

Original article

# What do we mean by multimorbidity? An analysis of the literature on multimorbidity measures, associated factors, and impact on health services organization

*Qu'entendons-nous par : « polypathologie chronique » ? Une analyse de la littérature des mesures, des facteurs associés et de l'impact sur l'organisation des soins de la polypathologie chronique*

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## Abstract

**Background.** – Multimorbidity is a consequence of both epidemiological and demographic transition. Unlike comorbidity, it currently has no consensus definition, making it difficult to assess its epidemiological and socioeconomic burden, to organize healthcare services rationally, and to determine the skills needed for patient self-reliance. The aim of this study is to define the spectrum of multimorbidity and to discuss current implications for the organization of care.

**Methods.** – Two independent readers analyzed the literature indexed in PubMed, Embase, CINAHL, and Scopus.

**Results.** – The bibliographic search conducted on July 16, 2013, retrieved 2287 articles (670 in PubMed, 666 in Embase, 582 in Scopus, and 369 in CINAHL). Of these, 108 articles were retained. Multimorbidity is designated by a variety of terms, none of them being MeSH terms. There is no single measure of multimorbidity, as this entity is usually studied for its functional or economic impact, rather than its causes. The prevalence varies considerably, depending on the measure used and the population studied. Factors associated with multimorbidity are age, gender, and socioeconomic characteristics of the populations studied. Studies evaluating the organization-of-care are inconclusive or insufficient.

**Conclusions.** – Multimorbidity serves as an avatar for the fundamental, recurrent problems of modern medicine and the organization-of-care. It may be defined by its causes or its consequences and reflects our concept of both individual health and its collective management. Tools that would allow a more appropriate measurement of this entity are available; we should use them to match medical reality to the needs of patients.

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**Keywords:** Multimorbidity; Multiple chronic conditions; Comorbidity

## Résumé

**Position du problème.** – La polypathologie chronique est une conséquence de la double transition épidémiologique et démographique. Distincte de la comorbidité, il n'en existe aujourd'hui aucune définition consensuelle, ce qui rend délicates l'évaluation de son poids épidémiologique et socio-économique, l'organisation raisonnée et adaptée des services de santé ou encore la détermination des compétences nécessaires à l'autonomie des patients. Le but de ce travail est de délimiter un spectre de la polypathologie chronique et d'en discuter les implications actuelles quant à l'organisation des soins.

**Méthodes.** – Analyse de la littérature référencée par PubMed, Embase, CINAHL et Scopus par deux relecteurs indépendants.

**Résultats.** – La recherche bibliographique a permis d'identifier 2287 articles au 16/07/2013 (PubMed : 670, Embase : 666, Scopus : 582, CINAHL : 369). Au total 108 articles ont été retenus. La polypathologie chronique est désignée sous différents termes, dont aucun n'est un terme MeSH. Il n'existe pas de mesure unique de la polypathologie chronique, cette entité étant plus souvent étudiée pour ses conséquences fonctionnelles ou économiques, non pour ses causes. Selon les mesures et les populations étudiées, la prévalence varie considérablement. Les

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facteurs récurrents associés à la polypathologie chronique sont l'âge, le sexe et les caractéristiques socio-économiques des populations. Les résultats des évaluations visant l'organisation des soins sont peu concluants ou les études présentent des insuffisances.

**Conclusion.** – La polypathologie chronique se pose comme un avatar des problèmes fondamentaux récurrents de la médecine moderne et de l'organisation des soins. Elle pose la question de sa définition, à partir de ses causes ou de ses conséquences, et renvoie à notre conception à la fois de la santé individuelle et de sa gestion collective. Il existe des outils permettant une mesure plus adaptée de cette entité, qu'il serait intéressant de mobiliser afin de marier réalité médicale et besoins des patients.

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*Mots clés :* Polypathologie chronique ; Comorbidité

## 1. Introduction

Most countries that have started or completed their demographic transition are experiencing an epidemiological transition as well. The growing burden of chronic illness [1,2] on a country's healthcare system, social services, and economy can no longer be ignored [3,4].

The effort to rationalize care and healthcare costs has produced a plethora of best practice guidelines on specialized care for the main chronic diseases, established independently from one another [5], with which specialists to consult and which tests and investigations to arrange for. This is, however, an idealized version of reality; chronic diseases rarely occur in isolation, especially as life expectancy increases and people acquire a growing number of illnesses [6]. Treating each of a person's chronic diseases separately basically sums the individual costs, which is suboptimal at best. It is therefore no longer a matter of chronic versus acute disease, but more likely of multiple chronic diseases, or multimorbidity. At a minimum, multimorbidity is defined as the co-occurrence of at least two chronic conditions in the same person.

In a context in which we wish to foster patients' self-reliance with respect to their diseases and the healthcare system, multimorbidity is a challenge. While some recent studies have attempted to formalize complex interventions, including self-management support programs [7], the majority of therapeutic patient education (TPE) programs are designed for a single disease. As pointed out by d'Ivernois and Gagnayre (2013) [8], there are currently no operative therapeutic education models for people with several chronic diseases, given that education cannot be obtained by adding together different existing "single-disease" programs. We know, for example, how to educate a diabetic patient, a chronic bronchitis patient, and a hypertensive patient, but we do not know, in practical terms, how to educate a patient with all three diseases. The difficulty is in identifying, out of all of the skills the patient has to master, which of his various diseases should take priority, and assembling the educational sequences accordingly.

Numerous studies over the past 20 years have shown that multimorbidity represents a significant problem, reporting high prevalence and incidence, high costs and inadequate healthcare services. Evaluating its importance in terms of public health, however, remains difficult. The problem, as much for researchers as for clinicians and patients, is further complicated by the fact that the concept of multimorbidity probably differs from the concept of comorbidity. Following Feinstein [9], van

den Akker et al. [10] suggest keeping the term "comorbidity" when talking about a disease of interest – or "index disease" – for which there are coexisting conditions that are not necessarily complications of the index disease, called comorbidities. Multimorbidity then designates all situations in which several conditions coexist, but none of them takes precedence over the others – that is, situations in which there is no index disease. Researchers are still divided as to the conceptual differences between multimorbidity and comorbidity, and it is not at all rare – especially in the United States – to see comorbidity used when talking about multimorbidity.

Given the variety of approaches and results dealing with comorbidity and multimorbidity, as reported in the literature, we sought to answer the following question: what do we currently mean by "multimorbidity"? Defining the boundaries of a nosological entity that has no unambiguous definition involves documenting not just the measures (i.e. the practical and operational definitions) used to approach it, but also the related available epidemiological data and the factors frequently identified as being associated with it. We decided to look at the literature indexed in various medical databases in order to try to answer this question. Based on the information obtained, we also propose to discuss the current organization-of-care issues relating to multimorbidity.

## 2. Methods

Our methodology is based on a study by Vogeli et al. (2007 [11]), presented as a semi-structured literature review consisting in a two-step bibliographic search: an initial search targeting the heart of the subject (for Vogeli, articles identified in PubMed with the MeSH terms "chronic diseases" and "comorbidity"), and then a second search based on the articles identified in the first step, this time targeting more specific characteristics (for Vogeli, for example: prevalence, access to care, mortality rate, and healthcare expenditures).

In order to collect material for analysis, we did a primary search on the PubMed database on July 16, 2013, using the following search string: "multipathology" [Title/Abstract] or "pluripathology" [Title/Abstract] or "multiple chronic conditions" [Title/Abstract] or "multimorbidity" [Title/Abstract] or "polymorbidity" [Title/Abstract]. From this first set we kept articles written completely in English, but not those in which only the abstract was in English, to ensure a uniform level of comprehension of the articles.

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