Magical Thinking: Its Effect on Emergency Medical Care

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1.1 Introduction

Magical thinking pervades our lives. Often it involves automatic culturally accepted actions, such as touching a medallion for reassurance, and saying 'God bless you' or 'good luck' to wish someone well. It is problematic when, for example, it causes patients, families, or emergency physicians (EP) to deny, refuse or deviate from evidence-based care in response to disease and injury. This paper provides an overview of magical thinking. It discusses its prevalence; its various manifestations; its potential effect on healthcare professionals, patients, and their families; and strategies for interacting with individuals whose magical thinking may be obstructing the delivery of good health care.

2.1 What is Magical Thinking?

Magical thinking is the belief that thoughts, actions, or symbols possess the power to cause, change, or prevent real-world events. Those who engage in magical thinking perceive natural occurrences as having purpose and meaning, and they attribute physical power to their thoughts.[1,2] This type of thinking ascribes supernatural or mystical abilities to specific wishes, rituals, symbols, objects, or beliefs, even in the absence of empirical evidence or logical reasoning. Often, it relies on an informal fallacy known as "post hoc ergo propter hoc," which assumes that an event happens simply because it follows another event, even in the absence of a genuine when there is no causal link. "Active" magical thinking is the belief that one's own thoughts, wishes, or desires can influence the external world, while "passive" magical thinking holds that factors such as astrological signs, shooting stars, or totems can cause or prevent an event without the individual's active involvement.[3,4] Cultural, religious, and individual factors can all influence magical thinking. While most people with magical thinking have otherwise normal thought patterns, in some cases, it is associated with obsessive-compulsive disorder or schizotypy. Individuals with schizotypy also adhere to conspiracy theories and often refuse vaccinations.[5-7]

Modern EMs' clinical practice uses evidence-based medicine (EBM) to differentiate tradition and belief from knowledge. Magical thinking is a set of beliefs that rarely can be justified while EBM is knowledge that is not subject to reasonable objections unless scientific studies prove it incorrect.[8] Plato described the relationship between knowledge and belief (Fig 1), writing that "there is false as well as true belief but not false as well as true knowledge."[9] Magical thinkers consider all their beliefs to be true knowledge.

3.1 How prevalent is Magical Thinking and what are its common manifestations?

Magical thinking is present to varying degrees in everyone's thoughts and behaviors, including patients, families, EPs, and other medical professionals. It manifests as various behaviors, as shown in Table 1, and can be observed in popular phrases, memes, and folk sayings. For example, phrases like "wish upon a star," "make a birthday wish," and "break a leg" (for performers) are associated with bringing good luck. Certain actions such as

“knocking on wood,” “keeping your fingers crossed,” throwing salt over one's shoulder, avoiding walking under ladders, and wearing amulets and talismans are believed to have protective or apotropaic “magical” properties and are thought to ward off misfortune.

Magical thinking has continually influenced beliefs and behaviors across all cultures, intertwining with social practices, folklore, and mythologies. For example, before the causes of illnesses were understood, medical practitioners relied on quasi-religious rituals rooted in magical thinking to care for the sick or injured. It played a role in shaping societies, influenced decision-making, and provided explanations for phenomena that were not easily comprehended through scientific or rational means. Those who deviated from accepted societal norms by engaging in magical thinking were often criticized and labeled as sorcerers.

3.1.1 In Medicine. In medical practice, magical thinking is particularly evident in the prevalence of superstitions. For instance, some surgeons wear “lucky” shoes or socks in the operating room to exert control over the unpredictable nature of their environment. They attribute their surgical outcomes to the symbolic power of these superstitious items.[13,14]

In EM, magical thinking can be observed in two distinct forms: common and relatively harmless superstitions, and the more dangerous and seldom discussed clinical thought processes. Many people believe in the superstition that bad events happen in threes, and this belief extends to the emergency department (ED) where staff may mention it when three trauma patients arrive during a single shift, three patients die in a week, or three patients present with an unusual diagnosis within a short period. Although studies have disproven many ED superstitions, they persist along with other common superstitions, such as avoiding shifts on Friday the 13th, believing that certain colleagues attract numerous challenging patients (referred to as "black clouds"), refraining from uttering the "Q" (quiet) or "S" (slow) words to describe a shift due to the fear of busier ED activity, and avoiding mentioning the names of "frequent flyers" for fear of their appearance in the ED.[15] Many ED personnel also believe that peculiar events occur during full moons, such as a surge in patients and ICU admissions. However, a comprehensive study has shown that a full moon has no effect on ED patient volume, ambulance runs, or admissions to a monitored unit.[16] Another study found no effect of using the “Q” word.[17] Due to the variability in practice style, efficiency, and knowledge among EPs, it is difficult to conduct scientifically valid investigations into the effects of a “black cloud” phenomenon.

EPs themselves are susceptible to magical thinking based on cognitive fallacies or simply overconfidence. They may misperceive the clinical effectiveness or complication rates of interventions, place unwavering trust in EBM, or resist incorporating new knowledge due to their adherence to traditional practices.

While it may appear to be magical both to patients and to less-experienced clinicians, expert EPs employ automatic, intuitive thinking (referred to as “System 1” or “gut” thinking) when making diagnoses or determining treatment plans.[18] Gladwell termed this “thin slicing.”[19] Rather than stage magic that relies on a set of skills based on misperception, deceit, and psychology,[20] these intuitive judgments are based on heuristics--rules of thumb or mental shortcuts--developed through extensive study and multiple exposures to similar situations. Failing to recognize situations in which System 1 thinking falls short, however, is a form of magical thinking and can have detrimental effects on patients. Such situations require more deliberate, time-consuming, and thorough analysis (referred to as “System 2” thinking).[21]

3.1.2 In Religions. Magical thinking commonly coexists alongside more structured religious doctrines and spiritual practices as belief in supernatural forces, miracles, divine interventions, and the power of rituals or prayers to influence events (Table 2). By creating a perceived connection to the unknowable, such beliefs are meant to reduce anxiety. Magical thinking affects patients when, in addition to or instead of seeking medical care, they go to exorcists and priests to placate or otherwise render harmless the god, demon, or sorcerer believed to be causing their ailment. Religion often involves a community of followers who share common beliefs, values, clergy, and rituals. Magical thinking is more individualistic and lacks formal structures or recognized leaders. The presence of magical thinking and how it is used varies among the adherents and communities of all religions.

3.1.3 In Different Cultures and Societies. Beliefs and practices associated with magical thinking can vary significantly across different cultures, and these ideas often persist when people from those cultures migrate. Indigenous cultures around the world, for instance, have rich traditions and beliefs that encompass spiritual connections to nature, healing ceremonies, rituals, and faith in supernatural forces or deities. African and Afro-Caribbean cultures frequently embrace magical beliefs, rituals, and spiritual practices rooted in animism, Vodou, Santeria, or other syncretic religions that merge multiple belief systems. Similarly, many Latin American and Caribbean cultures have syncretic belief systems that incorporate magical thinking, rituals, and spiritual healing practices. Through the combination of indigenous traditions with Catholicism, unique practices such as *curanderismo*, *espiritismo*, and *brujería* have emerged. In East Asian cultures, magical thinking is often intertwined with practices like Traditional Chinese Medicine, acupuncture, feng shui, as well as beliefs in spirits, luck, and the flow of energy (known as qi).

4.1 How to recognize magical thinking in patients and families' medical decision making

EPs should be able to identify instances where patients or their families rely on magical thinking to make medical decisions. Recognizing this can inform the EP's approach to the patient and their beliefs, enabling them to deliver appropriate medical care and work toward achieving the best possible outcome.

Misattribution of causality is common among individuals engaging in magical thinking. They attribute medical outcomes to unrelated events like astrology, luck, or divine intervention instead of accepting scientific explanations and evidence. Furthermore, they may describe their illness as the result of supernatural causes such as curses, hexes, or divine intervention or retribution. They often demonstrate an unwavering conviction in the power of charms, rituals, or supernatural forces to influence medical outcomes.

Magical thinkers may dismiss scientific evidence, refuse to acknowledge the seriousness of their situation, and rely heavily on rituals, repetitive behaviors (common in those with obsessive-compulsive disorder), or objects believed to possess magical or protective powers during medical procedures or interventions. Some may prioritize using unconventional or alternative remedies, such as herbal medicine, energy healing, crystals, or homeopathy, over evidence-based treatments. Despite the lack of scientific support, they remain convinced that these methods will offer better outcomes.

Unrealistic expectations frequently arise from magical or distorted thinking, often resulting from the misrepresentation of healthcare in popular media and a lack of understanding regarding the limitations of medicine. For example, a prevalent misconception

portrayed in television and movies is that suturing the skin alone or just removing a bullet can miraculously heal a gunshot wound to the torso. Patients or families may continue to have unrealistic hopes for immediate or miraculous cures, even in cases with a poor prognosis, demonstrating their limited comprehension of medical science's constraints. They may believe in the supernatural abilities of healthcare professionals or place unwarranted faith in specific treatments, expecting extraordinary results despite medical evidence to the contrary.

5.1 What benefits and detriments can magical thinking have on EM care?

Magical thinking often provides benefits to patients, families, and clinicians, but it can also have deleterious effects.

5.1.1 Patient Benefits of Magical Thinking. Despite its illogical nature, magical thinking can offer benefits to patients, their families, and their clinicians. Engaging in magical thinking can provide individuals with an "illusion of control" over their disease, leading to reduced anxiety, increased optimism, and potentially improved outcomes through the placebo effect.[22] It also can serve as a "neutralizing strategy" by offering patients a sense of comfort, security, and agency when faced with uncertain or uncontrollable situations.[23-25] Patients' magical thinking and optimism can be augmented by a belief in the power of technology and by the EP's behavior and appearance. By exuding confidence and projecting a sense of control in the face of uncertainty, healthcare professionals can help alleviate patient fears and create a more positive healthcare experience. Instead of disregarding magical thinking as a cognitive error,[26] EPs should acknowledge that it is a distinct cognitive ability aimed at coping, which may provide a survival advantage.

5.1.2 Placebo Effect. Both magical thinking and the closely related placebo effect are based on unsupported beliefs and expectations. Recognizing these phenomena is a crucial part of the EP's toolkit. The placebo effect, widely observed in clinical practice and a driving force behind the use of double-blind clinical trials, showcases how the conscious mind can exert influence over seemingly involuntary bodily functions.[27,28] When patients believe that a treatment will be effective, they may experience positive effects even if the treatment itself has no direct physiological effect.

Understanding the role of magical thinking in patients' perceptions and expectations is crucial for leveraging the placebo effect to enhance patient outcomes and psychological well-being. By employing strategies such as positive framing, empathetic communication, and patient-centered care, EPs can positively influence patients' healing processes. By aligning the presentation of treatments with patients' magical beliefs (within ethical boundaries), practitioners can enhance the placebo effect and contribute to improved patient outcomes. This, in turn, can have a positive impact on patients' psychological well-being and their perception of treatment effectiveness.

5.1.3 Patient Harm from Magical Thinking. Magical thinking "substitutes invented reality for actual external reality [as] a form of anti-thinking."[29] Using it motivates patients to deny the need for, delay, or refuse medical interventions. They may attribute their symptoms to supernatural causes or rely on alternative or mystical remedies.

Patients who believe that they will get better without medical help or that alternative unproven and risky remedies are superior to hospital treatments may delay seeking appropriate medical care. Some patients with serious illnesses, such as heart attacks, present to the ED late in their course. At that point, more heart damage has occurred because of their

belief that “If I don’t go to the ED, it won’t be a heart attack.” This delay can result in their condition worsening o and potentially leading to serious complications or even death.

5.1.4 EP Benefit from Magical Thinking. EPs and other EM professionals contribute to and benefit from the placebo effect through their words, actions, and demeanor. The belief and confidence they project through their bedside manner, as well as their symbolic scrubs, white coat, and stethoscope can influence patients' perceptions and outcomes, even if the actual treatment provided has no direct physiological effect.

EP’s awareness of magical thinking in their patients offers several opportunities for improving their clinical effectiveness. Understanding the patient’s beliefs and expectations, allows the EP to acknowledge and address their concerns and establish trust, facilitate shared decision-making, and enhance their relationship with patients. It may help alleviate anxiety and distress if the patient’s prayer, charms, or rituals are acknowledged in a non-judgmental manner. Patients may respond better if EPs respectfully acknowledge and incorporate patient-suggested non-pharmacological pain management techniques such as acupuncture and energy healing. Part of providing compassionate end-of-life care involves acknowledging the end-of-life rituals or spiritual beliefs involving magical thinking that many patients and their families have.[30] By understanding and respecting these beliefs, EPs can provide needed spiritual support, coordinate appropriate rituals, or involve chaplains or cultural consultants to meet their needs.

6.1 Effectively engaging with patients and families who rely on non-beneficial magical thinking.

When faced with requests influenced by magical beliefs that are deleterious to patient well-being, EPs should employ a range of strategies that prioritize effective communication and patient-centered care. To establish trust and rapport, they should begin by trying to understand the patients’ perspective, aligning their communication with the patients’ worldview. By acknowledging and respecting patients' beliefs, EPs can identify potential risks, address misconceptions, and negotiate to provide suitable medical interventions.

Since magical thinking often arises from a need to gain control, generate hope, or find meaning in difficult circumstances, EPs succeed by acknowledging their patients’ beliefs while ensuring their safety. Respectful discussions play a vital role in striking a balance between honoring patient preferences and delivering appropriate medical interventions. Active listening (Table 3) is an essential component of this process. Attend to their body language, use encouraging verbal cues, and refrain from judgment. EPs can gently present alternative perspectives and offer evidence-based explanations to bridge the gap between magical thinking and scientific practices. By emphasizing shared goals and values while providing accurate information, EPs can empower patients to make informed decisions.

Finally, EPs should promote collaborative decision-making by involving not only the patients, but also their families and other healthcare professionals. Seek assistance from psychologists, social workers, and ethics consultants to provide insights and support. Cultural mediators and chaplains can also bridge gaps between medical practices and cultural beliefs, addressing any underlying emotional or psychological issues contributing to magical thinking. By implementing these strategies, EPs can optimize EM care for patients and families engaging in non-beneficial magical thinking.

7.1 Conclusion

The influence of magical thinking on EM should not be underestimated. It permeates society and has a profound effect on clinical practice, presenting unique challenges in the high-stress and fast-paced environments of ambulances and EDs. However, by understanding the underlying factors, acknowledging its impact on patient care, and employing effective strategies, healthcare professionals can navigate the convergence of magical thinking and EM successfully.

Magical thinking manifests differently in individuals, influenced by cultural background, upbringing, religious beliefs, and psychiatric conditions. Its presence can disrupt the timing of medical presentations, treatment responses, and adherence to medical recommendations. To address these challenges, healthcare professionals must strive for a delicate balance between cultural sensitivity, effective communication, and a commitment to EBM. By cultivating trust, respecting patient beliefs, and providing education, they can deliver compassionate and evidence-based care while navigating the complexities of magical thinking within the constraints of the emergency care environment.

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Table 1: Expressions of Magical Thinking

Category	Examples
Thoughts	Wishful thinking, e.g., saying "Breathe!" during a resuscitation; Making a wish when blowing out birthday candles, when seeing a shooting star or a rainbow; Believing in psychics, astrology, numerology, ghosts, or fairies; Attributing consequences to a universal force that gives everyone what they deserve (i.e., "just world" fallacy)
Actions/Rituals	Praying to deities, burning incense; Conforming with superstitions (e.g., avoiding specific words, not working on certain days or with specific people; knocking on wood; throwing salt over shoulder, crossing fingers, not walking under ladders); Using alternative medicine practices; Wearing lucky or protective clothing; Talking to objects to make them work (e.g., a dead battery)
Objects	Treating objects as if they had contagious (based on the law of contagion) or sympathetic (like affects like) magic; [11,12] Attributing power to reliquaries, talismans (e.g., lucky charms or amulets like a rabbit's foot, St. Jude medal, reliquary, horseshoe, cross, mezuzah, Seal of Solomon, or Ganesh); Using secret potions or unneeded herbs/vitamins for health; Attributing protective powers to objects (e.g., Ghost/bullet-proof shirts).
Symbols	Political symbols (e.g., flags, tomb of unknown soldiers); religious symbols (e.g., churches, personal totems); job-associated attire (scrubs, white coat, police or military uniform, and religious garb)
Places	Attributing "sacred" sites with special properties (e.g., Mecca, Ganges River, Wailing Wall, Church of the Holy Sepulcher, Bodhgaya, or Puri)

Table 2: Magical Thinking Within Major Religions

Religion	Examples of Magical Thinking
Christianity	- Prayer for healing
	- Belief in miracles
	- Use of sacraments or spiritually powerful objects
	- Emphasis on rituals, blessings, or spiritual interventions
Islam	- Supernatural interventions
	- Power of prayers and supplications
	- Seeking intercession from saints or holy figures
Hinduism	- Belief in karma and reincarnation
	- Influence of deities on human affairs
	- Rituals and offerings
	- Use of amulets or sacred objects
Buddhism	- Chanting mantras
	- Rituals
	- Seeking blessings from monks or sacred objects
Judaism	- Use of amulets or talismans for protection
	- Belief in the power of blessings
	- Rituals to ward off evil or promote healing
	- Mystical traditions like Kabbalah and related practices
African Traditional	- Beliefs in spirits, ancestors, and magical rituals
	- Divination, spellcasting
	- Use of charms or amulets

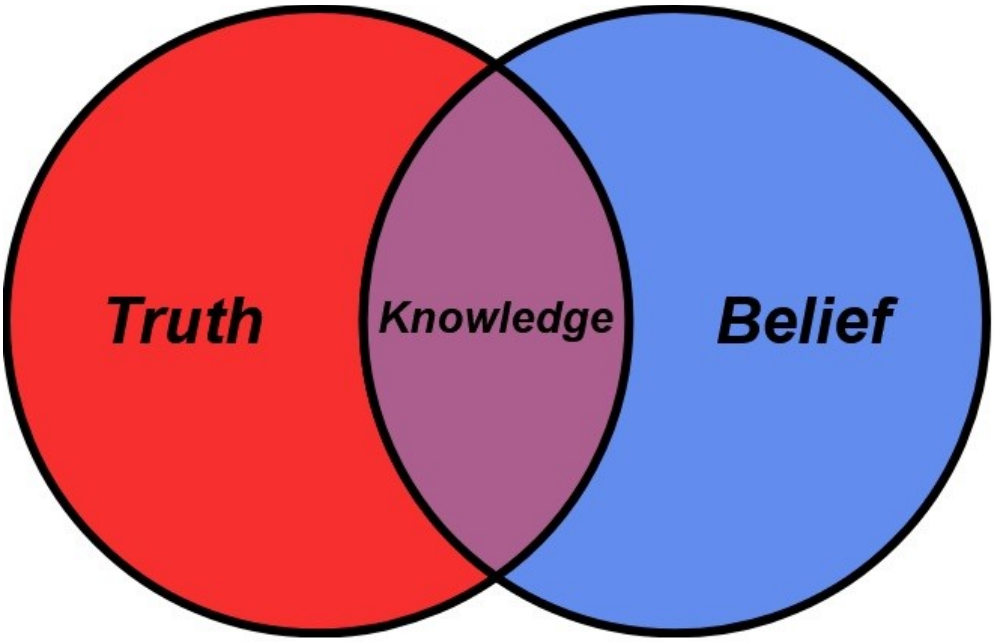
Truth
Knowledge
Belief

Figure 1: Relationship between Truths, Beliefs and Knowledge (Based on Plato) [10]

Table 1: Expressions of Magical Thinking

Table 2: Magical Thinking Within Major Religions