 per 10,000 residents) and psychotic disorders (30.6 per 10,000 residents) [11].

1.2.3 Acute Inpatient Units

Acute inpatient care is delivered in general hospital psychiatric wards (GHPWs), closely linked with CMHCs to guarantee a continuity of care. As established by the 180 Law, a maximum of 15 beds is allowed for each GHPW [14]. In 2022, more than 92,000 patients were discharged from psychiatric wards, after a mean length of stay of 12.7 days [11]. Admissions to GHPW can be either on a voluntary or a compulsory basis. Involuntary admission is regulated by a specific procedure, described in the 180 Law. According to the Italian regulation, the patient is suffering from a mental condition requiring urgent treatment, the person does not accept the treatments, and it is not possible to take appropriate extra hospital measures. The procedure includes the initial

proposal by a physician and the confirmation by a psychiatrist working in a public hospital. These documents are sent to the mayor (the highest local health authority), which are authorized by the tutelary judge who is entrusted with the jurisdictional safeguard of such treatment. The involuntary treatment lasts for 7 days, but it can be revoked earlier or prolonged, if the clinical conditions still persist [15].

1.2.4 Day Centres

Day centres usually implement short- and medium-term rehabilitation programmes, that are semi-residential recovery-oriented facilities operated by the MHD or are accredited no-profit or for-profit structures. They are open 8 h per day from Monday to Saturday and can accommodate up to 20 patients per day. Multidisciplinary mental health professionals working in day centres include social workers, psychologists, rehabilitation technicians, and volunteers. Psychosocial rehabilitative interventions are delivered to small groups of subacute patients in order to increase their social skills, autonomy levels, and daily global functioning.

1.2.5 Community Residential Facilities

Community residential facilities are non-hospital services providing overnight assistance for patients with severe mental disorders, upon prescription of CMHCs. They are public or private (non-profit and for-profit). People living in these facilities have relatively stable mental health conditions, require rehabilitative interventions, and receive periodic clinical and functional assessment.

According to the Italian Ministry of Health, community residential facilities can be classified according to rehabilitation intensity and care intensity. Residential facilities aim to support residents to progress from more supported settings to more independent settings as they gain competences. The care pathway is organized so that people move on from residential facilities providing higher support to those providing intermediate support and then to those with minimal support [16] (Fig. 1.2). All patients receive tailored therapeutic plans, including rehabilitative, psychological, and pharmacological interventions, for relatively short periods. However, length of stay often exceeds 2 years [6].

1.2.6 Day-Hospital Facilities

Patients suffering from mental disorders can receive diagnostic assessments, administration of medications, and rehabilitative interventions in day-hospital facilities, which can be located within the hospital or in external settings. Day hospitals usually operate for 6 days a week, 8 h a day. The aim of day hospital is to provide personalized treatment plans limiting the need for hospital admissions. Availability of beds varies at regional level.

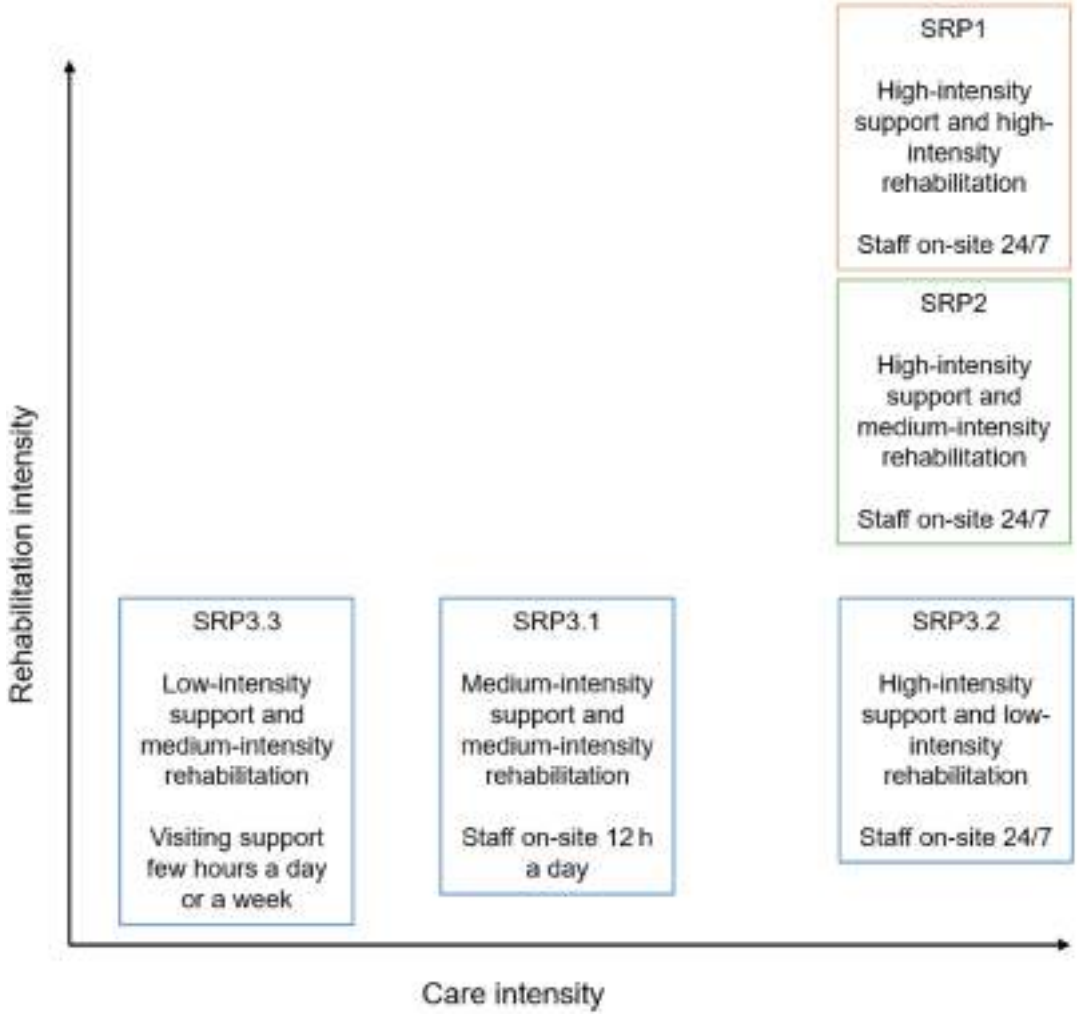

Fig. 1.2 Types of residential facilities

1.3 Service Use Data on Mental Health Care in Italian Regions

Provision of mental health care in Italy varies among the different regions. In particular, the prevalence of treated mental disorders, considered as a proxy indicator of the coverage capacity of community-based mental health care, ranges from 266.1 individuals per 10,000 population in the Autonomous Province of Bolzano-South Tyrol (Northern Italy) to 84.8 in Sardinia. Differences can also be detected in terms of incidence of treated mental disorders that is higher in Aosta Valley (Northern Italy) and lower in Friuli-Venezia Giulia (Northern Italy), Tuscany and Marche (Central Italy), and Molise and Basilicata (Southern Italy) [11].

The national rate of compulsory admissions is 1.0/10,000 residents, ranging from 2.3 in Umbria (Central Italy) to 0.1 in Basilicata (Southern Italy). Indeed, after the implementation of the 180 Law, the absolute number of compulsory admissions progressively declined, from more than 20,000 in 1978 to 5118 in 2022. Similarly, the proportion of compulsory psychiatric admis-

sions progressively declined from 1978 to 2005, remaining stable thereafter, accounting for 6.2% of all psychiatric admissions in 2022 [11].

1.4 The Italian Mental Health Care System: What Else?

The approval of the 180 Law in 1978 marked significant and enduring changes in the provision of mental health care in Italy. First, the transition from a custodialistic to a therapeutic model, allowing mentally ill patients to be treated in their own environment and with the same rights as any other patient suffering from a chronic physical illness. It took around 20 years to complete the gradual closing down of all asylums, but at the end the whole process can be considered a happy-ending story [17]. Also, the dissemination of community-based mental health facilities opened the way for a community public health care system. The opening of psychiatric wards within general hospitals reduced the number of admissions and facilitated the integration of mental health care with other medical disciplines [6]. This new model of mental health care would have not been possible without multidisciplinary teams of professionals, which include psychiatrists, psychologists, psychiatric nurses, social workers, rehabilitation technicians, and other health workers providing tailored and integrated treatment for all patients, each professional with his/her level of expertise [18]. Finally, the 180 Law facilitated the collaboration between mental health professionals, patients, and family members, who are now considered effective members of the caring team.

However, some areas for concern still persist. The Italian NHS came into effect with the promulgation of the 833 Law on December 23, 1978. Since then, health care in Italy is provided on a regional basis, with significant variations across the different regions, especially between Northern vs. Central and Southern Italy, and the number of beds in psychiatric facilities cannot represent an indicator of public health quality, but harder indicators should be considered, such as suicide rates, involuntary admissions, and number of patients placed in forensic facilities [9].

Given this heterogeneity in mental health care provision, the "clinical pathways in patients with severe mental disorders in Italy" (QUADIM) study has been recently carried out to assess the quality indicators of healthcare pathways for patients with severe mental disorders in four regions, namely Lombardy, Emilia-Romagna, Lazio, and the Province of Palermo [19, 20]. Using the healthcare utilization databases, the authors found significant heterogeneity in terms of timing of starting medications, continuity of care, accessibility to psychotherapy and psychosocial interventions, monitoring of side effects and mortality among patients suffering from schizophrenia [21, 22], bipolar disorder [23], and personality disorders [24].

The QUADIM project confirmed that the quality of mental healthcare in Italy is extremely heterogenous. Although community care is accessible, continuous, and moderately intensive in almost all Italian regions, main gaps exist regarding delivery of psychosocial interventions. In particular, psychoeducation and psychological treatments are not frequently provided, and the intensity of treatments is moderate. Regional heterogeneity for the prevalent cases is high in almost all areas, while it is significantly lower for newly taken-in-care patients. Accessibility to home care and continuity of care between general practitioners and community mental health centres are relatively homogenous.

A relevant issue is the rate of employed mental health professionals, which significantly varies among different regions; thus, a reorganization of mental health services at a national level would be advisable, in order to reach adequate standards everywhere. Although more resources are urgently needed, an increase in resources alone is not sufficient.

Regional disparity also affects the provision of mental health to criminal offenders [25]. As consequence of a Government Decree on April 1, 2008, the national healthcare system became responsible for managing the health needs of patients under detention. Following the closing

down of forensic psychiatric hospitals in 2015, MHDs provide mental health assistance to offenders both in prisons and in residential settings. In 2018, 37% of inmates in Emilia-Romagna were affected by psychiatric, behavioural, or substance use disorders; consequently, a multidisciplinary and case-management approach for mental healthcare in jails was proposed [26]. Forensic psychiatric units were created within the MHDs of Bologna, Parma, and Brescia in order to create continuity between forensic institutions and community facilities, to collaborate with penitentiary authorities and to support MHDs on legal matters [27]. Offenders who were judged not guilty "by the reason of insanity" but with "social dangerousness" can now be placed in residential institutions which replaced forensic psychiatric hospitals (the residences for the execution of measures of security, REMS).

The low levels of economic resources allocated to mental healthcare are associated with a significant burden on patients and their family members [28, 29]. Indeed, mental disorders are associated with high levels of family burden, making a priority the provision of supportive interventions to patients and their relatives [30–32]. Unfortunately, these interventions are only rarely available, mainly because mental health professionals are already overburdened, have difficulties in integrating these interventions in their routine work, and do not have adequate rooms or support to provide supportive family interventions within working hours [33].

Another area for concern is the separation between adult psychiatry and child and adolescent psychiatry (CAP), both in training of medical professionals and in the organization of clinical care. In some regions, CAP units are integrated in the MHDs, while in other contexts they are included in paediatric trusts and provide prevention, therapy, rehabilitation, social and school support to children and adolescents with mental problems independently from adult mental health services. The transition from child and adolescent psychiatry to adult mental health services is particularly important at this age, since treatment discontinuation can seriously damage mental health status of young patients [35]. Psychiatric services for early intervention in psychosis targeting people under the age of 18 are becoming more widespread in Italy, but significantly less than in other countries, and youth mental health services are completely missing [36].

Table 1.1 Staff and resources for mental health care in Italy (Source: WHO ATLAS [34])

Staff in mental health sector per 100,000	
Psychiatrists	6.39
Nurses	23.84
Social workers	2.41
Psychologists	3.94
Inpatient facilities per 100,000	
Beds for mental health in general hospitals	8.09
Beds in community residential facilities	42.83
Outpatient facilities	
Outpatient mental health facilities	1254
Day treatment facilities	843

Further reasons for concern include the low number of available mental health professionals, which is not adequate to satisfy the growing demands for care from the population (Table 1.1) and the potential use of residential facilities as long-stay residential services, with a subsequent lack of alternatives to acute inpatient admissions for many patients [14, 37, 38]. Patients should live in these facilities no more than 2 years, although with some regional variations. Finally, the use of involuntary admissions and of coercive measures remains a controversial issue in mental health practice in Italy and needs to be reconsidered [39, 40].

1.5 Conclusions

In conclusion, the organization of mental health care in Italy—albeit one of the oldest models in the whole Europe—is still modern and up to date. However, several concerns remain, including disparity of care provision at regional basis, low staffing levels, and improper use of residential facilities. Alongside with the achievement of patients' recovery, through a personalized

approach of care including pharmacological, psychological, and psychosocial interventions, psychiatrists are called to deal with other challenges. At the level of the general population, dissemination of knowledge about mental health and fight against stigma remain priority areas of action. Prevention and treatment of new forms of mental health problems, as well as management of special patient populations, such as migrants; [41], adolescents [42, 43], and elderly people [44, 45], require new models of mental health care and a restructuring of mental health facilities.

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The Biopsychosocial Model Revised for Mental Health

2

Gaia Sampogna, Roberto Brugnoli, and Andrea Fiorillo

Abstract

Mental health and mental disorders are complex phenomena involving specific brain functions, the area of human relationships, and several individual and social psychological domains. Although the etiopathogenesis of mental disorders is still not fully understood, paradigms that conceptualize mental disorders only as responses to genes or to adverse environmental situations or to problematic interpersonal relationships seem to be too simplistic. Establishing the superiority of a model over another is probably a useless exercise, considering that mental disorders are complex disorders that reflect the complex interplay between a complex organ (i.e., the brain) and an even more complex function, that is that of human relationships. The biopsychosocial model, which encompasses social, biological, and personal factors, seems the best model for explaining the etiopathogenesis of mental disorders. This model, which is well recognized in other branches of medicine—such as cancer—is currently living a renaissance in mental health research and practice.

Keywords

Biopsychosocial model · Social determinants · Mental health · Mental disorders

2.1 Background

Mental health is a complex phenomenon that can be approached from many angles, with a recent renewed interest for interdisciplinary approaches.

The World Health Organization (WHO) defines mental health as "a state of mental well-being that enables people to cope with life stressors, realize their abilities, learn well and work well, and contribute to their community." Mental health is an integral component of health and well-being that underpins individual and collective abilities to make decisions, build relationships, and shape the world we live in. Thus, mental health is much more than the mere absence of mental disturbances. It exists on a complex continuum, which is experienced differently from one person to another, with varying degrees of difficulty and distress and potentially different clinical and social outcomes. Mental health conditions include not only proper mental disorders and psychosocial disabilities but also

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other less severe mental health problems which cause significant distress, impairment in functioning, or risk of self-harm.

Several social determinants—such as poverty, unemployment, war, migration, environmental pollution, climate change—and personal factors, including specific cognitive traits or temperaments or genetic liabilities, such as polygenic variants, may act both as risk and protective factors for mental disorders.

In the last century, the etiopathogenesis of mental disorders has been explained through different models; however, it has been recently highlighted that paradigms conceptualizing mental disorders only as responses to genes or to adverse environmental situations or to problematic interpersonal relationships seem to be too simplistic [1]. Furthermore, establishing the superiority of a model over another is probably a useless exercise, considering that mental disorders are complex disorders that reflect the complex interplay between a complex organ (i.e., the brain) and an even more complex function, that is that of human relationships. The biopsychosocial model, which encompasses social, biological, and personal factors, seems the best model for explaining the etiopathogenesis of mental disorders. This approach, which is well recognized in other branches of medicine—such as cancer—is currently living a renaissance in mental health research and practice.

2.2 The Original Biopsychosocial Model

The "biopsychosocial model" of mental disorders was originally proposed by George Engel back in 1960s. An internist with a training in psychoanalysis, Engel started from the biomedical model of medical illnesses but considered the isolated biological, psychological, social, and environmental components of the various illnesses. Since his publication of "A Unified Concept of Health and Disease" in 1960 and his work "The Need for a New Medical Model: A Challenge for Biomedicine" in 1977, clinicians and researchers worldwide started to consider the integrative model more appropriate to explain the causes of most physical and mental disorders.

Engel contended that medical illnesses—and particularly mental disorders—result from a complex and dynamic interplay between physiological, psychological, and social variables.

As a consequence of this conceptualization, he proposed the first biopsychosocial approach, which became widely accepted for a comprehensive case formulation model and adapted to several illnesses, including schizophrenia [2]. Since 1980s, the biopsychosocial formulation became the organizing principle for psychiatric education and training, gaining wide acceptability across the globe.

The biopsychosocial formulation is a tentative working hypothesis which attempts to explain the biological, psychological, and sociocultural factors which have been combined to create and maintain the presenting clinical problem (American Psychiatric Association Commission on Psychotherapy). It is a guide to treatment planning and selection. It will be changed, modified, or amplified as the clinician learns more and more about the patient's history.

Recently, the sociocultural dimension of case formulation has received increased attention with the recognition that culture and ethnicity are often ignored or mishandled through ignorance or personal bias on the part of the therapist. In fact, the DSM-5 has included a Cultural Formulation Interview (CFI) in order to help clinicians to address important cultural factors [3].

However, in the past 20 years, the biopsychosocial model has been increasingly criticized for being vague, useless, and even incoherent clinically, scientifically, and philosophically. The combination of these two points defines a crisis in the conceptual foundations of medicine and healthcare [4]. Thomas R. Insel (2012) stated that "mental illnesses are not different from heart disease, diabetes or any other chronic illness. All chronic diseases have behavioral components as well as biological components, the only difference here is that the organ of interest is the brain instead of the heart or pancreas. But

the same basic principles apply." Furthermore, Jerome Wakefield (2007) highlighted that by placing too much attention on the biological causes of mental disorders, we may overlook important environmental, behavioral, and social factors that contribute to mental disorders. But also considering mental disorders as due only to psychological or social factors seems to be too reductionist. Establishing the superiority of a model over another is not an easy task, considering that mental disorders are complex disorders reflecting the complex interplay between a complex organ, which is the brain, and an even more complex function that is that of human relationships [5]. Thus, a balanced view—considering biological, psychological, and social factors—is again needed in order to correctly understand mental health and manage mental disorders.

2.3 The Biopsychosocial Model: Revised

Since then, several models have been proposed for integrating biological and social aspects. These models have considered social factors as antecedents to biological processes (i.e., the biological consequences of social disadvantage accumulate over time), as modifiers of genetic effects (i.e., the gene-environment effect [6]), or as an integral part of biological systems (i.e., biological and social aspects are intrinsically related as demonstrated in animal studies in which the social context changes the neuronal response to serotonin). However, how social factors are integrated with biological ones is still a matter of debate and no clear answers can be provided at the current level of knowledge.

The emotional tone of a person, his/her personality, the surrounding environment, and other social parameters do influence the manifestation of illness. This principle applies to basically all complex conditions, including cancer, neurological illnesses, and mental disorders.

Schizophrenia and cancer are complex disorders causing severe impairment and premature mortality. They both include a wide range of different illnesses, with different symptoms, course, and outcome. While the causes of severe mental disorders, such as schizophrenia, depression, and bipolar disorder, remain largely unknown, research into the etiopathogenesis of cancer has led to clarify its main genetic and environmental factors. Hopefully, a similar pathway will be applied to mental disorders if the approach used for understanding the etiopathological mechanism of cancer is going to be translated to severe mental disorders. In fact, nowadays, schizophrenia is conceptualized as a neurodevelopmental disorder, lying on a continuum, from mild psychotic experiences observed in the general population to frank psychotic episodes. This conceptualization is very similar to that of neoplasia. Several genetic loci are responsible for the liability to the illness, and several biological (e.g., hormones), environmental (e.g., pollution), or behavioral (e.g., healthy lifestyles) factors either protect against or prompt the illness. Such conceptualization of cancer has paved the way to a personalized approach to the disorder. This model has been recently proposed also for mental disorders, since cancer and mental disorders share the same environmental and behavioral risk factors, while responsible genes are still far to be identified [7].

The interplay between biological and psychosocial phenomena does not allow to draw certain linear causal links. What is causal, that is, responsible for a cause–effect between two observable events, may appear casual, that is, the result of chance and randomness, as we are often unable to determine a direct relationship. In mechanisms as complex as cancer and schizophrenia, scientists often fail to discriminate between what is causal from what is random or chaotic.

Mental disorders, exactly as cancer is, are heterogeneous, multifactorial "genetic diseases of environmental origin," in which genetic and environmental (chemical, physical, and biological) factors contribute. In fact, evidence is accumulating which confirm the role of social determinants of health as risk or protective factors for the development of severe mental disorders. The hope is that sooner or later we will be able to find

a genomic alteration caused by stressful environmental factors in patients with schizophrenia [7].

2.4 Genetic Determinants of Mental Disorders

A study carried out by the Brainstorm Consortium [8] published on *Science* for quantifing the genetic sharing of 25 brain disorders from genome-wide association studies. The authors found that mental disorders share common variant risks, whereas neurological disorders appear more distinct from one another and from psychiatric disorders. These results highlight the importance of a common genetic variation as a risk factor for brain disorders and the value of heritability-based methods in understanding their etiology.

Molecular genetic methods allow estimation of genetic correlations between psychiatric disorders and subclinical traits of these disorders based on additive, common genome-wide variants. Such studies report strong genetic correlations across disorders and traits for ADHD and major depressive disorder, with a moderate estimate for autism spectrum disorder. An alternative approach is to calculate the polygenic risk scores (PRSs) based on discovery genome-wide association studies (GWASs) of psychiatric disorders; PRSs capture an individual's common variant risk for a phenotype. Although some preliminary evidence supports shared genetic risks across disorders and traits for some psychiatric phenotypes, the evidence is still controversial. In a large population study, Taylor et al. [9] found that genetic factors associated with psychiatric disorders are also associated with milder variation in characteristic traits in the general population for many psychiatric phenotypes.

2.5 The Gene–Environment Model

Intriguing findings on genetic and environmental causation suggest a need to reframe the etiology of mental disorders. Molecular genetics show that mental illnesses are due to the contribution of thousands of common and rare genetic variants. Epidemiological studies have identified dozens of environmental exposures associated with psychopathology. The effect of environment is likely conditional on genetic factors, resulting in gene–environment interactions. The impact of environmental factors also depends on previous exposures, resulting in environment–environment interactions. Most known genetic and environmental factors are shared across multiple mental disorders. Schizophrenia, bipolar disorder, and major depressive disorder, in particular, are closely causally linked. Synthesis of findings from twin studies, molecular genetics, and epidemiological research suggests that joint consideration of multiple genetic and environmental factors has much greater explanatory power than separate studies of genetic or environmental causation. Multifactorial gene–environment interactions are likely to be a generic mechanism involved in the majority of cases of mental illness, which is only partially tapped by existing gene–environment studies. Future research may cut across psychiatric disorders and address poly-causation by considering multiple genetic and environmental measures across the life course with a specific focus on the first two decades of life. Integrative analyses of poly-causation including gene–environment and environment–environment interactions can realize the potential for discovering causal types and mechanisms that are likely to generate new preventive and therapeutic tools.

2.6 Social Determinants of (Mental) Health

We cannot exactly predict when and to which extent a certain environmental insult can cause a specific mental (or physical) disorder, but it is well established that the combination of genetic alterations and environmental factors under certain conditions can lead to the onset of various illnesses.

Therefore, the social determinants of mental health play an essential role in the etiopathogenesis of mental disorders. The social determinants of mental health can be grouped in five main domains: demographic, economic, life context, cultural, and environmental, which can influence the mental health of the population. The impact of structural and economic conditions on mental health has been highlighted by studies focused on poverty and income inequality [10], and on the different exposure to adverse life events—including humanitarian emergencies, war, or interpersonal violence [11, 12].

As recently highlighted by the WHO [13], a significant role is played by the environmental domain. In fact, climate change is associated with a heightened risk of environmental disasters, such as floods, fires, hurricanes, thus affecting the mental health and general well-being of the population. In particular, the Intergovernmental Panel on Climate Change (IPCC) has documented an association between recent climate changes and increased levels of anxiety, depression, insomnia, and suicidal behavior [14]. The impact of climate change on the mental health of the general population is mediated by several factors such as age, gender, educational level, and socioeconomic status. Furthermore, the association between some climate changes and some mental disorders, such as seasonal affective disorders, is well established since decades.

Recent studies carried out in different countries have documented that environmental pollutants and global warming are predictive factors of increased access to emergency room for mental health problems [15–19].

All nongenetic factors, including infections, childhood maltreatment and neglect, cannabis use, alcohol, smoking, bullying, and air, water, and soil pollution, can make the genome more "instable," modifying its structure [20]. Thus, the environment would "trigger" complex and specific cellular pathways that, through epigenetic modification, can become transmissible from one generation to another [20–27].

The concept that environmental factors, to which each of us is involuntarily exposed, represent a negligible risk today is outdated, particularly in light of growing incidence of cancer and schizophrenia in children and adolescents. Thus, there is the need for an integrated and multilevel approach, which integrates politics, health education, and an efficient health system.

2.7 The Biopsychosocial Model and Its Implications for Ordinary Clinical Practice

The predisposing, precipitating, perpetuating and protective factors (defined as "4Ps") of the revised biopsychosocial model include different factors reported in (Table 2.1). Predisposing factors are areas of vulnerability that increase the risk for the presenting problem. Examples include genetic (i.e., family history) predisposition for mental disorders or prenatal exposure to alcohol. Precipitating factors are considered as stressful events (that could be either positive or negative) that may be precipitants of the symptoms. Examples include conflicts about identity, relationship conflicts, or transitions. Perpetuating factors are any conditions in the patient, family, community, or larger systems that exacerbate rather than solve the problem. Examples include relationship conflicts, lack of education, financial and occupation stress (or lack of employment). Protective factors include the patient's own areas of competency, skill, talents, interest, and supportive elements. Protective factors counterbalance the predisposing, precipitating, and perpetuating factors.

It can be useful to develop a formulation table, in order to identify all factors occurring in the specific case of the individual patient. It is important to consider that not all boxes must be filled in, since many factors can act both as precipitating and perpetuating factors.

Table 2.1 Biopsychosocial model of mental disorders and 4Ps model

	Biological	Psychological	Social
Predisposing	• Temperament • Personality characteristics • Family history • Perinatal problems • Neurodevelopmental history	• Attachment style • Cognitive style • Self-esteem	• Poverty • Low socioeconomic status • Early traumatic events • Migration • Discrimination • Racism
Precipitating	• Serious medical illness or injury • Use of alcohol or drugs • Medication non-adherence	• Attachment style • Cognitive style • Self-esteem	• Loss/separation from family member • Interpersonal trauma • Work/academic/financial stressors • Recent immigration, loss of home
Perpetuating	• Serious medical illness or injury • Use of alcohol or drugs • Medication non-adherence	• Attachment style • Cognitive style • Self-esteem	• Loss/separation from family member • Interpersonal trauma • Work/academic/financial stressors • Recent immigration, loss of home
Protective	• Good overall health • Absence of family history • No substance use	• Positive sense of self • Adaptive coping mechanisms • Good coping skills	• Positive relationships • Supportive community • Religious/spiritual beliefs • Good interpersonal supports • Financial/disability support

Based on [28]

2.8 Conclusions

The WHO report "World Mental Health Report: Transforming Mental Health for All" highlights the need for all countries to achieve meaningful progress toward better mental health for their populations by focusing on deepening the value given to mental health, improve the physical, social, and economic characteristics of environments, and strengthen mental health care so that the full spectrum of mental health needs is met through a community-based network of accessible, affordable, and quality services and supports. The revised biopsychosocial model seems more aligned with the recent findings coming from mental health research and practice and may represent the basis for a full and granular understanding of the most severe mental disorders [29–31].

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