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The Character and Destination of Multimorbidity: Reflections for Classification

Jose Luis Turabian

Specialist in Family and Community Medicine. Health Center Santa Maria de Benquerencia. Regional Health Service of Castilla la Mancha (SESCAM), Toledo, Spain.

***Corresponding Author:** Jose Luis Turabian, Health Center Santa Maria de Benquerencia Toledo, Spain.*

Abstract

Currently one of the main challenges of medicine and epidemiology is the approach to multimorbidity. But, the natural history of multimorbidity is unknown. Health problems are complex structures. None appears isolated, free from relationships and accurate and clear. An evolution of the "order-disorder-order" type that can be observed in an isolated health problem is not fulfilled in multimorbidity. Are health problems, in multimorbidity, concurrent lines that start from different places but end at the same point, or are they divergent, or parallel lines? Are there several storylines at the same time which are interwoven and where there is no final outcome? Is invariably predetermined the destiny of the grouping of several diseases in the first days or months of an evolution that lasts many years? Are the accumulation of diseases combinations: where the order of problems does not matter or permutations: where the order does matter? Are there "good problems" and "bad problems"? Do health problems / diseases have an evolution that leads to an outcome to reach a destination that is "victory or failure", or the evolution of problems does not present any purpose and there is not really evolution, but consumes its time? Does the accumulation of diseases tend to disorganization or can they lead to a higher order? Attempting to answer these questions and approach the classification of the character and destiny of multimorbidity can help to understand and address it.

Keywords: *Multimorbidity; Complexity; Framework; Natural History of Disease*

Short Communication

Multimorbidity is the presence of two or more long-term health problems. It often involves the superposition of mental, cardiovascular, diabetes, cancer and respiratory diseases. Multimorbidity is now a widespread phenomenon that affects the health of populations around the world, with the greatest burden among people or disadvantaged subpopulations, as it has become a serious public health problem due to its negative consequences on quality of life, the greater tendency to disability and mortality, polypharmacy and cost of utilization of health services, and that gives rise to a considerable burden of care. Multimorbidity is not simply a problem of chronological aging, nor is it distributed randomly (1, 2).

Currently, one of the main challenges facing the multimorbidity approach is the fact that guidelines are not designed to take into account the cumulative impact of treatment recommendations on people with various conditions, or to allow the comparison of the relative benefits or risks (3).

But, not much attention is paid to the mechanisms of production, accumulation and evolution of multimorbidity; its character and destiny, and consequently its possible classification. Sorting forces us to reflect.

Not enough attention is paid to the mechanisms of disease production or accumulation and the effects that this accumulation produces on the clinical expression of the diseases. It is evident that the accumulation of health problems in a person implies more complexity and difficulties regarding their health care. This clinical expression of the accumulation of two or more diseases in a person can lead to a clinical aggravation or, conversely, to a survival advantage. However, it has not been drawn with sufficient clarity, the path

that leads to the accumulation of diseases and if that situation can occasionally be an advantage, rather than a disadvantage, and in what situations it can be intervened to avoid and prevent added risks

Health problems, such as stories and emotions are complex structures. None appears isolated, free from relationships and accurate and clear, but they arise interwoven with each other, "such as the cherries", imprecise, joined to each other, and often in the opposite direction; so, a cherry cannot be caught without getting entangled in others. Health problems, such as stories and emotions are complex structures. None appears isolated, free from relationships and accurate and clear, but they arise interwoven with each other, "such as the cherries", imprecise, joined to each other, and often in the opposite direction; so, a cherry cannot be caught without getting entangled in others (4). Is it about coincidences? But, coincidences feed on causalities.

It has been observed that most disease pairs occur more frequently than would be expected if the diseases had been independent, and that multimorbidity is not limited to specific related or more frequent combinations; about 70% of people with a disease has one or more additional chronic diseases that are not in the top five of the most common diseases; that is, multimorbidity is common in all ages and cannot be captured by some common combinations of diseases (5).

The evolutionary course of the interwoven of multimorbidity is partly unknown. An evolution of the "order-disorder-order" type can be observed in an isolated health problem, or as in an "approach-knot-outcome" narrative, but this scenario is not fulfilled in multimorbidity.

Are health problems, in multimorbidity, concurrent lines that start from different places but end at the same point, or are they divergent, or parallel lines? or how it happens other times in the pattern of evolution of multimorbidity, scenarios that behave like the arguments of "television series movies" occur: the characters, which are interconnected directly or tangentially with each other, get into the next mess or muddle before leaving the latter, this means that there are several storylines at the same time (two or three at least), where several causal stories are interwoven, and also all of them have moments of knots, or entanglements, or skeins, or mess, noise, jumble, confusion, disorder, which partly overlap for each character, and where there is no final outcome (6).

There is no conceptualization and systematization of the formation of the ball of health problems that accumulate during the life of the patients. A look at the combinations of diseases shows a wide variety in multimorbidity. It has been noted that most disease pairs occur more frequently than would be expected if the diseases had been independent, and that multimorbidity is not limited to specific related or more frequent combinations; about 70% of people with a disease have one or more additional chronic diseases that are not in the top five of the most common diseases; that is, multimorbidity cannot be captured by some common combinations of diseases (5, 7).

To understand the process of accumulation of diseases or the trajectory of disease associations, their evolution and their end, it does not seem very useful to make a previous classification by themes, common risk factors, body organs or organic systems, as unexpected sequences or random processes appear, which are, as the novelist Julio Cortázar would say, "worthy of a fly drawing its own flight for anyone or a cockroach playing against Bobby Fischer in a tiling; a hit of dice" (8).

Perhaps everything is so invariably predetermined that in the first days or months of an evolution that lasts many years, and from that moment it is difficult that the destiny foreseen for the different concurrent problems is not foreseen with enough approximation, like in those movies where narration is marked by what happens in the first 5 or 10 minutes?

Sometimes this evolution and accumulation of multimorbidity in patients, suggests combinations: where the order of problems does not matter; a "fruit salad where there is a combination of apples, grapes and bananas": no matter in what order we put the fruits, it could be "bananas, grapes and apples" or "grapes, apples and bananas", it is the same salad. But other times they seem permutations: variations of the

order or position of the elements of an ordered set, where the order does matter: "The combination of the lock is 472": "724" would not work, nor "247". It has to be exactly 4-7-2.

In this accumulation and evolution of health problems in the multimorbidity, sometimes there seems to be "good problems" and "bad problems"; as in the puppet theater: the good and the bad character. Or in certain novels: there would be "characters of" existence "who are those who have a destiny; in these health problems/diseases every moment is a function of the previous and the subsequent; it is an evolution or a meaningful time, because in it they are fulfilled certain values, a goal is pursued; its length runs; there are a Natural History of diseases. The existence health problems live in a time that leads to an outcome; it is the disease of avatar, of agony, of destiny; there is an end because you win or loses, heals or dies. In these health problems the doctor is always struggling to reach a destination that is victory or failure (9).

And on the other hand, "manifestation characters" who are the characters, who live a single experience that always repeats itself, they live in a consumptive time; the health problem is in itself - not in function of others; the evolution of those problems does not present any purpose; there is nor really evolution, but consumes its time. Charlot, for example is a character neither born nor dies; they are health problems that never change. As in Hollywood movies, in multimorbidity, perhaps it is possible tell from the beginning of the comorbidity trajectory, which problem will remain unchanged, no natural history; the "hero never dies" in the movie. Are they cancer or depression diseases of "character": its beginning is not clear, they have no end, they do not cure, but they remit, but they always remain? They only consume time?

It could be accepted that the whole process is embedded in the second law of thermodynamics, which predicts that, as a cup of hot coffee cools and never warms again, the universe thus tends to a similar state of disorganization; the evolution of independent diseases that are intertwined in the course of the accumulation of multimorbidity tends to disorganization. However, (¿random?) fluctuations occur ... and their effects can lead to new complexities and sudden reorganizations, such as escapes to a higher order. Internal disturbances of sufficient amount can lead to higher organizational states. When contradictions or conflicts increase in a patient ... there may finally be an "explosion" with a sudden change. As for example, persistent, intense and poorly controlled symptoms with correct treatment of a fibromyalgia, disappear, are attenuated or forgotten, when a cancer is added in that patient

So, the accumulation of health problems that leads to multimorbidity is a complex condition and can occur as a result of a genetic predisposition (a natural tendency), environmental or unknown factors. But, a certain history of the pathways of the accumulation of health problems to bequeath multimorbidity can be hypothesized. These multumorbility paths, at least, could be (10-15):

1. Causality, associations and links: Through a path of common origin (for example, many digestive diseases and related to the immune system are due to the accumulation of toxins in the intestine), or through a cortico-visceral or psychosomatic route (the origin of many diseases visceral is found in alterations of exteroceptive signaling); Through the accumulation of risk factors (for example, cardiovascular, age, hypertension, obesity, smoking and sedentary lifestyle, etc.); Through genetic bases (the accumulation of genetic and epigenetic alterations). It is a key causal process between the environment and diseases of complex etiology; Through molecular and biological links (for example, many of the multimorbidities of COPD are related to molecular and biological level, sharing genes, proteins and biological pathways); Through biopsychosocial links (pain in all its somatic manifestations and emotional disorders are linked; There are important links that are well established between health and living and psychosocial conditions, social and material circumstances.

2. Coincidences, series, synchronicities: it is the simultaneous occurrence of two events that are not causally connected.

3. Chance and rearrangement situations.

4. Due to our own interventions to solve other previous problems (such as pharmacological iatrogenesis with adverse drug reactions and drug-drug-interactions or surgical sequelae)

5. "Two diseases is better than one": on some occasions, suffering from several diseases is an advantage, improving the patient's clinical situation, compared to the situation of presenting those same non-associated diseases. For example, patients with sickle cell disease, are more resistant to its effects if concomitantly have a second disease, glucose deficiency 6-phosphate dehydrogenase disease; cystic fibrosis protects against typhoid fever; Tay disease -Sachs may have evolved to fight tuberculosis; Multiple infections can complicate immunity and treatment, although they can also provide an unexpected benefit for the patient, such as, for example, one organism suppresses the growth of another. Other organisms can act against each other. Bacteria, for example, are often quite aggressive around other bacteria to protect their territory, and a coinfection can suppress the growth of an organism; etc.

In summary, the clinical doctor and the epidemiologist regarding the appearance, evolution, accumulation and end of health problems and diseases that are arranged in groups forming multimorbidity in patients, are faced with the difference between the unexpected and what cannot be expected: what happens without being expected and what is not expected. The attempt to classify the character and destiny of multimorbidity can help to understand and address it.

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