



Beyond Belief: A Scientific Inquiry into the Myths and Looms of Hindu Rituals

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ABSTRACT

This study, titled "Beyond Belief: A Scientific Inquiry into the Myths and Looms of Hindu Rituals," explores the myths surrounding Bengali rituals among Hindus and investigates the relationship between science and these rituals, with a focus on birth and marriage ceremonies. Employing content analysis and meta-research, the study examines four research questions to uncover the persistent myths in the minds of Hindus, the connection between science and rituals, and the role of science in these practices. The sample consists of 46 papers and articles, primarily drawn from community-based convenience samples, and a systematic review of literature from Google Scholar and Scopus databases guides the research. The data collection involves segmenting texts, coding, and analyzing recurring themes, while manual coding processes and primary and secondary data comparisons inform the data analysis. Key findings reveal that rituals associated with birth and marriage, often deemed superstitions, have logical and scientific explanations. However, despite scientific clarity, myths persist, and science itself becomes a platform for new beliefs. The study emphasizes the limitations of science in addressing humanity's challenges, suggesting a focus on individual actions over blind faith in science. The research advocates for educational initiatives to raise awareness, urging governments to introduce programs in schools that foster scientific literacy and critical evaluation of traditional practices, contributing to a more informed and rational society.

Keywords: Bengali Culture, Hindu Rituals, Looms, Myths, Science.

I. INTRODUCTION

Superstitions, rooted in sociocultural heritage, often transcend logic and science, originating from ignorance and fear of the unknown. While some superstitions lack meaning, others surprisingly exhibit connections with logic and science. However, in our modern era, a growing disbelief in traditions and rituals is fueled by a misconception that deems them irrelevant. This shift is attributed to a lack of understanding of the scientific basis behind these practices. In contemporary society, the nuclear family takes precedence, and traditions are disregarded as mere "bullshit." The blame partly lies with forefathers who failed to convey the scientific rationale behind rituals. Yet, rituals persist, serving various purposes such as healing, marking rites of passage, and facilitating social interactions. Hindus, for centuries, have observed numerous rituals embedded in Vedic and Brahman scriptures. While some follow these traditions faithfully, others view rituals as outdated and unnecessary. The criticism stems from associations with superstitions, perceived meaninglessness, and a belief that rituals hinder individual freedom.

Despite such critiques, scientific explanations exist for Hindu rituals, offering insight into their continued relevance. These practices endure not only in India but also among diaspora communities worldwide. Understanding the scientific basis behind rituals can bridge the gap between tradition and modernity, highlighting the logical foundations that have sustained these practices through generations.

Indian myths, predominantly drawn from Mahabharata, Ramayana, and ancient Puranas, play a pivotal role in Hindu culture, forming the foundation of faith. However, blind faith, rooted in myths and rituals, extends beyond Hinduism to various religions in India. Scientific studies highlight the positive impact of rational

rituals on emotional well-being, fostering connections between individuals and transmitting cultural heritage across generations. Common Hindu rituals include meditation, prayers, baptisms, weddings, and funerals. The origin of religion and the debate over rational versus irrational rituals have been topics of discussion since the nineteenth century. Rituals, tailored to emotional needs and purposes, contribute to confidence-building or alleviating anxiety. Bengal's myths, rooted in Vedic mythology, are reflected in cultural practices. Superstitions, such as the howling of dogs at night, nail-cutting as a bad sign, and the belief in the relationship between itching palms and money, persist in the region. Despite scientific explanations emerging in the 20th century, these myths endure as part of cultural beliefs.

A. Review of Relevant Studies: Unveiling the Intersection of Myth, Rituals, and Science

Various studies have delved into the myths and science associated with Hindu rituals. Masse et al. (2007) examined the scientific study of myth, highlighting its historical significance and the potential for insights through a natural history approach. Gligor (2009) focused on Puja in Hinduism, emphasizing its role in achieving identity between the worshiper and god, transforming human nature. Ecklund (2010) concluded that science often contributes to religious unbelief, and religious scientists may serve as boundary pioneers within their communities. A Point of View (2011) argued that science and religion serve different purposes, with science providing usable theories and religion housing valuable myths about human experience. Srivastava and Barmola (2013) explored the link between Hindu rituals and spirituality, suggesting applications in mental health. Patwardhan (2014) studied Ayurveda, revealing the tension between traditions and rituals, cautioning against ritualistic behavior. Shalaeva (2015) discussed the historical transformations in the scientific study of myth, emphasizing its connection to Enlightenment, Romanticism, and Classicism. Hobson (2017) highlighted the emerging science of ritual as a natural anxiety buster. Wu (2018) emphasized the cultural meanings as the core of rituals. Kannabiran (2019) studied the changing relationship between science and religion, noting a shift towards science as a legitimate path for understanding nature. Johnson et al. (2020) found a positive relationship between science and Hinduism based on ritual practices. Roy (2020) explored the ritual bathing practices in modern India, considering perspectives from Vedic priests, Tantric ascetics, and scientists. Thomsen (2021) reported on the impact of spiritual practices on individuals, providing tools for kindness and generosity. While various studies have explored myths and rituals in different contexts, none specifically address the myths and scientific approaches to Hindu rituals in West Bengal. This study aims to fill this gap by examining the sustained myths in Bengali rituals, the relationship between science and rituals, and the role of science in Hindu rituals in West Bengal.

Despite various studies on Hindu culture, rituals, and traditions, a gap exists in understanding the science behind Hindu Bengali rituals. This research aims to fill this void by addressing key questions: What myths persist in the minds of Hindus regarding Bengali rituals? What is the intricate relationship between science and rituals? How does science contribute to the significance of Hindu Bengali rituals? In essence, the study seeks to illuminate the myths and scientific foundations behind Hindu Bengali rituals, enhancing our understanding of these age-old practices in a contemporary context.

B. Objectives of the Study

1. To study the different myths persist in Hindus' Bengali rituals.
2. To study the relation between science and Hindus' Bengali rituals.
3. To study the role of science behind Hindus' Bengali rituals.

C. Research Questions

1. What myths are sustained in the mind of Hindus in terms of Bengali ritual?
2. Is there any relationship between science and Hindus' Bengali rituals?
3. What is the role of science behind Hindus' Bengali rituals?
4. How does science play role behind the Hindus' Bengali rituals?

D. Operational Definitions of Terms

(a). Myth: A myth is a traditional story created in the past to explain practices, beliefs, natural events, or justify religious beliefs and social customs. In the context of Bengali mythology, it encompasses historical legends and folk tales from West Bengal and Bangladesh, drawing from Vedic, Hindu, and Islamic influences.

(b). Loom: Loom refers to a large, often frightening or unclear shape or object that stands out threateningly. In the context of this study, "looms" may metaphorically represent ambiguous or threatening aspects associated with myths or rituals.

(c). Science: Science is a system of knowledge focused on the physical world and its phenomena, involving unbiased observations and systematic experimentation. It pursues knowledge covering general truths or the operations of fundamental laws, providing a rational alternative to superstitions.

(d). Hindus' Ritual: In Hinduism, rituals aim to instill feelings of devotion and religiosity, placing God and spirituality at the center of human life. Rituals involve a sequence of activities, including gestures, words,

actions, or objects, performed in a designated place and according to a set sequence. They are characterized by formalism, traditionalism, invariance, rule-governance, sacral symbolism, and performance.

E. Delimitations of the Study

Due to time constraints, the study focuses specifically on Hindus' Bengali rituals associated with Birth and Marriage. Other rituals or aspects of Hinduism are excluded from this research.

II. METHOD

Content Analysis was employed, followed by Meta-research. The main research question guiding this study is: How are myths and looms related to Hindus' rituals? A qualitative systematic review of global literature, using an established educational methodology, was conducted to address this question. Four sub-research questions were formulated to guide data collection:

RQ1: What myths persist in the minds of Hindus in terms of Bengali rituals?

RQ2: Is there a relationship between science and Hindus' Bengali rituals?

RQ3: What is the role of science behind Hindus' Bengali rituals?

RQ4: How does science play a role behind Hindus' Bengali rituals?

Systematic reviews aim to search, evaluate, and synthesize findings from diverse primary studies. Regardless of qualitative or quantitative focus, they typically examine the spread and characteristics of the phenomena studied (RQ1 and RQ2). Qualitative systematic reviews further collect detailed data to address qualitative research questions, such as RQ3 and RQ4 in this study.

A. Sample of the Study

Given the emphasis on naturally occurring routines and rituals in community-based samples, the majority of the 46 identified papers and articles were drawn from convenience samples. Decisions to include/exclude were made at abstract and full-paper text stages. Various sources, including research papers, articles, newspapers, stories, reports, blog postings, and online reviews, were selectively chosen based on their relevance to the study's content.

B. Procedure of Data Collection

The researcher divided each text into segments or "chunks," treated as separate units of analysis. A coding process followed, where one or more concepts were applied to each unitized text segment, based on themes derived from the research materials. A coding scheme was employed, and the coded data were analyzed to determine recurring themes, contexts, and relationships.

C. Procedure of Data Analysis

Manual coding processes were employed, considering Word and Phrase Repetitions, along with Primary and Secondary Data Comparisons. A systematic review of English-language literature collected from Google Scholar and Scopus databases was conducted to answer the research questions. An exploratory approach was taken due to the limited existing work in this area. The review included both peer-reviewed journal papers and "grey literature" or reports. Literature from 1980 to 2022 was considered to capture programs and events, including the time of the Covid-19 pandemic. Google Scholar provided global diversity, and Scopus returned papers from more traditional sources.

III. RESULT

A. Myths of Hindu Bengalis' Ritual

Table 1 Myths of Hindu Bengalis' Ritual on Birth

Theme	Dimension	Summary and Citations
Myths persist in Hindus' Bengali Rituals	Birth	<p>1. Traditional practices of women from India: pregnancy, childbirth, and newborn care (Choudhry, 1997). Use of old generation cloths for the newborn. Keeping knife and water with mother and baby. Baby wears a protective amulet Taweez/ bangle/ kazal.</p> <p>2. Hindu birth customs Leading article (Gatrad et al., 2004). Desire for burial of placenta but not possible. Planned Cleansing ceremony on 6-8th day.</p> <p>3. Traditional practices of Konya women during pregnancy, birth, the postpartum period, and newborn care (Okka et al., 2016). Not giving colostrum to new born. Planned Naming ceremony.</p>

		<p>Removal of baby's hair ceremony.</p> <p>4. Common ritualistic myths during pregnancy in Northern India (Choudhary et al., 2017).</p> <p>Godh bhara ceremony.</p> <p>Plan to stay with own mother after delivery.</p> <p>5. Prevalence of Superstitions in Indian Society in 21st Century (Sethi, & Saini 2019).</p> <p>Giving sugar/honey to new born before breast feeding...</p> <p>Makes baby's life sweet.</p> <p>Not giving bath to new born baby... May lower baby's temperature.</p> <p>Not bathing new born after delivery...Not good for health.</p> <p>Not keeping new born and mother's clothes outside after sunset...</p> <p>Someone may do black magic.</p> <p>6. Significance of Arya Samaj in Eradicating Superstitions and Thus Safeguarding The Nation (Maitra, 2020).</p> <p>Applying Kajal as safeguarded for babies from the evil.</p>
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Table 1 presents a comprehensive analysis of the myths surrounding the birth rituals of Hindu Bengalis. It includes various relevant topics, their corresponding themes, and the findings from related studies. The table also lists the names of the topics, authors, and the years in which the studies were conducted.

Table 2 Myths of Hindu Bengalis' Ritual on Marriage.

Theme	Dimension	Summary and Citations
Myths persist in Hindus' Bengali Rituals	Marriage	<p>1. Weirdly True! 9 Indian Wedding Superstitions That May Seem Bizarre And Yet Remain Practical (Agarwal, 2018).</p> <p>The Engagement Ceremony.</p> <p>Mehendi Ceremony.</p> <p>2. Hinduism, marriage and mental illness (Sharma, et al. 2013).</p> <p>Haldi Ceremony.</p> <p>3. A Gender Critique of the Eight Forms of Hindu Marriages (Maharajh, 2015).</p> <p>Subho Dristi (Seeing each other just before the wedding).</p> <p>Saat Panke Ghora.</p> <p>4. 19 Hindu Wedding Customs to Expect at a Traditional Hindu Wedding (Nowack, 2021).</p> <p>Using Sindoor.</p> <p>Wearing Mangal Sutra.</p> <p>5. Interesting Indian Wedding Beliefs and Superstitions Passed on from One Generation to Another (Singh, 2017).</p> <p>Wearing bangles.</p> <p>Using Toe Ring.</p>

The content of Table 2 delves into the myths revolving around the marriage rituals observed by Hindu Bengalis. It encompasses a range of pertinent topics, their thematic representations, and the research outcomes obtained from various studies. Moreover, the table enumerates the titles of the topics, the authors involved, and the years in which the research was conducted.

B. Relationship between Science and Hindus' Bengali Rituals

Table 3 Relationship between Science and Hindus' Bengali Rituals on Birth.

Theme	Dimension	Summary and Citations
Relationship between Science and Hindus' Bengali Rituals.	Birth	<p>1. Common ritualistic myths during pregnancy in Northern India. (Choudhary et al., 2017).</p> <p>Saadh.</p> <p>Plan to stay with own mother after delivery.</p> <p>Desire for burial of placenta but not possible.</p>

		Planned Cleansing ceremony on 6-8th day. Not to give breast colostrum to baby...Reduces baby's immunity. Use of old generation cloths for the newborn. Keeping knife and water with mother and baby. Baby wears a protective amulet Taweez/ bangle/ kazaal. Planned Naming ceremony. Removal of baby's hair ceremony.
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Within Table 3, an exploration of the nexus between science and the birth customs of Hindu Bengalis is outlined. The table delineates different topics, their thematic underpinnings, and the findings resulting from research endeavors. Furthermore, it provides details such as the names of the topics, the authors involved, and the years in which the studies were conducted.

Table 4 Relationship between Science and Hindus' Bengali Rituals on Marriage.

Theme	Dimension	Summary and Citations
Relationship between science and Hindus' Bengali rituals.	Marriage	1. Reason behind popular Hindu marriage rituals (Dwivedi, 2017). The Engagement Ceremony. 2. Science Behind Hindu Rituals and Traditions (Niharikaa, 2020). Mehendi Ceremony, Darker the mehendi, luckier the bride. 3. Science Behind Indian Wedding Traditions Rituals and Customs (Nisalkar, 2021). 4. Turmeric: A spice with multifunctional medicinal properties (Nasri et al., 2014). 5. Turmeric Potential Health Benefits (Singletary, 2020). Haldi Ceremony. 6. Bengali Wedding Rituals (Nayyar, 2018). 7. The seven steps of Hindu wedding (Regasaan, 2016). Suvo Dristi (Seeing each other just before the wedding). Saat Panke Ghora. 8. Every Hindu Must Know These Practices and Their Scientific Reasons (Mandal, 2022). Using Sindoor, Sindoor for Groom's Long Life. 9. Scientific Reason to Wear Mangal Sutra by Women (Agyaat, 2020). Wearing Mangal Sutra. Wearing bangles. 10. Significance and Science of Sindoor in Hinduism - Red Dot on Forehead of Hindu Women (Rajendran, 2020). 11. Wearing Toe Rings: Astrological And Scientific Benefits (Panwar, 2019). Using Toe Ring.

The content of Table 4 delves into the relationship between science and the marriage customs of Hindu Bengalis. It encompasses a range of relevant topics, their thematic intersections with science, and the research outputs from various studies. Furthermore, the table lists the topics' titles, the authors' names, and the years in which these studies were conducted.

IV. ANALYSIS AND INTERPRETATION

A. Myths in Hindus' Bengali Rituals on Birth

India, ranking second in the world's total population, experiences higher birth rates compared to developed countries. Every married couple desires a safe delivery and a healthy baby, leading to the creation of numerous traditions during the perinatal period. Various findings reflected in the Table 1 revealed that certain traditional customs, particularly those related to the safety of the mother and baby, persisted in Indian families. These practices, ingrained in social culture, lack scientific evidence. Examples included the use of old-generation clothes for newborns, keeping a knife and water with the mother and baby, and the belief in protective amulets like Taweez, bangles, or kazaals. Additionally, applying Kajal was seen as a safeguard against evil forces.

The study indicated that the education level among the study population ranged from illiterate to postgraduate. Illiterate women tended to follow these myths more commonly than educated women, possibly

due to a better understanding of science among educated mothers. Women acknowledged that health personnel advise against following these myths. Among highly educated mothers, the main causes for adherence were family pressure or a lack of confidence in alternative well-being practices. Furthermore, women accepted reinforcement from family members, particularly grandparents. Women from rural backgrounds showed a higher prevalence than urban women, likely due to lower education, poor socio-economic status, and limited awareness of health facilities.

B. Myths in Hindus' Bengali Rituals on Marriage

Studies revealed in the Table 2 that in Hindus' Bengali rituals and cultures, wedding rings are traditionally worn on the fourth finger, commonly known as the ring finger of a person's left hand. This belief stems from the notion that the vein in this particular finger on the left hand runs directly to the heart. Hence, married couples wear the symbol of their union on this specific finger. Another common superstition in Hindus' Bengali rituals regarding a wedding ring being too tight is that it can spark jealousy in the marriage. A tight wedding ring is thought to symbolize a potentially 'strangled' or 'stifled' relationship, leading to an unsuccessful or unhappy marriage (Chesser, 1980).

The Mehndi ceremony involves applying a paste of henna tree leaves to the hands, palms, and feet of the Hindu Bengali bride before the wedding. Held at the bride's home a day before the wedding with close friends and family members, a prominent superstition associated with this ceremony is that the darker the mehendi, the luckier the bride, and a longer-lasting mehendi on the bride's hands than her groom's suggests she will receive more love from her in-laws (Yahoo News, 2015). The Holud Ceremony, also known as 'Gaye Holud,' is a significant wedding tradition among Hindu Bengalis. While this Haldi Ceremony is common across all communities in the country, the application of turmeric paste on both the bride and groom, either a day before or during the wedding, is believed to ward off evil entities and ensure a safe passage into married life (Foster and Kokko, 2009).

In Hindu Bengali religion, the bride and groom are not allowed to see each other's faces before the day of marriage, as it is considered to bring ill-fate. During the wedding, the bride, usually seated on a low wooden stool called a pidi, covers her face with paan leaves (Betel). Lifted by her brothers, she is taken round the groom in seven complete circles (saat paak), symbolizing their secure connection. After saat paak, the bride and groom are made to look at each other in front of all the assembled invitees. The bride is then told to remove the paan leaves, signifying an exchange of a loving glance to officially initiate them into being together by society (Basu, 2013).

C. Role of Myths and Relationship of Science with Hindu Bengalis' Birth Rituals

There is a relationship between traditional postpartum practices and demographic characteristics of women, such as age, educational status, age at marriage, and birthplace revealed in the studies reflected in the Table 3. The belief that mothers should keep a knife with them and their baby stems from the ancient belief that the knife protects them from evil spirits, particularly supernatural creatures known as "trows." To safeguard the unborn baby from these entities, it is customary to keep the pregnancy a secret, and the pregnant woman is advised to sleep with knives. This practice extends to the baby's room after birth, and women present during the birth are expected to stay at home for a few days to ward off evil forces. Since most customs are associated with activities conducted at home rather than in a hospital setting, medical care is not expected to influence these practices.

There are other myths that mothers may either follow or are determined to follow during the immediate postpartum period. One such practice is the administration of Ghutti, a prelacteal feed offered to the baby at birth. Typically given by the oldest or most respected person in the family, it is believed that the baby will inherit the nature and character of the person providing the Ghutti. Despite being potentially harmful, this practice persists. Additionally, the initiation of breastfeeding by Indian women is often delayed, beginning only when colostrum is fully expressed. Health professionals should inform women about the benefits of colostrum feeding and encourage timely initiation of breastfeeding.

It is common for mothers to adhere to at least one myth in the immediate postpartum period. However, certain practices, such as offering prelacteal feeds like boiled water, sugar-water, tea, honey, cow or goat milk, and mustard seed oil, should be discouraged. These foods are given with the intention of cleansing the infant's digestive system from impurities swallowed during birth and substituting breastfeeding before colostrum is fully expressed. Health professionals play a crucial role in educating women about these practices and promoting evidence-based approaches to postpartum care.

On the other hand, it is indeed noted that babies in our country often wear protective amulets like Taweez, bangles, or kazals. The practice of placing a black dot on the baby's forehead is also quite common. However, the burial of the placenta is not feasible in hospitals because, during institutional deliveries, the placenta is not handed over to the parents. Most of these practices occur outside the hospital or clinic and, as such, are not subject to pressure for change within institutional settings.

Another aspect to consider is the application of Kajal as a safeguard for babies from evil. In India, especially across Bengal, applying kajal to newborn babies is believed to protect them from Buri Nazar (evil eye) because the color black is thought to offer protection. In the past, mothers used to prepare kajal using the flame of Ghee (a product made from animal milk). This kajal was applied by the mother to the baby's lower

eyelid in a uniform stretched manner. The intention behind this practice was to absorb dust particles or germs before they could enter the baby's eyes. Additionally, regular use was believed to contribute to shaping the baby's eyes positively (Maitra 2020).

Similarly, the cleansing ceremonies are typically planned around the 6th to 8th day after the birth. The cleaning ceremony (jalwa) is often limited to the birth of a baby boy in some families. Additionally, the removal of the baby's hair ceremony (jadula) and the plan to stay with one's own mother after delivery are also commonly followed. Similarly, the avoidance of colostrum for the baby, along with the use of old generation clothes to receive the newborn after delivery, is based on the belief that using worn clothes of family members extends the newborn's life.

The Godh Bharai, commonly known as 'SAADH' in Bengal, is predominant among pregnant women. While 'Godh Bharai' is a North Indian Hindu ceremony practiced in the 7th month of pregnancy, it is more common for the first child. The literal meaning is to "fill the lap." The expecting mother is adorned, and friends and family bless her with gifts, cash, sarees, or jewelry. Everyone applies tikka (vermilion) on the mother's forehead, prays for her and the baby's well-being, followed by aarti, mehndi, playful banter, singing, and dancing. This ritual has also been adopted in Bengal under the name SAAD. According to Nirupam (2014), the SAADH ritual, or baby shower, is performed according to Hindu Bengali customs for pregnant women. The Panchammrita is performed in the fifth month of pregnancy, the Saptammrita in the seventh month, both focusing on the well-being of the mother and unborn child. The main ritual is conducted in the ninth month, involving the fulfillment of the pregnant woman's wishes with her preferred dishes and new dresses.

While these rituals once had a serious meaning associated with the fear of high mortality rates during childbirth, they have evolved into joyful ceremonies today. The fall in such customs in recent years is attributed to fewer arranged marriages, narrowed social ties, and diminished parental influences. Despite these changes, Indian birth customs appear to have been minimally influenced by Western medicine. However, prevalent myths related to pregnancy and childbirth persist, often leading to illogical and unscientific practices that can be harmful to both mother and baby.

In the present study, researchers identified various meaningless myths and superstitious activities practiced by a significant percentage of people. Examples include not giving colostrum to newborns, avoiding keeping newborn and mother's clothes outside after sunset, and refraining from sweeping the floor in the evening. While some practices may have underlying scientific rationales, blind adherence can result in physical disorders, psychiatric issues, and family disputes. Although beliefs have cultural significance, their impact on physical, mental, and social health should be considered. Education and public policies promoting non-superstitious directives are crucial to fostering healthy attitudes toward pregnancy and newborn care. Myths and superstitions should not be confused with tradition, culture, and rituals, and the remedy for unnecessary beliefs lies in education and knowledge.

D. Role of Myths and Relationship of Science with Hindu Bengalis' Rituals on Marriage

Different studies revealed in the Table 4, which focused on the Engagement Ceremony, commonly known as 'Ashirbad,' is one of the most important pre-wedding ceremonies in Hindu Bengali tradition. It takes place a few months before the wedding to officially announce the consent to marriage by both the bride and the groom. During the ceremony, the fathers engage both parties to one another, promising virtues of their child and formally announcing the wedding dates to the guests. In some traditions, a puja is also performed by a priest. The bride-to-be and the groom-to-be exchange rings, sweets, dry fruits, and gifts, followed by a feast, music, and dance. The engagement ring, always worn on the fourth finger (ring finger) of the left hand, symbolizes love and promise. The vein passing through the ring finger is known as the vein of Love, or "Vena Amoris" by the Romans, as it is the only vein directly connected to one's heart, signifying the romance shared by the engaged couple (Dwivedi, 2017; Nisalkar, 2021).

The Mehendi ceremony involves applying Henna to the hands and feet of the Bride-to-be. The event is held a day before the wedding, with close friends and family members in attendance. The bride must sit for hours to complete her Mehendi (henna art). Female guests also get Mehendi done on at least one hand as a show of moral support for the bride. While there are various beliefs regarding the significance of applying Mehendi on the bride's hands and feet, ranging from being a symbol of love and affection between the couple and their families to a symbolic representation of fertility, our ancestors were intelligent enough to provide scientific explanations for such rituals. Mehendi, or henna, is known for its medicinal properties. It has a cooling effect that helps in calming stress, headaches, and fevers. Additionally, it is beneficial for nail growth and protects nails from viral or fungal infections. The application of Mehendi serves to relieve the bride and groom of wedding stress and acts as a protective measure against viral diseases in case of any misfortune during the wedding (Hemalatha & Sai, 2017; Yahoo News, 2015).

Vridhi Puja is performed as a mark of showing respect to the ancestors. The paternal uncles of the groom and the bride, on their respective sides, perform this puja a day before the wedding. Immediately after the puja, 'Aai Buro Bhat,' an extensive array of food with a special emphasis on fish (considered auspicious), along with sweets, is served to the bride and the groom to celebrate their last day of being single. This ritual is followed by Dodhi Mangal at the break of dawn on the day of the marriage. During Dodhi Mangal, married women visit the sacred river Ganga or any nearby pond to fetch water for bathing the bride and groom. This is

followed by feeding the bride and groom with curd and churiya or rice, which is to be their only meal until they are wedded, as revealed by Nandi (2020).

Setting aside all assumptions and beliefs, there is science behind this ceremony. The yellow color relaxes the mind, and the turmeric paste, when massaged on the body, helps counter depression and anxiety, enabling the bride and the groom to remain calm. Haldi also brings about a natural, golden glow on the skin and minimizes the appearance of scars. In earlier times, it worked great as a concealer. Turmeric contains antiseptic properties, keeping the bride and groom safe from any disease or infection. Similarly, haldi is well-known for its medical properties, primarily in detoxifying the body. It acts as an antiseptic, helping in removing any unwanted bacteria and toxins from the skin. Haldi is even known to strengthen the skin, protecting it against cuts and bruising. As a result, haldi helps the skin of brides and grooms look like it's emitting its own glow, making them shine bright like a diamond. Applying a face mask of haldi helps fight off acne and its anti-inflammatory properties target pores, keeping the skin smooth and soft. Moreover, it aids in healing scars at a much faster rate than they normally wound (Nasri et al., 2014; Manola, 2016; Singletary, 2020).

Suvo Dristi, seeing each other just before the wedding, is a practice in Hindu Bengali culture where the bride and groom are not allowed to see each other's face before the day of marriage. Regarding this ritual, it does not necessarily support superstition. In the context of arranged marriages, there was a belief that if the couple saw each other before the ceremony, it would provide them with an opportunity to change their minds about the wedding. However, in contemporary times, many couples choose to meet up and even have portrait sessions before exchanging their vows. According to Nayyar (2018), the ritual of Suvo Dristi is followed by Saat Paak and Mala Badal. In this ritual, the bride sits on a piri (wooden seat), covering her face with a betel leaf, and is lifted up by her uncles and brothers, who then take her around her would-be husband seven times. The ritual culminates in Shubho Drishti and Mala Badal, where the couple, for the first time, sees each other and exchanges garlands thrice.

"Saat Panke Ghora," also known as the Seven Vows or Saptapadi, involves the bride and groom taking seven circles or steps around the holy fire as a symbol of their friendship and mutual duties. Each round is accompanied by the recitation of a Vedic mantra around the ignited fire, making the ceremony sacred. It is believed that the vows made around the sacred fire are unbreakable, and the God of fire witnesses and bestows blessings upon the couple. A study by Regasaan (2016) established that this Holy fire holds its own scientific significance. The fire is ignited using sandalwood and ghee, along with rice and other herbal ingredients. The smoke emitted from the fire helps cleanse the environment and radiates positivity to all corners.

Using 'Sindoor' for the Groom's Long Life. Sindoor, applied by married women, carries physiological significance, particularly when applied on the bride's hair partition to distinguish between married and unmarried women. Apart from being a symbol of matrimony for a Hindu woman, Sindoor (red vermilion powder) also offers some great health benefits. Studies have found (Hemalatha & Sai, 2017; Mandal, 2022; Pathak, 2014; Rajendran, 2020) that the mercury in Sindoor cools down the body and induces a feeling of relaxation. It is also believed to trigger a sexual drive. Therefore, widows and unmarried women are prohibited from wearing it. Sindoor should be applied directly up to the pituitary gland, where all our feelings are centered. The red color is suggested to symbolize power.

A 'Mangal Sutra' is a symbol of marriage, and the wife is meant to wear it throughout her life, indicating the love and commitment the husband and wife have towards each other. The significance of wearing a 'Mangal Sutra' lies in its design—a necklace of black and gold beads with two round cups at the center and no front design, associated with the power of knowledge. This design corresponds to the spot where major nerves of the body meet, and massaging it helps in relieving headaches. Studies have also indicated that wearing a Mangal Sutra contributes to the development of the immune system, regulates blood flow, keeps the wearer fresh and energetic, and helps in maintaining normal blood pressure (Agyaat, 2020; Augrav, 2020; Hemalatha & Sai, 2017; Nisalkar, 2021).

The human body is the center of electric currents and impulses. In India, women wear a bundle of 'Bangles' on both hands, which is a must for married women. The wrist portion is constantly activated in any human, and doctors often check the pulse beat in this area for various ailments. The bangles, usually worn on the wrist part of the hand, create constant friction, increasing blood circulation. Moreover, the electricity passing out through the outer skin is redirected to one's own body due to the ring-shaped bangles, where the round shape has no ends to release the energy outside but sends it back to the body. Research conducted by Chaitu (2017) on women wearing glass bangles and those wearing bangles made of other synthetic materials revealed that women wearing non-glass bangles experienced distress such as pressure on the head or body, fatigue, etc. (Augrav, 2020; Banerji, 2018; Hemalatha & Sai, 2017).

Some brides wear 'Toe Rings,' preferably made of silver, on the second toe of any foot as it is believed to strengthen the uterus. A vein connecting the uterus ends at the second toe where the ring is worn. This is thought to regulate heat and menstrual cycles and is helpful for reproductive organs (Mandal, 2022; Millington, 2021). Similarly, a study by Panwar (2019) revealed that the rings create pressure on women's sciatic nerve, accelerating blood circulation, maintaining normal blood flow from the uterus to the intestines, and helping control blood pressure.

E. Major Findings

1. This research was based on a comprehensive review of relevant articles, newspapers, documents, blogs, and other sources. The analysis revealed that many rituals associated with birth and marriage, often perceived as superstitions, actually have logical and scientific explanations. Despite the prevalence of such rituals, it was observed that Bengali people, in particular, practiced them to uphold social and cultural traditions without necessarily being aware of the scientific underpinnings.
2. However, despite the logical explanations provided by science, it was noted that the dispelling of myths has not been achieved. Instead, science has become a platform for the creation of new myths, prominently the belief in salvation through scientific progress. Some individuals who dismiss religious beliefs express unwavering confidence in the ability of science to lead humanity towards a better future. Contrary to this optimism, the research posits that humanity, as a collective entity, does not exist; rather, there are individual human beings, each driven by conflicting passions and illusions, both internal and external.
3. While acknowledging the manifold benefits that science has bestowed upon society, the research argues that science alone cannot rescue the human species from its inherent challenges. The assertion is made that abandoning belief systems, including blind faith in the power of science, would be beneficial. The emphasis is on recognizing the diversity of human beliefs and the acknowledgment that what one believes in is ultimately of lesser significance. The paramount concern should be on how individuals choose to live their lives.
4. Therefore, the research suggests that while rituals and beliefs may have logical explanations, the reliance on science as a savior for humanity is questioned. The focus is redirected towards individual lives and actions, urging people to live purposefully rather than being preoccupied with what they believe.

V. DISCUSSION

Rituals and Scientific Explanations true acknowledgment of many rituals, often labelled as superstitions, have logical and scientific bases is significant. This finding challenges the notion that traditional practices are purely irrational. It highlights the importance of understanding the cultural and historical contexts that give rise to these rituals. They often serve social, psychological, or practical purposes beyond mere superstition. Encouraging awareness of these scientific underpinnings can lead to a deeper appreciation of cultural heritage while demystifying practices that might otherwise be misunderstood. Similarly, the observation of science and myth itself has become a platform for myth-making is thought-provoking. It reflects how human societies often project their hopes and aspirations onto scientific progress. The belief in salvation through science mirrors traditional religious beliefs in some ways, suggesting a human tendency to seek transcendence or ultimate answers. This phenomenon underscores the complexity of human beliefs and the multifaceted roles that science plays in shaping our worldviews. Equally, while science has undeniably brought immense benefits to society, it's crucial to recognize its limitations in addressing all aspects of human existence. The call to abandon blind faith in science echoes broader discussions about the need for a balanced perspective that integrates scientific knowledge with ethical, cultural, and spiritual considerations. Emphasizing individual agency and the diversity of human beliefs encourages a more holistic approach to navigating complex societal issues. However, further research could explore how different cultures and societies reconcile traditional practices with modern scientific understandings, highlighting nuances and areas of convergence or divergence. Examining the psychological and social functions of rituals and belief systems can provide deeper insights into their resilience and evolution over time. Considering the ethical implications of relying solely on scientific progress for solutions to global challenges prompts discussions on sustainability, equity, and human well-being. In inference, this research opens up important discussions about the interplay between tradition, science, belief systems, and societal perspectives. By fostering a nuanced understanding of these dynamics, we can navigate cultural diversity, foster dialogue, and pursue collective well-being more effectively.

A. Educational Applications

1. The study's findings serve to raise awareness within society about the myths and scientific underpinnings behind Hindu rituals. This awareness can contribute to a more informed and enlightened perspective among community members.
2. Furthermore, the study holds significant implications for both the Government of West Bengal and the Government of India. It underscores the need for the introduction of school-based programs aimed at educating students about ritual practices. The objective of these programs would be to instill scientific beliefs and pragmatic values concerning customs.
3. By incorporating such educational initiatives, governments can actively participate in fostering a generation that critically evaluates traditional practices. This approach aligns with the broader goal of nurturing a scientifically literate and culturally aware citizenry. Implementing school-based programs would not only bridge the gap between tradition and science but also contribute to the cultivation of a more informed and rational society.

B. Suggestions for Further Studies

While the current study focused on a specific Bengali community, future research could adopt a more comprehensive approach by examining multiple communities. This would provide a broader understanding of the cultural variations in rituals and the scientific perspectives underlying them. The present study had a limited scope in terms of the number of reviewed literature. Future research could enhance the depth and breadth of the study by expanding the range of related literature, thereby providing a more comprehensive theoretical foundation for the investigation. To enhance the generalizability of findings, future studies could increase the sample size, both in terms of the number of participants and the variety of rituals studied. This expansion would contribute to a more robust analysis of the scientific rationale behind a diverse array of cultural practices.

The current study concentrated on Bengali birth and marriage rituals. Subsequent research endeavors could extend the scope to include a more diverse range of rituals from different cultural backgrounds. This would facilitate a comparative analysis and yield insights into the scientific basis underlying various cultural practices. To enrich the understanding of scientific practices in rituals, future studies could involve a comparative analysis between Bengali rituals and those of other cultures. This comparative approach would shed light on the universality or uniqueness of scientific perspectives across different cultural contexts. By addressing these suggestions in future studies, researchers can contribute to a more holistic and nuanced comprehension of the scientific foundations of cultural rituals, fostering cross-cultural dialogue and enhancing our appreciation of the diversity and commonality in human practices.

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