

BIOPOWER AND THE CONTESTED LANDSCAPE OF COLONIAL EPIDEMIC POLICY IN PUNJAB (1866–1922)

SALMAN BURKI*

ABSTRACT

This research paper investigates the nexus between public health and imperial control in colonial Punjab during the tumultuous period from 1866 to 1922. This study propose is that the British epidemic policies—specifically quarantine, sanitation drives, segregation orders, and mass vaccination campaigns—constituted a decisive instrument of biopower, effectively serving the dual objectives of securing imperial economic and military interests while simultaneously establishing complete governance over the native body and population. While these measures occasionally fostered interaction through necessity, they predominantly generated profound resistance, suspicion, and hostility between the governing and the governed. The imposition of Western medicine and public health protocols was a calculated move to assert epistemological dominance, displacing indigenous healing systems and thereby facilitating a comprehensive system of surveillance, discipline, and control. This analysis, grounded in primary administrative reports and contemporary vernacular accounts, illustrates how this colonial public health strategy was, at its core, an assertion of political authority that ultimately redefined the social, religious, and political life of the Punjabi populace. The ensuing conflict over the control of the human body highlights the critical role of medical intervention in the wider project of colonial hegemony.

KEYWORDS: Biopower, Governmentality, Punjab, Epidemics, Colonial Medicine

* EST, Dar-e-Arqam School and college D. I. Khan. Email: salmanburki034@gmail.com
DOI: <https://doi.org/10.65463/17>

The final decades of the nineteenth century and the early years of the twentieth century in Punjab were not merely marked by administrative consolidation and infrastructural growth; they were tragically defined by devastating biological incursions. The region, a critical bulwark of the British Indian Empire, experienced a relentless sequence of epidemics, including cholera, smallpox, malaria, and the terrifying resurgence of bubonic plague. This pathological landscape provided the colonial administration with a unique and powerful opportunity to extend its political architecture into the most intimate spheres of Indian life—the human body, the home, and the social fabric. The official response, often framed as a benevolent exercise in modern governance, must be re-evaluated as a fundamental strategy of imperial management.

The core argument is that the British epidemic policies, spanning from the implementation of rudimentary sanitation schemes to coercive quarantine and vaccination drives, functioned primarily as an instrument of biopower. These policies were meticulously designed to secure the paramount imperial objectives: protecting the health of the racially segregated European military and civilian populations, and safeguarding the economic lifelines of trade and agriculture from disruption (Watts 1999, 143). When examined through the Foucauldian lens of *governmentality*, the actions of the colonial state reveal a sustained effort to effect the "conduct of the conduct" (Madsen 2014, 815) of its subjects, achieving dominance not only through military might but through the minute regulation of daily existence. The colonial policy was never simply about mitigating disease; it was about managing and controlling the population itself.

Consequently, the enforcement of these measures—such as mandatory segregation, forced evacuations, and the intrusion of medical inspectors into private homes—immediately clashed with deep-seated religious, social, and cultural practices of the local populace. This conflict forged a pattern of engagement characterized by an uneasy oscillation. On one hand, the desperate need for medical relief during high-mortality events necessitated a grudging, often pragmatic, interaction with state-provided resources. On the other, the coercive nature of the state's intervention ignited widespread resistance, fuelled by rumours and suspicion, which frequently escalated into protests and violent confrontations. I contend that the legacy of this period is not merely one of public health achievement, but rather the embedding of deep-seated mistrust in state authority, directly resulting from the colonial project's use of medicine as a tool of political and social subjugation.

The scholarly discourse surrounding colonial medicine and epidemics in India broadly divides into examinations of the pan-Indian context and more focused regional studies, both of which inform the present inquiry. The first category, spearheaded by seminal works from historians such as David Arnold and Mark Harrison, has firmly established the centrality of medical intervention to the colonial project. Arnold's argument—that epidemics offered the Western power a decisive opportunity to examine and eventually colonise the native body—is crucial for understanding the political utility of diseases like smallpox, cholera, and plague (Arnold 1993, 45). His work, alongside that of Harrison, who stresses the political significance of public health measures as a tool for asserting control and governance over subject populations, provides the macro-historical

scaffolding for this essay (Harrison 1994, 21). These scholars correctly identify the inherent racial segregation in medical policy, where the primary objective was consistently the protection of the British troops, with the health of the indigenous population being a secondary, utilitarian concern tied to imperial revenue and security. Furthermore, general studies of contagion, such as those by Frank M. Snowden, confirm that epidemics universally reshape social structures and political systems, giving weight to the proposition that the events in Punjab were part of a larger, global phenomenon of disease-driven societal change (Snowden 2019, 7).

However, the necessary granularity for understanding the intense cultural confrontation in Punjab requires moving beyond the general colonial framework toward more localized inquiries. The work by Gagandip Cheema, focusing specifically on Western medicine in colonial Punjab, offers an invaluable regional lens, detailing how the British medical infrastructure, including the establishment of the Lahore Medical College, was strategically deployed to penetrate and subvert indigenous systems (Cheema 2013, 22). This body of regional scholarship, along with the detailed analyses of public unrest by Ira Klein (Klein 1988, 727), highlights the specific cultural topography of the region, where religious sensibilities concerning the body, caste-based anxieties, and the strength of the *Unani* and *Ayurvedic* traditions created a unique theatre of resistance. This research builds upon these localized findings by explicitly applying the theoretical apparatus of biopower and governmentality—concepts only alluded to in some of the prior literature—to fully explain how policies like forced segregation and the banning of *variolation* became instruments of administrative discipline rather than purely

therapeutic interventions. I find that the integration of primary source material, specifically the Punjab Government Proceedings and contemporary vernacular press like *The Tribune*, allows me to provide a richer, assertive analysis of the state's motivations and the nuanced, volatile public reaction, thereby advancing the existing knowledge base on this critical chapter of South Asian history.

This historical inquiry is fundamentally grounded in a rigorous analysis of both primary and secondary sources, synthesizing data in a non-numerical form to describe and examine the complex interactions between colonial governance and public health crises in Punjab. I primarily rely on official administrative records, including the Proceedings of the Punjab Government Civil Secretariat (Home Department: Municipal, Medical and Sanitary, 1874–1919), which articulate the colonial state's objectives, its self-assessment of policy effectiveness, and its internal struggles regarding resource allocation and political risk. Crucially, *The Tribune* newspaper, which provides a contemporary, often critical, perspective from the educated middle class, serving as a vital counterpoint to the official narrative (*Tribune*, May 16, 1901). Furthermore, the District Gazetteers of Punjab (e.g., Amritsar, Sialkot, Lahore) offer invaluable ethnographic detail and demographic data, helping me to contextualise the impact of epidemics on local economies and social structures. The meticulous cross-referencing of these different streams of primary evidence—official, journalistic, and archival—is the most effective technique for verifying facts and identifying the underlying biases and political motivations present in the historical record.

The methodological approach is further reinforced by the systematic application of a critical theoretical framework. I suggest that

the concepts of 'Governmentality' and 'Biopower', derived from the work of Michel Foucault, are indispensable tools for interpreting the colonial project in Punjab. *Biopower* allows me to understand how the power dynamic shifted from merely taking life (sovereign power) to administering and managing life (Wald 2014, 12). This lens re-casts quarantine and vaccination as technologies of population control, aimed at regulating the "bodies of individuals and populations through various forms of surveillance, regulation, control, and discipline". Similarly, the concept of *Governmentality* permits a deeper reading of the bureaucratic and administrative policies, revealing how the British attempted to manage the conduct of the native population through sanitary legislation and medical professionalization. While I acknowledge the inherent limitations of historical research—including the partial access to certain primary source materials and the need to interpret medical terminology of the time—I have employed a critical approach to constantly evaluate the reliability and potential biases of all sources.

THE PATHOLOGICAL LANDSCAPE OF COLONIAL PUNJAB

The defining feature of public health in colonial Punjab was not the dramatic, high-profile plague or cholera outbreaks, but rather the pervasive and ceaseless scourge of 'fever,' predominantly malaria (Zurbrigg 1992, 2). This category, encompassing a range of undifferentiated ailments but centred on the mosquito-borne disease, was rightly identified by sanitary officials as the single largest cause of mortality in the general population, maintaining a low-grade yet chronic pathological reservoir that perpetually undermined indigenous health.

The impact of this chronic killer was catastrophic, resulting in a low endemicity that meant children often grew up without natural immunity, rendering the population explosively susceptible when large-scale outbreaks did occur (Harrison 2002, 105). Records from the period tragically indicate that between 1850 and 1947, the Punjab region alone experienced at least fifteen major malaria epidemics, with an estimated cumulative death toll reaching five million lives, starkly illustrating its persistent lethality.

The British-led advancements in irrigation and commercial agriculture, paradoxically intended to modernise the province, severely aggravated the problem. The expansion of canal networks created vast areas of standing water, providing ideal breeding grounds for the *Anopheles* mosquito (Zurbrigg 1992, 18). Consequently, the very infrastructure intended to fuel the imperial economy became an engine for the propagation of disease, transforming agricultural progress into a major public health liability.

The famine conditions that frequently coincided with or preceded malaria outbreaks—such as those recorded in 1878, 1897, and 1900—greatly contributed to its destructive power. High food prices and crop failures impoverished marginal families, leading to severe scarcity and malnutrition which critically compromised the people's natural resistance and immune response to the malarial parasite (Sasha 2003, 56). This created a deadly synergy between economic vulnerability and biological susceptibility, ensuring that the epidemic cycles remained violent and pervasive.

The spatial distribution of this relentless fever highlights the sheer scale of the crisis, with districts like Rohtak, Karnal, Firozpur, and Lahore being consistently among the worst affected areas. In some of these urban

centres, I find that the death rate per thousand inhabitants soared dramatically during peak years, demonstrating that the mortality was not confined to rural areas but actively destabilised core administrative and commercial hubs (Cheema 2013, 30). This massive regional haemorrhage of life, claiming millions over the decades, ensured that the specter of fever remained an immutable feature of the social and demographic history of the Punjab.

In their attempts to mitigate this widespread issue, the colonial authorities adopted measures such as large-scale quinine distribution throughout the province, acknowledging the scale of the problem. However, I propose that the efforts were often reactive and logistically inadequate to suppress an endemic disease so deeply entrenched in the environment and social-economic vulnerabilities of the population, leading to only marginal and temporary successes (Watts 1999, 150). The long-term policy failures to address the environmental causes—the unholy link between canal irrigation and mosquito breeding—speak volumes about the prioritisation of economic output over genuine public health.

The cholera epidemic, famously described as "the classic epidemic disease" of the subcontinent, possessed a unique political significance that set it apart from other diseases (Arnold 1986, 118). Unlike the chronic malaria, cholera was acutely and violently destructive, capable of wiping out a vast segment of the population in a short period and, crucially, appearing to slander the very bases of British authority in India.

The rapid lethality of cholera, where mortality rates could approach eighty percent among those infected, ensured it was the most feared contagion in the region. Records from 1817–1821 onward show it quickly spreading to critical areas of the Punjab,

including major urban centres like Amritsar, Lahore, and Firozpur, with subsequent, terrifying recurrence throughout the century (Rogers 1957, 1197).

The colonial administration quickly associated cholera outbreaks with mass gatherings, particularly religious festivals such as the *Kumbh Mela* at Hardwar. The official epidemiological narrative centred on the "affected pilgrims" returning home, effectively casting indigenous religious practice and mobility as the vector of disease and the primary threat to public safety (Cunningham 1873, 5). I suggest that this narrative served a powerful political function by externalising the blame for the disease outbreak away from British sanitary and infrastructural failures.

The policy response, therefore, became heavily focused on surveillance and control of movement, particularly around major pilgrimage routes and points of congregation. The 1867 epidemic, traced to pilgrims returning from Hardwar, became a flashpoint, justifying the implementation of restrictions on movement and the establishment of cordons that severely disrupted local life (Arnold 1986, 130). This restriction of religious freedom and assembly was a direct exercise in biopolitical control, attempting to govern collective behaviour under the guise of disease prevention.

Despite the political anxieties surrounding it, the colonial cholera policies were often demonstrably ineffective. Early British understanding of the disease's transmission was severely limited, often focusing on miasma or indigenous habits, rather than the true vector: contaminated water supplies (Klein 1980, 36). The focus on establishing municipalities to manage water and sanitation was a step in the right direction, but the lack of universal clean water infrastructure ensured cholera

remained a recurrent, terrifying visitor, highlighting the gap between official pronouncements and public health realities.

The history of smallpox in Punjab represents the earliest and most sustained ideological and physical battle between the colonial state and the indigenous population over the control of the body. Historically, smallpox was one of the most dreaded diseases globally, causing immense fatality, and leaving survivors with severe disfigurement and disability (Hopkins 2002, 10). In India, its annual average death toll reached hundreds of thousands towards the end of the nineteenth century, confirming its status as a major public health challenge.

The British response was the implementation of the smallpox vaccination—a policy that, while scientifically advanced, was immediately perceived as an unacceptable political and social intrusion. This effort was initially selective due to the "considerable infrastructure and heavy finances" required, necessitating the establishment of a hierarchy of staff including the Sanitary Commissioner, medical officers, and a network of Indian vaccinators (Hume 1977, 215).

The policy's greatest point of friction was its direct assault on indigenous healing practices, specifically the practice of variolation (inoculation). What the British initially observed with a degree of sympathy was later deemed a "murderous trade" and was legally prohibited, a clear example of the colonial state criminalising indigenous medical autonomy in favour of its own scientific hegemony (Arnold 1993, 105).

The vaccination process itself was fraught with cultural conflict. The early method of "arm to arm vaccination" before the introduction of lymph raised serious caste-based anxieties, as it involved the ritual transfer of bodily fluids from potentially low-

caste or untouchable vaccine providers (Sohal 2015, 63). Hindus, particularly dominant trading castes like the *Khatri*s, often viewed the entire process as ritually polluting and, more importantly, a visible "mark of subjugation to the British Government" (Gazetteer of Firozpur 1883, 40).

This resistance, documented in government reports from Lahore and Firozpur, was intense and multifaceted: parents hid children, doors were closed to vaccinators, and the policy was bitterly criticised as a "cruel act" (Sanitary Administration of Punjab 1873, 12). The eventual introduction of mandatory vaccination for government servants in 1919 epitomised the state's determination to enforce compliance through economic and professional coercion, fully integrating the medical intervention with the apparatus of state employment. The smallpox campaign, therefore, was not a simple public health measure; it was a decades-long struggle for control over the native body, laying the groundwork for later, more violent confrontations.

The arrival of the bubonic plague in Bombay in 1896 and its subsequent rapid spread to Punjab marked a severe inflection point in colonial governance and medical intervention. This third pandemic, an event of extraordinary panic and unprecedented mortality, demanded a policy response that was "quick and involved an unprecedented degree of sanitary and medical intervention," shifting the colonial approach from administrative management to military-style coercion (Klein 1988, 723).

The British reaction was initially driven by dual, often conflicting, anxieties. The first was the immediate, terrifying reality of the death toll, which reached hundreds of thousands annually in Punjab during peak years (1906–1907) and resulted in massive social

disorganisation and collapse (Tumbe 2020, 10). The second, and perhaps more powerful, concern was the fear of an international ban on Indian shipping, which threatened to close off Britain's vital raw material sources and market, immediately subordinating public health to global trade interests (Islam 2021, 160).

The resulting policy, implemented under the Epidemic Diseases Act of 1897, was characterised by its draconian nature. Assuming that human contact was the primary vector, the authorities instituted policies of complete quarantine, village evacuation, and cordoning off affected areas (Inglis 1898, 5). Within a mere forty-eight hours, villagers were ordered to abandon their homes and move to quarantine camps for extended periods, a process I argue was fundamentally an act of political displacement and social dismantling.

The intervention did not stop at the living; even the deceased were subject to stringent epidemic measures, with police instructed to inspect and dispose of corpses (Proceedings, Home: Medical and Sanitary, June 1898, Serial Number 154). Furthermore, the restrictions on social gatherings and the prohibition of local fairs—such as the *Baisakhi Mela*—constituted a direct and politically sensitive interference with the cultural and religious calendar of the Punjabi population, immediately linking public health to a violation of social obligations.

The pinnacle of the racial and authoritarian nature of the plague response was the segregation of rail passengers. Lower-class natives, deemed "dirty" and unreliable, were subjected to humiliating stripping, disinfection, and bathing rituals in separate tanks (Tribune, September 27, 1893). In stark contrast, Europeans or Eurasians, even if ill, were permitted to continue their journeys with minimal disruption, demonstrating a

blatant and legally enforced racial disparity (Cheema 2013, 130). These policies, in their severity and their focus on controlling the native body through humiliation and restriction, transcended medical necessity and became a purely political measure intended to assert absolute imperial dominance.

BIOPOWER AND THE IMPERIAL RESPONSE: SECURING THE RAJ

The genesis of the sophisticated, yet often crude, British public health policy in Punjab was the profound political and military crisis exposed by the War of Independence in 1857. The events of the uprising brutally revealed the critical vulnerability of British troops, not just to Indian hostility, but, perhaps more alarmingly, to endemic disease and epidemics (Metcalf 2015, 60). The subsequent policy development was an immediate, reactive measure intended to secure the bedrock of British sovereignty: the health and readiness of the European military apparatus.

Following 1858, colonial administrators were faced with a singular challenge: how to effectively sanitise the indigenous population who they deemed a permanent source of contagion, without simultaneously provoking a political backlash that could threaten their hard-won authority (Harrison 1994, 78). The initial public health efforts were, therefore, almost exclusively confined to military cantonments, creating racially segregated islands of 'health' within a perceived sea of native 'sickness' and pollution.

The administrative mindset was firmly rooted in a paradoxical blame structure: while numerous systems were developed to protect Europeans, the failure of these systems was consistently attributed to the Indian climate, indigenous habits, or the 'unhealthy' behaviour of the local populace

(Greenberger 1969, 45). I assert that this narrative served to rationalise the segregationist policies and justify the neglect of broader native welfare, framing the colonial state as a perpetually frustrated reformer rather than a negligent authority.

The foundational principle of the early sanitary policy was, therefore, not egalitarian health provision, but rather racial and military prophylaxis. The first and foremost objective was to purge the immediate environment of the British soldiers and civilian population, establishing physical and administrative barriers between the clean European spaces and the 'noisy' and 'unhealthy' indigenous quarters (Oldenburg 2014, 150). This prioritization formed the enduring, structural bias of all subsequent public health interventions in the province.

The establishment of a formal sanitary policy represents the most direct, early attempt to apply the principles of *governmentality* to the civil administration of Punjab. Following the annexation, orders were issued to the colonial administration to maintain 'healthy conditions,' but the true impetus came from reformists like Florence Nightingale, who, based on detailed reports, observed that "unhealthy condition, risky lifestyle were the major causes behind the death rates" (Moore 1903, 75).

The Royal Army Sanitary Commission's report of 1863 provided the necessary political impetus, leading directly to the establishment of Municipalities across the province's main centres in 1868 under the Punjab Municipal Act of 1867 (Hume 1986, 705). These municipalities were not simply local government bodies; they were the primary political instruments designed to extend sanitary control—managing water supply, lighting, and, most crucially, sanitation—into the chaotic urban life of the native population.

The capital city of Lahore immediately became the emblematic 'sanitary problem' for the Raj. Despite concerted efforts, I find that contemporary commentators described it as "a compact mass of high mansions fast falling into decay and harboring so much illness that is in fact asylum for epidemics" (Gazetteer of Lahore 1883, 22). This official description of Lahore as a pathological entity justified invasive administrative measures and the subsequent appointment of the first Sanitary Commissioner for Punjab in 1868.

This first Sanitary Commissioner, Dr. DeRenzy, was explicitly charged with the task of investigating epidemic outbreaks, proposing eradication measures, and establishing a robust system for collecting mortality and disease statistics (Proceedings, Home: Medical and Sanitary, February 1874, Serial Number 6). The creation of this centralised statistical apparatus was a key manifestation of biopower, turning the entire native population into a knowable, countable, and governable entity, thereby enabling the state to manage the 'life' of the province from a central administrative core.

The subsequent introduction of drainage schemes in Lahore, Sialkot, and Rawalpindi, aimed at reducing malaria and improving general urban hygiene, was an expensive and difficult undertaking. While these measures represented a genuine attempt at environmental improvement, I must emphasise that they were frequently perceived by the locals as arbitrary and disruptive impositions, leading to tension and resistance that continuously hampered the full realisation of the sanitary objectives.

The implementation of the smallpox vaccination policy in Punjab illustrates the colonial state's calculated shift from tentative persuasion to outright administrative coercion. Initially, the vast infrastructure required meant the campaign was

administered selectively, primarily targeting areas of immediate military or administrative concern (Hume 1977, 218). The establishment of a chain of command, from the Superintendent-General down to the Indian vaccinators, was necessary to reach the rural populace and begin the physical work of control.

The early efforts by the British Sanitary Commissioner in 1874 focused on visiting villages and attempting to explain the benefits of vaccination to an ignorant population (Proceedings, Home: Medical and Sanitary, June 1876, Serial Number 8). Furthermore, the state sought to co-opt the local native elites, encouraging them to "set an example by having their family members vaccinated," thereby attempting to lend social legitimacy to a foreign medical practice (Gazetteer of Amritsar 1876, 55).

However, I find that these attempts at gentle persuasion were quickly overshadowed by administrative impatience and the endemic resistance from the populace. Government reports repeatedly highlight the "unfavourable attitude" and outright opposition, particularly from Hindus who were wary of the ritual pollution associated with the transfer of lymph (Sanitary Administration of Punjab 1873, 14). This deep-seated resistance manifested in people actively hiding their children or closing their doors to vaccinators.

The legislative response was the 1879 bill prohibiting variolation—the indigenous form of inoculation—an act which I contend was a direct political intervention against native medical autonomy (Sohal 2015, 68). This was followed by the crucial compulsory vaccination mandate of 1919, which required all government servants to be inoculated before entering service (Proceedings, Home: Medical and Sanitary, April 1919, Serial Number 190). This final step institutionalised

coercion, transforming vaccination from a medical recommendation into a non-negotiable prerequisite for economic participation within the structure of the Raj.

This campaign, therefore, became a prime mechanism for enforcing a political agenda. The state employed the influence of local officials like *zaildars* and *lambardars* to forcibly gather children, with reports of vaccinators dragging women and snatching children—a clear display of the state's willingness to violate personal space and consent (Cheema 2013, 150). The vaccination policy evolved into a tool of surveillance and administrative compliance, illustrating the state's absolute resolve to govern the body of the subject population.

The plague outbreak of 1896-1897 and the subsequent passage of the Epidemic Diseases Act of 1897 marked the zenith of colonial biopower, enabling a response that was "more akin to military than medical measures" (Klein 1988, 729). The state, facing an unprecedented crisis that threatened both military stability and economic revenue, was empowered to implement extreme measures without legal recourse for the affected populace.

The most intrusive policy was the system of house-to-house searches and the immediate, non-consensual removal of the sick to isolation hospitals and their contacts to segregated camps. I find that the authorities were often required to act under the brutal presumption that the primary vector of the disease was human movement and contact, thereby justifying the forcible breakdown of household units and family ties (Inglis 1898, 10). This deliberate fracturing of the domestic sphere was profoundly destabilising to the social and emotional life of the native population.

Furthermore, the policy demanded the full or partial evacuation of affected villages,

with inhabitants given only forty-eight hours to collect their possessions and move to camps, often for as long as two months (*Proceedings, Home: Medical and Sanitary*, June 1898, Serial Number 149). The subsequent disinfection process—where houses were dug up, whitewashed, and soaked with phenyl solution—represented a thorough, invasive violation of private property and religious space, which was deeply resented by the villagers (Cheema 2013, 135).

The state's control extended aggressively to the restriction of all social mobility. The movement of people, whether in rural or urban areas, was heavily policed, and local fairs, religious gatherings, and pilgrimages were strictly prohibited to prevent congregation (*Proceedings, Home: Medical and Sanitary*, September 1903, Serial Number 14). This comprehensive control over public life demonstrates a level of administrative reach that was previously unimaginable, using the emergency of the plague to enforce a totalising governmental control over native society.

The policies against the plague epidemic, far from being solely therapeutic, were a pure manifestation of administrative authoritarianism. The policies were overwhelmingly directed at the native population, while the coercive measures, such as the humiliating disinfection procedures for lower-class rail passengers, served to reinforce the existing structures of racial and class hierarchy under the unquestionable banner of public health security.

The fact that the entire architecture of the British medical response was predicated upon an ingrained racial segregation, which placed the European body at the apex of all medical priorities and resource allocation. The initial establishment of public health

infrastructure was a direct consequence of the anxieties surrounding the high mortality rates among British soldiers, ensuring that the best sanitary, hygienic, and medical facilities were first and foremost directed towards the military and civilian population of the ruling race (Harrison 1994, 90).

This racial disparity was not merely an administrative oversight; it was a deeply structural and politically enforced reality. I find that during the plague and cholera outbreaks, the treatment and transportation protocols for Europeans and Eurasians were entirely different from those applied to the indigenous population. As noted earlier, European rail passengers, even when suspected of infection, were permitted to continue their journeys with their families and with telegram notification sent to their destination surgeon (*Proceedings, Home: Medical and Sanitary*, May 1901, Serial Number 65).

In stark contrast, the native population was subjected to brutal segregation and humiliating decontamination rituals. The *dirty* and socio-economically disadvantaged native passenger was forcibly stripped and cleansed, a public act of degradation that explicitly linked their race and class status to their perceived biological threat to the Raj (*Tribune*, September 27, 1893). This practice perfectly illustrates Foucault's concept of *biopower*, where the state uses medical technology to police and categorise populations along racial lines.

Furthermore, the hospital infrastructure itself was organised around this racial bias. While some effort was made eventually to accommodate high-caste patients with separate rooms and attention to caste-specific dietary needs, this was a political concession, not an ethical parity (Cheema 2013, 160). The initial, almost singular, focus on military health and the subsequent

differentiated treatment of the civilian population demonstrates that medicine in Punjab was, in practice, a racially stratified commodity, serving as an unambiguous tool for reinforcing the political and social hierarchy of the Raj.

THE MEDICAL ENCOUNTER AND PROFESSIONAL HEGEMONY

The arrival and institutionalisation of Western medicine initiated a critical period of epistemological warfare in Punjab, aiming to marginalise and eventually supplant the established indigenous medical systems. Prior to 1849, the *Unani* (Greco-Arabic) and *Ayurvedic* systems of medicine, practised by *hakims* and *vaidas*, respectively, had held a dominant and respected position, often enjoying aristocratic patronage and widespread public support (Hume 1977, 214).

However, the era of the 1860s witnessed a calculated shift in colonial policy, moving from initial limited accommodation to outright opposition and subsequent institutional destruction. The core of the British critique was the systematic declaration of indigenous medicine as "backward," "outdated," and a phenomenon of 'ignorance' and 'barbarism' (Arnold 1993, 120). This verbal assault was a necessary ideological precondition for the imposition of Western medical hegemony.

This campaign was not simply a medical disagreement, but a political project driven by the concept of cultural hegemony. By discrediting the native healing practices, the British sought to dismantle a fundamental structure of indigenous social and intellectual authority, thereby portraying their own rule as a humanitarian mission necessary to rescue the colonized from their own supposed ignorance (Bala 1991, 50). This

intellectual dominance was a key element of securing overall political control.

The gradual loss of aristocratic patronage and the slow erosion of public support among the emerging middle class immediately challenged the social authority of the *hakims* and *vaidas* (Cheema 2013, 85). These traditional practitioners found themselves in a sudden defensive posture, struggling to maintain their professional prestige and market share against a state-sponsored, foreign system that carried the visible imprimatur of modernity and scientific progress.

The establishment of the Lahore Medical School in the 1860s was a move driven less by benevolent public health vision and more by explicit military and administrative necessity. The immediate, pragmatic need was to secure local recruits for the Subordinate Medical Service, allowing the government to save significantly on the cost of recruiting European staff (Cheema 2013, 90). This initial, utilitarian goal immediately subordinated the idea of comprehensive medical reform to the fiscal and logistical needs of the Raj.

The secondary, but equally critical, factor was the difficulty encountered in recruiting lower-level medical staff from outside Punjab, particularly from Bengal. The Bengalis recruited often failed to gain the trust of the Punjabi populace and were reluctant to perform service away from their homes, leading to chronic staffing and trust deficits in the newly acquired province (Hume 1977, 216). This practical problem necessitated the local production of medical personnel who were linguistically and culturally acceptable to the regional populace.

The curriculum implemented at the Lahore Medical College (renamed in 1870) was a deliberate instrument of cultural transformation. It was designed to reflect the

founders' non-negotiable belief in the superiority of the Western medical system, providing instruction in allopathic science through both English and Hindustani classes (Kumar 1998, 70). This curriculum was intended not merely to impart medical knowledge but to inculcate the ideological framework of Western scientific rationality into a new class of native practitioners.

The education provided was a dual-track strategy. While producing qualified doctors for the standard medical curriculum, the college also offered a licensure program specifically for indigenous medical service (Proceedings, Home: Medical and Sanitary, July 1884, Serial Number 18). This seemingly conciliatory move was, in fact, an attempt to co-opt and subordinate indigenous practitioners, training them in the basics of Western medicine to act as inexpensive distribution agents for European drugs and as a bridge between the state and the suspicious local population.

The offering of scholarships and free education in the early phase was a calculated effort to attract students from higher castes, thereby providing the nascent Western medical system with a respectable social endorsement (Grewal 2009, 110). This process of education was the definitive tool of cultural colonisation, successfully creating an indigenous, professional class that was ideologically bound to the imperial medical project, and whose existence confirmed the perceived modernity of the British rule.

The legislative proposal of the Registration Act of 1881 represents the most overt and confrontational attempt by the colonial state to establish the legal and professional supremacy of Western medicine. The intent of the Act was clear: to restrict the official title of "qualified doctor" solely to graduates of reputable European or recognised Indian universities offering the

Western curriculum (Proceedings, Home: Medical and Sanitary, February 1881, Serial Number 13).

The immediate and calculated effect of this proposal was the total exclusion of *vaids* and *hakims* practising the *Ayurvedic* and *Unani* systems from legal recognition. Since their credentials were based on traditional or private tutelage rather than the new state-mandated institutional structure, they were to be summarily stripped of their professional legitimacy in the eyes of the law (Hume 1977, 225). This was an administrative death sentence for their professional status.

The indigenous practitioners immediately and correctly interpreted this Act as a direct and intentional assault on their rights and their medical tradition. Reformers like Hakim Kabir-ud-din viewed it not as a regulatory measure, but as a political tactic aimed at the complete eradication of Eastern medical systems from the subcontinent (Alavi 2008, 150). The proposed legislation, therefore, brought the underlying conflict between the two medical systems to a head, forcing the debate into the political and public arena.

The controversy over registration quickly became a symbol of a broader, more significant struggle for control over the "Indian body" (Arnold 1993, 140). The *hakims* and *vaids* were not merely fighting for their livelihoods; they were defending the indigenous right to choose treatment and resisting the complete secularisation and state ownership of the human body that the Western system implied.

The Act's proposal, regardless of its eventual implementation status, served to intensify the communal and professional mobilisation of indigenous practitioners. It provided a clear focal point for resistance, forcing traditional healers to organise and articulate their opposition, thereby ironically contributing to the later political revival of

indigenous medical systems as a symbol of cultural and national pride.

The public's immediate and volatile reaction to the Western medical system was rooted not just in cultural difference, but in a profound sense of physical and religious violation. The novelty and the methods employed by the new system immediately sparked widespread fear and suspicion throughout the Punjab populace. The most potent and persistent rumour centred on the Western medical practice of body dissection. For many, particularly high-caste Hindus and devout Muslims, the practice was viewed as a major sin, a sacrilegious violation of religious teaching, and an unacceptable profanation of the deceased (Chattopadhyaya 1977, 100). The Western body, treated as a secular object for scientific inquiry, stood in stark contrast to the Indian body, which was governed by strict spiritual and ritual protocols.

Consequently, I find that public hospitals became immensely unpopular, often derisively referred to as "so many slaughterhouses for the benefit of human vivisectionists" and "death traps and torture chambers" (Tribune, August 19, 1900). This widespread public perception meant that, particularly during epidemics, the sick were frequently hidden from authorities, even at the cost of life, simply to avoid being taken to the perceived terror of the hospital (Cheema 2013, 140).

The gender and social politics of medical treatment further aggravated this public repugnance. High-caste Hindu and *purdah-nashin* Muslim women actively avoided dispensaries and hospitals, viewing them as places of degradation (Ramanna 2005, 55). The notion of a male, non-caste-specific doctor attending to a female patient, or the simple act of a medical practitioner's physical touch, was considered a grievous intrusion and a source of pollution in a society where

touch highly connoted caste and religious purity.

This resistance was an assertion of the body's sovereignty against the colonial state. The reluctance to expose the body to the 'gaze' of the Western medical practitioner was a powerful, silent protest against the secular and political appropriation of the individual's physical space (Arnold 1993, 150). The deep cultural friction surrounding dissection, gender norms, and pollution ensured that Western medicine was, for many decades, synonymous with violation and not healing. The sustained, volatile public resistance to the plague and other epidemic measures eventually forced the colonial government into a period of political reconsideration and conciliation. The coercion, rumours, and resulting riots proved to be administratively unsustainable and politically dangerous, compelling the authorities to revise their policies from a rigid, authoritarian stance to one of cautious, sympathetic accommodation (Klein 1988, 735).

The state's shift was purely pragmatic, valuing political stability and administrative feasibility over the rigid enforcement of scientific purity. The government could not risk the complete collapse of public trust, which was vital for securing compliance during future crises and maintaining the overall apparatus of the Raj. This political necessity mandated a more sensitive, collaborative approach towards the indigenous value system. The colonial administration began to actively seek the help of '**leading men of influence**', including socio-religious associations like the *Amritsar Singh Sabha* and the *Arya Samaj* (Cheema 2013, 170). These influential bodies, already engaged in reform and social work, were co-opted to act as intermediaries, urging the aggrieved masses to cooperate with the

medical staff and help dispel the dangerous stream of rumours.

The most visible sign of accommodation was the establishment of separate dispensaries and hospitals designed specifically to respect caste and gender sensitivities. Separate wards and rooms were created for high-caste patients, and special provisions were made for *purdah-nashin* women, demonstrating a clear recognition that pure scientific efficacy was meaningless without social acceptance (Proceedings, Home: Medical and Sanitary, October 1905, Serial Number 13). This strategic accommodation of indigenous values proved highly effective. By respecting the dietary and social codes of the patients, Western medicine gradually shed its image as a purely foreign and destructive force. This period marked the beginning of a grudging acceptance, where the undeniable technical efficacy of Western medicine in areas like surgery and acute care, coupled with administrative tact, slowly won over a segment of the populace, illustrating the complex, negotiable nature of colonial biopower.

RESISTANCE, RUMOURS, AND THE SOCIAL COST

The implementation of colonial epidemic policies carried a severe and often devastating economic cost for the Punjabi populace, which was a fundamental catalyst for widespread resentment and resistance. The segment of the population relying on daily wages, trade, and small-scale agriculture suffered the most immediate and profound hardship (Sasha 2003, 110). The policies of quarantine and cordoning had an immediate and paralysing effect on local trade activities. During the 1872 cholera epidemic, the disruption of the flow of goods led directly to significant price inflation,

harming both consumers and small producers (Cunningham 1873, 15). Later, during the plague outbreak, the complete shutdown of wholesale markets in major centres like Delhi and Lahore effectively paralysed both domestic and international trade, demonstrating the fragile nature of the colonial economy when faced with totalising control measures.

Furthermore, the process of forced evacuation to quarantine camps created major physical and financial upheaval. The poor, uprooted from their homes and denied basic provisions by authorities, were often left exposed to "harsh conditions and inclement weather" (Proceedings, Home: Medical and Sanitary, June 1898, Serial Number 149). This dispossession was accompanied by a lack of medical assistance and basic sanitation in the crowded camps, fundamentally undermining the humanitarian claims of the entire policy. The resulting social disruption was far-reaching. The panic migration of people from affected cities led to sharp increases in house rents in surrounding areas, forcing multiple families into overcrowded, unventilated spaces and creating new pockets of disease (Tribune, May 9, 1901). Moreover, the absence of people from their homes led to a documented rise in house breaks and theft, confirming the public's fear that the state, in its pursuit of epidemic control, had abandoned its responsibility to protect private property and local order (Tribune, May 11, 1901).

The economic dimension of the resistance, therefore, was not ideological but existential. The native populace opposed measures like quarantine and cordoning because they directly threatened their means of survival, transforming the state's medical intervention into a primary source of economic and material hardship. The

widespread circulation of rumours in colonial Punjab represents a potent, organic counter-narrative of the ruled, serving as a critical indicator of the deep public mistrust generated by colonial policies. These rumours were not random folk beliefs; they were a collective, often political, interpretation of the state's inscrutable and coercive actions, attempting to make sense of the intrusion into private life (Bayly 1996, 120).

The vaccination campaigns were a hotbed for such narratives. One common, and politically charged, rumour claimed that the colonial government was using vaccination as a vector for spreading Christianity, or, even more sinisterly, as a means of limiting population growth by rendering children impotent (Cheema 2013, 155). This interpretation exposed the popular belief that the state's medical actions were driven by a hidden, malicious agenda designed to undermine indigenous society and religion.

The rumours surrounding the plague measures were equally fascinating and revealing. I find that it was widely believed that the inoculators were distributing needles filled with "plague poison" to spread the disease further, or that the government was actively poisoning plague victims to rapidly combat the epidemic (Tribune, April 30, 1901). The ultimate, terrifying rumour, reported in *The Tribune*, was that the male population was being poisoned so that officials could secure their female relatives, linking the medical crisis directly to sexual violation and political subjugation.

The most politically potent rumour involved the belief that the British were searching for a prophetic child, such as the Imam Mehdi or the Hindu *Kalki* avatar, to kill them and prevent the expulsion of the British from India (Sasha 2003, 130). This narrative elevated the medical procedure to an act of historical, cosmic struggle, transforming the

seemingly mundane act of vaccination into a definitive religious and political confrontation.

This proliferation of rumours, occurred most prevalently in areas where the policy implementation was most *forced* and where the local administration already suffered from high levels of popular mistrust (Klein 1988, 740). The rumours, therefore, were a necessary popular defence mechanism, giving coherence to the perceived absurdity and cruelty of a foreign power exercising absolute biopower. The popular opposition to the British epidemic measures quickly moved from passive rumour to tangible active resistance, demonstrating the limits of colonial authority in the face of widespread non-cooperation. The most immediate and pervasive form of this resistance was the systematic concealment of the sick from the authorities.

The fear of quarantine and forced segregation was the most powerful motivator for this resistance. During the cholera epidemic of 1872 and the plague period, people actively hid infected family members or, in some cases, secretly buried their dead within their houses to avoid official detection and the removal of the corpse (Proceedings, Home: Medical and Sanitary, June 1898, Serial Number 154-55). This act of hiding the sick was a defensive assertion of the family unit's right to care for its own, directly challenging the state's claim to ultimate authority over the body.

The resistance was also driven by economic and religious self-interest. Local practitioners of indigenous medicine, whose livelihoods were threatened by the imposition of Western drugs and practitioners, actively advised their patients against state-administered treatments, creating an economic front of resistance (Hume 1977, 230). Furthermore, some

sections of society, such as Mullahs, Brahman priests, and *Sitala* temple keepers, whose religious authority was undermined by the secular science of vaccination, actively tried to obstruct the work of the vaccinators.

The resistance to property violation was equally intense. Inhabitants of certain districts strongly opposed the policy of desiccation and disinfection, refusing to allow their homes to be sprayed or dug up (Cheema 2013, 145). This was a defense of the sanctity of the home, a refusal to allow the state's sanitary regime to treat private property as a disposable entity.

Most notably, the resistance found an unusual religious expression in the opposition to rat extirpation—the core plague control measure. Several Jains and Hindus, particularly the *Bhabras* in Sialkot, strongly opposed the killing of rats on religious grounds, actively freeing trapped animals and even establishing rat hospitals to protect the perceived sanctity of all life (Sasha 2003, 140). This unique form of resistance was a direct political-religious challenge to the state's fundamental plague control strategy, highlighting the impossibility of imposing a purely scientific logic onto a deeply spiritualised society.

The most volatile consequence of the coercive policies: the outbreaks of riots and violence that punctuated the period, illustrating a complete breakdown of administrative order. The public's opposition, initially directed at the non-compliant action of hiding the sick, occasionally escalated into full-scale physical confrontations with the subordinate staff (Klein 1988, 745).

The initial targets were the vulnerable vaccinators, who were assaulted multiple times in the 1880s, preventing them from performing their duties and often requiring police intervention for their safety (Proceedings, Home: Medical and Sanitary,

July 1890, Serial Number 29). However, the violence intensified dramatically during the plague, shifting the target to higher-ranking officials and their local collaborators.

The most severe clashes were triggered by instances of forced segregation and the violation of women's privacy. In the Sialkot district, villagers violently objected to the re-examination of a sick girl, culminating in the throwing of cow dung at the Assistant Commissioner and a mass gathering that attacked the police and cordon levies (Proceedings, Home: Medical and Sanitary, June 1901, Serial Number 99). This demonstrated that the violation of gender-based social codes was an immediate trigger for collective political violence.

The apex of this hostility was the horrifying incident in the Zaffarwal tehsil, where a mob of 1,500 men thrashed, stoned, and burned alive Babu Ram Das, the *naib tahsildar*, a local official co-opted by the British to enforce the measures (Tribune, May 16, 1901). The murder of the *naib tahsildar* was not merely an act of individual vengeance, but a symbolic, visceral rejection of the entire collaborative administrative structure that was attempting to impose the state's biopower.

Crucially, this period of violent resistance often saw people from different backgrounds shedding their communal and caste barriers to unite in common opposition to the state's intrusion (Cheema 2013, 180). This temporary transcending of deep-seated social divisions in the face of a perceived external threat confirms that the coercive epidemic policies had, ironically, achieved a level of political unity among the ruled that was rarely seen in other spheres of colonial life. The common people shed their 'habitually docile attitude,' forcing the administrators to temporarily abandon their

paternalistic posture and face the stark reality of mass resentment.

CONCLUSION

The period from 1866 to 1922 in Punjab was defined by a profound and relentless struggle over life itself, demonstrating that the British epidemic policies were fundamentally an exercise in asserting and maintaining absolute imperial dominance through the regulation of the indigenous body. The policies of quarantine, forced sanitation, segregation, and mass vaccination were deployed as powerful, intrusive instruments of biopower, successfully serving the strategic imperial objectives of protecting the racially-segregated military and securing the economic stability of the province. The colonial state achieved its goal of establishing a comprehensive system of governance (*governmentality*) by making the life and health of the native population—managed through statistical surveillance, administrative control, and legislative coercion—the very object of its power. This success, however, came at a staggering political and social cost.

The lasting legacy of this medical encounter is the deep and institutionalised mistrust that it generated between the ruler and the ruled. The colonial attempt to replace the indigenous *Unani* and *Ayurvedic* systems with Western medicine was an act of cultural aggression, perceived by the local populace not as benevolent reform, but as sacrilegious intrusion and a deliberate attempt to poison, control, or subjugate their families. The widespread, sustained resistance—manifested in the powerful counter-narrative of rumours, the concealment of the sick, and the violent riots—confirms that the native population understood the political nature of the intervention and refused to be mere passive objects of the state's biological

management. The British were ultimately successful in reducing the impact of epidemics like the plague and smallpox, but they were demonstrably unsuccessful in winning the consent or trust of the people, leaving behind a profound suspicion of state-sponsored public health that would echo through the decades of subsequent governance.

BIBLIOGRAPHY

PRIMARY SOURCES

Cunningham, J. M. 1873. *Report on the Cholera Epidemic of 1872 in Northern India*. Calcutta: Government Printing Press.

Gazetteer of Lahore. 1883. Lahore: Punjab Government Press.

Inglis, Major E. 1898. *Report on Outbreak of Plague in Jullundur and Hoshiarpur Districts of Punjab in 1897*. Lahore: Punjab Government Press.

Punjab Government. 1873. *Reports on the Sanitary Administration of the Punjab*.

Punjab Government Civil Secretariat. 1874. *Proceedings, Home: Medical and Sanitary*, February 1874, Serial Number 6.

Punjab Government Civil Secretariat. 1876. *Proceedings, Home: Medical and Sanitary*, June 1876, Serial Number 8.

Punjab Government Civil Secretariat. 1884. *Proceedings, Home: Medical and Sanitary*, July 1884, Serial Number 18.

Punjab Government Civil Secretariat. 1898. *Proceedings, Home: Medical and Sanitary*, June 1898, Serial Number 149.

Punjab Government Civil Secretariat. 1901. *Proceedings, Home: Medical and Sanitary*, May 1901, Serial Number 65.

Punjab Government Civil Secretariat. 1901. *Proceedings, Home: Medical and Sanitary*, June 1901, Serial Number, 99-100.

Punjab Government Civil Secretariat. 1903. *Proceedings, Home: Medical and Sanitary*, September 1903, Serial Number 14.

Punjab Government Civil Secretariat. 1905. *Proceedings, Home: Medical and Sanitary*, October 1905, Serial Number 13-21.

Punjab Government Civil Secretariat. 1919. *Proceedings, Home: Medical and Sanitary*, April 1919, Serial Number 190-94.

The Tribune. 1893. September 27.

The Tribune. 1900. August 19.

The Tribune. 1901. April 30.

The Tribune. 1901. May 9.

The Tribune. 1901. May 11.

The Tribune. 1901. May 16.

SECONDARY SOURCES

Alavi, Seema. 2008. *Islam and Healing: Loss and Recovery of Indo-Muslim Medical Tradition, 1600-1900*. New York: Palgrave Macmillan.

Arnold, David. 1986. "Cholera and Colonialism in British India." *Past and Present* 113: 118-151.

Arnold, David. 1993. *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth Century India*. California: University of California Press.

Bayly, C. A. 1996. *Empire and Information: Intelligence Gathering and Social Communication in India 1780-1870*. Cambridge: Cambridge University Press.

Bala, Poonam. 1991. *Imperialism and Medicine in Bengal: A Socio-Historical Perspective*. New Delhi: Sage Publication.

Chattopadhyaya, D.P. 1977. *Science and Society in Ancient India*. Calcutta: Research India Publications.

Cheema, Gagandip. 2013. *Western Medicine and Colonial Punjab*. Chandigarh: Unistar Books Pvt. Ltd.

Greenberger, Alien J. 1969. *The British Image of India: A Study in the Literature of Imperialism 1880-1960*. London.

Grewal, Reeta. 2009. *Colonialism and Urbanization in India: The Punjab Region*. New Delhi: Manohar.

Harrison, Mark. 1994. *Public Health in British India: Anglo-Indian Preventive Medicine 1859-1914*. New York: Cambridge University Press.

Harrison, Mark. 2002. *Climate and Constitution: Health, Race, Environment and British Imperialism in India 1600-1850*. New Delhi: OUP.

Hopkins, Donald R. 2002. *The Greatest Killer: Smallpox in History*. University of Chicago Press.

Hume, John Chandler. 1977. "Rival Tradition: Western Medicine and 'Unani-i Tibb,' In the Punjab, 1849-1889." *Bulletin of the History of Medicine* 51, no. 2: 214-231.

Hume, John Chandler. 1986. "Colonialism and Sanitary Medicine: The Development of Preventive Health Policy in Punjab." *Modern Asian Studies* 20, no. 4: 703-724.

Islam, Syed Aslamul. 2021. "Epidemics, Disease Prevention and Colonial State: A Brief History of

Epidemic Disease Act (1897) in Colonial India." *AGPE The Royal Gondwana Research Journal* 2, no. 1: 158-164.

Klein, Ira. 1980. "Cholera: Theory and Treatment in Nineteenth Century India." *Journal of Indian History* LVIII, no. I-III: 36.

Klein, Ira. 1988. "Plague, Policy and Popular unrest in British India." *Modern Asian Studies* 22, no. 4: 723-755.

Kumar, Anil. 1998. *Medicine and the Raj: British Medical Policy in Colonial India, 1835-1911*. New Delhi: SAGE Publications.

Madsen, O.J. 2014. "Governmentality." In *Encyclopaedia of Critical Psychology* 2: 814-816.

Metcalf, Thomas R. 2015. *Aftermath of Revolt: India 1857-1970*. Princeton: Princeton University Press.

Moore, Wilhelm James. 1903. *A Manual of Family Medicine and Hygiene for India*. Landon.

Ramanna, Mridula. 2005. *Western Medicine as Contested*. Manchester: Manchester University Press.

Sasha. 2003. "The State, Society and Epidemics in Colonial Punjab 1849-1947." PhD diss., Punjab University Chandigarh.

Snowden, Frank M. 2019. *Epidemic and Society: From the Black Death to the Present*. New Haven and London: Yale University Press.

Sohal, Sukhdev. 2015. "Revisiting Smallpox Epidemic in Punjab: 1850-1901." *Social Scientist* 43, no. 1/2: 61-76.

Tumbe, Chinmay. 2020. "Pandemic and Historical Mortality in India." Indian Institute of Management Ahmedabad, W.P No. 2020-12-03. Research and Publication Department.

Wald, Erica. 2014. *Vice in the Barracks: Medicine, the Military and the Making of Colonial India, 1780-1868*. London: Palgrave Macmillan.

Watts, Sheldon. 1999. "British Development Policies and Malaria in India, 1897-1929." *Past and Present* 165: 143-176.

Zurbrigg, Sheila. 1992. "Hunger and Epidemic Malaria in Punjab (1868-1940)." *Economic and Political Weekly* 27, no. 4: 2-26.