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Evidence-Based Law: A New Approach to Legal Practice under the Scope of the Pragmatic Methodologies of Evidence-Based Medicine

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Abstract

This paper aims to establish the relationship between Evidence-Based Medicine (EBM) methodologies and Law. It proposes the methodological application of EBM principles to legal interventions. Systematic reviews and trials may incorporate prediction and monitoring of many variables within complex social environments, in order to ensure and establish the relationship between intervention and qualitative and quantitative outcomes. The incorporation of evidence-based methodologies into legal practice underscores the potential for a more scientifically grounded approach to judicial decision-making. Evidence-Based Law (EBL) aims to reduce uncertainty and improve the predictability and fairness of legal outcomes through empirical research. This approach advocates for the use of objective scientific data to guide judicial decisions and policy, thereby reducing the impacts of personal biases and ideological influences.

Keywords

Evidence-Based Medicine, Evidence-Based Law, Predictability

1. Interdisciplinary Translation: Bridging Law and Medicine for Evidence-Based Law

Health sciences achieved remarkable progress in recent decades, especially regarding diagnosis and treatment. Along with those scientific advances, it became imperative to associate medical decision-making with scientific evidence in order to decrease uncertainty rates of treatment decisions. Therefore, evidence-based medicine (EBM) became an indispensable tool, enabling medical decisions focused on the best available evidence (Friedland et al., 1998).

EBM aggregates known tools of clinical epidemiology, statistics, scientific methodology and technological information in order to promote the integration of clinical experience to the best available evidence. It acknowledges hierarchical levels of scientific information, according to the nature and quality of the studies available, reducing uncertainty and making medical practice closer to the best scientific data (Atallah & Castro, 1998; Sackett et al., 2007; Kang, 2016).

Systematic reviews are the highest level of scientific evidence, by means of strategies that narrow bias by the systematic assembly, clinical appraisal, and synthesis of all relevant studies on a specific topic. On the other hand, expert opinions are ranked as the poorest evidence level. It is no demerit to experts; actually, those opinions generate questions that, when build up under adequate clinical research, can result in high levels of evidence. Therefore, expert opinions can positively move the virtuous circle of science and practice but cannot be regarded by itself (Atallah, 2001).

EBM, while widely regarded as a cornerstone of modern clinical practice, has not been without its critics. One major critique is that EBM relies too heavily on empiricism, especially systematic reviews, while potentially disregarding other valuable forms of medical knowledge, such as expert opinion or clinical experience (Cohen et al., 2004).

Another significant criticism is the population-based approach that EBM often employs, which leads to inappropriate or even harmful outcomes for some patients, as the generalizations made by EBM may not fit every individual case (Muckart, 2013; Tonelli, 1998). Critics also argue that EBM can inadvertently devalue patient individuality by shifting the focus from personalized care to a more standardized approach based on population averages (Tonelli, 1998).

Moreover, the practical implementation of EBM in clinical settings can be problematic. The time constraints and stringent algorithms imposed on physicians as part of evidence-based protocols can lead to serious mistakes in clinical practice. Physicians may feel pressured to adhere to guidelines rigidly, even when their clinical judgment suggests that a different approach might be more appropriate for the patient (Pediaditakis, 2022).

While the criticisms are valid, the benefits of EBM in advancing modern healthcare cannot be overstated. EBM is fundamentally about improving patient outcomes through the rigorous application of the best available evidence. By systematically reviewing and synthesizing research data, EBM helps to ensure that medical interventions are not based on anecdotal evidence or outdated practices, but on treatments that have been scientifically validated through rigorous research (Davidoff, 1999; Atallah, 2001).

By providing standardized guidelines based on robust evidence, EBM ensures that all patients receive care that is consistent with the latest scientific understanding, regardless of where they are treated. This is particularly important in an era where healthcare is increasingly complex and specialized. Therefore, it supports a more informed decision-making process where clinical expertise and

patient preferences are integrated with the best evidence (Sackett et al., 2007).

The growing adoption of EBM by governments and international organizations, such as the World Health Organization (WHO), underscores its increasing significance in shaping health policy. This shift towards evidence-based practices represents a broader move towards more quantitatively informed decision-making, challenging traditional expert opinions and helping to resolve conflicting viewpoints (Davidoff, 1999).

Based on EBM, evidence-based methods have gained wide repercussion under the general term evidence-based practice (EBP), which refers to different fields such as clinical itself, policy and social welfare. Evidence-based methods, although, are primarily epidemiological and statistical (Lessard & Birsch, 2010).

Therefore, one should ask: would legal science be under the scope of EBP methods? At first, it seems unthinkable to apply a pragmatic methodology to a traditional rhetoric and dialectic social science. We believe; however, it is not impossible.

Of course, it is not reasonable or scientifically valid to ignore the vicissitudes and peculiarities of legal science, yet there is no hindrance to the development of evidence-based Law (EBL), as a result of the necessary adaptation of EBM.

As a starting point, it is important to highlight that EBL may focus on the confluence between the core methodology of scientific research and legal daily practice, in order to increase legal certainty and predictability. That way, Law and technology can instate new intersection lines, clearly defined under the principles of scientific safety and legal transparency.

2. Relevance of Scientific and Epistemological Understanding in Legal Practice

Many authors consider positivism as the genesis of modern Law. Hans Kelsen, for instance, suggests that inter-systematic communication was not acceptable, so that legal science could offer answers regardless of associating with external systems (Kelsen, 2009).

However, along with the legal positivism crisis, it is possible to claim that, currently, Law itself is facing an identity crisis. By mid-twentieth century there was no problem in claiming Law as a pure normative science whereas complex policy interventions, based on modern technology, were not in question. Currently, however, legal practice cannot ignore its political role and the remarkable advances of technology.

Thus, since positivism is no longer a paradigm for legal science, legal principles became the preferential plea for Law practitioners worldwide. Hence, along with decision-making supported by wide principles, the judiciary branch emerged as a major political force.

Given this scenario, Zygmunt (2020) suggests that intuition might provide most answers to legal problems. This approach does not disregard experimental verification of its premises; rather, it encourages researchers to scrutinize both

the specific and general assumptions underlying its implications.

Cárdenas (2017) proposes that in the application and interpretation of the law, legal principles provide a scientific foundation for judicial decisions. From a scientific perspective, the validity of these decisions hinges on constructing justifications that can persuade an audience. Functionally, legal principles possess scientific-legal validity and prompt a reassessment of non-positivist viewpoints. For interpreters, this entails acting as constructors and designers of legal doctrine, particularly when addressing dilemmas posed by positive Law within a complex landscape of competing systems claiming axiological precedence.

On the other hand, Kellogg (2011) argues that premature recourse to principles in hard cases may lead to improvident choices and violate democratic values. We align with Kellogg's perspective, particularly in light of the situation in Brazil, where the judiciary plays a prominent and active role in shaping a wide range of public policies, with very little support from scientific evidence.

Considering that picture, the major challenge facing Law, at present time, refers to the lack of modulation of the judiciary's almost free creativity, often reflected in the rise of ideological decision-making. In fact, judging has frequently become a phenomenon of pure consciousness, which exhausts itself within the cloth and unfathomable depths of mere subjectivity, giving rise to unjustifiable arbitrariness of judicial decisions (Mata-mouros, 2003).

Therefore, it is vital to reflect about the principle of free evaluation of evidence. It is, unmistakably, a cornerstone to the rule of Law and the tripartite separation of powers, however, given the emergence of legal activism, it must be grounded by scientific foundations. Law and science are not worlds apart; therefore, it is crucial to consider a reciprocal approach. Legal science is not, to any further extent, merely language. It has to advance beyond rhetoric and dialectic and reach scientific and technological methodologies in order to rule unbiased contemporary disputes.

Consequently, it is possible to debate if Law's conventional methods for resolving science-laden legal disputes are up-to-date or justifies resumption. As a matter of fact, it seems that Law (and especially legal decision-making) is indeed struggling behind an accelerating scientific revolution (Posner, 2004).

For that reason, it has come the time when science and Law brake down the wall that has divided them up to now. In fact, legal science requires a shared scientific core theory based on empirical confirmation of hypotheses (Ulen, 2002). It is feasible to estate that Law and jurisprudence demands urgent revision, in order to cast aside ungrounded opinions and ideology (or opinion-based Law) and enhance science methods (Segone, 2010).

In fact, the adoption of evidence-based approaches in Law aims to enhance the influence of scientific research on public policy and judicial decisions. This shift allows legal decisions to be guided by empirical evidence, rather than relying solely on tradition, precedent, or theoretical reasoning, thus making legal policies more effective and outcome-focused. Legal professionals might use em-

pirical research to support legal arguments, and judges might consider data from studies when deciding, all with the goal of improving outcomes for clients and the justice system.

Thus, an evidence-based Law method would aspire the mitigation of uncertainty and unjustified judicial mistakes, by proposing a communication theory that would embrace Law and non-legal sciences. Therefore, legal professionals should get used to answer questions such as: Does it work? Why? Who says so? Is it fully compatible with scientific evidence?

In fact, evidence-based Law does not intend to mitigate the independence of congressman or judges, but enforce and modulate it scientifically, in order to move decision-making away from the ideology (Solesbury, 2001).

3. The Faces of Evidence-Based Law

EBL mainline conceive it as a methodological approach to legal decision-making, in order to aggregate pragmatic methods to manage meta-legal issues brought into judicial environment. Or, in other words, a methodology that allows legal professionals to decide about topics unrelated to legal practice, increasing certainty and predictability.

One of its goals is providing unbiased scientific information through scientific databases targeted to legal practitioners (e.g. judges, lawyers, prosecutors). When legal science encounters hard cases—those situations where existing rules do not immediately provide a clear solution, and decisions must instead be derived from underlying legal principles—it becomes crucial to supply impartial and reliable data. This ensures that judicial decisions are not only guided by legal principles but are also grounded in sound scientific reasoning. By doing so, the judiciary can make well-informed decisions that are both legally and scientifically robust, even in the face of novel or complex issues.

In fact, a wrong scientific premise will inevitably result in an unfair decision. It only will tangent fairness, turning the judicial branch into a mere instrument of the judge's personal will.

Unlike evidence carried on by parties, those scientific databases intend to be unbiased. They will be able to consign information that may help judges and professionals to deal with the large amount of meta-legal cases that cannot be assigned by Law and its traditional sources.

In Brazil, which faces a strong judicialization of health policies, there is a germinal project of a national database that hosts technical papers based on scientific evidence, issued by the Technical Support Centers for the Judiciary (NATJUS) and the Health Technology Assessment Centers (NATS).

It intends to mitigate the risk of conflicting legal decisions on topics related to medical treatments, as well as to make it easier the search of statistical data by legal professionals who daily deal with complex health subjects. It enables evidence-based decisions, avoiding requests of medicines and treatments that are not safe or effective.

It is a remarkable initiative as many judicial decisions, perhaps based on mere legalistic arguments, may have larger social implications and extend beyond the original judicial decision (Cook et al., 2006). Thus, such databases are probably an effective instrument to reduce the social risks behind misleading judicial decisions, as judges may refer to them in order to guide decision-making in meta-judicial issues. Indeed, databases enable public access to pragmatic data that stands as a general support to any decision that requires information external to legal knowledge.

But not only that. EBL may also refer to the observation of cause and effect relation between judicial interventions and its future outcomes, in order to congregate reliable information about the effectiveness and safety of these interventions.

Under such scope, it is inevitable to question: is it possible to evaluate the effectiveness of complex legal interventions? Is it reliable? Is it necessary?

It seems that the correct answer for all these questions is *yes*. For example, it is possible to lead a cohort study assessing the effects of affirmative action policies in a certain college. Similarly, it is viable to evaluate the effects of land reform, especially concerning outcomes such as familiar income, social growth, education levels, etc.

Also, it is feasible to evaluate, retrospectively, the effects of changes in civil procedure regulations regarding the judiciary's celerity. In fact, there are many examples, just as there are many challenges surrounding this side of evidence-based Law.

Therefore, when enforced by empirical legal research, through methodological tools and empirical grounds that aggregate meta-legal knowledge to the decision-making process, EBL can reduce risks and uncertainty of legal interventions and policies.

4. Evidence-Based Law as an Evaluation and Monitoring Method

Systematic reviews (SR) are a secondary type of study designed to evaluate evidence and answer a specific question. It requires systematic and explicit methods to identify, select and critically evaluate previous studies, synthesising reliable and up-to-date evidence. Statistical methods (meta-analysis) may or may not be used during the analysis and synthesis of the results (Atallah & Castro, 1998).

In other words, a systematic review summarizes high quality researches fitted under eligibility criteria, in order to answer hard questions. The main purpose of a systematic review is to provide reliable, up-to-date evidence about beneficial and harmful effects of a given intervention, when compared to a primary control group (Mugford et al., 2010).

Since systematic reviews enable a sum of data provided by every reliable study about a given intervention, uncertainty may be reduced, once the original studied sample is noticeably enlarged. Thus, the researcher reaches wide and reliable

information that would not be found in one isolated trial or study (Sampaio & Mancini, 2007).

Indeed, SR are the highest level of scientific evidence, and, therefore, the more appropriate and suitable instrument for safe and effective decisions. For these reasons, they are considered the gold standard of EBM and, probably, the first step towards the methodological deployment undertaken by EBL.

However, the development of EBL, based on the methods used by EBM, faces relevant challenges. Part of the problem is complexity. In fact, most of judicial or legislative interventions play a role in complex social systems (Pawson et al., 2005). Indeed, co-interventions may be related to outcomes and they cannot be controlled but predicted and monitored.

In other words, legislation, policies and judicial decisions may affect an indefinite number of subjects. Thus, prediction, monitoring and controlling co-interventions become complex due to the undefined size of the sample.

Clinical evidence is visible, treatments are well defined, tests are strictly controlled, and repetitions abound. On the other hand, as soon as we address legal interventions, initiatives become complex, impossible to manipulate experimentally and hard to replicate. The evidence is patchy, uneven, disparate and controversial (Pawson, 2002).

Thus, such complex interventions have to be considered in a distinct manner, as its evaluation must be carried beyond traditional methodologies. Complex social interventions are subject to seasonal, local, cultural and economic variations. What works in a certain time, may not work later; what works in a given place, may not work in another and so on. The environment is dynamic, the number of people affected is undefined and there is a large number of agents interacting, playing roles that communicate intensively. That multiple perspective requires qualitative attention, in order to achieve a reasonable explanation to any outcome, beyond quantitative answers (Lessard & Birsch, 2010).

Additionally, legal reasoning differs fundamentally from scientific reasoning, as it operates within a normative context based on rules and legal principles. In fact, Law tends to be more populist and ideological than science, because it operates within a framework that is deeply rooted in societal values, norms, and political influences (Schuck, 2007).

Furthermore, the legal system's traditional approach to evidence and decision-making can be at odds with the demands of scientific rigor. Courts and legal practitioners often prioritize procedural fairness, precedent, and the adversarial process over the empirical testing of hypotheses, leading to a tension between legal and scientific standards (Foucar & Wick, 2005). This tension complicates the adoption of evidence-based approaches, as the legal system may resist changes that could be perceived as undermining these established priorities.

We must not overlook, moreover, that effectively implementing EBL requires a consensus on what constitutes valid evidence within the legal context. This entails not only generating new evidence in areas where it is lacking but also stra-

tegically disseminating this knowledge to legal practitioners, policymakers, and the judiciary. In addition, it is essential to establish initiatives that ensure this evidence is integrated into policy and practice in a manner that respects the unique demands of the legal system (Boaz & Nutley, 2009).

However, the challenges do not end here. As we mentioned before, systematic reviews are based on primary studies, which are carefully selected and then summarized. Nevertheless, when we move to legal field, studies and trials are rare and their methodological grounds are limited. As a result, systematic reviews of policies, judicial or legal interventions will possibly be, in many cases, little useful due to scarce studies and research material (Byford et al., 2010).

Therefore, it is important to develop an empirical methodology that overcomes the mentioned challenges, expanding legal research based on strong methodological grounds, in a way that enables the expansion of systematic reviews of complex social interventions. The Campbell Collaboration may be a good starting point.

As a matter of fact, as stated earlier, any study that intends to evaluate social interventions requires both qualitative and quantitative data. It is a fundamental methodological prerequisite of EBL. Indeed, at this point, EBM and EBL are partially detached, once medical research focuses in quantitative results (notably revealed in the meta-analysis charts).

In other words, within social interventions, it is not sufficient to simply determine whether intervention "A" works; it is equally important to understand the underlying reasons for the observed outcome. If EBL is to be considered as a decision-making tool, it has to incorporate that feature. A merely quantitative question (does it work?) is too bald. Legal practitioners need to know what works, for whom, where and when it was evaluated and why outcomes were probably found. Indeed, studies should incorporate description, analysis, diagnosis, theory and prescription (Solesbury, 2001).

It is possible to highlight an example: in a certain state, a new legislative amendment increases the penalty for murder. After 10 years of enactment, the murder rate has declined in the order of 38%. It seems tempting to claim the effectiveness of the new rule. However, considering the complex social environment in which legislative intervention has been inserted, it is possible to acknowledge many variables or co-interventions that may have led to the described outcome, despite of the aforementioned intervention.

Therefore, the decrease in homicide rates could result from various factors, such as changes in police force strategies, stricter firearm regulations, improvements in police intelligence, or other variables that are only partially controlled, if at all. As demonstrated, these unforeseen or uncontrolled co-interventions can significantly influence the final outcome.

So, EBL can be a relevant decision-making tool as long as its trials enable an extensive evaluation of variables and co-interventions that may impact the outcome under investigation, in a predictive and descriptive process that, in the

end, will be evaluated by the study authors under a qualitative and quantitative scope.

Hence, it is imperative that any empirical legal study add such methodological strategies in order to capture the full complexity of an intervention, its impact and its relations to other social contexts. For instance, realist reviews, as described by Pawson, suggests theory-driven studies that draws "theoretical maps" of actions and steps that lead to the ultimate purpose of a particular intervention (Pawson, 2001).

Although it is not possible to control variables or co-interventions, it is possible to establish a historical and theoretical prediction of the them, which are followed by the investigator in order to set facts or policies that ultimately co-contributed to the outcome of a given intervention.

Similar to realist reviews, EBL trials and reviews require an explanatory focus to untangle complex social interventions and anticipate variables that may influence the outcomes. In this way, a trial or systematic review, beyond providing data on efficacy and effectiveness, will also be equipped to address the timing and variables that may have contributed to the observed outcome (Pawson et al., 2005).

Based on these parameters, EBL will be able to guide legislation and judicial rules about several topics such as crime, health, tax, etc. This perspective is remarkably innovative and can be paradigmatic to enforce law, so as to guide complex interventions supported by scientific grounds.

In fact, a key advantage of EBL is its commitment to retrospective analysis of existing legal practices, allowing for the identification and correction of inefficiencies within the legal system. This continuous feedback loop could lead to a more adaptive and responsive legal system that evolves based on what has been empirically proven to work.

Unenforceable rights and ineffective legislation result in a double frustration: unfulfilled social expectations and wasted public funds. Consequently, when considered broadly, EBL also serves as a solid mechanism for safeguarding social peace by significantly enhancing public trust in government actions.

5. Conclusion

Evidence-based Law seeks to bring the systematic rigor of evidence-based medicine into the legal domain, aiming to improve the quality and efficiency of legal decision-making by grounding it in empirical evidence. By incorporating methodologies like systematic reviews and controlled trials, EBL attempts to establish clear connections between legal interventions and their outcomes. This approach is particularly valuable in testing new legal practices, where rigorous evaluation can prevent the premature adoption of practices that may be ineffective or even harmful.

However, the implementation of EBL is not without significant challenges. These challenges underscore the complexity of applying evidence-based ap-

proaches in legal contexts, highlighting the need for careful consideration and adaptation of these methods to fit the nuances of the legal landscape.

In any case, the integration of evidence-based methodologies into legal practice underscores the potential for a more scientifically grounded approach to judicial decision-making. As previously noted, EBL aims to reduce uncertainty and enhance the predictability and fairness of legal decisions by utilizing empirical research. This approach advocates for the use of unbiased scientific data to inform judicial decisions, thereby mitigating the impact of personal biases and ideological decision-making.

This interdisciplinary collaboration has the potential to enhance the effectiveness and equity of the legal system by refining empirical legal research methodologies. Such refinements are essential for addressing the challenges associated with evaluating complex legal interventions. It is, in fact, time for Evidence-based Law.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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