

## Fostering Scientific Temper in India: Can Bollywood be a Catalyst?

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### ABSTRACT

As the nation fervently and rightfully celebrates 'Azadi Ka Amrit Mahotsav', it is yet pertinent to investigate the status quo of scientific temper among the citizens to estimate the progress and development of our heterogeneous society. The very foundation of Indian democracy propagates the idea of a society with a scientific mindset. Two important areas, under the backdrop of the 'Swachh Bharat Mission', where the existence of scientific temper is to be investigated or rather reinvestigated are sanitation and menstrual hygiene because of certain deeply ingrained unscientific beliefs and practices dominant in our society.

Cinema is a quintessential mass media to popularize the need for societal reforms. Taking leverage of it, cinema can act as an indispensable tool of change in society. In view of it, we embarked on evaluating the impact of four women-centric Bollywood films namely *Toilet Ek Prem Katha* (2017), *PadMan* (2018), *Mission Mangal* (2019) and *Shakuntala Devi* (2020) in instilling the spirit of scientific enquiry and reform. The study carries out a thematic analysis followed by a quantitative approach to decipher the mindset of people of various academic backgrounds and regions. It identifies two groups of women –(i) a neo-liberal group who is seen as a promoter of science and (ii) a group who is the bearer and victim of unscientific societal norms. It could also be inferred that due to the limited outreach of films, scientific temper is still managing to evade the doorstep of common people.

**Keywords:** Scientific temper, Bollywood, Sanitation, Menstrual hygiene

### Introduction

An overwhelming proliferation of scientific temper among the masses is paramount for nation-building. It would be acutely mistaken if scientific temper merely embodies esoteric knowledge of advanced science, technology and cutting-edge research. Rather, scientific temper is a rational and progressive way of living bidding adieu to superstitions, religious bigotry and dogmas- unfortunately still prevalent in Indian society and embracing a healthy life guided by a true understanding of nature. Underscoring it, the Indian Constitution through the 42<sup>nd</sup> amendment in 1976 under Article 51A (clause-h) of fundamental duties urges every citizen of India to develop scientific temper, humanism, the spirit of inquiry and reform (The Constitution of India, 1949).

Understanding the dire importance of it in Indian society, the meaning and need for scientific temper were also reiterated by Pandit Jawaharlal Nehru in his famous book *'The Discovery of India'* which was published in 1946. He eloquently writes "The applications of science are inevitable for all countries and people today. But something more than its application is necessary. It is the scientific approach, the adventurous and yet critical temper of science, the search for truth and new knowledge, the refusal to accept anything without testing and trial, the capacity to change previous conclusions in the face of new evidence, and the reliance on observed fact and not on preconceived theory, the hard discipline of the mind — all this is necessary, not merely for the application of science but for life itself and the solution of its many problems" (Nehru, 1946).

He was greatly appalled to realise that there is little evidence of scientific temper in the people or even in their leaders despite living in an era of science. Therefore, the Government of India has been unrelentingly initiating a slew of measures to promote scientific temper for the isotropic development of society. It is noteworthy to mention that the 28<sup>th</sup> of February of each year is designated as National Science Day in India to popularise science and inculcate 'think scientifically, act scientifically' vibes among young minds. Infact, the themes for the celebration in 2014 and 2015 were 'Fostering Scientific Temper' and 'Science for Nation Building' respectively (Vigyan Prasar). The

Government of India in 2021 also decided to setting up dedicated and dynamic 'Science Museums' across the country to arouse scientific wareness and curiosity among the common masses (Press Information Bureau, Govt of India, 29 September 2021).

Another remarkable and app lauding initiative aggressively undertaken by the government is the 'Swachh Bharat Mission' in 2014. The sole aim of the mission is to sustain scientifically appropriate sanitation behaviour. The recent outbreak of COVID-19 has univocally reemphasised and reignited this need for behaviour among citizens without any boundaries. Despite the continuous efforts of governments, complete eradication of traditional unscientific mindset is yet to be achieved. For instance, according to the National Family Health Survey (NFHS, March 2022), the total households practicing open defecation is 19% in 2019-21 and ruraldwellers contribute more to it (26%). Considering the total population of India, these numbers are dismally high.

Another important area, where scientific temperament is yet to reach the commoners, is maintaining hygiene during menstruation. NFHS data again reflects that 22.4% of women in the age group of 15-24 years do not follow the scientifically proven safe and hygienic menstrual method and, similar to open defecation, the share from rural women is highest (27.4%). This is despite being the implementation of the Menstrual Hygiene Scheme by the Ministry of Health and Family Welfare since 2011 where the main objective is to promote menstrual hygiene in rural areas (National Health Mission, Govt of India). In addition, to ensure '*Swachhta, Swasthya and Suvidha*' for the underprivileged women across the country, the government also facilitates a unique social drive of supplying sanitary napkins at a cost as low as Rs 1.00 per pad (Press Information Bureau, Govt of India, 15 August 2020). Hence, there appears to be a chasm while adopting a scientifically driven modern life in India.

Cinema, in particular Bollywood movies, being an integral and quintessential source of entertainment in Indian society, could be an agent of societal change and reform. Since the inception of Indian cinema, it played a pivotal role in showcasing social reforms, imparting education and disseminating information among the acutely complex heterogenous group of the Indian population. A certain genre of movies, where social issues are represented, hasan

uncanny resemblance to the ground realities in society. Films on social awareness issues including the environment, climate change, superstitious beliefs, and cultural traditions have been made from time to time, but mostly with the perspective of male protagonist. Here are a few examples from the Hindi film industry to understand the various issues addressed over the period of time - *Shree 420* (1957), *Bhopal Express* (1999), *Lagaan* (2001), *Taare Zameen Par* (2007), *Vicky Donor* (2012), *Oh My God* (2012), *Jal* (2013), *Jolly LLB* (2013), *Swades* (2014), *Masaan* (2015), *Aligarh* (2015), *Kaun Kitney Pani Mein* (2015), *Kadvi Hawa* (2017), *Irada* (2017), *Kedarnath* (2018), *Article 15* (2019), etc.

Citing the scholarly work of Laura Mulvey's concept of male gaze introduced in her seminal work on *Visual Pleasure and Narrative Cinema* (1975), it can be argued that the role of female characters in the earlier Hindi films was mostly found to be passive that primarily adds to the possible pleasures of seeing the female being objectified on screen. Whereas the male protagonist is solely responsible for the narrative and flow of the story from his perspective. However, in the light of feminism, the age-old practice is seen as evolving as it has given opportunities for both male and female actors to share equitable spaces on screen in the Hindi film industry.

In recent times spanning between 2015 to 2022, there are few Bollywood films exclusively based on women-centric issues which allowed us to understand the subtle battle between science versus superstitions, and women with or without scientific temperament at the backdrops of both urban and rural settings of the country. Some of these films are *Toilet Ek Prem Katha* (2017), *Pad Man* (2018), *Mission Mangal* (2019) and *Shakuntala Devi* (2020). These films classified women into two categories—first, advanced science literate and second, basic science illiterate. It would be a fallacy to consider the latter group to lack the necessary intelligence but maybe a victim of unscientific societal practices entangled in our patriarchal society. While *Toilet Ek Prem Katha* and *Pad Man* reflect on the miserable status of women in rural India fighting against the very society in which they live, for their basic needs and rights of sanitation and menstrual hygiene, *Mission Mangal* and *Shakuntala Devi* portray and praise the significant contributions

of women in the emerging field of science and technology. Hence, broadly there are two groups of women in our society with contrasting scientific education, ideology and temper.

The issues of sanitation and menstrual hygiene are still taboo in our society and raising such issues through discourses of films is complex dynamic in India, therefore, it requires to be more generic and palatable without hurting any sentiment of cultural traditions and religious beliefs. A research study by Patil *et al.* on menstruation by rural women in Pondicherry highlights the taboo and challenges associated with it (Patil, 2011). Similarly, Chawla traces the origin of myths about menstruation and how menstrual flow has been conceived as guilt during Vedic times (Chawla, 1994). In view of it, the present study attempts to identify the scope of popularizing scientific temper through selected Bollywood films.

### **Objectives**

This study selected four Bollywood movies namely *Toilet Ek Prem Katha*, *Pad Man*, *Mission Mangal* and *Shakuntala Devi* released after 2015 for carrying out the research. The primary objectives of the study are as follows.

- (i) Analyze the portrayal of scientific temper in the selected movies,
- (ii) To find out the public understanding of scientific temper exclusively related to sanitation and menstrual hygiene,
- (iii) Correlating the role of Bollywood movies in fostering the spirit of scientific mindset.

### **Methodology**

The study follows both qualitative and quantitative approaches to examine, understand and interpret the awareness of scientific temper through the aforementioned films. First, a thematic analysis of films was carried out considering the scenes and dialogues related to scientific temper. Second, an online audience survey across the country was pursued to find out the reach of the films and their impact. Third, physical interviews of women working as menials in the rural areas of Sonitpur and Ajmer districts of Assam and Rajasthan respectively were

conducted to analyse their narratives on sanitation and menstrual hygiene.

### **Findings and Discussion**

#### **a. Thematic analysis of the films**

(i) *Locating neo-liberal women as a promoter of science:* The film *Mission Mangal* reflects the immense contribution of Indian women scientists in the field of space science at the national and international levels. In fact, there are real-life examples of such successful space women scientists in India such as Ritu Karidhal, Anuradha TK, Nandini Harinath, etc. (BBC, 2016). The film also throws light on the much-debated issue of science versus superstitions even commonly practised by the educated population of India.

In *Shakuntala Devi*, how Shakuntala (a real-life character) could establish herself as a genius by virtue of her extraordinary ability to solve mathematical sums is showcased. The journey of Shakuntala is indeed full of challenges and the audience can draw inspiration not only from her talent but also from her views on homosexuality and progressive thoughts. Overall, in both the films, the female protagonists have been established as independent women, career-oriented, confident and have dared to live their lives to the fullest on their own terms. It clearly showcases that there is nothing holding women back from science education and becoming the promoter and preachers of science.

(ii) *Women as bearers and victims of superstitions and traditional values:* In *Toilet Ek Prem Katha*, the lead female protagonist Jaya with her logical and scientific arguments raises questions on the age-old practice of open defecation in the name of culture, gender, religion and superstitious beliefs in the rural areas of the country. It is a misbelief that a toilet is an impure structure within the premises of a dwelling. This film is an attempt to raise scientific temper among the Indians to promote hygiene, sanitation and gender equality. The tone and message of the film echo two of the important national and global campaigns on sanitation namely the *Swachh Bharat Mission* and *Sustainable Development Goals*.

In *Pad Man*, the male protagonist Lakshmi designed and made low-cost sanitary pads to break the taboos and unscientific cultural practices associated with menstrual hygiene which he saw from his family to an entire village in Madhya Pradesh. He was against the cultural practices associated with menstruation and wanted his wife and other female members to follow menstrual hygiene that was otherwise rejected by all considering men talking about menstruation as ‘wrong’ and ‘unfair’. The film highlights the prevalent superstitious beliefs and customs that women follow during menstruation in the name of religion, social norms and honour. It is inferred that due to the lack of sensitisation and dominant paradigm of menstruation discourse, women are still the bearers of the superstitious and unscientific approach to health and hygiene.

(iii) *Barriers in the scientific temper — Locating the ‘villain’*: The films reflect on the unscientific traditional belief system and cultural practices which are even endorsed by the highly science-educated community. As an illustration, one of the characters in the film ‘*Mission Mangal*’, who is apparently a scientist in the Indian Space Research Organization (ISRO), seeks advice from an astrologer regarding his marriage and he undertakes superstitious measures to stay away from the dark influence of planet ‘Mangal’ (Mars). Pandit Nehru had this fear and mentioned “Too many scientists today, who swear by science, forget all about it outside their particular spheres. The scientific approach and temper are or should be, a way of life, a process of thinking, a method of acting and associating with our fellow-men’ (Nehru, 1946). Hence, it raises an apt question — who is the villain in the impediment of scientific temper in our society? From the discourses in the films, the following dominant factors could be identified as some of the barriers to the development of a scientifically driven society.

- Toilet is an impure structure to have inside a house. The practice of open defecation is a way to avoid pollution in the house. It is a sin to discuss toilet while eating. It is normal for men to urinate in an open space. The cooking of food by women without going to the toilet in the morning is not acceptable.

- Women should follow traditional cultural practices without questioning their relevance and need. A menstruating woman is impure, so, she should stay in isolation for 5 days. Menstrual hygiene is not to be discussed and talked about publicly. Puberty should be celebrated while talking about menstruation is taboo. It is disgraceful for men to talk about menstruation in front of women. Only women are responsible for maintaining the pride and honour of a family.
- Caste plays an important role in maintaining hygiene and cleanliness. Upper caste people are well-versed in the understanding of the need of society. Age-old traditional cultural practices and customs inherited from the elders are more important than the knowledge gained from formal education.

#### ***b. Analyzing scientific temper through the audience***

An online survey with a question nairerelated to the aforementioned films and their scientific impact was conducted and more than 300 respondents across the country participated in the survey. The sample size could be fairly considered as a higher educated class since 50.5% and 29.4 % of the respondents possess post-graduation and graduation respectively. Despite this fact, it is astonishing to note that a major share of the respondents (41.5%) is completely unaware of the United Nations Sustainable Development Goals. This reflects that the global goal of sanitation is yet unknown even to the educated section of society. However, the survey indicates an important point.

In general, it indicates that 95.2% of respondents agree with the proposition that Bollywood films, such as those considered for the study, are an important medium for propagating scientific attitudes among viewers and have the potential to work against superstitions, beliefs, customs and traditions. It is also revealed that regional films could also play similar roles. The survey concludes that only 28.6% of respondents have watched all the films under consideration in this study, whereas 10.5% have not watched any of them. More than 45% of respondents have watched *Pad Man*, *Toilet Ek Prem Katha* and *Mission Mangal*.



It could be inferred that although cinema is a popular mass media in India, its penetration to inculcating scientific temper in society appears to be on the lower side. One of the reasons for such low penetration may be attributed to the quality of the storylines which fails to appeal to the viewers. Interestingly, out of the four films, the most watched (49.8%) film is *Pad Man*. This allows us to interpret that audiences irrespective of gender are open to women-centric films and have no qualms for discussion about menstrual hygiene.

The second most watched film is *Toilet Ek Prem Katha*. Although the film is humorous, it brings to the analysis that the audience has accepted to understand the cause-and-effect phenomenon in daily lives and learned to seek valid explanations for deeply rooted unscientific practices and to defy such practices if required — a prerequisite in developing scientific temper. It reflects the enormous possibilities of films in inducing the spirit of enquiry and reform. It is also found that 71.9% of respondents feel that society, at large, still considers that women are the bearers of superstitious beliefs, cultural customs and traditional practices which have been inherited by them from generation after generation. Hence, the films under study were able to show this blatant discrimination against women which is certainly a hindrance to the smooth percolation of scientific temper. The following table 1 summarises the specific survey outcomes.

**Table 1**

<b>Data analysis</b>	<b>No. of respondents</b>
Higher educated respondents participated in the online survey	50.5 %
Awareness of United Nations Sustainable Development Goals	No by 41.5 %
Bollywood films are an important medium for propagating scientific temper	Agreed by 95.2%
Women are the bearers of unscientific traditions	Agreed by 71.9%
Awareness of menstrual hygiene	Yes by 97 %

***c. Narratives of rural women on scientific temper***

We conducted in-person interviews of women (a total of 70) of various ages working as menials in public or private spaces from

remote locations of Sonitpur and Ajmer districts of Assam and Rajasthan respectively to find out the awareness of scientific temper concerning sanitation and menstrual hygiene and to find out the impact of the selected films in inducing such mindset. The period for conducting the interview was January-June 2022.

It is learnt that the films have no discernible influence on their daily lives since the majority of them failed to watch those films due to reasons such as lack of awareness; scope and time, limited space at home, accessibility factors, etc. It signifies the inability of those films to reach the female audience of rural areas and, consequently, failed to propagate the important message of the spirit of inquiry against traditional beliefs and cultural customs. However, the narratives of the women are interesting and these are categorized as follows:

- *Toilets-have and toilets-have-nots*: The findings show contrasting narratives on the use of the toilet. While all the participants from the Sonitpur region revealed to have toilet in their house premises, the responses of the participants from Ajmer are not so encouraging and a subject of concern. They mentioned the existence of the practice of open defecation due lack of toilets in their houses due to either cultural or financial reasons.

It is to be noted here that, according to *Swachh Survekshan 2021* — an annual cleanliness survey conducted by the Ministry of Housing and Urban Affairs, Govt of India, Tezpur town (of District Sonitpur, Assam) ranks No. 1 as the cleanest city in Northeast India. The participants selected for the survey were wellers on the outskirts of Tezpur. It signifies the successful implementation of providing toilet facilities in rural areas and an effective campaign for the promotion of safe sanitation under the *Swachh Bharat Mission (Grameen)* in Sonitpur. However, all the participants are still to comprehend the necessity of regular and safe hand washing after visiting the toilet.

- *Myths of menstrual hygiene*: The narratives of the women, both in Sonitpur and Ajmer, however, highlighted the prevailing common myths and superstitious beliefs that are followed during menstruation. These women, without ever questioning the need for it, have been practicing unscientific norms during menstruation such as the use of cloths instead of sanitary pads,

avoiding physical contact, particularly with male members, avoiding visiting kitchen and religious places, not washing hair, stay in isolation, etc. What is most surprising is that these beliefs are so deeply ingrained in them that they may not be willing to change their mindset to embrace scientific temper.

The following table 2 summarises the specific interview outcomes.

**Table 2**

<b>Data analysis</b>	<b>No. of respondents</b>
Not watched the films under consideration	92.85 %
Toilets in house-Sonitpur/Ajmer	100/40 %
Do not use sanitary pads-Sonitpur/Ajmer	40/63 %
Follows traditional rituals during menstruation-Sonitpur/Ajmer	100/100 %

### **Conclusion**

Discussion on scientific temper is a lot easier than embracing it. No wonder, even in the 75<sup>th</sup> year of Independence, the government requires to implement a sensitization programme such as the ‘*Swachh Bharat Mission*’ to promote a scientific way of living for sustainable health, hygiene, and prosperity. In addition to government policies, other instruments such as Bollywood films are also taking their due part in recent times.

There is a change in the mindset of the people which allows them to accept films like *Pad Man* and *Toilet Ek Prem Katha*. These films are certainly catalyzing the process of creating awareness and generating the spirit of enquiry among the Indian audience. However, a fraction of our society is yet struggling to abolish superstitions and traditional practices especially related to safe sanitation and menstrual hygiene. Our findings reveal that the educated class accepts that films have enormous possibilities to bring change into society. In contrast, our survey based on the villages in Assam and Rajasthan indicates the limited reach of films. Consequently, there is also wide spread acceptance of unscientific practices such as open defecation and superstitions related to menstruation. Therefore, mass media must play a proactive and vigilant role in educating and disseminating information related to scientific social development so that every

individual acts responsibly to make India a scientifically healthy nation.

### **Acknowledgement**

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