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The Illusion of Certainty: Medical Realism and Its Uncritical Reception in Islamic Thought

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Abstract

This study explores the nature and methods of biomedical reasoning to ascertain its epistemic standing. The analysis of the metaphysical presuppositions that undergird contemporary biomedicine as well as its logical weaknesses is needed, since biomedicine, when appropriated from within the Islamic tradition of theology and jurisprudence, is assumed to have extremely high epistemic worth and prestige due to its practical efficacy and success. When biomedicine interacts with the Islamic knowledge tradition (theology and jurisprudence), these unquestioned assumptions lead to the subsuming of the Islamic worldview by the biomedical worldview, in which Muslims tend to interpret their doctrines and principles under the undeclared philosophical position of scientific realism (SR). The method employed in this paper is to reveal the underlying metaphysics of modern biomedicine and the lack of finality (*qaṭʿiyya*) in its reductionist working principles. Through this method, this paper argues that the high level of *ẓann* (both in terms of conjecture and doubt) that characterizes the knowledge (theoretical models) and practice of biomedicine does not warrant its use within the sphere of Islamic theology. By delineating the inherent metaphysical reduction and various logical weaknesses in biomedicine, this paper tends to open the discourse in which Muslim scholars should treat biomedical knowledge as instrumental knowledge for pragmatic ends, instead of adopting it in a scientific realist fashion, providing a provisional outline of such a framework.

Keywords: Biomedicine, Islamic theology, Instrumentalism in Biomedicine

Introduction

This study explores the nature and methods of biomedical reasoning to ascertain its epistemic standing. The analysis of the metaphysical presuppositions that undergird contemporary biomedicine as well as its logical weaknesses is needed, since biomedicine, when appropriated from within the Islamic tradition of theology and jurisprudence, is assumed to have extremely high epistemic worth and prestige due to its practical efficacy and success. When biomedicine interacts with the Islamic knowledge tradition (theology and jurisprudence), these unquestioned assumptions lead to the subsuming of the Islamic worldview by the biomedical worldview, in which Muslims tend to interpret their doctrines and principles under the philosophical hegemony of the former. By revealing the underlying metaphysics of modern biomedicine and lack of finality (*qaṭʿiyya*) in its reductionist working principles, this paper sets out to argue that the high level of *ẓann* (both in terms of conjecture and doubt) that characterizes the knowledge (theoretical models) and practice of biomedicine does not warrant their use within the sphere of Islamic theology, such as using biomedical knowledge for the ascertaining of beginning or end of life in distinction from former or pre-biomedical understanding, and in the case of Islamic jurisprudence, such as in issuing fatwās or juristic verdicts on issues such as purity, praying, fasting and cadaver transplant based on biomedical knowledge, hence questioning and changing the former juristic positions in the process. Within *ẓann*, there is the following epistemological taxonomy: (1) *al-ẓann al-rājiḥ* (when a proposition has a high probability of being true). (2) *al-ẓann* (when a proposition is likely to be true). (3) *al-shakk* (when a proposition can be equally true or false). (4) *al-wahm* (when a proposition is more likely to be false than true) (5) when a proposition is false. What moves a person along this spectrum is the nature and the weight of evidence.

For Ghazali, knowledge does not accept doubt, and for him, experiential knowledge acquired through the senses should be true based on certainty, leaving no room for doubt, illusion, and falsehood (Al-Ghazali, 1990, p. 12). Therefore, he calibrated the standard for truth when it came to the knowledge of sense-experience, which was the absence of error. Hence, for him, if any knowledge lacked such certainty, it could not be categorized as certain or yaqīn knowledge (Al-Ghazali, 1987, p. 47). Al-Jurjani also defined certain or firm belief as corresponding to reality and, hence, stable (Al-Jurjani, n.d., p. 157). In al-

Mustaṣfā of Al-Ghazali we see that he contrasts knowledge with ignorance, imitation, and conjecture. He defined it as firm belief with no doubt in the face of skepticism (Al-Ghazali, 1983, pp. 24–26).

In Ibn Sina's *Kitāb al-Shifāʾ* (2005b), specifically *al-Ṭabīʿiyyāt* (physics), hylomorphism serves as a rigorous anti-reductionist framework. He argues that a physical object cannot be reduced to its bare material components. For Ibn Sina, physicalist reductionism fails to account for the actual unity, intelligibility, and behavior of the natural world.

A physical thing exists and acts the way it does because of its form, not merely the physical particles that comprise it. In Ibn Sina's view, natural substances act toward ends (*teleology*). The behavior of a living organism or a chemical element cannot be explained merely by looking at its bottom-up material causes; the organizing form drives the whole's unified function. One can find its relevance to contemporary discourse in the philosophy of medicine regarding the goal-directedness of organisms according to their telos. Ibn Sina's hylomorphism culminates in his unique approach to the human mind and soul (*al-Nafs*). While physicalists argue that the mind is strictly identical to or reducible to physical brain states, Ibn Sina posits that the rational soul is the "substantial form" of the human body.

Ibn Rushd's Kulliyyāt al-Ṭibb offers a critique of medicine's epistemic limitations that anticipates many of the paper's arguments. Ibn Rushd's (Averroes, 2005) *Kitāb al-Kulliyyāt fī al-Ṭibb* (Generalities on Medicine) critiques medicine's epistemic limitations, framing it as an inherently probabilistic discipline dependent on natural philosophy rather than an absolute science. He argued that clinical practice must synthesize rational analysis with empirical observation to navigate inevitable uncertainty.

Ibn Rushd established several core arguments that redefined medical epistemology in the 12th century, many of which echo in modern critiques of clinical reasoning. He defined medicine strictly as an operational art, not an exact science. He noted that its goal is to maintain health and combat disease as to what is possible, acknowledging the inherent limitations of treating complex, individualized human bodies. Because every human constitution (*mizāj* or temperament) is unique, he emphasized that theoretical, universal medical principles must always be adapted to particular circumstances according to the

sensory tajriba and mushāhada of the treating doctor. He recognized that the ultimate epistemic challenge in medicine lies in applying universal rules to constantly varying individual cases (Averroes, 2005).

Ibn al-Qayyim's philosophy of *Ṭibb al-Nabawī* (Prophetic Medicine) merges divine revelation with holistic natural healing. He taught that the Qurʾān and Sunna provide the ultimate framework for physical and spiritual health, viewing illness as an imbalance of the body, mind, and soul rather than just a physical malady. Ibn al-Qayyim (2003) strongly believed in holistic connections, such that spiritual ailments, such as anxiety, sins, or lack of faith, either directly cause or worsen physical illnesses. He emphasized diagnosing and curing the heart before treating the physical body. He asserted that seeking medical treatment does not contradict reliance on God (*tawakkul*). Rather, using both physical remedies (herbs, diet, cupping) and spiritual remedies (supplication, Qurʾān) is part of divine destiny.

He favored natural, preventive care and simple dietary adjustments, such as the use of honey, black seed (*ḥabba sawdāʾ*), and water, arguing that simple illnesses should be treated with simple medicines.

The methodology of the paper is to delineate the inherent metaphysical reduction and various logical weaknesses in biomedicine. This is meant to affirm that Muslim scholars should treat biomedical knowledge as instrumental knowledge for pragmatic ends, instead of assessing it as absolute in a scientific realist (SR) fashion. This would prevent them from identifying pragmatic utility and efficacy with the ontological realness of the theories, models, and entities constituting biomedicine. Hence, they will not be encumbered to necessarily make use of that knowledge and reconfigure and reinterpret Islamic positions in a way that is aligned with and makes use of the biomedical worldview. The recommendation will be that biomedical models be left to operate within the confines of their own discipline without being given epistemic authority to supervise Islamic theological and juristic positions.

Another inference that can be drawn from such an analysis is the determination of the comparative worth of systems of treatment and healing other than biomedicine. The internal logic of biomedicine with its particular metaphysical stance (although not generally declared and acknowledged) is unfair to them if used to evaluate alternate systems based on holistic metaphysics. The Muslim

populace, in addition to scholars, often considers biomedicine to represent the most accurate and factual understanding of health and disease. The critical evaluation undertaken in this paper questions the uncritical setting of biomedicine as the epistemic standard for evaluating all other systems. Hence, alternative paradigms of medicine that are holistic or anti-reductionist could be judged on their own merits and efficacy rather than being rejected for using a different mode of reasoning. This enhanced awareness of the limitations of biomedical reasoning will be useful for Muslim scholars, patients, and doctors, making them more open to exploring these options rather than being restricted to just one paradigm of thought and practice. Presently the alternative medical systems and practices are lowly rated on epistemic scale despite their practical efficacy. It will be argued that judged on the Islamic epistemological standard, they all belong to the conjectural (*ẓannī*) category of opinion and hence all systems of treatment are to be judged based on cure or relief of the existing condition rather than their ability to describe the reality underlying the disease. When it comes to the treatment plans offered by biomedicine, due to dependence on highly theory dependent unobservable data (even for what is called evidence-based medicine) most of the propositions would fall under shakk or ẓann, with few qualifying for ẓann al-rājiḥ. Many with abstract concepts without sensory referents might fall even into wahm.

Before we delve into the limitations of medical science and its related assumptions, it is important to understand the epistemic nature and position of modern science from within Sunni epistemological standards of the theological (*kalām*) tradition. These are metascientific and must be used to establish the nature and status of scientific theories, models, and explanations within the Islamic hierarchy of knowledge. Establishing the status and position of scientific theories based on theological standards and categories of knowledge is a prerequisite for developing Islamic justifications for the scientific enterprise and the arbitration of the ends and goals toward which modern scientific knowledge should be directed, by and for Muslims. To ascertain the Islamic position regarding scientific theories (biomedicine is a major part of the scientific enterprise) by assessing them through Sunni *kalām* standards of knowledge, the limits of those scientific theories in terms of conceptualizing and studying the phenomena must be determined.

"It needs to be understood from within the discipline of the philosophy of science whether scientific theories are, by and large, capable of, and developed for the purpose of, revealing reality (partially or wholly) or providing explanations of apparent phenomena or whether their goal is to solve problems within a certain research paradigm. The objective of capturing, conceptualizing, or representing reality that lies beyond appearances is metaphysical, whereas the goal of explaining and predicting phenomena and solving problems that come in the way is pragmatic or instrumental. Islamic understanding of knowledge encompasses both; classifying the scientific theories and hence scientific knowledge under the pragmatic objective could still make it a valuable social enterprise. This, however, would not allow scientific knowledge to be used for understanding, explaining, verifying, or refuting theological doctrines or claims, which can only happen on the assumptions of scientific realism–hereafter referred to as SR (Raquib et al., 2024)".

Scientific realism is being adopted by Muslim theologians and academics and doctors in the biomedical sphere without much critical analysis; consequently, various scientific terms and ideas get mapped onto Islamic theology, which means the attribution of scientific entities and theories to God and His ways of interacting with or acting upon the physical world, which ultimately raises questions about the compatibility or incompatibility of scientific assumptions with the scripture. In medical science, these take the shape of restricting God dispensing *shifāʾ* (cure) through the paradigm of biomedicine only. Although Islamic theology maintains that God can use any means or no means to cure a disease, the certainty attributed to biomedical knowledge gives the impression that God cannot act otherwise. This certitude of scientific (theory-based) propositions is neither supported by the Sunni epistemological standard for determining definitive propositions (*qaṭʿiyya*) nor by the history of scientific development and theory change, which has shown that scientific theories are not certain or conclusive in their claims but are rather limited in many aspects by the respective scientific methodologies.

Contemporary Muslim theologians grant higher certainty to unobservable scientific entities than do philosophers of science, treating them as ontologically real rather than merely approximating truth, as they are in principle fallible and debated within the philosophy of science under the umbrella of scientific realism. This approach contrasts with *kalām* (theological) criteria, which require certain

knowledge of physical entities to be self-evident, rather than inferred through theory-laden experimentation (Raquib et al., 2024, p. 1969).

"In contrast to observable entities, such as the sun or mountains, scientific entities, such as electrons or germs, are not directly observable or sensible; hence, they require two (or maybe even three) levels of theoretical inference or interpretation to merely prove their existence" (Raquib et al., 2024, p. 1969).

One can anticipate the argument presented in this paper by earlier Muslim philosophers and scholars such as Avicenna, Averroes and Ibn al-Qayyim, all of whom argued against physicalist reductionism, questioning the kind of knowledge produced in medicine and a critique of medicine's epistemic limitations in Ibn Sina's al-Qānūn fī al-Ṭibb (2005a) and Ibn Rushd's Kulliyyāt al-Ṭibb

This scientific realism (SR), embedded within the contemporary dialogues of Islam and biomedicine, must be highlighted and defended by those proposing it. The paper does not seek to disqualify this position in its entirety but merely advocates that this aspect be considered in all such dialogues. Qureshi et al. (2022, p. 248) mentions,

"A fruitful dialogue about Islam and science requires specifying which conception of science one is using, because… there are different approaches to the study of the natural world and different meanings accorded to the knowledge produced by such investigations. Whichever perspective on science one adopts, one must realise that historical, cultural, philosophical, and theological variables play a role in what scientific questions we investigate and what answers we are willing to entertain."

Muslim participants in these dialogues should make a concerted effort to understand their own metaphysical commitments as well as the underlying assumptions and perspectives of the scientific fields they engage with, particularly in medicine. Only by doing so can we hope to address the pressing questions of harmony and reconciliation that often challenge us. In fact, it is possible that these questions may not arise at all or could even be resolved in the process.

The first section introduces the current landscape of biomedicine by listing its meta-assumptions, such as reductionism and biological determinism. This will be

followed by a discussion of telos, goal directedness in relation to the Islamic objectives (*maqāṣid)*, fallacies in medical reasoning, and the overall limitations of the biomedical paradigm, all of which serve to compromise its epistemic standing. In the final chapter on the theology of medicine, the main argument will be illustrated by two examples of Muslim theologians' undeclared use of scientific realism in Islamic theology and jurisprudence. The paper will conclude by charting a path forward that incorporates instrumentalism as the philosophy of medicine and *maṣlaḥa* and *maqāṣid* as its axiology.

Meta-Assumptions Informing The Practice of Biomedicine

This section explores the key assumptions of biomedical reasoning and the fallacies embedded within them. The purpose is to understand the mode of thinking inherent in this paradigm.

1. Reductionism

One of the distinguishing features of biomedicine is its embrace of reductionism, which is a 'philosophical and methodological stance that holds that phenomena are best explained by the properties of their parts' (Valles & Friedman, 2025). When this methodology is applied to a human body in biomedicine, it means that "the patient's body is often perceived as a material object that can be reduced to a system of physical parts. That body is viewed as a machine composed of individual body parts, which can be fixed or exchanged with new parts, when broken (Marcum, 2005). In other words, the functions of the body are first reduced to organs, then tissues, then cells, and even to genes. Proponents of this methodology often consider it as a valuable source of research and that it gives insight into the inner workings of the body which can help understand and cure many diseases,

"Being able to successfully take a disease as complex as sickle cell anemia or Parkinson's and reduce it to a single genetic error that cascades through various systems, even if that reduction holds for only a proper subset of cases, illustrates that reduction can be a powerful tool for research and explanation in medicine. It cannot be the only tool in the toolkit, because some diseases or dysfunctions may

be only partially reducible, or for which only some cases are reducible" (Andersen, 2016, Chapter 8).

When a disease is diagnosed, the experience of illness, which affects bodily functions, is reduced to a single cause-effect event. However, the extent to which this is warranted is ignored. For instance, if someone is suffering from a viral infection, their body temperature is high with a runny nose and overall lethargy; a multitude of symptoms are reduced and explained by a virus that has attacked the body and is affecting them in all these ways.

It is well known that the same virus can affect different people differently. Why is this the case? If the virus is the same, how can it have a different impact on the body? The differences of human reactions to these microorganisms are not something that has been explored or entirely explained. If this is the case, it might be safer to assume that there is something more at work than the overly simplistic cause-and-effect relationship offered by biomedicine. It also assumes that all causes of illness are material in nature, when in fact, there is a debate within the realm of medicine over whether pain is physical or psychological. This will be explored further when discussing the placebo and nocebo effects.

To understand phenomena as having a single cause is also a metaphysical position because the methodology assumes that there can be only one identifiable cause. Any claim about causes and effects is, in fact, metaphysical in nature. The justification for this assumption is missing from this methodology. This remains unacknowledged among practitioners and users of this field. The paper does not seek to dismantle biomedicine but seeks to bring forward its key assumptions, reasoning, and methodology that support a particular kind of metaphysics. Awareness of these is absent, which makes the adherents of biomedicine mostly unaccepting of other methodologies, paradigms, and even metaphysical schemas. Alternative treatments must first pass biomedical standards to prove their worth and utility.

"Biomedicine shares the Kuhnian paradigm quality of being incommensurable (or at least more or less so) with other conceptions of biology and health. Scholars of complementary medicine have spent enormous efforts searching for ways that traditional medical practices— for example, herbal treatments handed down over generations—can gain a foothold in a medical world dominated by biomedicine. It is telling that there is no question that 'proof' of a treatment's

efficacy requires starting from scratch, by examining the herb's chemical makeup, isolating and analyzing which chemical components are the active ingredients, and then testing safety and efficacy, all entirely within biomedicine's rules. Whatever explanations might have been offered by herbalists (e.g., 'it calms turmoil in the stomach') are irrelevant untranslatable knowledge" (Andersen, 2016).

As noted above, even alternative paradigms of medicine are subjected to the same tests and must pass the empirical or epistemic criteria set by biomedicine to be deemed acceptable and admissible. This allows biomedicine to continue to practice hegemony over all other methods of healing and cure, conveying a very loud and clear message that it is the only valid method.

2. Biological Determinism

Another key issue in biomedical deductions is its heavy reliance on the principle of generalization derived from a belief in biological essentialism or determinism. This can also be understood as a second step toward reductionism, such that the occurrence of multiple symptoms can only always point to one disease condition when it is possible that multiple symptoms can have multiple explanations instead of just one.

For example, patients with weight loss, excessive thirst, excessive urination, and sweet-tasting urine are generalized to create the diagnosis of diabetes mellitus. Subsequently, it was found that these patients had elevated blood sugars; therefore, the generalization is now that elevated blood sugars suggest the diagnosis of diabetes mellitus. However, when selecting the original group of patients, why were hair color, eye color, or right- or left-handedness not incorporated into the selection criteria? Clearly, there must have been some prior understanding that these factors are not relevant" (Montgomery, 2019).

The theory-ladenness of medical observations cannot be ignored in this example. The observation scheme depends on theory and not the other way around. This particularly highlights the framework one chooses to operate in. To extend the above example, in the future, the field of genetics may also consider human eye color and its correlation to diabetes mellitus. Persons with certain eye colors may be more prone to this condition than others. One factor is considered in one area

and largely ignored in the other. This highlights that theoretical pre-formulation decides the parameters of data collection; there is some prior understanding or concepts of what makes a person sick before those factors are investigated, researched, or even observed.

It has been observed that this type of reasoning also establishes one-to-one essential connections between brain functions and subsequent anatomical organization. For instance, the frontal cortex controls linguistic functions in humans. This theory has risen to the level of fact and is applied across the board for everyone. The question of whether the frontal cortex is the only linguistic determinant is hardly ever raised. Once a connection is established, reductionist reasoning comes in, and the observed phenomena are generalized to all cases; any dissenting case is considered an outlier.

"Neuroscience ultimately seeks to understand brain/mind function in the patterns of neuronal interactions. Thus, it is expected that there is a one-to-one correspondence between specific brain/mind functions and a specific anatomical/physiological organization of neurons. Furthermore, it is expected that the specific anatomical/physiological organization of neurons will be found in all humans who demonstrate the same specific brain/mind function" (Montgomery, 2019).

The idea that "the organization of neurons will be found in all humans" is again a metaphysical position rather than a biological one. It presupposes the human body to be uniform and the same across all human beings, largely ignoring variations. This is a prime example of reductionism giving way to deterministic generalization, in which two key metaphysical positions regarding causation and uniformity are assumed. This paper deals only with reductionism and determinism as examples to demonstrate the type of reasoning employed in biomedicine and the metaphysical implications that this brings along with the limitations it imposes on biomedicine. The purpose of this paper is not to address all types of reasoning but to show that these metaphysical conclusions are inescapable in theory and practice. The fact that these remain unacknowledged in practice, creating discordance with theological and juristic positions, will be discussed in a later section.

In *The Disorder of Things: Metaphysical Foundations of the Disunity of Science* (1993), philosopher John Dupré argues that the universe is fundamentally

disordered, complex, and diverse, meaning that it cannot be explained by a single, unified scientific framework. He explicitly rejects the traditional mechanistic metaphor of the universe as a giant, predictable machine, offering a philosophy of the disunity of science grounded in biological complexity.

His core argument relies on refuting the three foundational pillars of the traditional philosophy of science. He critiques essentialism in his version of Promiscuous Realism asserting

that nature does not have objective boundaries ("natural kinds") that science discovers.

Dupré argues that there are many equally valid ways to classify things depending on human purposes and scientific contexts. He critiques reductionism and determinism, arguing that different levels of reality possess their own autonomous orders and causal powers.

Complex biological systems cannot be perfectly mapped down to microstructures because biological entities are fluid, highly interactive, and context-dependent. Dupré contends that indeterminism is a real feature of the world**.** The total order is an exception, not the rule. Science finds *pockets of partial order* within an otherwise messy and disordered reality.

Dupré concludes that scientific projects are inherently guided by human values because there is no single "correct" scientific method or classification system. The choices that scientists make about what to study and how to categorize the world are not purely objective value judgments dictated by social, political, and practical goals. This is particularly important for the purposes of this paper.

Physiological Functions of The Body Versus Goal Directedness and Telos

Biomedicine operates on the assumption of a materialist or physicalist metaphysics, and evidence of this is its use of reductionism. Biomedical reductionism only takes into account the physical processes of the body to arrive at an understanding of health, disease or dysfunction.

‘‘Biomedicine is built around a conception of disease as a dysfunction of particular physical parts (organs, tissues, and cells) of the body. Despite being hegemonic in the global research community, biomedicine’s ontological and

metaphysical commitments are not self-evident, historically long-lived, or universally embraced. Put another way, the biomedical framework of the body can be understood by considering what it excludes: spirit, vitality, and any other entity or property unknown to mainstream physicists or chemists" (Valles & Friedman, 2025)

A materialist worldview can have the strongest alliance with this empirical methodology simply because they both favor and validate each other. Empirical sciences can only use reductionism because matter is most easily reducible to its constituent parts. Concepts such as "spirit," "vitality, " or even consciousness, do not make their way into such a system. With the assumption that the human body is all matter the dilemma arises when it comes to determining what purpose does this matter serve.

Kenneth Richman (2004) talks about the challenging nature of scientifically explaining that biological organs, like hearts, have functions, unlike man-made objects such as blenders, whose functions are clearly tied to a designer's intent. While we might view organs as having functions, it's unclear how this view fits into a naturalistic, scientific framework, since they weren't purposefully designed in the same way.

"Thus, we have several different ways of accounting for our intuition that some biological entities, such as hearts, have functions. What they have in common is that they set up criteria for evaluation. Hearts are designed to pump blood; they exist to pump blood; it is their nature to pump blood; they are reproduced because of their blood-pumping capacity. All of these statements allow us to evaluate hearts. If a heart is designed to pump blood, then one that fails to do this well (assuming it is in the appropriate environment) is a bad specimen of its kind. (Of course, it could also be the case that the design is poor.) If a heart has been reproduced because of its blood-pumping capacity, one that fails to do this well is either a bad heart or the result of a poor mechanism of selection" (Richman, 2004, p. 15).

The idea of goal-directedness is key to understanding what it means for something to have a function. However, not all things with functions are themselves goal-directed. For example, a clock's pendulum regulates the mechanism, but this serves our goal, not the pendulum's. In contrast, biological entities have natural, intrinsic functions. Even if they do not have conscious goals,

they still work toward outcomes that are not based on external intentions. Ernest Nagel (1977) suggested that many philosophers fail to recognize important differences between functions and goal-directedness. Goal ascriptions: "... state some outcome or goal toward which certain activities of an organism or its parts are directed" (Nagel, 1977). He contrasted Goal ascriptions with "function ascriptions." Function ascriptions, he says, identify the actual effects or activities of some entity. Nagel admitted that "[s]ome biologists use the words 'goal' and 'function' interchangeably . . . possibly because the distinctions are not relevant to the tasks on which they are engaged" (Nagel, 1977).

Nagel is right to point out, among other things, that goal ascriptions imply intentionality in the goal-directed entity much more strongly than do function ascriptions. However, in emphasizing the effects of functional entities, his theory is inadequate in accounting for entities that have a function that they are unable to perform although function is by definition what gets performed or the activities being carried out not the ones that ought to have been carried out but are not.

In Understanding the Qurʾanic Miracle Stories in the Modern Age, Yazicioglu (2015) explores how attributing autonomous agency to natural entities can lead to a form of "naturalistic idolatry," in which nature is perceived as self-governing and self-sufficient.

> "In other words, the attributes of the apparent causes, such as soil, water, and sunlight, fall short of bearing responsibility for a well- ordered and well-balanced unified being, such as a garden or a living being. That is, the apparent causes, even when they are considered collectively, do not display the knowledge, contrivance, power, mercy, or life displayed by their effects. The natural causes are "lifeless, ignorant, aggressive, unconscious, chaotic, blind and deaf," and they become messier as an "innumerable" quantity of them mix with one another. This gap between the qualities of the natural causes and the qualities of the effects associated with them is the key to realizing that an unseen real cause must be acting through these natural causes. Interestingly, Nursi presents this reasoning as inspired by Qurʾanic verses such as "Those you call on beside God could not, even if they combined all their forces, create a fly" (Q. 22:73) (Yazicioglu, 2015, pp. 138–139).

This viewpoint challenges the assumption that natural processes operate independently, suggesting instead that they are signs pointing to a higher, purposeful agency. By reframing natural phenomena as signs (*āyāt*) of divine action, Yazicioglu invites readers to recognize the consistent divine will behind the regularity and predictability of nature. She critiques the modern tendency to view natural entities as possessing self-regulating knowledge and control over their future functions and goals, effectively turning them into mini-gods. Instead, it encourages a theocentric worldview in which the natural order is seen as a continuous expression of God's creative power.

Fallacies of Medical Reasoning

The following are the three major fallacies in medical reasoning at the level of diagnosis. These are mentioned not to dismiss medical reasoning in its entirety, but to understand its operating assumptions and consequently to understand the epistemic status of the biomedical paradigm as a whole. This allows for a more realistic understanding of its logical limitations, encouraging a humbler expectation and a non-condescending attitude toward other systems of healing that follow a different internal logic. A medical practitioner who is aware that biomedicine is not theoretically or methodologically superior to other modes of understanding and treating diseases can then consider biomedicine as one system among others rather than the system to which all other systems should subscribe. They can even direct patients to explore alternative modes of treatment in case they yield better results.

1. Affirming the Consequent

This fallacy in thinking and ultimately diagnosis occurs as follows: A implies B and B implies C; therefore, A implies C. This is a logically sound argument; however, its converse is not valid. If B exists, then it does not imply A. This is the most common mode of reasoning employed in medicine and is responsible for misdiagnosis.

“The Fallacy of Confirming the Consequent is arguably to blame for most misdiagnoses. Nearly 25% of patients with Parkinson’s disease, for example, are misdiagnosed and instead have tremor due to essential tremor, hyperthyroidism,

the influence of drugs, or some other cause. Physicians usually reason that if a patient has Parkinson's disease (a), then she should present with tremor (b). The presence of Parkinson's disease implies the presence of tremor (a implies b)" (Montgomery, 2019).

Not every tremor implies Parkinson's disease; that is usually interpreted as such and is only corrected later if at all.

2. Fallacy of Limited Alternatives

If a patient has a preexisting condition, doctors are more likely to use it as the basis for every future diagnosis, even though there may not be a sound logical reason for doing so.

"Frequently, when confronted with a patient with peripheral neuropathy and a known diagnosis of diabetes mellitus, the physician quickly attributes the peripheral neuropathy to the diabetes and does not look for other causes. However, there may be nothing about the patient having diabetes mellitus that reduces the probability of an alternative diagnosis, assuming the probability of each alternative is independent of the others" (Montgomery, 2019).

The assumption that later symptoms are somehow connected to earlier ones is not logically defensible. This weak assumption is often undetected in a doctor's thought process when generating a diagnosis.

3. Gambler's Fallacy

Example of the gambler's fallacy:

In the emergency department, one might diagnose three patients in a row with pulmonary embolism; therefore, it is unlikely that the next patient will also have a PE, despite the fact that the patients are clearly unrelated to each other. This leads to a form of base rate neglect, in which the pretest probability is inappropriately adjusted based on irrelevant facts.

The reverse is also true: during COVID, patients presenting with any COVID-like symptoms were more likely to be tested and diagnosed with COVID than with anything else.

These are but a few of the many fallacies that exist in the field of modern medicine. The problem that this paper seeks to highlight is not that they exist but that they remain unidentified and undisclosed. Healthcare professionals and religious scholars who engage in Islamic scholarship with the conclusions reached in biomedicine remain unaware of the limitations of its reasoning and methodology, which makes them overrate those conclusions. One undesirable consequence of this uncritical acceptance is the sustenance of the hegemonic culture of modern medicine.

Limitations of Biomedical Paradigm

This section further delineates the limitations inherent in the nature and modes of reasoning of the biomedical paradigm.

1. Interventionist Nature of Modern Biomedicine and Its Side Effects

Modern medicine is interventionist in nature because disease is understood as a dysfunction. Medicine acts as a counteragent in this paradigm. Once the issue is identified, medicine intervenes, fixes the issue, and retreats. One of the greatest challenges is caused by the side effects, which are sometimes fatal. The irony is that the justification of medical intervention is prevention of death or disease, and that in turn becomes the cause of death. A study by Johns Hopkins researchers identified medical error as the third leading cause of death in the United States, accounting for an estimated 250,000 fatalities annually (Makary & Daniel, 2016).

Side effects are also a direct result of reductionism gone wrong. If the body is theoretically broken down to the cellular level and addressed at that level only (for example, painkillers), it cannot be predicted how this medicine could impact all other concurrent systems because the medicine is being administered to a reduced entity, whereas the body might function as a whole. This also provides a simple justification for why side effects cannot be predicted but need to be managed whenever they occur. Given the available scientific research, how do doctors assess the impact of interventionist medicine on a person? Some people are more prone to side effects, and some are less. The diversity of human

reactions is ignored at first by reductionism and worsened by interventionist medicine. These are important questions to consider when directing research and funding to programs and investing all hopes in a paradigm (biomedicine) that has its own underlying schema, concepts, and metaphysics.

2. The Unknowables of Biomedicine

The field of biomedicine is full of miracle recovery stories as well as shocking unexpected death stories. A unique feature of biomedicine is that it seeks to explain the condition of the patient by relying on unobservable entities. Other paradigms of medicine have traditionally observed and understood diseases at the level of visible symptoms and have relied on the context and experience of the patient. A simple example is that through blood screening, a person with high cholesterol levels can be classified as a cardiac risk patient, while no such explanation exists in traditional medical paradigms. The causal explanation that modern medicine builds upon becomes even more complicated because not all "patients" with high cholesterol levels end up with heart attacks or other cardiac issues; how, then, valid is this paradigm that relies on unobservable, highly theorized research-based entities to arrive at a diagnosis in which the personalized experience of the patient is completely missing? This is not to state that theoretical modeling of diseases is incorrect but rather that it lacks the acknowledgment that these are working or instrumental models that may or may not apply in certain situations. This epistemic humility is lacking from this paradigm because once the diagnosis leaves the arena of physical symptoms and enters the domain of unobservable entities, everyone becomes a potential patient, waiting to be diagnosed through screening. A person can experience absolutely no symptoms but may still have low sodium levels and be at risk for dehydration.

This represents a peculiar understanding of disease or health that is distanced from apparent symptoms and the personal experience of the patient. The methodological assumption here is that theoretical understanding rules over other parameters, such as personal experience and reports of the patient. This entails the metaphysical assumption of scientific realism with respect to the theories constituting biomedical knowledge. Realism is difficult to defend in the context of changing theoretical models for explaining diseases. The theoretical

understanding of a conjectural *ẓannī* nature ends up refuting their definitive (*qaṭʿī*) subjective declarations of not having a sickness and declaring people as patients who have no physical representation of the disease. At this point, medicine becomes a tool for dominating people rather than curing them. Routine tests are part of the biomedical system, and everyone is a patient until proven otherwise. This is a stark reversal of traditional methodologies in which people were considered healthy and were only declared patients when they experienced or reported discomfort.

In such cases, it has been witnessed that despite the doctor's poor prognosis of the patient, s/he continues to live well beyond the expected date. How does medicine explain such outliers (Turner, 2015; Weil, 2000)? If an enzyme, a blood clot, or any unobservable entity that is screened is fatal in theory but somehow has no effect on a person or a group, how is that to be explained? If such screening-based judgments can be proven wrong by a few people, how reliable are such judgments to begin with? This is not a simple case of exception versus rule because the rule seems to be speaking conclusively in certain situations. Furthermore, what about those treatments that are expected to work and have shown consistent results in the past, medical doctors have witnessed even such medicine or treatment to be not working. Usually, the explanation given is that it may have impacted another organ or system or some kind of side effect that was not known and hence could not have been predicted. This again raises the question that if something that is unknown and is having such an impact on the efficacy of a trusted medicine, how can any conclusive or binding evidence or solution be stated. This deals a blow to the epistemic value of the biomedicine enterprise.

3. Placebo Effect

The concept of the placebo effect is equally elusive. How can the absence of medicine produce the same result as its intended consequence? This is true for all paradigms of medicine, but particularly so for the biomedical sphere, because there is an entire theory of how, for instance, the active ingredient acts upon the system to remove germs and bring about wellness. How is the same result achieved without an active agent? Perhaps healing is more than physical in nature.

"Part of why the placebo phenomenon has been relatively neglected within biomedicine is that the predominant paradigm focuses on a biological conception of disease that is treated by technological interventions (including drugs, medical procedures, implanted devices, and surgery), with relatively less attention to illness relieved by the context of the medical encounter, including the doctor-patient relationship" (Miller et al., 2009).

The crucial thing to understand here is that only biomedicine is interventionist in its nature because traditional paradigms of healing have looked at the body holistically and can offer alternate explanations based on their understanding of the body. This question of the resolution of the placebo effect and, by extension, the nocebo effect, becomes difficult for this paradigm to answer simply because it seeks to explain the observable (sick patient) on the basis of unobservable (germs or genes) and reduces the experience of illness or disease to physical causes alone.

At the very least, the placebo effect challenges the physicalist notion of the body and creates space for extra-material processes that are at work when healing occurs. For example, the relationship that a patient has with their doctor does have a role in healing. This paper seeks to bring forth this decontextualization. Sullivan (1993) remarks,

"Medical scientists set themselves apart from the doctor–patient relationship to obtain knowledge stripped of personal elements. This allows the development of context-independent expertise and therapeutic technology that can be delivered by a profession to its patients" (Sullivan, 1993, p. 213).

However, the physicalist or reductionist meta-assumptions of biomedicine bar such an inclusion and therefore escape any explanation for placebo or nocebo effects. Such a one-dimensional conceptualization of the human body, in the face of counter evidence, reflects prejudice and therefore cannot claim to have the highest epistemic authority.

The Theology of Medicine

One of the many issues that arise when biomedicine interacts with theology is that previously held positions in the traditions are "forced" to be reinterpreted or explained using the new paradigm of knowledge. Furthermore, this knowledge

can also be used to lend greater credibility to one opinion in cases of conflict. One such example is the event of ensoulment that occurs in a mother's womb. There is a difference of opinion based on aḥādīth regarding whether ensoulment occurs at 40 days or 120 days. Currently, screening technologies are available that claim to be able to monitor the developing embryo and fetus from the very early stages until birth. The question "when ensoulment occurs" is answered by employing such technologies and checking the vital features of the embryo and fetus at 40 and 120 days (and in between). This is what Hamza Yusuf's work attempts to do.

"The argument that ensoulment occurs soon after 40 days ultimately proves far stronger than the traditional majority view that it occurs after 120 days, given what we know of embryogenesis today. The basis for 120 days, if taken from the ḥadīth in its standard interpretation, would mean that the ḥadīth contradicts today's medical views that are based upon unshakeable evidence of embryonic organogenesis, where neuronal activity and heart tones are detected by the sixth week of gestation. The well-known criterion among ḥadīth scholars is that a ḥadīth cannot contradict something known by reason with proofs beyond reasonable doubt. Thus, should a ḥadīth contradict agreed-upon factual knowledge, scholars either reject it or, if possible, reinterpret it if the language allows for other possibilities, as can be done in this case" (Yusuf, 2022)

The author's method of giving juristic preference (*tarjīh*) between the two opinions comes entirely from biomedicine or modern science. The idea that we now have access to more knowledge that will be used to interpret or reinterpret existing opinions on the Qurʾān and Hadith. This argument relies exclusively on treating the knowledge obtained from techno-science as 'certain," free of any assumptions or fallacies. If the author was aware of the nature of scientific knowledge and its theoretical assumptions, he would certainly not have claimed 'medical views' to be 'unshakeable evidence'. The criterion that ḥadīth scholars have about a ḥadīth not contradicting 'proofs beyond reasonable doubt' comes from within the Islamic epistemological paradigm only. The scientific proofs or knowledge claims that are being used here are not rated using that paradigm; secondly, they are inserted as 'factual knowledge"–a claim which science or biomedicine never makes for itself. At another point in the same article, he mentions:

> "In a different narration of the same ḥadīth, the man asked what determines the sex. He was told, 'A man's fluid is coarse white, and a woman's is translucent yellow (aṣfar raqīq). When they meet, if a male sperm (maniyy) (y chromosome) is dominant (ʿalā), then it is a boy. But if the female sperm (maniyy) (x chromosome) is dominant, then it is a girl.' The Prophet clearly distinguishes between the ovum (female nuṭfa) and the spermatozoon (male nuṭfa) and the sperm (maniyy), which he described as being both male and female (x and y chromosomes that a man receives from his mother and father)" (Yusuf, 2022).

Contemporary theory regarding sex determination relies on the X and Y chromosomes. XX is a girl and XY is a boy. However, the Prophet (sws) mentions observable aspects, such as the coarseness of men's white fluid and the translucence of women's yellow fluid, along with the dominance of one over the other. In an attempt to reconcile the two (seemingly contradictory) positions of genetics and ḥadīth, the author translates women's fluid as X and men's fluid as Y, simply forgetting or foregoing that both X and Y chromosomes of spermatogenesis are present in the semen ejaculated by men according to biomedical science. Sex determination depends on which sperm enters the ovum. The woman's fluid, as described by the Prophet (sws), appears to have no place in this current genetic model of sex determination. It is the man's semen (understood by science as sperm) that is solely responsible for sex determination. Even if we accept that there is a space to interpret the two fluids as chromosomes, the Prophet has described observable things (fluids), which are being given a meaning that is highly theoretical, abstract, and unobservable (chromosomes). The attitude of explaining phenomena using unobservable entities is something that modern science has yet to justify in its own domain.

Science in the Framework of Islamic Legal Epistemology: An Exploratory Account by Ahmed and Padela (2022) is a case in point where a partial understanding of the discourse within the philosophy, history, and sociology of modern science leads to the development of an interface between Islamic and scientific epistemology, resulting in theological incongruities. The stance upheld in his work, where certain scientific theories, such as gravity, are assumed to be facts beyond doubt, reflects a lack of awareness of the abstract, theory-laden character of gravitational theory as well as any other such theories. We also find

a lack of awareness of the interpretive and, hence, conjectural nature of these theoretical abstractions, which are a constant subject of debate and dispute within the philosophy of science.

The inconsistencies emerge mainly because the author adopts a strong scientific realist (SR) position without acknowledging it as such and thereby not providing a supporting reason or justification from within the Islamic epistemological framework for holding onto that position. As a result of not laying out this stance in clear terms, its implications for Islamic cosmology could not be drawn out, and thus the possible inconsistencies arising from the undeclared SR position could neither be surmised nor attempted for resolution.

Islamic cosmology, regardless of the theological position of the divine model of intervention adopted, does not cohere with the mind-body or soul-body dualism presumed in scientific methodology as well as by the author. The material realm of the cosmos is not entirely material, entirely controlled by physical causes, processes, forces, and laws, but is infused with the transcendent or metaphysical dimension in virtue of being caused and controlled by divine intervention and manipulation. This Islamic metaphysics implies that there is a dimension to the physical universe that is non-physical and divine, above and beyond the horizontal causation, that cannot be apprehended and comprehended by the human mind and imagination and that is why the understanding of the underlying working or the mechanism of any physical object, system or process cannot be known completely or with certainty by humans. This questions the very typology that has been developed in the work under discussion, which rests on the distinction of certain, absolute scientific postulates that are to be "treated as an aspect of God's will which has been discovered through scientific knowledge" and uncertain scientific knowledge. Claiming the scientific explanatory models of the mechanisms underlying physical phenomena to be an aspect of God's will reduces and limits God's transcendental mechanisms to scientifically reached unseen physical processes. This identification of humanly developed scientific categories, models, and concepts that provide merely physicalist explanations with God's ways of exercising His will and control finds itself at odds with Islamic metaphysics and theology. Scientific knowledge, by virtue of its very methodology, is fallible and hence cannot be considered as "knowledge revealed by God to His creation as part of His guidance (hidāya)." This level of certainty regarding the scientific postulates and theories that they can be considered

revelations from God is not avowed even by philosophers of science who are strong scientific realists, being knowledgeable of the limitations of the scientific methodology, which is incapable of studying even the physical properties of phenomena in their entirety since the method requires detached experimental conditions far removed from the natural, holistic setting of mutual interconnectedness.

The Islamic metaphysical dimension of human free will residing in the metaphysical consciousness would thus resist sharp mind-body dualism. Thus, the neural network model illustrated by the author cannot qualify as necessary knowledge because it relies on the reductionist dualist model and is, therefore, not reconcilable with faith in free will. It is not simply a matter of prioritizing one scientific theory over the other, attempting to incorporate or reconcile it with Islamic metaphysics and epistemology. Rather the efforts would turn out futile because of the initial schematization based on scientific realist assumptions. It is this uncritically adopted SR position that leads the author to recommend replacing the traditional *ʿaql* or intellect with scientific rationality. Unlike general rationality and its axiomatic principles, which in Islamic theology are considered to constitute certain and self-evident (*yaqīnī* or *badīhī*) knowledge, scientific reasoning is limited both in its epistemic and social scope because it requires knowledge of certain background theories and assumptions that are historically and culturally determined. The author fails to understand these historical, socioeconomic, and political dimensions of modern science. If the underlying explanatory concepts, entities, processes, and theories of biomedicine lack ontological veracity as per the Islamic epistemic benchmark, they cannot assume cognitive superiority over alternative healthcare practices because, in the final analysis, practical efficacy raises the practice of biomedicine as *ʿurf* or cultural practice, just like chiropractic, as mentioned by the author.

Just as there is no need to develop detailed epistemological categories for chiropractic—since it does not make strong claims to certain knowledge—if one thoroughly analyzes biomedicine before attempting to relate it to Islamic jurisprudence, one might similarly conclude that, although biomedicine may be pragmatically more effective, it does not offer the kind of certain knowledge required by Islamic theological epistemology. This questions the need for an interface or dialogue to exist between these two systems of knowledge.

Conclusion

The need to develop a framework to engage science as a whole is more than urgent. The paper does not propose that the framework should be universal; however, theologians would need to make their theological commitments clear and be critical of the positions they end up taking when engaging with modern science. The hope is that this exercise will resolve many questions even before they arise. This paper has examined some of the philosophical and logical dimensions of biomedicine, highlighting the critical metaphysical, methodological, and ethical assumptions that underpin modern medical practices. It has been argued that biomedicine functions as a modern, institutionalized, and centralized practice, in which its intrinsic metaphysical and ethical frameworks play a crucial role in its theological appropriation. This appropriation is often uncritically done and ends up creating more issues for Islamic theology and jurisprudence than it resolves.

The concepts of functions and goals of biological entities are central in medicine because they direct research, funding, institutes, and even people's ideas about what constitutes health or disease. It has consequences in terms of determining the ethical status of biomedicine, which apparently allows or facilitates human beings to perform their functions to the fullest. In light of the above discussion in this section, we have seen that the underlying physicalist metaphysics of biomedicine classifies human beings as the sum total of various biological organs, systems, and processes, each having some individual functions that contribute to the preservation of human life and health. The biological functions here, for the lack of any other higher telos or purpose, are identified with the goal of human beings and the maintenance and preservation of those functions becomes the highest goal within this worldview, acquiring a high ethical status and rationale for the further advancement of biomedicine. Another corollary of this reductionist metaphysics is that, because biological survival and functioning is the highest or the only end for human beings, a biologically strong individual also becomes ethically strong. Hence, offering and undertaking biomedical research and treatment plans becomes an ethical, social, and political responsibility. This is the area where the presuppositions of biomedicine sharply contrast with the Islamic worldview and theology. From the perspective of Islamic theology, the human being is not equivalent to a mere biological entity. According to Al-Ghazali (1990), the physical body is a vehicle for the moral purification and

adornment of the soul such that spiritual cleansing via bodily actions would allow a smooth transition into the next world at the time of death. Since Allah has purposefully designed and created the human being based on and reflecting His divine knowledge and wisdom, the various organs or systems do not determine their function. Those functions have been determined by their Creator, who has made the physical body function and work together in a certain way to not only fulfill the biological functions but essentially to allow human beings to fulfill their higher purpose and goals as moral, spiritual, and intellectual beings. The physical heart and body are the vehicles for character reformation and discipline of the spiritual self. In this schema, since the human essence is not equal to biological survival and functioning, a morally better human being is not one who has a sounder body and higher rate of survival and procreation but one who has higher levels of God-consciousness and virtue. A maimed person, who lost their limbs in the cause of a higher struggle such as establishing justice in an unjust world, and whose biological functioning is not optimum is not necessarily less capable of fulfilling the God-given goals and lives a goal-directed life despite less biological functioning. Only by understanding this salient difference in the worldview of biomedicine and Islamic theology can we understand and appreciate the ideas of redemptive suffering in Islam. A person willingly accepting some disease condition or symptoms to atone for sins or increase in reward does not look like an anomaly to be explained. Extreme concern with physical fitness and well-being and pre-diagnosis and treatments of anticipated biological or pathological conditions becomes blameworthy instead of praiseworthy in this cosmology. Physical wellness and strength only become appreciable when premised on healthy faith, heart (*qalb*), and goal directedness toward the purification (*tazkiya*) of self and good deeds[1].

In the eagerness to have a dialogue between biomedicine and jurisprudence (*fiqh*) for instance, care should be taken that it does not descend into a monologue or, worse, a dictation, in which theology and the jurisprudence

1

اللهُمَّ إِنِّي أَسْأَلُكَ صِحَّةَ إِيمَانٍ وَإِيمَانًا فِي خُلُقٍ حَسَنٍ وَنَجَاحًا يَتْبَعُهُ فَلَاحٌ يَعْنِي وَرَحْمَةً مِنْكَ وَعَافِيَةً وَمَغْفِرَةً مِنْكَ وَرِضْوَانًا

O Allah, I ask You for the health of my faith, such faith in good character, and salvation leading to success, Your mercy, Your wellness, Your forgiveness, and Your pleasure
Musnad Ahmad: 8255.

dependent on that theology are expected to mold themselves to accommodate the latest research or medical breakthrough. The next part of this paper will briefly survey the latest literature that engages biomedicine, theology, and jurisprudence. This is not an exhaustive study but rather an attempt to show the hegemony of biomedicine, not only in popular imagination but also in academic circles where these dialogues are taking place. The extent to which basic concepts like "harm", "quality of life", "necessity", "suffering", and others get reinterpreted when Islamic paradigm is confronted with biomedical paradigm were analyzed with the conclusion that such alterations and reconsiderations are not warranted at all.

The maqāṣid theory (Al-Shatibi, 1951) is an Islamic ethical framework that guides Muslim communities to live according to the Sharīʿa by deriving ethical principles for all situations. The maqāṣid theory is an Islamic ethical framework that prioritizes human well-being through a strict hierarchy of human needs, where community welfare always takes precedence over individual interests. It guides daily life under Sharīʿa by prioritizing human well-being and community welfare over individual interests. Its three categories of priority are essentials (*ḍarūrāt*), which are critical for survival and mandate the absolute protection of religion (*dīn*), life (*nafs*), intellect (*ʿaql*), progeny (*nasl*), and wealth (*māl*). Needs (*ḥājiyyāt*) are secondary elements that support essentials and remove daily hardships, while enhancements (*taḥsīniyyāt*) are optional, desirable elements used to beautify or facilitate life.

The maqāṣid approach relies on understanding maṣlaḥa (human good/benefit) and mafsada (harm). When clear scriptural texts are absent, actions are judged by weighing these two opposing forces. It has a holistic scope that includes both individual and societal welfare, guided by local customs and established practices. It prioritizes the collective welfare of the community by overriding the desires of the individual. Preventing collective harm is more important than achieving collective good or preventing individual harm. Individual benefits are prohibited if they cause or risk causing harm to the community.

How the idea of instrumentalism proposed in this paper should translate into a new framework of health, treatment, and cure within the Islamic system of thought and practice is something that requires intellectual deliberation and scholarly engagement. The model of pragmatic efficacy would have to operate

within the confines of the higher objectives (*maqāṣid*) of Sharīʿa with an understanding of human well-being and harm derived from the holistic ideas of human welfare (*maṣlaḥa)* as the field of health intersects with the broader social, moral, economic, geopolitical, and environmental contexts.

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