Anger and Physical and Psychological Health. A Narrative Review*

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Abstract | With the advent of modern Medicine, the connections between emotions and medical conditions have primarily been described through observational studies, where conclusions are drawn from correlations of observations rather than experimental research. Psychoanalytical theory has often been used to explain many common illnesses. This approach remains prevalent today. Interestingly, despite the wealth of information now available on the influence of emotions on health, the current divide between neurology and psychiatry, as well as the separation between mental health services and primary care, combined with the time constraints and physicians' workload, have led to a fragmented approach to many disorders. In these cases, psychological and emotional factors play an important role but are often inadequately addressed. The objective of this paper is to analyse the existing evidence on the relationship between anger and health through a narrative review. The evidence and data presented point to the need for analytical studies based on scientific methodology to explore the relationship between anger and health, and particularly to adopt an integral health approach taking into account social determinants and the role of empathy among the healthcare professionals and clinical and social care. The prevention and treatment of problems related to the high prevalence and intensity of anger are particularly relevant, given the potential negative impact this emotion can have on patients' physical and mental health, as well as their social adjustment and relationships.

Keywords | anger; chronic diseases; clinical relevance; physical health; psychological health

La ira y la salud física y psicológica. Una revisión narrativa

Resumen | Con la llegada de la medicina moderna, las conexiones entre las emociones y las enfermedades se han descrito principalmente a través de estudios observacionales, en los que las conclusiones se extraen de las correlaciones de las observaciones en lugar de la investigación experimental. La teoría psicoanalítica se ha utilizado a menudo para explicar muchas enfermedades comunes y este enfoque sigue predominando en la actualidad. Curiosamente, a pesar de la gran cantidad de información disponible hoy sobre la influencia de las emociones en la salud, la división entre la neurología y la psiquiatría, así como la separación entre los servicios de salud mental y la atención primaria, combinada con las limitaciones de tiempo y la carga de trabajo de los médicos, han llevado a un enfoque fragmentado de muchos trastornos. En estos casos, los factores psicológicos y

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emocionales desempeñan un papel importante, pero a menudo se abordan de forma inadecuada. El objetivo de este artículo es analizar, mediante una revisión narrativa, las evidencias existentes entre la ira y la salud. La evidencia y los datos presentados apuntan a la necesidad de estudios analíticos basados en la metodología científica para explorar dicha relación, y en particular para adoptar un enfoque de salud integral que tenga en cuenta los determinantes sociales y el papel de la empatía entre los profesionales de la salud y la atención clínica y social. La prevención y el tratamiento de los problemas relacionados con la elevada prevalencia e intensidad de la ira son especialmente relevantes, dado el potencial impacto negativo que esta emoción puede tener sobre la salud física y mental de los pacientes, así como en su ajuste social y sus relaciones.

Palabras clave | enfermedades crónicas; ira; relevancia clínica; salud física; salud psicológica

Ira e saúde física e psicológica: revisão narrativa

Resumo | Com o advento da medicina moderna, as conexões entre emoções e doenças foram descritas principalmente por meio de estudos observacionais, nos quais as conclusões são tiradas de correlações de observações em vez de pesquisas experimentais. A teoria psicanalítica tem sido usada com frequência para explicar muitas doenças comuns e essa abordagem ainda predomina atualmente. É interessante notar que, apesar da riqueza de informações disponíveis atualmente sobre a influência das emoções na saúde, a divisão entre neurologia e psiquiatria, bem como a separação entre os serviços de saúde mental e a atenção primária, combinadas com as restrições de tempo e com a carga de trabalho da equipe médica, levaram a uma abordagem fragmentada de muitos transtornos. Nesses casos, os fatores psicológicos e emocionais desempenham papel importante, mas geralmente são abordados de forma inadequada. O objetivo deste artigo é analisar, por meio de revisão narrativa, as evidências entre ira e saúde. As evidências e os dados apresentados apontam para a necessidade de estudos analíticos baseados em metodologia científica para explorar essa relação e, em especial, para a adoção de uma abordagem holística de saúde que considere os determinantes sociais e o papel da empatia entre os profissionais da saúde e a assistência clínica e social. A prevenção e o tratamento de problemas relacionados à alta prevalência e intensidade da ira são particularmente relevantes, dado o possível impacto negativo que essa emoção pode ter na saúde física e mental dos pacientes, bem como em seu ajuste social e em seus relacionamentos.

Palavras-chave | doenças crônicas; ira; relevância clínica; saúde física; saúde psicológica

Introduction

Among other things, the study of emotional life is an important source of insight into how emotions impact the wellbeing of individuals and society as a whole (Francis 2006; Stets and Turner 2006; Kraiss *et al*. 2020). However, the current healthcare system and health policies have become increasingly technified, drifting away from a humanistic approach to health. In this context, emotions and feelings receive little attention or interventions (Thibault 2019; Boysen *et al*. 2020). Paradoxically, while there is a growing body of information and conclusive data on the potential impact of emotions on health—both positive and negative—the integration of emotions into healthcare remains limited. It therefore seems logical to advocate for an approach towards improved health—particularly mental health—where emotions play a key role in healthcare, personal, and social relationships. This would enhance individual wellbeing and help reduce social inequalities (Stets and Turner 2006; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009). As Hans-Georg Gadamer, noted in in *The Enigma of Health: The Art of Healing in a Scientific Age*, that "it would therefore be very useful to be aware of the differences between scientific medicine and the true art of healing" (1996, 103), recognising that a balanced integration of

reason and emotion is the best path to wellbeing. Given this context, the objective of this paper is to analyse the existing evidence on the relationship between anger and health through a narrative review.

Anger, much like anxiety or sadness, is a basic emotional reaction with adaptive characteristics. However, when anger is sustained over time or becomes intense, it can lead to a negative affective experience, causing subjective distress and significant pathophysiological changes that may lead to health disorders (Schieman 2006). When expressed outwardly as violence or aggression, anger can harm others and have serious social repercussions. Moreover, anger may also be a symptom or manifestation of an underlying condition; thus, proper understanding and management of anger can contribute to improve the wellbeing of the individual experiencing anger and those around them. Emotions, including anger, play a crucial role in interpersonal relationships, and when such issues arise in the physician-patient dynamic, they can impact the overall health outcome (Borrell-Carrió 1993; Norlander and Eckhardt 2005; Schieman 2006; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009).

Anger, as an emotion, encompasses many conceptual facets with multiple meanings that are contextualised in complementary ways from the philosophical, psychological, biological and physiological domains, as well as in everyday language. It is associated with terms like rage, wrath, annoyance, resentfulness, fury, irritability, insult, indignation, hostility, violence, aggressivity, and pathological hatred (Berkowitz and Harmon-Jones 2004; Schieman 2006). Berkowitz links anger to a state of discomfort or unrest, with an intensity spectrum that ranges from rage or fury to its most extreme expression as violence or aggressivity (Berkowitz 1989 and 1990).

It is widely recognised that some of these concepts form syndromic constructs with their own distinct identities, particularly regarding their impact on interpersonal or social relationships and individual health. Examples include the anger-hostility-aggression (AHA) syndrome or the anger-aggression (AA) syndrome. Activation of one component within these syndromes typically triggers the activation of other related components (Ramírez and Andreu 2006; Robinson and Wilkowski 2010). In this context, hostility is understood as a negative psychological and affective mood state projected towards the environment, marked by resentment, indignation, pejorative feelings, and contempt for others—traits often ingrained in one's personality (a wrathful disposition). Meanwhile, aggressivity involves verbal and/or physical violence intended to harm a specific individual.

In addition to these considerations, patients appear to be able to clearly distinguish among these concepts and describe a single point of view when experiencing anger in person —except in cases involving personality disorders (Francis 2006; Schieman 2006). In a personal experience with individuals suffering from chronic pain (fibromyalgia syndrome), patients were asked during their first visit, what emotion they felt most intensely regarding the way they had been treated by the healthcare system—anger, resentment, or fury. Most patients reported feeling anger and resentment equally, with fewer expressing fury in highly stressful situations. They also spontaneously mentioned feeling irritable. These responses are consistent with findings in the literature (García-Campayo and Rodero 2009; Somalo 2017; Galvez-Sánchez, Duschek, and Reyes del Paso 2019).

Psychophysiologically, anger begins with a physical, sensory, or cognitive stimulus perceived as aversive (threat, provocation, frustration or obstacle seen as being immoral or unfair), which the patient prefers to avoid and automatically associates with an unpleasant situation or intense experience of anger that triggers important neuronal and motor activity with intense cardiovascular reactivity. Following internal cognitive evaluation, anger can manifest in three primary ways: internal anger (anger-in), external anger (anger-out) and anger control (anger-control).

Anger-in is characterised by repressing verbal or physical expression, while maintaining high internal activity. Anger-out is expressed through aggressive verbal or physical behaviour directed at others or objects. Anger-control involves using strategies to reduce the intensity and duration of anger, and to address the underlying cause of the emotion (Schieman 2006; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009). Some studies have identified a fourth form of internal coping—rumination—marked by an excessive focus on thoughts related to the stressful event. In the context of depression —which is the most widely investigated area in this regard—rumination can intensify and prolong the negative emotional response (Balsamo 2010; Besharat and Shahidi 2010).

Persistent anger is widely recognised as a frequent mental health issue, often linked to psychological and behavioural disorders, specific psychiatric conditions, and/or physical diseases that cause emotional suffering for both patients and those around them. Furthermore, anger is associated with behavioural or social problems, alcohol and drug abuse, financial and legal problems, and low self-esteem, all of which complicate efforts to implement health-improvement measures (Leiker and Hailey 1988; Norlander and Eckhardt 2005; Krantz *et al*. 2006; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009). In some cases, anger also poses a public safety risk, as it can escalate into various forms of violence (Norlander and Eckhardt 2005).

Anger is also a component of other emotional disorders such as depression or anxiety, and improving these conditions often helps in managing persistent anger (Gorenstein *et al*. 2007). Negative affectivity (anxiety, depression, and anger) characterises persistent anger as a trait reflecting the tendency to experience negative emotions consistently over time and in various life situations (Watson and Clark 1984; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009).

Anger and Aggressive Behaviour

The most intense external expression of anger is represented by aggressive behaviour or aggression, which has important social and health repercussions. In the late twentieth century, Berkowitz postulated that anger activates the motor system towards threat and aggression, and that the mechanisms which control aggressive behaviour modulate the response and protect the individual and the species itself. In this regard, in the case of humans, analytical, assessment and responsibility attribution processes come into play, determining the decision to act in a particular manner. A dysfunction of these control and inhibition mechanisms in turn results in violent, destructive, or criminal acts (Berkowitz 1989 and 1990; Berkowitz and Harmon-Jones 2004).

The advancement of neurobiology and the development of functional neuroimaging techniques, such as positron emission tomography (PET) and functional magnetic resonance imaging (MRI), have made it possible to study brain function and the neurobiology of emotions, including aggression and violence as the most extreme manifestation of anger. These technologies have provided an anatomical and physiological framework—specifically, the neural structures associated with aggression—that helps explain, at least in part, a significant number of criminal behaviours. This research differentiates between impulsive and instrumental aggressive behaviours and contributes to forensic and legal psychology (Rosell and Siever 2015; Ortega-Escobar and Alcázar-Córcoles 2016).

Impulsive aggressive behaviour—also known as emotional, reactive, or affective aggression—manifests as an immediate response to frustration, provocation or perceived insult. It is typically accompanied by a diminished affective state, with anger, hostility or rage. This type of aggression is often observed seen in individuals with a history of negative

emotional states, abuse, impulsiveness, or emotional rigidity. Fundamentally, it aims to compensate for or alleviate the distressing affective state that the individual is experiencing (Rosell and Siever 2015).

Instrumental aggressive behaviour—also known as proactive or predatory aggressive behaviour (lacking adaptive value)—is not accompanied by an unpleasant emotional state. It is usually triggered by the aggressor as a deliberate action rather than as a reaction, motivated by the anticipation of some form of reward, whether it be a goal, power, status, or social dominance. This type of aggression is often observed in psychopathic individuals, characterised by premeditation and manipulative tendencies, and it commonly manifests as physical aggression or violent criminal behaviour (Rosell and Siever 2015).

While aggressivity is defined as a normal physiological behaviour that contributes to the survival of both the individual and species, violence refers to forms of aggression where adaptive value has been lost. This loss may indicate a dysfunction in the neuronal mechanisms related to the expression and control of aggressive behaviour, with the intention of inflicting extreme harm (Stahl 2014). Currently, aggressivity and violence are considered to exist along a continuous spectrum, where cultural, environmental, social, and biological factors interact to modulate such behaviours (Van der Gronde *et al*. 2014; Vassos, Collier, and Fazel 2014).

Anger and Clinical Relevance

Anger is not recognised as a diagnostic entity by any official international classification of diseases, a fact that complicates its study, the analysis of its prevalence, and the assessment of its clinical repercussions. An additional challenge is the historical terminological confusion surrounding the definition and conceptualisation of anger, which further complicates its evaluation (Schieman 2006; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009).

To assess the clinical relevance of anger as a factor affecting health, it is necessary to examine the parameters that determine health and disease. While the healthcare system is a determinant of health, it is neither the only or the most important one; social relationships, the social environment, lifestyles, occupational and cultural conditions, economic status, and many other factors also play significant roles in determining the health of a population (Marmot 2005). Notably, when analysing the determinants of health, emotions and their impact on wellbeing are often overlooked. It is easy to understand that if each health determinant operates from the perspective of positive emotions—such as respectfulness—health outcomes will be more favourable. Conversely, if the healthcare system lacks empathy, interest in the patient, respect, and kindness, the resulting clinical outcomes are likely to be poor, negatively impacting health (Borrell-Carrió 2011). If anger, fury or resentment are the predominant emotions in the context of health determinants, the outcome will undoubtedly be detrimental to individuals' wellbeing and health.

Some aspects that define the clinical relevance of anger as an emotion and its impact on health are well recognised in daily practice, but have been inadequately documented to date. These include the frequency of anger as a determinant of disease, its role in distorting medical care and health outcomes during clinical interviews, and its prevalence in patients with personality disorders and social and/or family problems. Meanwhile, data on those aspects that are widely covered in the literature, such as anger as a risk factor for cardiovascular or gastrointestinal issues, are often heterogeneous and receive little attention from the clinical perspective (Schieman 2006; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009). Some clinically relevant aspects are outlined below:

- Anger induces health problems affecting practically all body organs and systems. However, at clinical level, it is rarely considered an aetiological factor and is generally not studied outside the field of mental health (Piqueras Rodríguez, Ramos Linares, and Martínez González 2009).

- Studies, particularly observational ones, have shown that anger increases the morbidity of many physical and psychological conditions and, in some cases, also mortality. For instance, sustained anger can raise blood pressure, increase the risk of cardiac arrhythmias or ischemic heart disease, and elevate cardiovascular mortality (Angerer *et al*. 2000; Krantz *et al*. 2006). Anger is also associated with a higher risk of suicide (as a severe expression of anger-in), traffic accidents, aggression (assault), or damage to property by individuals unable to control their anger outbreaks or who experience persistent anger (Norlander and Eckhardt 2005; Jang *et al*. 2014; Ābele *et al*. 2020).

- The external expression of anger (anger-out) in the form of irritability or aggression is a common occurrence in clinical practice across various care settings, particularly in emergency rooms or mental health centres, where there are specific management protocols for difficult or aggressive patients, with supervised isolation wards and reinforced staff (Altemir and Arteaga 2018; Hüfner *et al*. 2020; Pompeii *et al*. 2020; Zoleo *et al*. 2020; Aljohani *et al*. 2021). Therapeutic protocols for alcoholism in addictive behaviour wards or mental health centres contemplate the management of anger as a priority concern (Meyers *et al*. 1998; Schonfeld *et al*. 2000).

- Aggressive patients disrupt medical care, complicating their own treatment as healthcare providers may be reluctant to attend to them. As a result, their health issues may not be adequately addressed, and distrust can arise among healthcare professional due to concerns about potential complaints and legal issues. Additionally, the care of other, sometimes more seriously ill patients, may be delayed. The clinical management of aggressive patients can sometimes lead to legal reports and lawsuits (Gorney 1999; Borrell-Carrió 2011; Hüfner *et al*. 2020).

- Personal relationships and cohabitation with patients who exhibit sustained anger often lead to marital problems, abuse, and separation (Norlander and Eckhardt 2005; Farzan-Kashani and Murphy 2017).

- All these circumstances also have social and economic implications that usually do not receive the necessary attention (Gorenstein *et al*. 2007).

At this point, and based on the literature, it can be affirmed that negative emotions—and hence anger—affect the health/disease continuum in the following ways: a) their association with various pathophysiological structures, leading to changes that turn into clinical disorders affecting multiple organs and systems; b) their impact on motivation, which can alter both healthy behaviours (physical exercise, a balanced diet, adequate rest, etc.) and unhealthy behaviours (alcohol and other substance abuse, smoking, a sedentary lifestyle, obesity); and c) the loneliness and isolation experienced by many individuals with persistent anger and aggression, which contributes to increased morbidity and mortality (Leiker and Hailey 1988; Houston and Vavak 1991; Whiteman, Deary and Fowkes 2000; Brummett *et al*. 2001; Francis 2006; Schieman 2006; Piqueras Rodríguez, Ramos Linares, and Martínez González 2009).

Anger and the Clinical Interview

Francesc Borrell-Carrió highlighted the importance of the clinical interview in determining patients' health outcomes, noting that the interview is conditioned by the relationship between the healthcare professional and the patient, as well as the emotional state of both (Borrell-Carrió 2011; Moudatsou *et al.* 2020). If the clinical interview occurs in an environment lacking empathy and/or marked by tension, the patient may perceive a lack of interest in their problems, and respond with anger—this, in turn, distorts the purpose of the visit and hampers the resolution of health problems. A lack of appropriate behaviour and/or interest from the healthcare professional towards the patient can lead to irritability and a lack of credibility, and reduced patient adherence to prescribed treatments or recommendations (Borrell-Carrió 2011; Moudatsou *et al*. 2020). When a patient's attitude is marked by anger, hostility or aggressivity, some professionals may be inclined to reject managing the patient. An aggressive individual is less likely to follow recommendations and treatments, tends to have a poorer clinical outcome, may generate complaints or legal issues, and could potentially damage the professional's reputation (Lee *et al*. 1992; Gorney 1999).

In this regard, Borrell-Carrió suggested that the clinical interview should be redefined as a therapeutic tool aimed at improving patient health outcomes. Before beginning their work, healthcare professionals should assess their own emotional state to ensure it fosters harmony in the physician-patient relationship. Patients should never be judged in the medical setting; healthcare must be provided with respect; attentiveness to the patient's needs, emotions, and concerns; and sufficient time should be allocated for dialogue and active listening. This approach helps establish an empathic relationship that demonstrates genuine interest in the person, their health issues, and a compassionate attitude towards the suffering (Balint 1955; Borrell-Carrió 2011; Roth *et al*. 2018; Moudatsou *et al*. 2020).

The reality of clinical practice puts theory into context. It is crucial to understand that, in order to grasp a patient's personal reality, the patient must be allowed to tell their story, and the healthcare professional must be willing to listen (Charon 2004; Somalo 2017; Roth *et al*. 2018). From the professional perspective, it is important to recognize that an angry or aggressive patient is not a "difficult" patient, but rather an individual with underlying health issues, in addition to physical problems for which they are seeking help in the first place. In some cases, anger is a sign or symptom of personal or social difficulties, disorders related to alcohol or other substance abuse, an adverse drug reaction, or a mental issue that requires exploration, diagnosis, and the establishment of an appropriate treatment plan in collaboration with the patient.

Anger and Loneliness

Persistent anger or anger as an emotional state, characterised by subjective sensations of tension, wrath, irritation, fury or rage, creates problems for the patient in terms of personal relationships. This often leads to loneliness and isolation, participation in unhealthy or toxic social networks, and increased morbidity and mortality (Hardy and Smith 1988; Leiker and Hailey 1988; Smith *et al*. 1988; Gorenstein *et al*. 2007).

Individuals exhibiting persistent anger and an unacceptable social attitude, often cause other people to avoid them. When interactions do occur, they are typically marked by antagonistic attitudes that reinforce the angry individual's behaviour, creating a stressful and conflictive interpersonal environment that no one wishes to be part of (Hardy and Smith 1988). This situation leads to margination, a lack of social support, and loneliness. In turn, loneliness contributes to high psychophysiological reactivity and neuroticism, characterised by emotional insecurity, instability, intense anxiety, a permanent state of

worry and tension, feelings of guilt, depression, psychosomatic symptoms and behavioural abnormalities. These factors increase sympathetic nervous system activity and cardiovascular reactivity, ultimately leading to health problems (Smith 1992; Palfai and Hart 1997).

In the 1950s, the psychiatrist Frieda Fromm-Reichmann was the first to describe the negative impact of loneliness on health. Among other aspects, Fromm-Reichmann portrayed loneliness as one of the most painful and terrifying experiences in life, creating a feedback loop that causes the brain to perceive the social environment as hostile and unsafe. This in turn keeps the affected individual in a continuous state of alert, leading to fragmented and non-restorative sleep, chronic fatigue, and general malaise (Fromm-Reichmann 1959). Recent studies have shown that loneliness increases the prevalence of all disease conditions (including infections) and all-cause mortality compared to the general population of the same age (Brummett *et al*. 2001; Umberson and Montez 2010; Holt-Lunstad *et al*. 2015; O'Súilleabháin, Gallagher, and Steptoe 2019).

Anger, Healthy Habits and Health

Classical literature has explored the repercussions of anger or its expression on non-compliance with healthy habits or the consolidation of toxic habits that negatively affect health. Intense and/or frequent adaptive reactions to anxiety, depression, and anger that persist over time increase the risk of engaging in health-damaging behaviours (smoking, alcohol and substance abuse, high-risk sexual practices), and lead to the abandonment of healthy habits (physical exercise, a balanced diet, meditation, etc.) (Leiker and Hailey 1988; Houston and Vavak 1991).

There are several classical cardiovascular risk (CVR) factors that, individually or in combination, account for a significant proportion of all cases of cardiovascular disease (CVD). Most of these factors are related to lifestyle aspects, such as smoking, poor eating habits, a sedentary lifestyle, alcohol abuse, excessive consumption of saturated fats, and obesity. In this regard, Leiker and Hailey (1988) linked increased vulnerability to CVD in hostile individuals to the absence of healthy habits and the presence of risky behaviours in daily life. Other authors have associated hostility with decreased adherence to prescribed therapies and recommendations, which, in turn, increases the risk of illness and complications (Lee *et al*. 1992). Some researchers, based on empirical data and personal experience, have associated individuals with AHA with a negative attitude towards physical exercise and personal care, a tendency towards obesity, excessive salt and alcohol consumption, and smoking (Houston and Vavak 1991; Smith 1992; Whiteman, Deary, and Fowkes 2000). These attitudes often become chronic because individuals with AHA tend to engage in inadequate and toxic social networks and avoid social support—a situation that further exacerbates the factors contributing to CVR and other health problems (Undén, Orth-Gomér, and Elofsson 1991; Uchino, Cacioppo, and Kiecolt-Glaser 1996; Uchino and Garvey 1997).

Studies analysing the expression of anger have shown that who experience high levels of tension by inhibiting the open manifestations of anger (anger-in) and those with low anger control who are unable to channel their energy towards constructive objectives (indicating limited adaptive capacity) tend to exhibit less healthy habits. This behaviour is also associated with increased CVR. Blocking the expression of anger likely leads to greater emotional discomfort, neuroticism, and the experience of psychosomatic of symptoms (Dembroski *et al*. 1985; Martin and Watson D, 1997; Harburg *et al*. 2003; Suls and Bunde 2005).

Anger and Chronic Diseases

In both daily life and in the context of anthropological research, it is well recognised that chronic diseases have a profoundly negative impact—psychologically, emotionally, physically, professionally, economically, and socially—on patients, their families, and care givers. This negative impact intensifies with the degree of patient disability and dependence, the duration of the illness, and the resulting family burden.

An epidemiological study conducted by the World Health Organization (WHO) in 2006 (Piqueras Rodríguez, Ramos Linares, and Martínez Gonzalez 2009), using data from various European countries, analysed the psychological repercussions in patients with chronic illnesses. The study reported a prevalence of anger, anxiety, and depression of over 27% (95% confidence interval: 10.4 - 59.8). The impact of the mental health problems was found to be directly related to the duration of the chronic illness and the degree of disability and dependency it caused (Piqueras Rodríguez, Ramos Linares, and Martínez González 2009).

Sociologist and health anthropologist Lina Masana, conducted a study following patients with chronic diseases, analysing the personal (psychological and physical), familial, and social repercussions of these conditions. She identified several key implications: the condition is lifelong (it never ends); both the patient (individual and social identity) and those around them are affected; life changes because of the disease (nothing will be the same again); lifestyle adaptations are required; disability, dependency and caregiver burden may ensue; one's personal self-conception must be rethought; personal and social relationships are affected; and both the patient and those close to them experience emotional and psychological stress and suffering. Masana found that these negative characteristics of chronic disease lead to feelings of impotence, helplessness, anger, anxiety and fear, and she established a direct relationship between chronic disease and anger, which is influenced by the duration of the disease and the level of disability it causes (Masana 2015). These situations often result in marital problems, the decision not to have children, and ultimately separations and divorce (Bhatti, Salek, and Finlay 2011).

Many chronic diseases affect humans, and some of them are very common (rheumatological, dermatological, respiratory, cardiovascular, neurological and neuromuscular disorders, diabetes, alcoholism, mental health problems, chronic pain, etc.). Indeed, from the age of 60-65 years onwards, it is not uncommon for many people to suffer several such conditions simultaneously. This reality underscores the need for social and health care systems to pay closer attention to negative emotions, feelings, and social challenges faced by these patients (Barnett *et al*. 2012).

Anger and its Impact upon Physical Health

No clear distinction can be made between physical health problems and psychiatric or psychological issues (mental health problems), since both interact closely with each other. An example of this is anger, which often accompanies various mental health issues and disrupts healthy lifestyle habits—these habits being crucial determinants of physical health and causal factors in the development of disease (Leiker and Hailey 1988; Houston and Vavak 1991).

In other words, classifying hoy anger affects both aspects of health and disease can only be approached from a didactic perspective, while keeping in mind the Hippocratic notion that there are no diseases, only ill people. The anger that accompanies many disease conditions may act as an aetiological factor (cardiovascular diseases), as an emotional component

accompanying chronic illnesses, and/or as a common symptom of some of these chronic illnesses (cancer, chronic pain, respiratory failure, etc.) (Prigatano, Wright and Levin 1984; Angerer *et al*. 2000; Perozzo *et al*. 2005; White *et al*. 2007).

Anger and rheumatological disorders. Rheumatological problems, together with neurological disorders, are typically characterised by functional alterations, disability, and a chronic course that, in some cases, manifest from very early stages of life. Such issues are often accompanied by chronic pain, which is one of the key symptoms that most condition negative affectivity and have a detrimental effect on quality of life (Anyfanti *et al*. 2016). According to data from the Spanish National Health Survey of 2017, a total of 23.4% of all women and 15.9% of all men suffer chronic pain. It is well known that anger associated with chronic pain can exacerbate the pain itself, worsen depression, impair psychosocial functioning, and negatively impact physical health and health-related habits (Fernandez and Turk 1995).

Although there is growing evidence that fibromyalgia syndrome (FMS) is a central nervous system hypersensitivity disorder, it has traditionally been regarded as a rheumatological problem and remains the leading paradigm of chronic pain without tissue damage—a fact that has contributed to the lack of recognition of FMS (Yunus 2008; Moscoso and Zaragoza Bernal 2014; Roth *et al*. 2018). Fibromyalgia syndrome is the most common cause of chronic pain and is characterised by generalised and multifocal pain accompanied by other symptoms such as fatigue, insomnia and non-restorative sleep, cognitive and mood state alterations, and comorbidity affecting practically all body organs and systems. FMS affects 4% of all women (with an estimated female predominance of 21 cases for every male case of FMS). This combined with personal, healthcare, social and economic issues caused by the syndrome, constitutes a genuine public health issue. The lack of recognition of FMS, and the incomprehension and rejection these patients face at various levels (medical care, family, occupational and social) give rise to numerous negative emotions (frustration, fear, anger, irritability, loathing, etc.) that exacerbate the disease—worsening the pain, fatigue, and insomnia, and leading to social isolation and suicidal ideation (Somalo 2017; Galvez-Sánchez, Duschek, and Reyes del Paso 2019; Roth *et al*. 2021).

Patients with FMS often experience significant anger-in (uneasiness, moral pain, resentment) which tends to focus on external obstacles, accompanied by psychological obnubilation and functional incapacitation. This cycle makes it difficult to achieve therapeutic goals, increases frustration, worsens anger-in, and prevents the patient from improving their baseline condition. The anger and resentment in such patients are apparent during all medical visits, and their general tendency to inhibit the anger predicts an increase in daily pain (Van Middendorp *et al*. 2010; Somalo 2017; Galvez-Sánchez, Duschek, and Reyes del Paso 2019; Roth *et al*. 2021).

Anger and Mental Health Repercussions

As mentioned earlier, anger—particularly persistent anger—is widely recognised as a mental health problem in itself. It can also manifest as a symptom, as a comorbid factor with psychological and psychiatric issues ranging from mild (anxiety, depression) to very severe (dissociative personality disorder), and as an element in conditions that often go unnoticed, such as alexithymia (Leiker and Hailey 1988; Norlander and Eckhardt 2005; Krantz *et al*. 2006; Galvez-Sánchez, Duschek, and Reyes del Paso 2019). Persistent anger frequently accompanies other emotional disturbances such as anxiety and/or altered mood states, and a correct therapeutic approach to these conditions can help reduce anger (Suls and Bunde 2005).

An epidemiological study on the association between mental health and anger in the Australian general population, involving a sample of 8 841 individuals aged 16-85 (Australian National Survey of Mental Health and Wellbeing of 2007), documented a significant number of mental disorders (major depression, bipolar disorder, social phobia, generalised anxiety, obsessive-compulsive disorder, posttraumatic stress and disorders related to alcohol and drug abuse) that were found to be independently associated with the symptoms of anger. In other words, anger may have extremely maladaptive effects on behaviour, with serious consequences for the individual and the community (Barrett, Mills, and Teesson 2013).

Anger, anxiety and depression. Anger, anxiety, and depression are three elements of emotional and/or psychological disorders that generally manifest together, leading to what is known as negative affectivity (whether transient or permanent). This often overlaps with neuroticism and produces behavioural disorders that perpetuate the anger—anxiety—depression cycle (Watson and Clark 1984; Schieman 2006; Gorenstein *et al*. 2007). It is noteworthy that studies often analyse the anger-anxiety (alcoholism) and anger-depression (cardiovascular risk) dyads in isolation, without considering the combined influence of anger-anxiety-depression (Kushner, Sher, and Erickson 1999; Sparagon *et al*. 2001; Wattanakit *et al*. 2005; Hawkins and Cougle 2011; Barrett, Mills, and Teesson 2013). In this context, intense, frequent, and chronic maladaptive reactions in the form of anger, anxiety, and depression ultimately trigger behaviours that are harmful to health (smoking, addiction to alcohol or drugs, etc.), which in turn induce a range of physical and mental health problems (Watson and Clark 1984; Leiker and Hailey 1988; Houston and Vavak 1991).

The interaction between anger and anxiety plays a central role in alcoholism and its relapses (Meyers *et al*. 1998). Additionally, there is evidence suggesting relationships between the expression of anger and various anxiety disorders that are not explained by the psychiatric comorbidity (Hawkins and Cougle 2011).

The Freudian idea that inhibited anger is a cardinal element in the pathogenesis of depression has been one of the cornerstones in psychiatry. However, depression may be characterised by excessive anger control, poor anger control, or a combination of both—indicating problems in regulating anger, and suggesting that the links between anger and depression are part of a complex psychological and emotional network. Depression has been associated with feelings of frustration, poorer anger control, and difficulty expressing anger (both anger-in and anger-out), particularly in younger individuals with a higher state of anger (Luutonen 2007). Although the presence or absence of hostility, anger, and aggression in depression has been the subject of controversy, studies have shown that anger attacks are more frequent in depressed patients than in healthy controls (Painuly, Sharan, and Mattoo 2005). Depressed patients with anger attacks also show higher levels of anxiety, irritability, and anger, greater expression of anger, psychoticism, and poor quality of life (Painuly, Sharan, and Mattoo 2007).

Major depression, social phobia, panic disorder, and generalised anxiety disorder have been closely related to trait anger and anger attacks (De Bles *et al*. 2019). Similarly, persistent anger causes emotional discomfort, which can be mistaken for anxiety and depression, and can lead to violence (Krantz *et al*. 2006).

It is important to highlight the need to address structural violence through healthcare that respects and embraces diversity and considers the social determinants of health and disease. This approach should include the development of primary prevention and treatment programs in childhood, which are among the most effective ways to reduce the negative impacts of anger (Farmer *et al.* 2006; Krech 2012). Similarly, it is essential to conduct studies that examine the sociocultural factors behind the higher rates of depression and anxiety diagnoses in women and their connection to negative emotional states,

including anger, which stem from their personal, familial, and social backgrounds. Reducing gender disparities in the diagnosis and treatment of physical and mental health issues will require a coordinated effort at the clinical, community, and structural levels. This must be driven by a feminist perspective aimed at reversing the social, economic, and cultural vulnerabilities that disproportionately affect women (Bacigalupe, González-Rábago, and Jiménez-Carrillo 2022).

The evidence and data presented here underscore the need for analytical studies based on scientific methodology to explore the relationship between anger and health. Specifically, there is a need to adopt an integrated health approach that considers social determinants and the role of empathy among the healthcare professionals in both clinical and social care settings (Krech 2012; Moudatsou *et al*. 2020). The prevention and treatment of problems related to the high prevalence and intensity of anger are particularly important due to the potential negative impact of this emotion on the physical and mental health of patients, as well as their social adjustment and relationships.

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