

The Never-Ending Legacy of Mahatma Gandhi in the Field of Medicine 150 Years After His Birth

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MAHATMA GANDHI: HIS LIFE

Mohandas Karamchand Gandhi, also popularly known as Mahatma Gandhi (2 October 1869–30 January 1948) [Figure 1], was an eclectic figure. He was a lawyer, visionary philosopher, and writer. He was a charismatic politician and prominent Indian activist who led the Indian non-violent civil disobedience movement, which eventually resulted in the independence of India from the British colonial empire on 15 August 1947 [1,2].

His entire life was spent traveling, from India (from Porbandar, in Gujarat, where he was born, and New Delhi, where he was brutally assassinated) to the United Kingdom and South Africa (from Durban to Johannesburg). He was devoted to ensuring the rights of poor, downtrodden, underprivileged, and sick people.

Despite coming from a wealthy family, he decided to live a humble and modest life, always escaping from privilege and making simplicity the hallmark of his life.

GANDHI AND HIS INTEREST IN MEDICINE

Gandhi knew both physical pain and the mental suffering. During his lifetime, he complained of different ailments, including pleurisy, acute dysentery, viral gastroenteritis and constipation, malaria attacks, influenza, rheumatic inflammation, recurring headaches, hypertension, severe appendicitis and hemorrhoids, as well as anxiety, anguish, and loneliness [3,4].

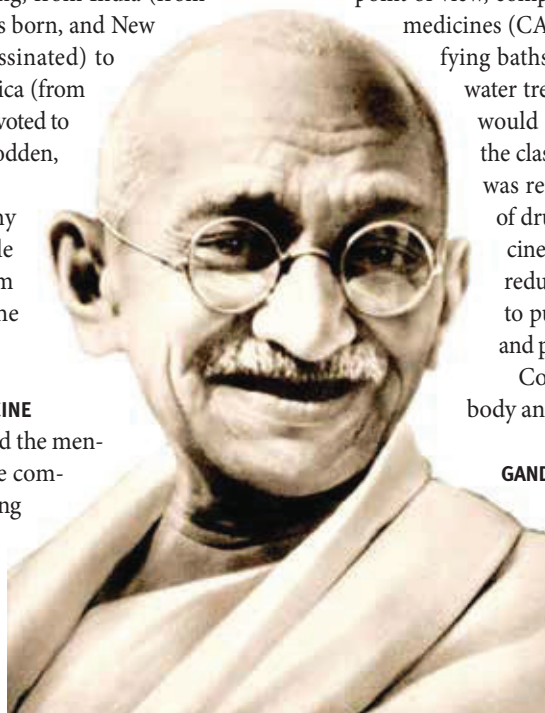


Figure 1. Portrait of Mahatma Gandhi (1869–1948)

Gandhi was passionate about medicine, and on at least in two occasions, in 1888 and from 1908–1909 [4], he thought about earning a medical degree and becoming a professional medical doctor, even though he was discouraged by his older brother. In 1909 he criticized the professional medical practice of the physicians of his time, since he considered taking care of marginalized and frail patients not just a mere job but a form of supreme dedication and commitment to life. For him, being a physician meant being the guardian of both the body and the soul [5]. Indeed, his ardent vocation for healing and curing people remained indelible and increased throughout his lifetime [5].

His dream was to create a modern, self-renewing healthcare system, economically accessible, and financially affordable and sustainable, in which the patient was authentically at the center of the relationship with the physicians [6–8]. According to his point of view, complementary or alternative traditional medicines (CAMs), including naturopathy, detoxifying baths and diets, hydrotherapy, earth and water treatments, ice treatments, and fasting, would be integrated and harmonized with the classical Western medical system, which was regularly based on the administration of drugs [6]. Gandhi called Western medicine “black magic,” because by pursuing a reductionist approach, it tempted people to put an undue importance on the body and practically ignores the spirit within’ [9].

Combining and integrating the cure of body and soul was a motto of Gandhi.

GANDHI AND A HOLISTIC VIEW OF MEDICINE

Gandhi had a holistic, ambitious view of medicine, which encompassed different specialties from preventive medicine and hygiene to nutrition and dietetics, psychology, and mental health [10,11]. Moreover, health was not conceived as a static concept but as a multi-dimensional and

multi-factorial, dynamic condition, resulting from the complex, non-linear interplay of the biological make-up of the individual, the mind, spirituality, thoughts, as well as the environment. Social capital (in terms of peer support and networks) was also recognized as an integral component of human well-being. This explanation of health preceded the definition given by the World Health Organisation (WHO).

GANDHI AS A PIONEER OF PUBLIC HEALTH

Gandhi used to emphasize the importance of taking preventative measures, such as living a healthy lifestyle, eating a proper diet, ensuring proper sanitation and cleanliness (*sulabh shauchalayas*), and getting regular exercise (*sharirshrama*), to counteract the insurgence of diseases [6,11,12]. He was also aware of the impact of spirituality and religiosity on human health and diseases. Spiritual beliefs were a universal need, without any distinction and difference among the various faiths and creeds (*sarva dharma samantva*). Prayers and meditation favored the inner balance, leading to the growth of the individual and to the adoption of healthier lifestyles.

According to Gandhi, increasing people's health education and literacy was of paramount importance, as was fostering self-responsibility, self-reliance, self-engagement, self-management and self-empowerment (*swawalambana* and *swast-hawalambana*) [6].

During his lifetime, Gandhi made several efforts to remove any barrier to accessing healthcare services and to reduce social and cultural stigmas (*sarvatra bhayavarjana*) toward some diseases. The latter was especially true for leprosy (*kushtha*, literally "eating away") patients, who were considered untouchable and were forced to live alienated and separate from the rest of the community [13]. Leprosy is an infection, the first mention of which dates back to old Indian texts and handbooks, including the *Atharava Veda* (circa 2000 BCE), the *Laws of Manu* (approximately 1500 BCE) and the *Sushruta Samhita* (about 600 years BCE) [14,15].

When he was 13 years old, Gandhi met Ladha Maharaj, who had been allegedly healed from leprosy by reciting verses from the *Ramayana* (an epic of ancient India written in Sanskrit). Gandhi was impressed by his illness and recovery [13]. Some years later, in 1940, Gandhi personally assisted Sh. Parchure Shastri, a prominent Sanskrit scholar, who showed signs of leprosy, by nursing him and supervising his diet [13].

Furthermore, Gandhi was a pioneer in the use of media and public personalities as ways to improve public awareness of diseases, their determinants, and the importance of keeping healthy habits. Health advocacy, which can be defined as the public support for recommending a particular health-related cause or policy, was wisely exploited by Gandhi.

Finally, to facilitate access to health services, Gandhi was against the commercialization of healthcare services, because

for him, taking care of patients was not a business but a mission and, as such, should be made affordable for the masses.

GANDHI AND SANITATION

Gandhi was convinced that it was not possible to implement public health in India without the principles of sanitation and cleanliness [16,17]. As such, he steered the establishment of the *Sulabh* movement, which subsequently strengthened and increased in the 1970s, with the launch of the Clean India Campaign (*Swachh Bharat Abhiyan*). The goal was to make India open-defecation free by 2 October 2019, the 150th anniversary of Gandhi's birth, which would make Gandhi's dream come true [16,17].

During Gandhi's lifetime, India was mainly a rural nation, comprised of many villages and plagued by practices like manual scavenging and disposal of human feces, which inevitably caused several recurring episodes of environmental enteric dysfunction, diarrheal disease, and other water-borne diseases. These factors were among the main causes of undernourishment and malnutrition.

To mitigate such burden, Gandhi advocated the use of toilets. Moreover, Gandhi had another ambition, emphasizing the importance of eliminating mosquito breeding sites and regularly monitoring of water containers as simple but effective measures to prevent the spread of mosquitoes and the occurrence of malaria attacks [2].

GANDHI AND THE PRINCIPLES OF AHIMSA (NON-VIOLENCE) AND BRAHMACHARYA (SELF-RESTRAINT)

Gandhi was a firm believer in the principle of non-violence (*ahimsa*), a principle that he applied also in the medical field. He was also fiercely against dissection and cruelty to animals. Another principle he believed in was the practice of self-discipline and self-restraint from excesses: namely, self-control from lust (*brahmacharya* or sexual abstinence), and self-control from over-eating (*aswada* or fasting).

In the Gandhian philosophy of life, the principle of *brahmacharya* was also linked with the concept of artificial birth control and planned parenthood. Gandhi further developed this concept after meeting Margaret Sanger (1879–1966), an American nurse, sex educator, and social activist [5].

GANDHI AND DIETETICS

Inspired by different books, including Henry Salt's *Plea for Vegetarianism* [18], Howard William's *The Ethics of Diet* [19], and Anna Kingsford's *The Perfect Way in Diet* [20], Gandhi was an advocate of vegetarianism and recommended avoiding consuming refined sugars, fat, alcohol, tobacco and other intoxicants. He expressed his opinion in essays such as *Diet and Diet Reforms*, *Vegetarianism*, *Guide to Health*, and *Key to Health* [21]. Furthermore, pioneering the modern phenomenon and movement of the "zero kilometer food production

and shopping,” he promoted the idea that the usage of locally grown foods and dietary products (*swadeshi*) was the only way to preserve and guarantee food quality and sustainability [11].

Gandhi was a strong advocate of fasting. He used to fast on the *Ekdashi* (the 11th lunar day in the Hindu calendar), on the *Janmashtami* (to celebrate the day when Lord Krishna was born), and on other festivals [3]. He fasted not only for health purposes but also for ethical and moral reasons: to protest against societal and political injustices [3].

GANDHI AND HIS VIEWS ON THE END OF LIFE

Gandhi expressed his point of view also on assisted suicide, euthanasia, and palliative care [5,22]. These opinions were not ideologically biased but were highly empirical, being pragmatically based on his personal experiences, especially when he had to assist his wife Kasturba, who was dying of a bacterial infection. Instead of injecting her with medications, which were unlikely to cure her infection, he preferred to spend the last moments of her life being with her, with her head on his lap [5].

GANDHI AND HIS NEVER-ENDING LEGACY

Gandhi’s call for a more humane, patient-centered, preventative medicine sounds extremely modern and reflects the recent shift from a reactive one-size-fits-it-all model of medicine to a paradigm of personalized and individualized medicine, which incorporates preventive interventions and psychosocial aspects. In the present industrialized and globalized society, Gandhi’s ethical values and virtues (*ekadash vrata*) have never ceased to be valid and are still urgent and timely, today more than ever, even 150 years after his birth. His philosophy is still influencing new healthcare policies and programs based on a global, affordable, need-driven health innovation [2,6].

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Capsule

Follicular regulatory T cells control humoral and allergic immunity by restraining early B cell responses

Follicular regulatory T (T_{FR}) cells have specialized roles in modulating follicular helper T (T_{FH}) cell activation of B cells. However, the precise role of T_{FR} cells in controlling antibody responses to foreign antigens and autoantigens in vivo is still unclear due to a lack of specific tools. Clement and colleagues developed a T_{FR} cell-deleter mouse that selectively deletes T_{FR} cells, facilitating temporal studies. T_{FR} cells were found to regulate early, but not late, germinal center (GC) responses to control antigen-specific antibody and B cell memory. Deletion of T_{FR} cells also resulted in increased self-

reactive immunoglobulin (Ig) G and IgE. The increased IgE levels led the authors to interrogate the role of T_{FR} cells in house dust mite models. T_{FR} cells were found to control T_{FH}13 cell-induced IgE. In vivo, loss of T_{FR} cells increased house-dust-mite-specific IgE and lung inflammation. Thus, T_{FR} cells control IgG and IgE responses to vaccines, allergens and autoantigens, and exert critical immunoregulatory functions before GC formation.

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