

Reconstructing data: Evidence-Based Medicine and Evidence-Based Public Health in context

NADAV DAVIDOVITCH (*)

DANI FILC (**)

BIBLID [0211-9536 (2006) 26; 287-306]

Fecha de recepción: 3 de febrero de 2006

Fecha de aceptación: 8 de abril de 2006

SUMMARY

1.—Introduction. 2.—Definitions. 3.—Historical roots. 4.—Statistics as science: Is there an alternative to positivism? 5.—EBPH and the neo-liberal reduction of the public sphere. 6.—Evidence-Based Medicine and Public Health as an answer to deprofessionalization. 7.—Conclusion: EBPH as an expression of neo-liberal governmentality.

ABSTRACT

The emergence of Evidence-Based Medicine (EBM) as the gold-standard practice in biomedicine and public health practices represents a significant epistemological turn in modern medicine. The development of Evidence-Based Public Health (EBPH) followed the emergence of Evidence-Based Medicine, as an attempt to ground health policies and interventions on «sound facts». The present paper analyzes the historical and sociological roots of this turn. We evaluate the ethical and social consequences of this transformation, both within the medical profession (the polarization between a medical elite which strengthened its professional status, and a rank and file which

(*) Center for the History and Ethics of Public Health, Mailman School of Public Health, Columbia University and Department of Health Systems Management. Division of Public Health. Faculty of Health Sciences. Ben Gurion University of the Negev. PO Box 653, Israel. E-mail: nd2166@columbia.edu

(**) Department of Politics & Government. Faculty of Humanities and Social Sciences, Ben Gurion University of the Negev. PO Box 653, Israel.

experienced a process of «de-professionalization») and in its relationship to the welfare state (the link between the medical elite, EBM, EBPH and the commodification of health care and public health).

Palabras clave: medicina basada en la evidencia, salud pública basada en la evidencia, historia de la salud pública, sociología de la salud, profesión médica.

Keywords: evidence-based medicine, evidence-based public health, history of public health, sociology of health, medical profession.

1. INTRODUCTION

Evidence-Based Medicine (EBM) developed as an attempt to ground clinical practice on scientific facts and diminish the idiosyncratic scope of different therapeutic approaches for the same problem. The development of Evidence-Based Public Health (EBPH) followed the emergence of evidence-based medicine, as an attempt to ground also health policies and interventions on «sound facts». Social scientists and public health professionals have criticized the uncritical adoption of evidence-based medicine by the public health field, claiming that this approach can validate blaming individual patients for health problems resulting from social conditions or that the EBPH approach may justify cuts in public health spending (1).

The present paper presents also a critical view of the emergence of evidence public health. While accepting the need to use data and scientific valid evidence in order to guide action, this paper looks critically to the attempt to reduce scientific explanation to statistical analysis and other empirical procedures, and to accept an up-to-date positivism as the only form of valid knowledge. The paper also looks critically at the context in which evidence-based medicine and eviden-

-
- (1) See COBURN, David; POLAND, Blake. The CIAR vision of the determinants of health: A critique. *Canadian Journal of Public Health*, 1996, 87, 308–10; EAKIN, Joan *et al.* Towards a critical social science perspective on health promotion research. *Health Promotion International*, 1996, 11, 157–165; LABONTE, Ronald, Population health and health promotion: What do they have to say to each other? *Canadian Journal of Public Health*, 1995, 86, 165–168; POLAND, Blake *et al.* Wealth, equity and health care: A critique of a «population health» perspective on the determinants of health. *Social Science & Medicine*, 1998, 46, 785–798.

ce-based public health developed. We claim that they represent not only an attempt to scientifically ground clinical practice and health policies but that they fulfill two other goals. The first one is that they function as a strategy of public health professionals, especially those who belong to the medical profession, to protect monopoly over a certain body of knowledge, monopoly which is an essential foundation of professional power. The second one is that they are part of the neo-liberal effort, under the disguise of cost-effectiveness, to reduce public spending in the field of health care.

2. DEFINITIONS

Evidence-based public health developed following the emergence of evidence-based medicine. According to one definition, evidence-based medicine «involves the delivery of optimal individual patient care through the integration of current best evidence on pathophysiological knowledge, cost effectiveness, and patient preferences» (2).

Evidence-based medicine is rooted in five linked ideas: firstly, clinical decisions should be based on the best available scientific evidence; secondly, the clinical problem —rather than habits or protocols— should determine the type of evidence to be sought; thirdly, identifying the best evidence means using epidemiological and bio-statistical ways of thinking; fourthly, conclusions derived from identifying and critically appraising evidence are useful only if put into action in managing patients or making health care decisions; and, finally, performance should be constantly evaluated.

A crucial aspect of the claim that clinical decisions and health policies must be based on scientific evidence is to define what scientific evidence means. In order to do that evidence was classified according to a hierarchy of «valid evidence», a hierarchy grounded on a positivist approach to science. In line with this hierarchy randomized controlled

(2) BROWNSON, Ross C.; GURNEY, James G.; LAND Garland H. Evidence-based decision making in public health. *Journal of Public Health Management Practice*, 1999, 5, 86-97.

trials (RCT) are considered as the best evidence (3), followed by other trials, observational studies, comparison of descriptive studies and finally expert opinions and case observations. The conceptualization of evidence-based public health (EBPH) follows the concept of evidence-based medicine. Thus, EBPH is defined as «the development, implementation and evaluation of effective programs and policies in public health through application of principles of scientific reasoning including systematic uses of data and information systems and appropriate use of program planning models» (4). Following this definition, the steps of EBPH practice are: the formulation of a clear question arising from a public health problem; searching for evidence; appraisal of evidence; selection of the best evidence for a public health decision; linking evidence with public health experience, knowledge and practice and with the community values and preferences; implementation of useful evidences in public health practice, evaluation, and teaching (5). EBPH's main tools and processes are: meta-analysis, i.e. the statistical evaluation of the quality and conclusions of existing research; risk assessment, i.e. determining the risk of a population to suffer from a certain condition; cost-effectiveness studies, i.e. assessing whether a certain intervention is justified in terms of its cost vis a vis the savings in possible future treatments and the gains in quantified health status (for example QUALY (6)); surveillance, i.e.

-
- (3) The randomized controlled trials (RCT), whose methodological foundations were laid down as a coherent theory mainly after the Second World War, incorporates the principle that the most «scientific» way to test the efficacy of a treatment, whatever it is, is by comparing a group of patients receiving the treatment to a control group who receive placebo. On the history of the modern clinical trial see LILIENFELD, Abraham M. *Ceteris paribus: The evolution of the clinical trial*. *Bulletin of the History of Medicine*, 1982, 56, 1-18; MELDRUM, Marcia L. *Departures from the design: The randomized clinical trial in historical context, 1946-1970*. Ph. D. Thesis, State University of New York at Stony Brook, 1994; MARKS, Harry M. *The progress of experiment: Science and therapeutic reform in the US, 1900-1990*. Cambridge, Cambridge University Press, 1997.
- (4) BROWNSON, note 2, p. 87.
- (5) JENICEK, Milos; STACHENKO, Sylvie. Evidence-based public health, community medicine, preventive care. *Medical Science Monitor*, 2003, 9 (2), 1-7.
- (6) QUALY stands for Quality Adjusted Life Year. It is a mean of adjusting the benefits accruing to patients that takes into account the quality of life each year.

the ongoing, systematic collection, analysis and interpretation of data; experts' panels that will review the data and recommend action; and consensus conferences.

3. HISTORICAL ROOTS

Quantification in medicine is part of the growing trust in numbers that has gradually affected all aspects of social life during the past centuries (7). More narrowly, it is part of a process of objectification in clinical medicine that has been going on since at least the eighteenth century. It has been most evident in diagnosis, which has come to depend less and less on patients' accounts or physicians' subjective judgment and more and more on objective signs that, in theory at least, transcend subjectivity and compel agreement among qualified observers.

It is interesting to note that both advocates and opponents of EBM have made the very same connection between EBM and the «numerical method», advocated by the French clinician Pierre Louis during the first half of the 19th century in Paris (8). Yet while the proponents of

It is used now extensively in health and economics study, by measuring changes in the quality of life in relation to the cost of treatment. one year of perfect health-life expectancy is set at 1. If a lifeyear is less than perfect it is set to between 0 and 1, depending on the quality of that year. Death is set at a value of 0.

- (7) On the history of quantification in modern medicine see JORLAND, Gérard; OPINEL, Annick; WEISZ, George (eds.). *Body counts: Medical quantification in historical and sociological perspective*, Montreal & Kingston, McGill-Queen's University Press, 2005; MATTHEWS, J. Rosser. *Quantification and the quest for medical certainty*, Princeton, Princeton University Press, 1995; CASSEDY, James H. *American medicine and statistical thinking, 1800-1860*. Cambridge, Harvard University Press, 1984; PORTER, Theodore M. *The rise of statistical thinking, 1820-1900*, Princeton, Princeton University Press, 1986; HACKING, Ian. *The taming of chance*, Cambridge, Cambridge University Press, 1990; MAGNELLO, Eileen; HARDY, Anne (eds.), *The road to medical statistics*, Amsterdam, Rodopi, 2002; MARKS, note 3.
- (8) In the first half of the 19th century Paris became the Mecca for foreign medical students and practitioners. One of the most influential Parisian physicians was

EBM use it to emphasize the historical legitimacy of their enterprise, the opponents argue that there is nothing particularly original about EBM —«old French wine with a new Canadian label» (9).

We should remember though that while diagnosis of illness had by the early twentieth century become highly objectified, the same was not true of therapeutics. Doctors and patients continued to define success subjectively. Quantification of therapeutics, despite several often quoted early historical examples such as the evaluation of smallpox vaccination or scurvy treatment, continued to be highly controversial. As historian George Weisz wrote, historically the various criticisms expressed can be divided into two types: 1. quantification did not work (mainly from a methodological point of view, both practical and theoretical) 2. the use of quantification in directing clinical judgment limits the freedom of doctors (10). Counting and quantifying actually did not enjoy a high epistemological status —doing laboratory work was considered to be the pinnacle of scientific medicine. The development of the pharmaceutical industry and its therapeutic products together with the rise of more sophisticated statistical methods gradually changes the place of quantification in medicine. The rise of new methods in epidemiology, mainly the randomized clinical trial (RCT), brought to the fore the practical importance of quantification in the clinical realm.

Although the use of statistics in research with control groups and even with placebos existed sporadically in orthodox medicine, the

the clinician Pierre Louis, a radical empiricist, remembered today as father of clinical statistics. Two classic historical accounts of the Parisian Medical School are ACKERKNECHT, Erwin H. *Medicine at the Paris Hospital, 1794-1848*, Baltimore, Johns Hopkins Medical Press, 1967; FOUCAULT, Michel. *The birth of the clinic: An archaeology of medical perception* (translated from French by A. M. Sheridan Smith), London, Tavistock Publications, 1976.

- 9) This is also the title of one of a commentary on EBM: RANGACHARI, Patangi K. Evidence-based medicine: Old French wine with a new Canadian label. *Journal of the Royal Society of Medicine*, 1997, 90, 280–284.
- (10) See WEISZ, George. From clinical counting to Evidence-Based Medicine. In: JORLAND; OPINEL; WEISZ (eds.), note 7, pp. 377-393.

Second World War constitutes an important landmark (11). The link between the establishment, the scientific community, industry and the call of the hour, that was so obvious in the production of the atom bomb, radar, etc., formed the model that was about to change the perception of science and the production of science. The model shifted from the lone scientist working in a modest laboratory to large work groups, access to massive funding and the support of the establishment and industrial concerns. The world of clinical research also underwent a transformation in these years, symbolized by the research into penicillin and streptomycin, research which, in fact, laid the practical and theoretical foundations for the image of RCT as we know it today (12). This epistemological turn, as represented by its promoters, in contrast to its predecessor that occurred in the second half of the 19th century, which focused mainly on understanding causality in the medical world, focused on the issues of how to authenticate medical procedures. It is important to stress that the flag bearers of this revolution were no longer the laboratory men, who in a certain sense became a «natural», almost taken-for-granted, part of the scientific medicine scene, but the clinicians, the epidemiologists and the statisticians. At the time, the objective was not how to harness what is called in the medical school world the «basic sciences» for the good of clinical diagnosis, but to turn the treatment interaction into one that could be scientifically tested.

The research hierarchy, as manifested in the medical schools and in the textbooks, became more sharply defined. During the last decades, research that was not RCT had very little chance of being published in a leading medical journal. When in June 2000 two arti-

-
- (11) For a list of several of those sporadic uses of placebo and of blind assessment see KAPTCHUK, Ted. J. Intentional ignorance: A history of blind assessment and placebo controls in medicine. *Bulletin of the History of Medicine*, 1998, 72, 389-433. Interestingly most of these compared irregular treatments such as homeopathy and mesmerism to placebo. This fact confirms further the relationship between the placebo and deception in the 19th century.
- (12) For more details on these trials and their crucial place in the formation of the modern RCT see MARKS, note 3. Another important field was that of vaccination, as expressed in the massive clinical trial of the Salk polio vaccine, see MELDRUM, note 3.

cles were published in the *New England Journal of Medicine*, trying to object to the thesis that the RCT is in all cases preferable from a methodological viewpoint to observational research, a belligerent editorial article accompanied them, arguing that these articles were in fact undermining the character of modern medicine and threatening to collapse the scientific order (13).

This process was accompanied also by the rise of new regulations and institutions regarding the pharmaceutical industry and the drug market. After the Second World War, the RCT became the gold standard for introducing new therapeutic agents, providing according to its proponents reliable data on drugs' safety and more important on drugs' efficacy.

Yet, while RCT dealt mainly with drugs, during the same period the field of clinical epidemiology —meaning the use of epidemiological thinking and methods not only on population but at the bedside— took its place. Clinical epidemiology drew on the methods of epidemiology and biostatistics to develop systematic ways of ensuring that «the best clinical data are collected and accurately interpreted, leading to well-justified treatment or management plan» (14). Another

(13) See POCOCK, Stuart J.; ELBOURNE, Diana R. Randomized trials or observational tribulations? *New England Journal of Medicine*, 2000, 342, 1907-1909. The authors wrote in the opening of this editorial: «If these claims [that observational studies give results similar to those of randomized, controlled trials] lead to more observational studies of therapeutic interventions and fewer randomized, controlled trials, we see considerable dangers to clinical research and even to the well-being of patients». The two articles discussed are CONCATO, John; SHAH, Nirav; HORWITZ, Ralph I. Randomized, controlled trials, observational studies, and the hierarchy of research designs. *New England Journal of Medicine* 2000, 342, 1887-1892; and BENSON, Kjell; HARTZ, Arthur J. A comparison of observational studies and randomized, controlled trials. *New England Journal of Medicine*, 2000, 342, 1878-1886.

(14) On the development of clinical epidemiology in the context of the creation of EBM, see DALY, Jeanne. *Evidence-Based Medicine and the search for a science of clinical care* [Milbank Books on Health and the Public], Berkeley, University of California Press, 2005. The most likely route for bringing statistics into medical training was through public health, which claimed epidemiology as its basic science. Yet the problem was that historically public health was viewed with suspicion by both biomedical research and clinicians. The focus on community

initiative that stood out as providing the foundation for EBM was the formation of the Cochrane Collaboration, an international network started in the UK that synthesizes evidence of what works and what does not work in health care (15).

From its inception, EBM was not only about quantification, it was suggested by its supporters as a deep epistemological turn. It educates physicians to look for the best evidence, to evaluate every aspect of health and medicine related programs. Efforts such as those of the Cochrane collaboration extend their reach far beyond it, by evaluating the literature on various medical problems in order to generate recommendations for practice.

Interestingly, although the main criticism of EBM came from public health practitioners, which share a more holistic and socially oriented approach to health, and from alternative practitioners, today we have both evidence-based public health or evidence-based alternative medicine (16). This fact is just one aspect of the strength and broad acceptance of EBM in medical circles.

4. *STATISTICS AS SCIENCE: IS THERE AN ALTERNATIVE TO POSITIVISM?*

While EBM and EBPH claim to base decisions on scientific evidence, many times they adopt a restricted, positivist, conception of science and evidence. According to this conception evidence/facts are independent of the theory we use. Facts are «out there» and we are able to perceive (directly or using scientific equipment) reality «as it

health could bridge some of these gaps as it brought to the fore also issues of social justice, poverty, and other social determinants of health —classic public health preoccupation. See also *ibid.*, pp. 14-18.

(15) On the development of the Cochrane Collaboration, see DALY, note 14, especially pp. 154-181.

(16) On evidence-based alternative medicine see BORGERSON, Kirstin. Evidence-based alternative medicine? *Perspectives in Biology and Medicine*, 2005, 48, 502-515.

is». However, the history and the philosophy of science have taught us that facts are theory-laden, that the very perception of reality, the definition of certain events as facts, and the ways in which perceive those events, are all theory laden, they depend *also* on the theoretical framework with which we approach reality.

Moreover EBM and EBPH consider that only certain elements of reality count as «evidence» (mostly those that can be interpreted within the bio-medical paradigm and can be reviewed through quantitative methods), and only certain methods count as scientific. This approach, combined with the methodological individualism which characterizes EBM and EBPH dismisses qualitative methods or facts related to collective entities such as class.

Another problematic assumption of the positivistic understanding of science is that evidence-based medicine (and EBPH) assumes universal biological responses (17). They do not take into account the social and historical grounds of the researched sample, and thus they assume that conclusions of a specific set of researches can be generalized to any population. However, responses to treatment or to interventions are culturally and historically framed. Social classes, gender, social status, are all main variables affecting both the expression of diseases and health conditions and the response to treatment. The a-critical generalization of results is especially problematic, since the conditions of research are highly influenced by social and cultural conditions: e.g. the fact that research is often financed by pharmaceutical companies with vested interests in the results, the fact that most reviews reflect the priorities of the developed countries and not those of the developing world, or that many of the treatments or interventions proposed cannot be implemented «in resource-poor situations» (18).

(17) See VICTORA, Cesar G.; HABICHT, Jean-Pierre.; BRYCE, Jennifer. Evidence-based public health: Moving beyond randomized trials. *American Journal of Public Health*, 2004, 94, 400-403.

(18) See McMICHAEL, Celia; WATERS, Elizabeth E.; VOLMINK, Jimmy. Evidence-based public health: what does it offer developing countries? *Journal of Public Health*, 2005, 27, 215-221.

Another assumption, mostly hidden and implicit, made by EBM and EBPH is that randomized controlled trials demonstrate causal relations. Randomized controlled trials provide, at best, a relatively unbiased probability statement of the relation between two events. However, a causal relationship is more than a relation of probability: for example it requires biological and conceptual plausibility (19). In the field of public health reducing causation to statistical correlations is even more problematic, since causation in the field of public health is not only biological but also behavioral, social and cultural. Thus, in order to claim causal relationships we must not only offer plausible biological explanations, but also those which take into account the interrelationship between body, self and society. However, behavioral and social causation cannot be studied nor explained only in terms of probability and statistical correlations, but need to take into account a wide variety of methodologies, appropriated for the different levels of reality at which claims are made (20).

A fourth problematic feature is that evidence-based medicine reduces the patient's condition to a single definition. This model is reductionist in two ways: it reduces the patient's problems to «a single-word diagnosis and treatment» (21) and it reduces the causes of disease to a simple, Baconian, bio-medical, model of causality. However, even if we focus ourselves on the individual patient, his or her problems and complaints usually express a cluster of «single-word problems». Moreover, problems can not be explained only at the molecular or bio-medical level, and even when dealing with an individual patient we must take into consideration that individuals are not closed systems and that diagnosis and treatment are influenced by conditions external to the medical encounter. Evidence-based medicine, and as a consequence also evidence-based public health, considers the system as a closed one because they uncritically adopt the conception of the

(19) VICTORA, note 17.

(20) See McGUIRE, Wendy L. Beyond EBM: New directions for evidence-based public health. *Perspectives in Biology and Medicine*, 2005, 48, 557-569.

(21) AVEYARD, Paul. Evidence-based medicine and public health. *Journal of Evaluation in Clinical Practice*, 1997, 3, 139-144.

medical encounter as closed and totally autonomous (22). The model's limitations are especially salient in the field of public health, where conditions considering problems to be the result of simple, one-directional, causal relationship, is even more reductionist.

Finally, in the field of public health, the evaluation of evidence and the consideration of the context in which the recommended interventions will take place inevitably raise questions of interpretation and priorities (23). Activities, interpretations and determining priorities for intervention cannot be grounded solely on statistical tools.

In sum, the positivist approach to science, the methodological individualism, the reductionist consideration of facts and the building of a hierarchy of evidence which takes into account only quantitative methods, make EBPH an approach which cannot apprehend the complexity of the public health field.

5. *EBPH AND THE NEO-LIBERAL REDUCTION OF THE PUBLIC SPHERE*

Cost-effectiveness is a central feature of the evidence-based approach. The emergence of evidence-based medicine and public health should be thus considered also in the context of the consolidation of neo-liberal/post-Fordism as the hegemonic model in our globalized world. The new accumulation model includes the following features:

- 1) At the realm of production a switch from scale to scope economy and the development of new ways of organizing production, such as batch production, just-in-time production and flexible specialization. Those new ways of organizing production were made possible by technological developments, which allowed the application of communication and data-assessment techni-

(22) AVEYARD, note 21.

(23) RYCHETNIK, Lucie; HAWE, Penelope; WATERS, Elisabeth; BARRATT, Alexandra; FROMMER, Michael. A glossary for evidence based public health. *Journal of Epidemiological Community Health*, 2004, 58, 538-545.

ques. Technological developments gave birth to new fields for capital accumulation, such as biotechnology and information technology, which became the most dynamic fields. Traditional, labor intensive, industries were transferred from the richest countries to the less developed ones, and replaced by capital intensive hi-tech firms and services employing deskilled labor. As a consequence unemployment became chronic.

- 2) At the realm of the organization of labor, an increase of temporary employment, part-time jobs and subcontracting; and the replacement of collective agreements by factory-wide or individual contracts.
- 3) The realm of exchange and finance grew and became more diversified, and new forms of financial investment were developed. Political changes and technological developments allowed for the deregulation of exchange and of capital flow. The free flow of capital limits the autonomy of national states policies, subjecting them to the interests of big investors.
- 4) In the realm of consumption, everyday life has become increasingly commodified. «Life-styles» became themselves commodities, and market niches appropriate for elastic production were created.
- 5) Concerning institutional forms and modes of social organization, at the level of state and politics, Keynesian policies were abandoned, and there was a process of recommodification of the different welfare regimes. This process of recommodification eroded universalistic welfare policies and reinforced a two-tier system, i.e. a «safety public net» and semi-private or private services for those who can afford them.

One of the characteristics of the Fordist/Keynesian welfare state was the decommodification of certain services, meaning that the distribution of resources and the access to services was not dependent on market criteria or market performance. The neo-liberal re-organization of society includes as an essential feature the recommodification of welfare, i.e. putting back services under the discipline of the market. The recommodification of welfare has two goals: reducing public spending in order to free resources to the process of accumulation of capital, and, through the privatization of public services, opening new fields

for for-profit private investment. The recommodification of health care represents a central aspect of this process, because of the volume of health care costs in contemporary societies. The recommodification of health requires changes in the practice and professional consciousness of the health care workers. Since the traditional professional consciousness and practice of health care practitioners are in conflict with the new hegemonic model and its cost-containment goals, a new body of knowledge, both theoretical and practical, developed, a body of knowledge which aims to include cost-effectiveness as part of the clinical judgment (24).

This body of knowledge and practices is an example of what Michel Foucault called governmentality. Foucault defined governmentality as a rationality of government, situated in the intersection of disciplines of power and technologies of the self. The implementation of governmentality as a concept means both the discipline of subjects through outside surveillance (as, for example, the panopticon (25)), and through self-surveillance, where individuals internalize the practices and rationality of government. Every form of governmentality is based on the development of forms of knowledge and data production. According to Foucault, the link between these two meanings is that of a two-sided relationship: on the one hand, discipline in the sense of instilling discipline by developing a complex system, almost like a transparent spider's web, capable of controlling the citizens. This system also enables the accumulation of knowledge necessary for such disciplines as epidemiology, sociology, criminology, etc., through the constant observation of subjects and the obsessive collection of information on those subjects by setting up enormous databases. On the other hand, the fields of knowledge themselves, which develop through the use of this accumulated information, also justify and

(24) MAYNARD, Alan. Evidence-based medicine. Cost effectiveness and equity are ignored. *British Medical Journal*, 1996, 313, 170.

(25) See FOUCAULT, Michel. *Discipline and punish: The birth of the prison* (translated from French by A. M. Sheridan Smith), Harmondsworth, Middlesex, Penguin, 1979.

improve the ability to control and to «educate» the citizens of a modern state (26).

The medical profession, of course, occupies a central place in this process. The medicalization of daily life, from birth to death, a process which accelerated in the 19th and 20th centuries, is a further aspect of the development of the discipline in the two senses mentioned above. The perception of the body and the right ways to treat it, the perception of behavior as a risk factor for the development of various diseases, are themes that developed and became increasingly sophisticated in the 18th and 19th centuries and continue to be improved today (27).

The transition to the post-Fordist/neo-liberal model includes the development of a body of knowledge, data and techniques which constitute the *neo-liberal governmentality*. We can thus see the emergence and development of evidence-based medicine and evidence-based public health as part of this new form of governmentality. Evidence-based medicine consists in a body of knowledge, a hierarchy of research and production of data, which allow for a more efficient implementation of the new hegemonic model in the medical field. The evidence-based approach to the field of public health and to decisions over health policy transforms policy decision into a rational-choice process. Thus knowledge production is intertwined within the neo-liberal worldview, given that rational-choice represents the conceptual structure upon which neo-liberalism is based (since it considers men as egotist, rational, profit-maximizers). Secondly, evidence-based guided practice includes cost-containment calculations as a basic input for recommending treatment, practices and policies. EBM and EBPH a-critically

(26) Yet, it is important to remember that Foucault's concept of governmentality rejects the perception of the state as a coherent, uniform body employing its power in a simple form by intervening in civil society. See JOHNSON, Terry. Governmentality and the institutionalization of expertise. In: Terry Johnson; Gerry Larkin; Mike Saks (eds.), *Health Professions and the State in Europe*, London and New York, Routledge, 1995, pp. 7-24.

(27) For the fruitful use of Foucault when analyzing health and disease, see PETERSEN, Alan; BUNTON, Robin (eds.). *Foucault, health and medicine*, London and New York, Routledge, 1997.

include cost-containment calculations, without discussing the general policy which imposes cost containment as a basic variable to recommend treatment and interventions.

Thirdly, the evidence-based approach sharpens biomedical tendencies to individualize etiology and treatment and neglect the social dimensions of disease and illness (28). Social risk factors are rarely explored by the evidence-based approach, and change at the level of social policy or legislation rarely recommended (29). As Wendy McGuire claims, «[I]f adopted as the basis for the evaluation of public health evidence, EBM will perpetuate and legitimize research that is incapable of generating knowledge of the social relations affecting health and the interactions between social structure, meaning, and individual behavior. Furthermore, basing public health policy and practice interventions on this type of knowledge may cause harm by imputing responsibility to individuals for conditions that lie outside their control» (30). The individualization of etiology and treatment often results in «blaming the victim» for his/her problems, an ideological strategy characteristic of neo-liberalism. Finally, the evidence-based approach consists mostly in the meta-analysis of research done in rich countries, research based on technology-intensive, expensive health care. Thus while recommendations do not have much to offer societies low in resources, they appear as the gold standard of practice, stimulating a non-efficient use of resources in the poor countries (31). In sum, EBM and EBPH represent a field where technologies of domination (a hierarchy of knowledge, a professional hierarchy, the acceptance of experts' opinions, the surveillance of individual practitioners by central management) and technologies of the self (each practitioner is supposed to develop instruments in order to evaluate

(28) GERBER, Andreas; LAUTERBACH, Karl. Evidence-based medicine: Why do opponents and proponents use the same Arguments? *Health Care Analysis*, 2005, 1, 59-71.

(29) MACINTYRE, Sally *et al.* Using evidence to inform health policy: Case study. *British Medical Journal*, 2001, 322, 222-225.

(30) McGUIRE, note 20.

(31) McMICHAEL; WATERS; VOLMINK, note 18.

his/her performance) intersect, and this intersection is functional for the post-Fordist/neo-liberal model.

6. *EVIDENCE-BASED MEDICINE AND PUBLIC HEALTH AS AN ANSWER TO DEPROFESSIONALIZATION*

The development of managed care as the main organizational form of health care represents a threat to the traditional self-perception of the medical profession. As an anonymous physician expressed in the Internet:

I used to be a doctor
 Now I am a health care provider
 I used to practice medicine
 Now I function under a managed care system.
 I used to have patients
 Now I have a consumer list.
 I used to make diagnosis
 Now I approve consults.
 I used to treat
 Now I wait for authorization to provide care.
 I used to have a profession
 Now I have an attitude,
 Now I don't know what I am (32).

We could point out four defining traits, namely, monopoly over skills, autonomy, distance from the working class, and power over other social groups, and even over society as a whole. The professions' main feature is their monopoly over specialized skills, skills that demand an extensive body of theoretical and practical knowledge. Monopoly gives the profession (the medical profession, in this case) the right to declare both «external» evaluation and «external» competition as

(32) Cited in FAIRFIELD, Gillian; HUNTER, David J.; MECHANIC, David; ROSLEFF, Fleming. Managed care: Implications of managed care for health systems, clinicians, and patients. *British Medical Journal*, 1997, 314, 1895.

illegitimate in the name of the sanctity of «clinical freedom», and the doctor-patient relationship. Mastery of this specific knowledge requires a lengthy formal education that involves the transmission of a body of theory as well as a set of skills (33).

The monopoly over a body of knowledge allows the members of an occupation to limit access to that occupation. Monopoly over a body of knowledge is also the foundation of the profession's power over lay people and other occupations. The medical profession's monopoly over knowledge has been challenged both by alternative forms of healing and, most important, by the popularization of knowledge. These other approaches to medicine, threaten the very core of «scientific» medicine, since in many cases both various forms of alternative and popular medicine, use the same rhetoric of science. The emergence and development of the evidence-based approach to health care and public health can be understood also as a strategy to retain monopoly over knowledge by the development of a sub-discipline which allows the professional elite to determine which knowledge is the *true* one and which treatments and interventions should be adopted (34). This strategy, however, does not protect all the health care professions. Since the medical profession has much better access both to methodology, but more important also to the data itself, it regains power over the decision process. Moreover, the adoption of evidence-based strategies contributes to the polarization of the health care professions (and

(33) LARSON, Magali S. *The rise of professionalism: a sociological analysis*, Berkeley, University of California Press, 1977.

(34) In the case of alternative medicine or CAM (complementary and alternative medicine) as it is usually called now in medical literature, contemporary discussions of the alternative vs. orthodox medicine debate are steered almost immediately in the direction of Randomized Controlled Clinical Trial. This is also symbolized in the changes in the placebo use and image from its use mainly in the treatment of obstinate patients to making it one of the principal tiers of clinical medical research. See also DAVIDOVITCH, Nadav. From A «Humble Humbug» to the «Powerful Placebo»: The Image of the Placebo in the Orthodox-Alternative Medicine Debate. In: Volker Roelke; Giovanni Maio (eds.), *Twentieth century ethics of human subjects research: Historical perspectives on values, Practices and Regulations*, Stuttgart, Franz Steiner Verlag, 2004, pp. 293-308.

especially so the medical profession) into an elite, which manages the new techniques, and thus gains more power and autonomy, and the rank-and-file practitioners, who see their power and autonomy further restricted, since they have to adapt their practice to research performed by those professionals with access to resources, to analysis made by researchers with the appropriated skills, to guide-lines written by experts and to surveillance by medical auditors and manages who check that individual practice conforms to «evidence-based» recommendations.

7. CONCLUSION: EBPH AS AN EXPRESSION OF NEO-LIBERAL GOVERNMENTALITY (35)

Recently much criticism has been directed toward EBM and EBPH. Proponents of EBM had also moderated their former rhetoric that stressed the inability of the regular physician to make rational decisions and that also presented EBM (and EBPH) as a Kuhnian paradigmatic shift. Yet even though you can find more nuanced expressions of EBM and EBPH in medical literature, usually the former rhetoric and logic remained quite intact when analyzing health policy makers' discourses. Decisions regarding allocation of resources, priorities in health care and public health programs, evaluation of health interventions —all are permeated now with EBM language and logics. It is hard to avoid this phenomenon and it has very practical influences in real life. As a result, and coherently with neo-liberal governmentality, politics is understood only as a set of rational choices and piecemeal engineering, and not as related to conflict of interests, power and values.

The critique of EBPH should not amount to the rejection of using scientific knowledge in order to improve public health practice.

(35) An earlier version of this paper was presented in December 2005 at the Spirit of 1848 social history of public health titled «Evidence-Based Public Health: Critical Histories and Contemporary Critique», American Public Health Association Annual Conference, Philadelphia, US. We would like to thank Louis Avilés, Anne-Emanuelle Birn and Nancy Krieger for organizing the panel.

But an alternative, more democratic, vision of the incorporation of evidence-based decision making into public health, should be developed. A vision not limited to statistics and cost-containment but one where knowledge produced by a variety of biological science and social science research and evaluation methods can inform democratic public health policies.