

# Endocrinology and Supernatural Beliefs; A Review

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## Abstract

Medical Science is ever-evolving, advancing and progressing for better understanding and management of diseases. However, despite these advancements and progression, even today we can find superstition, non-scientific thinking and supernatural beliefs influencing the way people think and behave to manage their diseases. Supernatural beliefs are beliefs in things that do not and cannot exist to the best of scientific knowledge, but which appear real to believers. Supernatural beliefs involve the acceptance of phenomena that transcend scientific understanding and can affect health behaviour and understanding. Endocrinology is the branch of science that deals with endocrine glands and hormones, which regulate mood, growth, development, metabolism and the way our organs work to maintain internal homeostasis. Supernatural beliefs may have an impact on endocrine health. So, in this review, we will discuss supernatural beliefs and endocrine health.

**Keywords:** Endocrinology, health behaviour, hormones, supernatural beliefs

## INTRODUCTION

There is humor as well as the tragedy that some of the missteps and misconceptions are part of the history responsible for non-scientific behaviour. Also, it is equally true that many modern scientific concepts and treatments are based on history and have their counterparts in approaches that were tried long ago. Charaka was the first to introduce a rational angle to the science of medicine. The evolution and emergence of the 'rational angle/approach' to the causation and cure of disease (Yukti Vyapashraya versus Daivaryapashraya concepts and measures) was first seen in the Charka literature.<sup>[1]</sup> Medical Science is ever-evolving and progressing for better understanding and management of diseases. However, if we think that we are progressing towards a scientific, knowledgeable and humane approach to treating diseases, we should think again because we are still bound by culturally conditioned constraints and beliefs. Even today we can find superstition and non-scientific thinking influencing the way people think and behave to manage their diseases. On social media platforms, we commonly see non-scientific rituals based on superstition, fear and supernatural beliefs for the management of diseases.

Traditional practices, rooted in superstition might impact overall health and may play a role in hindering modern medical

care as evident from day-to-day encounters with patients. It is important to explore how these practices perpetuate health disparities and inequalities across different cultures. Thus, in this review, we will discuss supernatural beliefs and endocrine health as supernatural beliefs may impact behaviour pertaining to endocrine health.

## SUPERNATURAL BELIEFS

Supernatural beliefs are beliefs in things that do not and cannot exist to the best of scientific knowledge, but which appear real to believers. Human beings globally use supernatural beliefs to explain the world around them and are remarkably prone to supernatural beliefs, in particular, to beliefs in invisible agent beings that, like us, act on the basis of their beliefs and desires, but that, unlike us, are not usually visible to the naked eye.<sup>[2,3]</sup> Studies suggest that supernatural beliefs can control how people think and behave.<sup>[4]</sup>

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Common causes that lead to supernatural belief-related practices in different parts of the globe are illiteracy, fear, false belief, anxiety, rituals and immaturity.<sup>[5]</sup>

In the 2000s, with the discovery of the so-called God-spot—a brain region that was suggested to be involved in the experience of God—the field of neurotheology came to flourish, according to which supernatural beliefs are engrained in our brains. At the same time, other researchers have pointed out the relevance of cognitive bias and sociocultural factors for the learning and proliferation of supernatural beliefs.<sup>[6]</sup> However, maybe many beliefs are false because they contradict other similar beliefs. For example, belief in God. Some believe there's one god; others such as Manicheans believe that there are two Gods; others: pantheons of gods.<sup>[3]</sup>

Superstition might have a declining trend with the advancement of medical science, and yet these beliefs continue to influence evidence-based medical care. According to a study from Japan, superstitious beliefs influenced the decision to discharge from the hospital contributing to increased medical care expenses. Patients preferred staying in the hospital beyond recommended days by consulting the doctor and getting a discharge on an auspicious day.<sup>[7]</sup>

According to a study from Chandigarh, about two-thirds of people attributed their symptoms of mental illness to sorcery/witchcraft (Jaadu Tona), planetary/celestial influences (Grah Nakchatra), bad deeds in a previous life (Karma), spirit intrusion (Opari Kasar), evil spirits (Buri Atma), ghosts (Bhoot-Pret) and divine wrath (Devi Devta Prakop) and believed that offering prayers or performing magico-religious rituals only is sufficient for treatment.<sup>[8]</sup> Thus, these superstitious beliefs delayed the proper treatment of mental illness leading to complications. Similar observations were identified in a study from Chhattisgarh that identified supernatural belief as a factor along with several other factors for delay in treatment of patients with psychosis.<sup>[9]</sup>

According to a study from Gambia, several people still believed that malaria could be caused by supernatural entities (witchcraft or Jinne) or foul wind.<sup>[10]</sup>

## ENDOCRINE HEALTH

Endocrinology is the branch of medicine that deals with endocrine glands and hormones. The endocrine system is a complex network of glands and organs, which uses hormones to control and coordinate our body's metabolism, sleep, energy level, reproduction, growth and development, and response to injury, stress and mood.<sup>[11]</sup>

Any abnormality in the complex network leads to endocrine disorders such as diabetes, thyroid disorders, obesity, height disorders, infertility, a disorder of sexual differentiation and orientation, polycystic ovaries syndrome, acromegaly, Cushing's syndrome, genetic syndromes such as Turner's syndrome, Downs' syndrome, and many more.

For several endocrine disorders, scientifically proven defects are known, whereas several endocrine disorders have hypotheses and several are idiopathic.

Though there are scientific guidelines for the management of several endocrine disorders, their acceptance at the societal level is variable because of several beliefs. Supernatural belief is a common perennial problem faced by healthcare workers across different specialities. Also, there is a paucity of scientific data on the effect of supernatural beliefs on endocrine health; thus, in this article, we have discussed the impacts of supernatural beliefs on health behaviour pertaining to endocrine health.

## NEGATIVE IMPACT OF SUPERNATURAL BELIEFS ON ENDOCRINE HEALTH

Mostly, endocrine disorders are chronic disorders and emotionally challenging. Faced with everyday struggles, the emotional challenges of endocrine disorders can make one susceptible to supernatural beliefs. And, supernatural beliefs are such as double-edged sword, which may have favourable impacts but have several negative impacts if not adapted wisely. For example, thyroid disorders and goiter are common endocrine disorders but several people believe that witchcraft/devil causes these diseases and hence, sought to tradi-medical treatments to cure them.<sup>[12]</sup>

Also, lack of knowledge and social embarrassment associated with endocrine disorders such as DSD, infertility and genetic syndromes are some of the many barriers that cause people to hide their symptoms and prevent them from getting necessary treatment.

This ignorance and delay in scientific management may lead to complications and an increase in morbidity and mortality. Common non-scientific beliefs observed in endocrine practice are described in Table 1.

## NON-NEGATIVE IMPACT OF SUPERNATURAL BELIEFS ON ENDOCRINE HEALTH

Several modern scientific concepts and treatments are based on history. Medical science is ever-evolving and progressing but several disorders are still identified as idiopathic; thus, there are no specific guidelines for management that hold true for some endocrine disorders also.

In such conditions, supernatural beliefs that include peculiar beliefs, which are often considered a sign/symptom of psychopathology, religious/spiritual beliefs, and fate beliefs that are adaptive and may give psychological benefits life satisfaction, emotional clarity and positive affect, less negative affect, depression and perceived stress.<sup>[13]</sup>

Supernatural beliefs in the form of invisible agents provide quick, convenient explanations for events that might otherwise strike us as deeply mysterious and, in so far as these beings can be appeased or persuaded, belief in them can also create the

**Table 1: Common non-scientific beliefs in endocrine practice**

Belief related to	Common belief seen
Modern healthcare system	Modern healthcare system is in a very primitive stage, which is ever-changing with many complications. Only disease control is there, no cure.
Alternative therapy	Is always safe with no side effects. Type 1 diabetes can be cured by alternative medicines and insulin should not be given to children
Etiopathogenesis	Being obese or overweight is healthy. Only female partners are responsible for infertility. The female partner is blamed for consecutive female children and specific food has effects on the gender of the child. Diseases such as genital ambiguity are a curse of God, which is also applicable to other rare diseases
Investigations	Getting investigations done, causes diseases in healthy individuals.
Pharma therapy	Initiation of insulin therapy is the last stage of diabetes treatment and once on insulin therapy lives countdown begins. Insulin, if given in GDM, will cause insulin dependency in the mother and the child will be born with diabetes. Fear of damage to the kidneys, liver and other organs due to allopathic medications such as a. Thyroid medications cause kidney problems and should be not consumed or consumed in the lowest dose. b. Children on thyroid tablets for a long time will have side effects Costly medicines may be more effective than cheap medicines. If a female is on any medication, specifically thyroid and diabetes medications, they will have problems with fertility because of the medicines
Non-pharma therapy	Having bitter foods such as bitter gourd and neem leaves, can cure diabetes.
Spiritual and religious support	Offering names for pleas and pilgrimage prevent diseases.
Disease outcome	The use of blessed oil and holy water, use of relics of saints or religious leaders and holy icons improves disease outcomes. Prasad/blessed food or sweets do not cause an increase in blood glucose.

illusion of control, which can be comforting in an otherwise uncertain and dangerous world. Thus, one obvious advantage of positing invisible agents is that they can account for what might otherwise be baffling.<sup>[3]</sup>

Supernatural punishment belief may motivate a person to be more cooperative and follow scientific guidelines.<sup>[14]</sup> This motivation may bring self-discipline, which may help in internal homeostasis and may improve endocrine health even in idiopathic cases. For instance, diabetes is a common endocrine disorder and is a global health problem. Management of diabetes is associated with significant social and economic burdens worldwide. However, the majority of the relationship studies showed positive relationships and efficacy studies showed high efficacy of interventions in faith-based approaches.<sup>[15]</sup>

## CONCLUSION

Human beings are social beings and across the globe use supernatural beliefs to explain the world around them. Supernatural beliefs emanating from early views continue to influence health behaviours even when they are not empirically proven. However, many beliefs are false because they contradict other similar beliefs. Supernatural beliefs may motivate a person and may bring self-discipline and may improve endocrine health. However, several times, supernatural belief includes health-related misinformation that can be life-threatening to individuals. Thus, for treating physicians taking cognizance of these superstitious beliefs is crucial to paving the way for holistic healthcare programs and also ensuring quality healthcare delivery. As our present is based on the past and future on the present, we should adopt

healthy scientific habits and discard unhealthy unscientific habits for a better future.

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## Author contributions

Jaideep Khare has contributed with concept, design, and draft of article. Preeti S. Pendharkar has contributed with literature review & analysis. Sanjay Kalra has contributed with literature review, critical revision and important intellectual content. Sushil Jindal has contributed with final revision and improving the content and approving for final version.

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## Conflicts of interest

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