



SPECIAL ARTICLE

Artículo bilingüe inglés/español

Life medicalization and the recent appearance of "pharmaceuticalization"

La medicalización de la vida y la reciente emergencia de la "medicamentación"

Ricard Meneu

Fundación Instituto de Investigación en Servicios de Salud, Valencia, Spain.

Author of correspondence

Ricard Meneu
San Vicente 112-3º. Valencia 46007

Correo electrónico:
ricard.meneu@gmail.com

Recibido el 28 de abril de 2018;
aceptado el 28 de mayo de 2018.

DOI: 10.7399/fh.11064

Abstract

Medicalization is a concern to which we have been paying attention intermittently for the past half century. However, it is increasingly difficult to look away from its multiple and ubiquitous manifestations, and therefore there is an increasingly higher number of analysis and studies about them, from the most varied perspectives, not only by healthcare literature, but also with the great contribution by social sciences such as Anthropology or Sociology.

Based on previous publications, this article offers an updated review on life medicalization in the European setting, highlighting particularly those situations where a medication is the main vehicle for medicalization. This demands a careful exploration of the "pharmaceuticalization" concept, which appeared in the past decade, and which many of the research projects with these characteristics intend to embrace.

The decentralized nature of the decisions on diagnosis and treatment requires an agreement of healthcare professionals on the presumed benefits of certain therapeutic interventions as key factor to the expansion of medicalization. Even so, there are multiple interactions and synergies between incentives and economic interests in the medicalization process, as well as bias in the generation of knowledge, the training for professionals, their need to cope with patient expectations, progressively overcoming their resolution capacities, and the mechanisms for structuring said expectations. A better understanding of the dispositifs that promote medicalization (the strategy without a strategist that becomes visible through its cumulative outcome, but is less clearly seen by the different agents, sometimes contradictory, working through it) is essential in order to limit its most undesirable expansions.

Resumen

La medicalización es una preocupación a la que prestamos atención intermitentemente desde hace medio siglo, pero cada vez resulta más difícil apartar la mirada de sus múltiples y ubicuas manifestaciones. Los análisis y estudios sobre este fenómeno son cada vez más abundantes y adoptan perspectivas más variadas, no solo desde la literatura de matriz sanitaria sino también con importantes contribuciones de las ciencias sociales como la antropología o la sociología.

A partir de trabajos previos se aporta una revisión actualizada sobre la medicalización de la vida en el entorno europeo, con especial énfasis en aquellas situaciones en las que un medicamento es el principal vehículo de la medicalización. Ese énfasis obliga a explorar atentamente el concepto de "medicamentación" surgido en la década pasada, y al que se pretenden acoger muchas de las investigaciones de esas características.

El carácter desconcentrado de las decisiones sobre diagnóstico y tratamiento exige para la extensión de la medicalización la anuencia de los sanitarios sobre los beneficios de las intervenciones terapéuticas. Aun así, en el proceso de medicalización las interacciones y sinergias son múltiples entre los incentivos e intereses económicos, los sesgos en la producción del conocimiento, la formación de los profesionales, su necesidad de lidiar con las expectativas de los pacientes, progresivamente alejadas de las capacidades de resolución de aquellos, y los mecanismos de conformación de dichas expectativas. Una mejor comprensión de los dispositivos que propician la medicalización –la estrategia sin un estratega que se hace visible a través de su resultado acumulativo, pero es vista con menos claridad por los diversos agentes, a veces contradictorios, que trabajan a través de él– resulta imprescindible para limitar sus extensiones más indeseables.

KEYWORDS

Medicalization; Pharmaceuticalization; Overutilization; Overdiagnosis; Overtreatment; Agents; Drivers.

PALABRAS CLAVE

Medicalización; Medicamentación; Sobreutilización; Sobrediagnóstico; Sobretratamiento; Agentes; Motores.



Los artículos publicados en esta revista se distribuyen con la licencia
Articles published in this journal are licensed with a
Creative Commons Attribution 4.0
<https://creativecommons.org/licenses/by-nc-nd/4.0/>
La revista Farmacia no cobra tasas por el envío de trabajos,
ni tampoco por la publicación de sus artículos.

Introduction

Medicalization is a concern to which we have been paying attention intermittently for the past half century. However, it is increasingly difficult to look away from its multiple and ubiquitous manifestations, and therefore there is an increasingly higher number of analysis and studies about them. It is enough to confirm that over 1,500 articles in PubMed include this concept in their titles or abstracts (of these, almost 500 in the title), and 70% of these articles have been published in this century. And this account considers only the health literature, and omits the great contribution of social sciences such as anthropology or sociology, of which Google Scholar offers thousands of references.

On the basis of a previous publication¹, this article intends to offer an updated review on life medicalization in the European setting, highlighting particularly those situations where a medication is the main vehicle for medicalization. This demands a careful exploration of the "pharmaceuticalization" concept, which appeared in the past decade, and which many of the research projects with these characteristics intend to embrace.

Medicalization: some historical background

In a previous article, repeatedly quoted, we already addressed the evolution of the increasing life medicalization; 15 years later there have been no major qualitative changes, only quantitative. Half a century ago, the criticism of medicalization appeared in healthcare discussions, and enjoyed a brief moment of dubious centrality. Although some of the elements of this criticism enjoyed a long tradition, it also merged very different visions and divergent interpretations.

In the social imaginary, the criticism of medicalization is inextricably linked with the name of Ivan Illich and the publication of his *Medical Nemesis*², even though this work did not choose Medicine as its topic, but as an example. *Medical Nemesis* started by claiming: "*The medical establishment has become a major threat to health*". What seemed radical in 1974 has become, to some extent, conventional today. In one of his latter texts, Illich stated that 25 years later he would have started by writing: "*In developed countries, the obsession to have perfect health has become the prevailing pathogenic factor*"³. This is a clear sign of the shift occurring on the driver of medicalization.

In our previous work referenced¹, we put forward an almost comprehensive overview of the factors that contribute to the increasing phenomenon of medicalization, which demanded an initial look towards health providers, both professionals and medical-pharmaceutical companies, without leaving out the important role played by the industry of communication. Even so, it was acknowledged that any analysis would be incomplete if it did not include the trends noticed in the population and the answers provided by those in charge of healthcare policies and management. Currently, some of the main factors usually mentioned in the evolution of medicalization include wellness obsession, pharmaceutical industry, statistical and research saturation, media, Internet, and in the professional setting, lawsuits, or rather fear of lawsuits⁴.

A competent updated history of the studies on medicalization and their different perspectives can be found in a recent article by Joan Busfield⁵, which led to a clarifying controversy with some defenders of "pharmaceuticalization". The fact is that during the past decade we have seen the development of approaches intended to exceed or extend the paradigm of medicalization, and "pharmaceuticalization"⁶, "biomedicalization"⁷ and "geneticization"⁸ appear as particularly interesting. Given that a major part of the differences between these approaches lie in their definitions, it will be convenient to conduct a previous review of those used in the setting of health sciences, before exploring the conceptualizations arising from social sciences.

At the start of this century, public health dictionaries defined medicalization as the way in which the modern medicine setting has expanded in recent years, and now covers many problems which previously were not considered medical entities⁹. The expansion of the medicalization areas can explain the multiple definition adopted by the last edition of the dictionary by the International Epidemiological Association¹⁰: "*The process by which conditions, processes, or emotional states traditionally considered nonmedical are redefined and treated as medical issues. The process of identification and labeling of a personal or social condition as a medical issue subject*

to medical intervention. The expansion of the influence and authority of the health professions and industries into the domains of everyday existence".

But no definition can capture its whole semantic field. Most literature on medicalization still comes from social sciences, while healthcare articles usually prowl the matter by addressing concepts which are associated but not identical, such as healthcare services overuse, overdiagnosis^{11,12} and overtreatment¹³. There is a relationship between the concepts of overdiagnosis and medicalization, but they are not the same, and there is an ambiguous association between them, because medicalization is partly derived of overdiagnosis in medical consultations¹⁴. Both medicalization and overdiagnosis lead to more people being ill, that is to say, more people are classified as ill, and therefore, more people are feeling ill. Both concepts play an essential role in the criticism of modern medicine, and they also present similar moral reactions, because they are considered unnecessary, useless or even harmful¹². Medicalization and overdiagnosis also share the fact that they are not easy to operationalize. Medicalization is a qualitative term which, in a wide sense, cannot be measured; but even though overdiagnosis is *a priori* quantifiable and measurable, practical difficulties will question this notion, because it can only be estimated or measured indirectly, and there is no consensus regarding its adequate measurement.

Peter Conrad, one of the pioneers in Health Sociology, points out that medicalization occurs mainly around deviation and "everyday life events", including a wide range of our society, and covering wide areas of human life¹⁵. Among other categories, the medicalization of deviation already includes eating disorders, sexual and gender differences, sexual dysfunction, learning difficulties, or child and sexual abuse, going beyond alcoholism, mental disorders or addictions to illegal drugs. It has also generated various new categories, such as Attention Deficit Hyperactivity Disorder (ADHD), premenstrual syndrome, post-traumatic stress disorder, or chronic fatigue syndrome. Thus, behaviours that were once defined as immoral, sinful or criminal have now received a medical meaning that has taken them to the setting of illness. But an increasing number of common life processes have also become medicalized, including anxiety and different moods, menstruation, birth control, infertility, childbirth, menopause, ageing and death.

All this growth is not only the result of medical colonization or the manifestation of a logical business interest for maximising their number of clients. Parallel to this, there has been a reduction in the tolerability of the public to mild symptoms, promoting a "progressive medicalization of physical anxiety where body discomforts and isolated symptoms are reclassified as diseases"¹⁶. Different social movements, patient organizations and individual patients have also acted in this development as major defenders of medicalization¹⁷. In recent years, corporate entities such as the pharmaceutical or health technology industry, as well as potential patients and users, have started to play increasingly relevant roles within medicalization.

This change in the concept of health has finally led to redefine a series of many conditions that were previously considered social phenomena or psychological situations. Different readings of Foucault theories on knowledge¹⁸ and power¹⁹ have highlighted the need to demonstrate the complex relationship between the biomedical claim on the "true" and "neutral" nature of knowledge about the body and the power procedures and discussion practices which orientate its implementation. The way in which the body and its processes are perceived has little relationship with an intended objective reality. Once it is assumed that disease is strictly a social construction rather than a questionable physical "reality", it is easy to understand the reason why such varied problems as shyness, male menopause, chronic fatigue syndrome, occupational failure, lack of attention, marital disagreement, fibromyalgia, or binge eating disorder have become medical disorders with all their implications.

Medicalization as a concept has changed from an essentially sociological notion to being used by a wide range of academic disciplines. It is possible to read studies on medicalization by historians, anthropologists, physicians, bioethicists, economists, literature academics, communication researchers, feminist academics, and many others. The concept carries analytical weight in a wide range of disciplines²⁰. Undoubtedly, among the vast array of studies on medicalization, the most interesting for *Farmacia Hospitalaria* readers are those dealing with the use of medications and their conditions of circulation. There are numerous examples in this area; the ones that stand out are the literature on the late and explosive use of products such as Ritalin® (methylphenidate) for ADHD treatment, medication associa-

ted to conditions such as Alzheimer's Disease (AD) and mild cognitive deterioration (MCD), arthritis, bipolar disorder, depression, erectile dysfunction and premature ejaculation, insomnia, psychosis or schizophrenia. Recently, a renowned study by Courtney Davies²¹ has represented a valuable contribution, by trying to measure and evaluate the nature and scope of an excessive pharmacological treatment for patients with advanced metastatic solid tumours.

This wide range and complexity can partly explain the recent trend to detach a new label (a new "wise discourse") from the medicalization frame: "pharmaceuticalization".

The recent emergence of "pharmaceuticalization"

Until the past decade, limited sociological attention had been paid to pharmaceutical products²². The pioneer studies, a minority on the field of medicalization, focused on some type of medications, such as minor sedatives^{23,24} or on specific drugs such as Opren® (benoxapropfen) or Halcion® (triazolam)^{25,26}. Typically, the analysis framework for these studies was linked to matters such as medicalization and social control²⁷.

Things changed with the new millennium. In the synthesis of his long career, Peter Conrad²⁸ already stated that pharmaceutical companies have become so important that they have displaced physicians as the main drivers for the medicalization process. But while Conrad and many others believes that medicalization can incorporate such developments, others have argued that a new concept is needed to capture the growing importance of pharmaceuticals as a specific form of medicine, within and beyond medicalization. This has been called "pharmaceuticalization".

The term originally proposed –"pharmaceuticalization"– though it is reasonable to translate it into Spanish as "*farmaceutización*" or "*farmaceutización*", in this paper it has been preferred to use the term "*medicalización*", because its attention is focused on medicines, medications, beyond the specific study of the strategies, behaviours and interests of pharmaceutical industries. The term "pharmaceuticalization" was used for the first time in the Anthropology setting, around 1989; it was defined as "*a term that designs the appropriation of human problems by medicines, (which) can be differentiated from medicalization, where appropriation by the medical profession confers the power of monopoly and increases social control on human experience settings*"²⁹. This is clearly an unjustified extension, given the strict interpretation applied to the medicalization concept.

In the past decade, the term was imported by Sociology, particularly in the studies by Abraham³⁰, using it as "*the process by which social, behavioural or bodily conditions are treated or deemed to be in need of treatment, with medical drugs by doctors or patients*". More recently, some Health Sociologists, defenders of the "pharmaceuticalization" specificity, have defined it as "*the translation or transformation of human conditions, capabilities and capacities into opportunities for pharmaceutical intervention*"³¹. One of the key differentiators between these two definitions is that the second is wider, because it acknowledges the role of pharmacological interventions both for medical and non-medical reasons³². In other words, it suggests that it is not only restricted to the use of pharmaceutical products by physicians or patients for treatment goals, but that it must also consider its use outside the medical authority setting, for lifestyle or improvement reasons.

In this wider definition, "pharmaceuticalization" can also be applied to the use of pharmaceutical products to address problems currently outside medical practice, such as some medications for lifestyle, or the use of nicotine replacement therapies as chewing gums or electronic cigarettes³³. This supposedly wider view is not at all as new or controversial as the debates between these authors might suggest. Ivan Illich already pointed out, long before our current obsession with medications associated to lifestyles, that pharmaceutical products don't require physicians and hospitals in order to impregnate the society, and that not even the majority of "poisons", "remedies" and "placebos" are necessarily targeted to patients^{34,35}.

The champions of "pharmaceuticalization"³⁶ try to reject the idea that said concept does not offer an adequate alternative to the concept of medicalization or reduces its utility, by insisting in the fact that not all medicalization cases involve "pharmaceuticalization", and not all "pharmaceuticalization" cases involve medicalization. For this, they appeal to the usual definition by Peter Conrad, which they read with little open-mindedness:

"Medicalization describes a process by which nonmedical problems become defined and treated as medical problems, *usually* (emphasis added) in terms of illness and disorders"³⁷. And they intend to give examples with the "pharmacological improvement" practices conducted by healthy individuals, in situations that are not considered pathological. This approach has been objected to by the traditional Health Sociology³⁸, even pointing out that it first precedent, Irving Zola, defined medicalization as the process of "making medicine and the labels "healthy" and "ill" relevant to an ever increasing part of human existence"³⁹.

The question to be answered is whether the adoption of "pharmaceuticalization" will help to capture major changes that the medicalization concept cannot make, or on the contrary, it can be subsumed in the general framework of medicalization. Abraham argues that there are significant differences between both: the first one is that there can be changes between treatment regimens in a condition already medicalized, for example a switch from psychotherapy to drugs, and this does not involve the transformation of a non-medical problem into a medical problem. Another one is that medications can be bought without the need for prescription by physicians³⁰. But as Busfield points out⁵, a switch between treatment regimens does not require in itself the introduction of a new concept, because they will still be considered therapeutic. And regarding self-medication, ultimately the legitimacy of a medication depends on the "imprimatur" of Medicine shown in the common denomination of drugs as "medications".

Finally, this new discourse on "pharmaceuticalization", which has become increasingly visible in Social and Health Sciences and Medicine, exaggerates its "novelty" in a struggle to highlight its specificities, and neglects or ignores the impact of previous criticism to the role of pharmaceutical products in daily life, criticism that at least dates from half a century ago⁴⁰. Certainly this concept of the contingency of "medical authority" has already been covered in the previously quoted definition by the IEA: "*The expansion of the influence and authority of the health professions and industries into the domains of everyday existence*". Because the studies on medicalization had become independent from medical studies a long time ago, as well as from those approaches concerned by the so-called "medical power".

Some examples of situations in which medications are the vehicle for medicalization

Probably those situations where more multidisciplinary penetrating looks at medicalization processes have coincided are those where the marketing of a new drug has been associated with the creation, modification, or reformulation of the pathological condition to be solved. It exceeds the length of this study to draw the genesis of the varied literature about the social construction of erectile dysfunction⁴¹, the Female Sexual Arousal Disorder (FSAD)⁴², menopause⁴³, premature ejaculation⁴⁴, etc.

The processes for the redefinition of the normality thresholds for the values in different diagnostic tests, with the subsequent epidemiological explosion of population affected, have also become an area of special interest. As an example, we can mention the noticeable controversy⁴⁵ about cholesterol guidelines for treatment initiation as primary prevention in low-risk individuals, regarding its evidence basis and its conflicts of interest with the pharmaceutical industry. In these cholesterol guidelines, to as in many other clinical guidelines, the dependence on ACE inhibitors and the notorious conflicts of interest have shown the limitations of the evidence used for recommendations. Based on this troublesome evidence, clinical guidelines have extended the disease thresholds and claimed higher intervention, frequently pharmaceutical; therefore it is necessary to research and find out if guidelines are offering a higher gain in prevention or in medicalization.

This kind of conflicts also appears when faced with the changes in the definitions of many conditions candidates for pharmacological treatment. The recent issue of the DSM-V (the latest version of the mental condition map) has raised the alarm about the huge increase in the number of persons now included in some of them, particularly those labelled as ADHD or depression patients. There is minimum research evidence to support the biological origin of a great number of common disorders such as depression, anxiety disorders, schizophrenia, or childhood problems such as behavioural disorders, Attention Deficit and Hyperactivity Disorder (ADHD), childhood bipolar disorder, challenging behaviours or tantrums. Said disorders become medicalized when it is claimed, without any supporting research evidence,

that they are caused by genetic deficiencies, chemical unbalances, or other biological phenomena⁴⁶.

The case of the Attention Deficit and Hyperactivity Disorder (ADHD) is included in this line of research: it is considered strongly medicalized in the United States since the 60s decade, and it has been the object of one of the classical studies on medicalization⁴⁷. Since the 90s decade, its diagnosis and treatment has extended at international level. Through the analysis of the use and expansion of ADHD in different countries, including the United Kingdom, Germany and France, the authors of pioneer research have identified and described various drivers that have encouraged the displacement of ADHD diagnosis: the international pharmaceutical industry, the influence of Western Psychiatry, the application of the ICD (International Classification of Diseases) to the diagnostic criteria of consecutive versions of the DSM (Diagnostic and Statistical Manual of Mental Disorders), the role played by Internet, with the development of on-line check-lists easy to access, as well as the action of advocacy groups⁴⁸.

Different studies have analyzed the influence of the pharmaceutical industry on the definition of what represents depression⁴⁹, generally by funding the research projects of those experts involved in preparing the DSM V (current DSM version, *vide supra*). But these are not the only agents with interests potentially conflictive; the relationships between the advocacy groups for certain conditions and the reviewers of manuals and guidelines are equally troublesome, though more neglected; these have also been studied⁵⁰.

The situations where it is questioned if we are faced with the treatment of a pathological condition or a process for medicalized "improvement" are highly appealing for these research studies. Thus, a biologic medication such as the human growth hormone (hGH) can be studied as the basis for case studies on the configuration of low height in childhood as a niche for pharmaceutical intervention. Accepting that the human growth hormone has legitimate applications for the treatment of its deficiency or low height associated with other conditions acknowledged, at the same time it can be considered as a way of biomedical human improvement when applied to children with idiopathic or "normal" low height⁵¹. In addition to the debate regarding whether the treatment of idiopathic low height is an improvement or not, its study allows to assess how some applications of hGH for the treatment of low height have been accepted and stabilized as legitimate "therapies", while other similar uses are still controversial and considered "enhancements"⁵².

Among the areas of study on medicalization associated to the increasing use of drugs in recent years, the exploration of the drivers and consequences of the expansion of the use of medications for treatment of patients with advanced metastatic solid tumours has become particularly relevant. The articles by Courtney Davis stand out, incorporating the literature review on recent evaluations of the clinical benefits offered by new medications against cancer, an evaluation of these benefits in the context of studies on the expectations and preferences of patients, and a review of the research analyzing the effects of chemotherapy expansion at the end of life. It is argued with these elements²¹ that, taken as a whole, these evidences pose significant doubts about the credibility of the biomedical explanations for a higher use of chemotherapy in patients with terminal disease.

A subsequent review by Davis⁵³ on the evidence for benefits supporting the increasing use of these drugs shows that the European Medicines Agency (EMA) approved between 2009 and 2013 the use of 48 medications against cancer for 68 indications. At the time of marketing approval, 24 of these 68 (35%) presented a significant prolongation of survival. At the time of marketing approval, for 24 of the 68 (35%) indications, there was a significant prolongation of survival.

At the time of its approval, 7 of 68 indications (10%) showed an improvement in the quality of life.

Of those 44 indications for which there was no evidence of survival gain at the time of marketing authorization, there was evidence of survival prolongation in three (7%) and informed benefit on quality of life for five (11%). The extent of the benefit on overall survival varied from 1.0 to 5.8 months (median 2.7 months). Of the 68 cancer indications approved by the EMA in the 2009-13 period, and with a median follow-up of 5.4 years (minimum 3.3 years, maximum 8.1 years), only 35 (51%) showed significant improvement in survival or quality of life vs. alternative treatment options, placebo, or as a treatment complement.

Even though this increasing use can be partially explained, undoubtedly, by pharmacological advances and improvement in patient care, evidence can also be found about an inadequate and excessively aggressive use of these therapies, leading to a review of the empirical research conducted in U.S.A. and Europe, shedding light on the main factors that model expectations and drive to an excessive "pharmaceuticalization". Thus, a generalized overestimation of the benefits of chemotherapy seems to have impact on the willingness of patients to undergo treatment. A study on patients with metastatic disease who had already received a median 6 months of chemotherapy⁵⁴ showed that 88% of them reported that they would receive treatment again. However, when they were asked to specify the minimum gain required in order to repeat therapy, the mean thresholds of survival required by participants were 18 months for patients with non-colorectal cancer and 36 months for patients with colorectal cancer. Therefore, even though the majority of patients would repeat chemotherapy, this decision was based on the expected benefits, that exceeded largely the real survival gains offered by treatments against cancer in the context of this disease.

The dissonance promoted by the insufficient or biased information received by participants is a matter that still has been analyzed to a low extent, even though the increasing studies on behavioural economics⁵⁵ point at results certainly innovative. Besides, recent studies show that there is lack of balance in the information spread by mass media, both general and professional^{56,57}; the overall rule is to exaggerate the benefits of new medications against cancer. Moreover, information on cancer research prioritizes pharmacological treatments and excludes other therapeutical options⁵⁸.

More research, and a better understanding of the systematic biases and trends in mass media when informing on healthcare matters, could lead to separate another area of study from medicalization, to be added to "pharmaceuticalization": the "media-calization". This "media-calization" would be defined as those population orientations towards concepts and preferences inconsistent with the knowledge available and the values of affected decisors, due to the generalized influence of mistaken, biased or exaggerated information spread by mass media. One need only think of the countless allegedly scientific stories published daily that lead to create unreasonable expectations about some therapeutic options, that magnify alleged "revolutionary breakthroughs", or that introduce groundless concerns about minor problems or certain lifestyles that will become the object of a concern to some extent medicalized.

In fact, even in the majority of countries where Direct-to-Consumer (DTC) advertising of medications is forbidden, it has been pointed out that the analysis of advertising might need to be extended to real-life practices used by pharmaceutical companies. For example, DTC advertising is forbidden in Sweden, like in the rest of Europe; however, there are reasons to believe that this prohibition only works partially. The industry-supported websites for information on diseases sometimes suggest unabashedly the use of pharmaceutical solutions. Sometimes, media reports about new medications can be read as press releases by the industry³⁵. Therefore, in the European setting, the regulation of DTC advertising is not meeting its objectives adequately.

Some ideas to restrict an excessive medicalization

The research lines and the perspectives that these can adopt in the study of medicalization phenomena are wide, varied and overall productive. But it is necessary to have more and better knowledge about these dynamics; therefore, the main contribution to be expected from healthcare professionals is a greater involvement in modulating, at least, some of the obvious excesses currently taking place. The vicious circle established between economic interests, biases in knowledge creation, professional training, their need to cope with patient expectations increasingly overcoming their resolution capacities, and the mechanisms shaping said expectations, get twisted into a Gordian knot that seems impossible to untie and dangerous to cut.

But no matter how excessive these expectations by the population might be, sometimes irresponsibly encouraged by the health system and the media: the main agents of medicalization will necessarily be the healthcare professionals. The decentralized nature of decisions on diagnosis and treatment demands an agreement among healthcare professionals on the presumed benefits of certain therapeutic interventions. Even though, there are multiple interactions and synergies in the medicalization process, and

healthcare professionals also experience some fascination by new technologies, and even by new diseases.

A complementary explanation for the willingness of professionals to accept almost any new clinical entity should take into account their particular situation regarding the changing status of knowledge and the expectations and demands by users. They are trapped between an inner doubt about their real resolution capacities and an increasing social pressure that demands answers and trusts that science will prevent even the unpreventable. That is probably why "risk" has become a prevalent disease, demonstrated by the fact that preventive drugs are among the main products on the rise. Their use keeps extending, even though there are disagreements among clinical practice guidelines, and the low extent of their benefits at individual level, even in those persons with higher risk.

Bibliography

- Márquez S, Meneu R. La medicalización de la vida y sus protagonistas. *Gest Clin Sanit.* 2003;5(2):47-53. Disponible en: <http://www.index-f.com/campus/ebe/ebe2/medicalizacion-gcs.pdf> (accessed April 14, 2018)
- Illich I. *Medical Nemesis. The Expropriation of Health.* London: Calder & Boyars; 1975.
- Illich I. L'obsession de la santé parfaite. *Le Monde diplomatique*, mars 1999; pp. 28-. Available at: <http://www.monde-diplomatique.fr/1999/03/ILlich/11802> (accessed April 14, 2018)
- Birrer RB, Tokuda Y. Medicalization: A historical perspective. *J Gen Fam Med.* 2017;18:48-51.
- Busfield J. The Concept of Medicalisation Reassessed. *Social Health Illn.* 2017;39(5):759-74.
- Faraone S, Barcala A, Bianchi E, Torricelli F. La industria farmacéutica en los procesos de medicalización / medicamentación en la infancia. *Rev Electr Margen.* 2009;54. Disponible en: <http://www.margen.org/suscri/margen54/faraone.pdf> (accessed April 14, 2018)
- Clarke AE, Shim JK, Mamo L, Fosket JR, Fishman JR. Biomedicalization: Technoscientific Transformations of Health, Illness, and U.S. Biomedicine. *Am Sociol Rev.* 2003;68(2):161-94.
- Arribas-Ayllon M. After geneticization. *Soc Sci Med.* 2016;159:132-9.
- Kishore J. *A dictionary of Public Health.* New Delhi: Century Publications; 2002.
- Porta M. Ed. *A dictionary of epidemiology* (Sixth edition). New York: OUP; 2014. Disponible en: <http://irea.ir/files/site1/pages/dictionary.pdf> (accessed April 14, 2018)
- Welch HG, Schwartz L, Woloshin S. *Overdiagnosed: Making people sick in the pursuit of health.* Boston: Beacon Press; 2011.
- Hofmann B. Medicalization and overdiagnosis: different but alike. *Med Health Care Philos.* 2016;19(2):253-64.
- Brownlee S. *Overtreated. Why Too Much Medicine Is Making Us Sicker and Poorer.* New York: Bloomsbury Publishing; 2007.
- Van Dijk W, Faber MJ, Tanke MAC, Jeurissen PPT, Westert GP. Medicalisation and Overdiagnosis: What Society Does to Medicine. *Int J Health Policy Manag.* 2016;5(11):619-22.
- Conrad P, Schneider JW. *Deviance and Medicalization: From Badness to Sickness.* Philadelphia: Temple University Press; 1992.
- Barsky AJ, Borus JF. Somatization and Medicalization in the Era of Managed Care. *J Am Med Assoc.* 1995;274:1931-4.
- Broom DH, Woodward R. Medicalisation reconsidered: toward a collaborative approach to care. *Soc Health Illn.* 1996;18(3):357-78.
- Foucault M. *Power, Truth, Strategy.* Sidney: Feral Publications; 1979.
- Foucault M. *Power/Knowledge. Selected Interviews and Other Writings 1972-1977.* New York: Pantheon Books; 1980.
- Conrad P. Foreword. In: Bell SE, Figert AE. Eds. *Reimagining Bio-Medicalization, Pharmaceuticals and Genetics- Old Critiques New engagements.* London: Routledge; 2015.
- Davies C. Drugs, cancer and end-of-life care: a case study of pharmaceuticalization? *Soc Sci Med.* 2015;131:207-14.
- Gabe J, Williams S, Martin P, Coveney C. Pharmaceuticals and society: Power, promises and prospects. *Soc Sci Med.* 2015;131:193-8.
- Cooperstock R, Lennard H. Some social meanings of tranquilliser use. *Social Health Illn.* 1979;1(3):331-47.
- Gabe J, ed. *Understanding Tranquilliser Use.* London: Routledge; 1991.
- Abraham J, Sheppard J. *The Therapeutic Nightmare.* London: Earthscan; 1999.
- Gabe J, Bury M. Halcion nights: a sociological account of a medical controversy. *Sociology.* 1996;30:447-69.
- Koumjian K. The use of valium as a form of social control. *Soc Sci Med.* 1981;15(3):245-9.
- Conrad P. *The medicalization of society. On the transformation of human conditions into treatable disorders.* Baltimore: The Johns Hopkins University Press; 2007.
- Nichter M. Pharmaceuticals, the commodification of health, and the health care-medicine use transition. In: Nichter M, Nichter M, eds. *Anthropology and International Health: Asian Case Studies.* London: Routledge; 2003;268-333.
- Abraham J. Pharmaceuticalization of society in context: theoretical, empirical and health dimensions. *Sociology.* 2010;44:603-22.
- Williams S, Martin P, Gabe J. The Pharmaceuticalisation of Society? A Frame for Analysis. *Social Health Illn.* 2011;33(5):710-25.
- Williams S, Martin P, Gabe J. Evolving sociological analyses of 'Pharmaceuticalisation': a reply to Abraham. *Social Health Illn.* 2011;33(5):729-30.
- Elam M. Pharmaceutical Incursion on Cigarette Smoking at the Birth of the Brain Disease Model of Addiction. In: Netherland J, ed. *Critical Perspectives on Addiction: Advances in Medical Sociology.* London: Emerald Press; 2012.
- Illich I. *Limits to Medicine/Medical Nemesis: The Expropriation of Health.* London: Marion Boyars; 1976.
- Johnson E, Sjögren E, Åsberg C. *Glocal Pharma. International brands and the imagination of local masculinity.* London: Routledge; 2016.
- Williams SJ, Coveney C, Gabe J. The concept of medicalisation reassessed: a response to Joan Busfield. *Social Health Illn.* 2017;39(5):775-80.
- Conrad P. *The medicalization of society: On the transformation of human conditions into treatable disorders.* Baltimore: Johns Hopkins University Press; 2007.
- Busfield J. The concept of medicalisation reassessed. *Social Health Illn.* 2017;39(5):759-74.
- Zola IK. Medicine as an institution of social control. *Social Rev.* 1972; 20:487-504.
- Greene JA. *Vital Objects: Essential Drugs and Their Critical Legacies.* In: Bell SE, Figert SE, eds. *Reimagining (Bio)Medicalization, Pharmaceuticals and Genetics: Old Critiques and New Engagements.* New York: Routledge; 2015.
- Fishman J. The making of Viagra: the biomedicalization of sexual dysfunction. In: Clarke A et al., eds. *Biomedicalization: technoscience, health and illness in the U.S.* Durham: Duke University Press; 2010.
- Moynihan R, Mintzes B. *Sex, lies and pharmaceuticals: how drug companies plan to profit from female sexual dysfunction.* Vancouver: Greystone; 2010.
- Krieger N, Löwy I, Aronowitz R, et al. Hormone replacement therapy, cancer, controversies, and women's health: historical, epidemiological, biological, clinical, and advocacy perspectives. *J Epidemiol Community Health.* 2005;59:740-74.
- Söderfeldt Y, Droppe A, Ohnhäuser T. Distress, disease, desire: perspectives on the medicalisation of premature ejaculation. *J Med Ethics.* 2017;43(12):865-6.
- Unruh L, Rice T, Vaillancourt Rosenau P. The 2013 cholesterol guideline controversy: Would better evidence prevent pharmaceuticalization? *Health Policy.* 2016; 120(7):797-808.
- Wyatt W. Medicalization of Depression, Anxiety, Schizophrenia, ADHD, Childhood Bipolar Disorder and Tantrums: Scientific Breakthrough, or Broad-Based Delusion?. *Post N Med.* 2013;26(1):10-21.
- Conrad P. *Identifying hyperactive children: the medicalization of deviant behavior.* Lexington: Lexington Books; 1976.

Funding

No funding.

Conflicts of interest

No conflicts of interests.

48. Conrad P, Bergey MR. The impending globalization of ADHD: Notes on the expansion and growth of a medicalized disorder. *Soc Sci Med*. 2014;122:31-43.
49. Cosgrove L, Krinsky S. A Comparison of DSM-IV and DSM-5 Panel Members' Financial Associations with Industry: A Pernicious Problem Persists. *PLoS Med*. 2012;9(3):e1001190.
50. Johnson RA, Barrett MS, Sisti DA. The ethical boundaries of patient and advocate influence on DSM-5. *Harv Rev Psychiatry*. 2013;21(6):334-44.
51. Hofmann B. Limits to human enhancement: nature, disease, therapy or betterment?. *BMC Med Ethics*. 2017;18:56.
52. Morrison M. Growth hormone, enhancement and the pharmaceuticalisation of short stature. *Soc Sci Med*. 2015;131:305-12.
53. Davis C, Naci H, Gurpinar E, Poplavska E, Pinto A, Aggarwal A. Availability of evidence of benefits on overall survival and quality of life of cancer drugs approved by European Medicines Agency: retrospective cohort study of drug approvals 2009-13. *BMJ*. 2017;359:j4530.
54. Mende M, Trautmann K, Rentsch A, Hornemann B, Schuler US, Ehninger G. Patients' perspective on palliative chemotherapy of colorectal and non-colorectal cancer: a prospective study in chemotherapy-exposed population. *BMC Cancer*. 2013;13:66.
55. Barnes AJ, Groskaufmanis L, Thomson NB III. Promising Approaches From Behavioral Economics to Improve Patient Lung Cancer Screening Decisions. *J Am Coll Radiol*. 2016;13(12 Pt B):1566-70.
56. Andrew P, Vickers MM, O'Connor S, Valdes M, Tang PA. Media Reporting of Practice-Changing Clinical Trials in Oncology: A North American Perspective. *Oncologist*. 2016;21(3):269-78.
57. Fishman J, Ten Have T, Casarett D. Cancer and the media. How does the news report on treatment and outcomes? *Arch Intern Med*. 2010;170(6):515-8.
58. Lewison G, Tootell S, Roe P, Sullivan R. How do the media report cancer research? A study of the UK's BBC website. *Br J Cancer*. 2008;99:569-76.