

Leverage the power of ritual to improve community health worker efficacy and public health outcomes: Lessons from Bihar, India

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Summary

Biomedical health interventions now have global reach and interact in complex and often poorly understood ways with traditional medical rituals that precede biomedicine. People often experience biomedical practices and treatments as rituals because they are very similar from an experiential perspective.¹ Yet the global public health community often views ritual practices of communities as obstacles to adopting new health-promoting behaviors. The lack of engagement with the biomedical and traditional medical rituals of local populations has obscured understanding the critical functions of these behaviors, limited the potential to leverage ritualization to increase behavioral uptake, and stymied social and behavioral change efforts. Our large-scale, mixed methods research with Community Health Workers (CHW) in Bihar, India, has shown that understanding the rituals of a community provides critical insight into their identities, norms, values, and goals. We propose that health interventions should be informed by, and build upon, knowledge of health rituals. A deep understanding of existing beliefs and behaviors will allow local health "influencers" such as CHW to encourage new and modified rituals that integrate the best of biomedical and traditional health practices in ways that preserve their meaning and shared purpose.

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A pervasive obstacle in Indian healthcare has been relatively low take-up of biomedical practices with accepted benefits. One such practice is the consistent consumption of iron and folic acid tablets by pregnant women - in Bihar, for example, only a small fraction of pregnant women report consuming them.² Other critical health-promoting behaviors, such as breastfeeding within one hour of birth, are below target.² The health consequences of the lack of large-scale adoption of these practices

are profound, 60% of Bihari women are anemic, and only 11% of children under two receive a nutritionally adequate diet, leading to persistent, often irreversible, health challenges throughout their lives.²

It's not for lack of effort - entire health systems focused almost exclusively on maternal and child health have been built by governments with support from global and domestic non-profits. A variety of behavior change strategies have been implemented: from information dissemination about the benefits of these behaviors to financial incentives, both to the family and to the community health worker (CHW).³ These efforts have had some notable successes, but the impacts are often short-lived and fail to meet the aspirations of organizations dedicating substantial time, effort, and resources to maternal and child health initiatives.⁴

In seeking reasons for explaining the failure, some have settled on the belief that these women and their communities are willfully ignorant, that the pulls and

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pressures of poverty have led to poor choices, or even that they lack the motivation to care for themselves or their children.^{5,6} In our research, however, we show that these same women are investing an extensive amount of time and energy attempting to mitigate health risks, including engaging in behaviors believed to reduce the risk of miscarriage, avoid congenital disabilities and illness, and promote the health of themselves and their babies.¹ They are keenly attentive to threats posed by contamination, are aware of the relationship between diet and health, and are strongly motivated to promote the health of their babies while avoiding illness.⁷ So why wouldn't women so concerned about risk and health not engage in biomedically-recommended practices? Why wouldn't the same women deeply concerned about avoiding congenital disabilities not take nutritional supplements proven to reduce them?

We acknowledge that multiple factors contribute to insufficient uptake of biomedically-recommended behaviors and practices including resource shortages, inadequate supply, and uneven access to biomedical treatments and information. We suggest, however, that such behavioral change initiatives are also missing a critical piece of the puzzle: they operate in a community vacuum by not considering the rich and complex traditional health practices, such as **rituals** already being observed by local communities. For example, there are already many health rituals being practiced in communities with the express goal of reducing congenital abnormalities, including those with low levels of IFA tablet consumption.¹ No change in practices can be sustained unless they are embraced by the people they are designed for. Health initiatives should be based on a deep understanding of current behaviors and responsive to local needs, wants, and challenges. Imposing medical practices on a population without considering their current health understanding and rituals is unlikely to succeed.

Functions and history of health rituals

During times of uncertainty, stress, and danger, many people turn to rituals to cope with anxiety and exert some measure of control.^{8,9} Rituals are culturally-transmitted conventions motivated by social affiliation.^{10–14} People use rituals for protective, restorative, and instrumental or goal-directed purposes worldwide, and thus they are of particular relevance to health-risk mitigation efforts.^{1,9,15–18}

One of the most stressful and transformative periods in the life course is at its very beginning: during pregnancy and after birth. The period before and after birth is thus universally and extensively ritualized. In our research in Bihar, we have documented hundreds of rituals that have evolved over many years to govern birthing, nutrition, and child-rearing practices. While there are undoubtedly rituals that require alteration or

updating, in most cases, they are not inconsistent with modern biomedical advice.¹

Written evidence for rituals to treat health-related problems dates back to ancient Egypt (Bryan, 1931). Rituals continue to be practiced by contemporary populations such as Brazil, India, and South Africa to treat health problems, including diseases as diverse as HIV and tuberculosis.^{9,15,19,20} The use of rituals to mitigate health threats requires entertaining their potential for causal potency or efficacy.^{16,21,22}

It is not by chance that health and hygiene practices such as hand washing are heavily ritualized. Rituals are the by-product of a *hazard precaution system*.²³ This psychological system responds to social threats, such as ostracism, and physical threats, such as the presence of pathogens or contamination.^{24–26} Reducing contamination is vital to human health and survival, so having ritual practices to disseminate these practices within a group is highly functional.²⁷

All populations use a diverse repertoire of health-related rituals and practices to mitigate risk or prevent adverse outcomes. Traditional health practices include taboos, superstitions, religious and folk-medical practices, and rituals, all of which exist in all human groups and operate as culturally-sanctioned responses to a perceived threat. Rituals may also serve as a form of palliative coping under stressful, uncertain, and uncontrollable conditions. Psalm recitation, for example, lowers stress among Israeli women during times of war.²⁸

The onset of illness is often associated with transition, risk, and uncertainty. Engaging in rituals increases the perception of personal control over the uncertain world around us. Health rituals provide a socially-sanctioned script to treat illness and ill health.⁹ People have created new hygiene rituals in response to the COVID-19 pandemic, for example, from new norms for mask-wearing to complex interpersonal negotiations surrounding social distancing. These rituals both promote health by reducing the transmission of infectious disease and provide a personal sense of control over mitigating health risks.²⁹

The amount and kind of health beliefs and behaviors result from local cultural ecologies of health and risk perceptions. In Bihar, India, for example, hundreds of rituals and other traditional health procedures are practiced during pregnancy and after birth, almost all of which attempt to reduce risk and mitigate adverse outcomes.¹ Rituals associated with health serve multiple functions within communities.¹⁰ Consider birth rituals, such as Chatti (छाती), a perinatal Hindu ritual widely practiced throughout India on the sixth day after birth. This ritual serves social functions by marking critical transitions in life by initiating a new baby into the family and community and celebrating new parenthood. It also has instrumental functions; ritual practitioners believe it protects the baby from supernatural threats such as the evil eye and promotes good fortune¹ (Figure 1). The social

Ritualization Mechanics (Chatti)

There are specific mechanics of rituals-

Rituals avoid risk and promote health
Rituals may be part of a hazard precaution system, a psychological system geared toward responding to threats in the environment such as the presence of pathogens or contamination.*

Rituals coordinate collective action
Rituals solve the coordination problem, one of the most complex challenges of social life. Communities organize the behavior, values, and goals of countless individuals through collective ritual. Practicing daily and weekly rituals in private and in public increases cooperation with others and contribute to community cohesion.

Rituals have reinforcing mechanisms
Rituals have various reinforcing mechanisms so that behaviours are repetitively practiced and practiced in a particular way.
1- They mark specific transition moments and rites of passage and have a defined way of being practiced. 2- Signifiers in the environment including material artifacts. 3- They are part of collective identity and not doing it is standing out.

Chatti
Protecting infants from illness and attracting good fortune. Reduces parental anxiety and increases feelings of control over the health and safety of the infant.

Chatti
Initiates a new baby into the family, increases familial and community investment.

Chatti
Between 10 PM-midnight on the 6th day after birth, the mother should dress her baby in new clothes and light a lamp with a wick soaked in ghee. The lamp, a red pen, and blank paper should be placed on a wooden plank for Vidhaata (goddess of Destiny) to write the future of the baby. Sindoor (red powder) should be mixed with water to catch the baby's footprints on a paper or cloth. There should be clean white handkerchiefs and extra pens so that after they have been blessed, they can be used in future auspicious occasions.

*When people use rituals to treat problems, they believe that they have the potential to have a causal effect. Yet even when people expect rituals to achieve the desired outcome, there is not a readily discernible causal link between actions and outcomes. Instead, rituals are justified as the way we do things.

Figure 1. Ritualization mechanics: Chatti.

capital and timing associated with this ritual could be extended to accommodate modern biomedical health practices related to maternal nutrition. Practices that encourage immediate and exclusive breastfeeding could be added to the core ritual to leverage existing health-promoting motivations.

Coexistence of biomedicine and traditional health medicine

The introduction of biomedicine into populations that previously lacked access does not replace traditional health beliefs, practices, and rituals.^{1,7} Instead, traditional approaches and biomedicine often coexist in complementary ways. People often use traditional interpretations and biomedicine to explain outcomes or events at different levels of causality. For example, supernatural explanations for acquired immunodeficiency syndrome (AIDS) infection are commonplace in many regions of the world, including South Africa and Haiti, despite high levels of accurate biomedical knowledge about the transmission of the virus among the population.^{19,30–32} In this context, supernatural explanations such as witchcraft provide distal explanations for why human immunodeficiency virus (HIV) is contracted; biomedical explanations such as germ theory provide a proximate explanation for how it is contracted. For example, “a witch can make a condom weak, and break”.¹⁹

We argue that modern biomedicine is a new ritual repertoire that frequently coexists with traditional medicine.¹ People experience many biomedical practices and treatments as rituals because they are often very similar from an experiential perspective. For example, the biomedical treatment for pulmonary tuberculosis specifies that patients must take a complex course of up to four antibiotics (e.g., isoniazid, rifampicin, pyrazinamide, and ethambutol) and other associated medications (to treat the side effects of those antibiotics) on a highly-specified schedule.³³ The treatment duration, dosage, and course are illness- and medication-specific and vary based on the other medications taken concurrently, potential side effects, age, body weight, general health, and several other factors. Doctors give patients specific and complex directions to take these medications: take up to 6 pills per day on an empty stomach, 1 h before or 2 h after a meal, with a full glass of water, on a regular and consistent schedule. They are directed not to take more of the medication, more often, or for a more extended period than specified to avoid adverse outcomes (e.g., antibiotic resistance, the persistence of the infection caused by T.B. bacteria (*Mycobacterium tuberculosis*), and side effects of the antibiotics).³³ Medical experts (physicians, nurses, and pharmacists) whom we trust despite not knowing well (or at all) supervise the course of treatment. Note that very few patients,

including patients with decades of formal education, can explain the biomedical basis of antibiotic efficacy. Even fewer can explain the biomedical mechanisms underlying the efficacy of this course of medications for pulmonary tuberculosis in particular. Note that the “causal opacity” - lack of knowledge of causal mechanisms underlying medical treatments - does not deter most people from taking them. Instead, they rely on trust in medical expertise and social norms that reinforce faith in the scientific process.³⁴

This course of biomedical treatment is structurally similar to ritualistic remedies widely used in traditional or homeopathic medicine in modern and ancient times. For example, consider Brazilian *simpatias* (rituals used to treat illness and other maladies).¹ *Simpatias* are ritualistic remedies widely used in Brazil to solve various common health-related problems, such as tuberculosis, asthma, and cancer, and non-health-related such as infidelity and unemployment.^{9,15} Consider this *simpatia*, used to find a partner in Brazil: “Buy a new sharp knife and stick it four times into a banana tree on June 12th at midnight. . . Catch the liquid that will drip from the plant's wound on a crisp, white paper that has been folded in two. The dripping liquid captured on the paper at night will form the first letter of the name of your future partner³⁵” (15, p. 2). Now consider this ancient Egyptian ritual, taken from the Papyrus Ebers, 1550 BCE, that was used to treat blindness: “Crush, powder, and make into one the two eyes of a pig [remove the water therefrom], true collyrium (i.e., mineral eye salve), red-lead (i.e., red oxide), and wild honey [in a clay bowl] Inject [mixture] into the ear of the patient. When thou hast seen properly to this mixing, repeat this formula: 'I have brought this thing and put it in its place. The crocodile [God Sobek] is weak and powerless. Repeat twice. Thereby he will at once recover.”³⁶, p. 104 (15, p. 2).

There are various surface-level differences between biomedical, modern traditional, and ancient ritual practices. They involve different substances, practices, and artifacts and treat different problems. Yet, there are also many psychologically-significant similarities. They all include repetitive actions, many distinct procedural steps, high levels of procedural detail, and specific amounts and duration. Despite the seeming variability in the content, practices, and artifacts used in biomedical and traditional rituals worldwide and over time, people evaluate the potential efficacy of these practices in predictable ways. Rituals often entail prescriptive, highly detailed, rigid behavioral patterns.³⁷ Because rituals usually lack explicit information about mechanistic causation – for example, how antibiotics produce their effects or how the actions in a *simpatia* produce favorable outcomes, people rely on intuitive causal principles to evaluate how well they work.^{15,10} These principles are the product of intuitions about causal potency (e.g., dosage effects). The lack of understanding of the mechanisms underlying a cause-and-effect relationship

(“causal opacity”) increases faithful adherence to the ritual “prescription” because of the lack of information about the consequences of deviating from the ritual script or procedure.^{38–40}

Note that the procedural specificity and causal opacity of the T.B. treatment plan described above are structurally similar to health rituals practiced in traditional medicine. The evidential basis of biomedical treatments and traditional medical treatments are different in a significant way; biomedical treatments rely on the scientific method to develop and test them. However, biomedical practices are often experienced as another kind of health ritual by most people who are not formally trained in medicine. Biomedical and traditional medical practices share many characteristics and are thus structurally and functionally very similar. Both are socially-transmitted systems of beliefs and behaviors based on authority and trust. Like traditional health rituals, the causal processes, practices, and mechanisms of biomedical practices and treatments are opaque from the perspective of most practitioners.^{1,10}

The structural and functional properties of ritual are ideally suited for transmitting behaviors, including health behaviors, within and between groups. Our minds are well-prepared to learn and transmit rituals to others. Psychological predispositions support ritual practices' acquisition and transmission, including sensitivity to conformity and consensus, high-fidelity copying, and teaching.⁴¹ Rituals' normativity and causal opacity increase high-fidelity imitation and transmission and inhibit individual-level variation or deviation.⁴² Ritualizing a behavior increases the motivation to engage as a form of social affiliation.¹¹ Mask wearing in the U.S., for example, has become as much a signal of affiliation with particular groups as a method for reducing the transmission of infectious diseases.⁴³

Rather than viewing existing traditional health rituals as obstacles to overcome, understanding the ritual practices surrounding health can potentially transform the efficacy and impact of behavioral change initiatives. For example, biomedical perinatal health initiatives could build upon existing birth and childhood rituals, which serve similar functions, to promote better health outcomes.¹ Consider the Indian birth ritual called Chatti (छट्टी) mentioned previously. This ritual occurs shortly after birth and is well attended by family members, community members, and community health workers. It provides an ideal opportunity to incorporate biomedical messaging with an important traditional health ritual during a critical and vulnerable time for both newborn and mother.¹

Applications

The lack of attention to the ritualization of biomedical practices is a missed opportunity to harness the power of ritual for behavioral change. For example, the COVID-19 pandemic is associated with a wide variety of biomedical rituals worldwide, which could be harnessed to improve health outcomes. Health interventions should be informed by and built upon knowledge of existing rituals. Widespread adoption of mask-wearing in public before the outbreak of COVID-19 in East Asia due to SARS facilitated the adoption of mask-wearing for COVID-19 protection. There are thus multiple unique insights associated with studying behavior through the “lens” of ritual. First, rituals demonstrate that behaviors are connected. They are part of complex systems of practices and should not be studied in isolation. Second, they are deeply embedded in lived experience and reflect local perceptions of risk, uncertainty, and health. Third, they are embedded within the social fabric of communities and involve a variety of local influencers and belief systems.⁴⁴

On several health outcomes, India, and not just the state of Bihar, continues to lag behind many other countries. There are several reasons for this. In our impatience and perhaps embarrassment over traditional aspects of our culture, we have hastily imposed a biomedical regimen while overlooking traditional medicine and deeply embedded health rituals. A better way forward, perhaps, would be to take an integrative and functional approach instead of a combative or dismissive one. This process would entail documenting and explaining rituals to determine when they can be leveraged to promote health outcomes and when they require minor modifications and updates. It entails working with other critical health influencers in these communities to promote positive health outcomes, including other formal health workers such as ANMs (Auxiliary Nurse Midwives) and AWWs (Anganwadi Workers), traditional medical practitioners such as dais, members of the informal medical community such as RMPs (Rural Medical Practitioners), and religious leaders such as Pandits, Ojhas, or Maulanas. Our work strongly supports investing in and supporting the ASHA by establishing her authority with fair compensation and training while harnessing her cultural capital to work with the community to promote healthy outcomes.

In a state like Bihar, the CHW, particularly the ASHA, is perfectly positioned to be an effective health influencer and agent of social change. She is from the community and knowledgeable about traditional and biomedically-recommended practices. Our research shows that she is already among the most significant influencers of biomedically-recommended perinatal practices.⁴⁴ Suppose we are to deploy the full power of the ASHA to effect change. In that case, we need to stop treating her as merely a messenger of the medical health system and embrace her more significant role as

¹ The idea of “incorporate” is used to communicate the notion of blending in and separating it from the mere “colocation” of the two sets of rituals

a translator and integrator of health culture: one who is equipped based on her first-hand knowledge of and connections with local communities to modify existing rituals in the direction of beneficial medical practices and can use her social capital to do so. Investing in her training and career growth while recognizing her unique positioning in her community would allow her to be an agent of social change and not merely a messenger.²

Summary

Biomedicine coexists in complex ways with traditional medical practices and rituals. We argue that the lack of engagement with the biomedical and traditional medical rituals of local populations has obscured understanding the critical functions of these behaviors, limited the potential to leverage ritualization to increase behavioral uptake, and stymied social and behavioral change efforts. Rather than view traditional health ritual as obstacles to adopting new health-promoting behaviors, we propose that understanding the rituals of a community provides critical insight into their identities, norms, values, and goals. Rituals are motivated by averting risk and promoting health, and with a few notable exceptions, most are neutral or consistent with biomedical recommendations.¹ We acknowledge that health rituals alone are insufficient to compensate for insufficient access to high-quality nutrition, healthcare, and biomedicine in resource-poor environments such as Bihar. Instead, our research has shown that that these rituals do little harm, generally speaking, to the mission of biomedicine and the promotion of good health outcomes¹ and that they have the potential to be leveraged to increase behavioral uptake.

The global health community should study the functions of health rituals, both biomedical and traditional, and identify the health “influencers” whose opinions are locally valued. A deep understanding of existing beliefs and behaviors will allow them to encourage new and modified rituals that fuse the best of biomedical and traditional health practices in ways that preserve their meaning and shared purpose. One promising direction for future intervention, for example, is to ritualize contact between CHW and newly married women by creating new rituals or leveraging existing rituals associated with marriage and fertility to increase opportunities for education and communication.

We should base behavioral interventions on deep knowledge of cultural ecologies of health by documenting and describing the complex, diverse and wide-

-ranging practices and beliefs associated with mitigating risk. A scientific understanding of ritual provides unique insight into how to tackle problems of social organization and change and has the potential to revolutionize the efficacy and impact of social and behavioral change interventions.¹

Declaration of interests

None.

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² This will also go a long way towards restoring her status as a “liberator” and not as a “lackey” (http://www.politicsofhealth.org/index.php?option=com_content&view=article&id=81:lacky-liberator&catid=44&Itemid=73) thus further strengthening her efficacy.

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