

Effectiveness of Cultural Sensitivity on public health Infographics in Diverse Population

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Abstract:

Health infographics serve as a powerful tool for disseminating crucial information to diverse populations, facilitating comprehension and promoting healthy behaviors. However, their effectiveness is contingent upon cultural sensitivity, especially in an increasingly multicultural society. This research explores the importance of cultural sensitivity in designing health infographics, focusing on strategies to adapt visual information for diverse populations. Understanding cultural nuances is essential to crafting infographics that resonate with diverse audiences. Cultural sensitivity involves recognizing diverse beliefs, values, languages, and communication styles. Integrating culturally relevant imagery, symbols, and colors can enhance engagement and comprehension among various cultural groups. Additionally, employing language-appropriate text and considering literacy levels are paramount for effective communication. Furthermore, health beliefs and practices vary across cultures, influencing perceptions of health-related information. In this research, we have conducted a survey on 500 people from 5 different states and we found out that people from different regions are sensitive to any information related to their culture. Be it online or offline information, the effectiveness of any health message or information regarding their society is considered very sensitive. Any negative information or projection related to any society or target group is not acceptable in society. The research concludes that adaptation of health infographics is required to ensure cultural sensitivity in fostering effective healthcare communication. By recognizing and respecting the diversity of cultural backgrounds, languages, and health literacy levels within populations, infographics can transcend language barriers and enhance understanding of crucial health information.

Keywords: Health Infographics, Healthcare, Communication, Infographics

1. Introduction

In recent years, the role of visual communication in education has grown exponentially, particularly with the increasing complexity of subject matter in high school curricula. Science subjects, often perceived as challenging due to their abstract concepts and detailed information, present a unique opportunity to explore innovative teaching methods that can enhance student comprehension and engagement. Among these methods, the use of infographics—a visual representation of information designed to present data in an easily digestible format—has emerged as a powerful tool for educators. The integration of infographic designs into teaching practices has the potential to make scientific content more accessible and engaging for students.

Infographics are particularly well-suited for the teaching of science because they can distill complex data, processes, and concepts into visually appealing and understandable formats. They cater to the growing preference for visual learning among students, leveraging the brain's ability to process images more quickly and efficiently than text. By combining text, images, and graphical elements, infographics can simplify intricate ideas and highlight key points, making it easier for students to grasp and retain information.

The rise of digital technology has further expanded the possibilities for using infographics in education. Traditional static infographics, which are typically printed on paper or presented as fixed images, have long been used in classrooms to complement textbook material. However, the advent of digital mediums has introduced dynamic and interactive infographics that offer a more engaging learning experience. Digital infographics can incorporate multimedia elements such as animations, videos, and interactive features that allow students to explore content in a more hands-on and immersive manner. This evolution raises important questions about the relative effectiveness of static versus digital infographics in supporting science education.

The transition from static to digital infographics represents more than just a technological upgrade; it reflects a broader shift in educational strategies aimed at meeting the diverse learning needs of students in the 21st century. Static infographics, while effective, are limited by their one-dimensional nature, which may not fully capture the attention of digitally native students who are accustomed to interactive and multimedia-rich content. Digital infographics, on the other hand, offer the potential to enhance student engagement through interactivity, allowing learners to actively participate in their education by manipulating data, exploring different scenarios, and receiving immediate feedback.

Despite the promising potential of digital infographics, the question remains whether they are truly more effective than static infographics in improving student learning outcomes in science subjects. This question is particularly relevant in the context of high school education, where students are at a critical stage of developing foundational scientific knowledge and skills. The answer to this question has significant implications for educators, curriculum developers, and policymakers who are tasked with integrating technology into the classroom in ways that genuinely enhance learning.

This research aims to compare the effectiveness of static and digital infographics in supporting the teaching of science subjects in high schools. Through a combination of quantitative and qualitative methods, the study will evaluate how each medium influences student comprehension, engagement, and retention of scientific concepts. By understanding the strengths and limitations of both static and digital infographics, educators can make informed decisions about how best to utilize these tools to enhance science education and cater to the diverse learning preferences of high school students. Ultimately, this research seeks to contribute to the ongoing discourse on the role of visual communication in education, providing insights that can help shape the future of science teaching in high schools.

2. Research Methodology

The research methodology used for exploring "Cultural Sensitivity in Health Infographics: Adapting Visual Information for Diverse Populations" involves a multifaceted approach designed to gain comprehensive insights into the topic. The methodology comprises both qualitative and quantitative methods to gather diverse perspectives and empirical data, ensuring a robust understanding of cultural sensitivity in health infographic design. Both primary and secondary data collection methods were used for collecting various information from the participants. To justify the diverse population, we selected 5 different states from different regions of India where there is huge difference in the language as well as in their culture. We decided to test their adaptation of common healthcare information despite their cultural and language differences.

2.1 Content Analysis

Analyze a diverse range of health infographics from various sources, including public health campaigns, healthcare organizations, and academic research to identify patterns and trends in

cultural representation and sensitivity. We also examine the use of imagery, language, symbols, and messaging in relation to cultural diversity and inclusivity. It also reveals a focus on enhancing accessibility and relevance of health information through visual media across varied cultural contexts. The discussion emphasizes the importance of incorporating culturally appropriate images, symbols and languages in infographics to ensure comprehension and engagement among diverse populations. By consulting with community representatives and cultural experts during the design process, infographics can effectively convey health messages that resonate with specific cultural beliefs and practices. Moreover, the analysis highlights considerations such as color symbolism, image and language preferences as crucial factors influencing the design and effectiveness of health infographics. These elements are tailored to reflect the diversity within the intended audience sensitively, thereby promoting inclusivity and trust in healthcare communication.

Overall, the content underscores the role of culturally sensitive infographics in bridging communication gaps and improving health literacy across multicultural societies. By adapting visual information to suit different cultural backgrounds, health practitioners and communicators can optimize the impact of their messages, ultimately contributing to better health outcomes and equitable healthcare access globally. In the Fig. 1 below, we can see various health infographic posters were released by the Ministry of Health and Family Welfare, Government of India in their social media page “Meta” (formerly Facebook) for the awareness of the Indian audiences. In designing the health infographic posters, the Government of India has used its official Language “Hindi” in writing the health information. Since India is a diverse state having different demographic language and cultures, not all audience will be able to read or understand the information provided in Hindi Language and hence there is a risk of communication gap between the audience and the information provided. Considering in the southern parts of India, local dialects are more commonly used than the Hindi Language. But there is a possibility of reducing the language gap to an extent by using various infographics designs and images related to the health information as shown in the Fig. 1.



Fig. 1: Health infographic posters released by the Ministry of Health and Family Welfare, Government of India. Source: Meta

With reference to one of the most popular Indian web series “Panchayat” which is streamed on “Amazon Prime”, the head of the village (Panchayat) decided to display the awareness of family planning information in traditional method by writing information on the walls of a house describing, “Two children are sweet; two or more is constipation” and the word “constipation” seem to be offended to few people who have more than 2 children as shown in Fig. 2. This indicates that the use of words like “constipation” specially targeting a particular family having more than two children is sensitive to people and must be avoided to disrupt any confusion.



Fig. 2: Image clip of the web series “Panchayat” showing the controversial population control message. Source: Amazon Prime

3. Survey

Our study aimed to assess perceptions and preferences regarding health infographics containing diverse health information through a structured questionnaire comprising 25 questions. Given the need for a data presentation of opinions across culturally distinct communities, we

employed a snowball sampling technique to collect the data. This method allowed us to involve participants from 5 different states with different demographics of India with various age groups ensuring a comprehensive perspective on health infographic usage and its effectiveness.

To understand the thoughts and perspective on health infographics with language differences, the survey was conducted in five different states of India having different demographic and unique cultural approaches. The selected states comprise from the east, west, north and south regions of India. Assam, Arunachal Pradesh from the east region, Jaipur from the west, Uttarakhand from the North and Tamil Nadu from the south region. From each state, 100 respondents were selected, yielding a total sample size of 500 participants with various age groups starting from 15 years to 60 years. This geographical diversity enabled us to capture insights influenced by regional health practices, linguistic differences, and socio-cultural contexts.

This data collection helps us to focus on gathering feedback on the clarity, relevance, and cultural appropriateness of health infographics. The Questions explored the participant understanding of health messages conveyed through visuals, preferences for specific types of information presentation, and the perceived impact of cultural sensitivity in infographic design. Our research has aims to contribute valuable insights to the field of health communication, advocating for more culturally sensitive approaches in conveying critical health information through visual media in both online and offline platforms.

4. Results

From the 500 participants in our study, we observed that individuals between the age group 15 to 40 years are mostly active on various social media and other online platforms. This age group shows significant engagement with the digital media, indicating a strong preference for accessing health information through visual and interactive formats like health infographics. In contrast, participants aged 41 to 60 years were notably less active or moderately active in their participation across these platforms due to certain factors. Interestingly, we found that within the age group 15 to 40 years, both males and females demonstrated active involvement in social media and online platforms, highlighting a shared enthusiasm for digital communication channels for accessing health-related content. These findings underscore the importance of targeting younger demographics with culturally sensitive health infographics, leveraging their high engagement in digital spaces to promote health literacy and awareness effectively. Most of the participants has become more health and diet conscious especially after the COVID 19

pandemic and since almost all the participants use multimedia phones, almost every user has one or more mobile applications related to health which is shown in Table 1.

Table 1: The number of participants having healthcare applications on their mobile phone.

State	Age	Age	Age	Age	Age
	15-20	21-30	31-40	41-50	51-60
Assam	4	23	15	6	4
Arunachal Pradesh	21	33	12	2	1
Jaipur	13	39	3	1	0
Uttarakhand	7	47	7	1	0
Tamil Nadu	8	52	10	2	1

From Table 1, with respect to the age group between 15- 20, 21- 30, 31- 40, 41- 50 and 51- 60 years, we demonstrated the number of participants who are using one or healthcare applications in their mobile phones. We see that the age group between 21- 30 years has the highest number of healthcare applications installed in their mobile phones followed by 15- 20 years and 31- 40 years.

Regarding active participants in the male-female ratio from the five different states, 60% of the participants were male and 40% were female participants. The Fig. 3 shows the participants of the male female ratio and the number of participants with respect to the age category from the five different states.

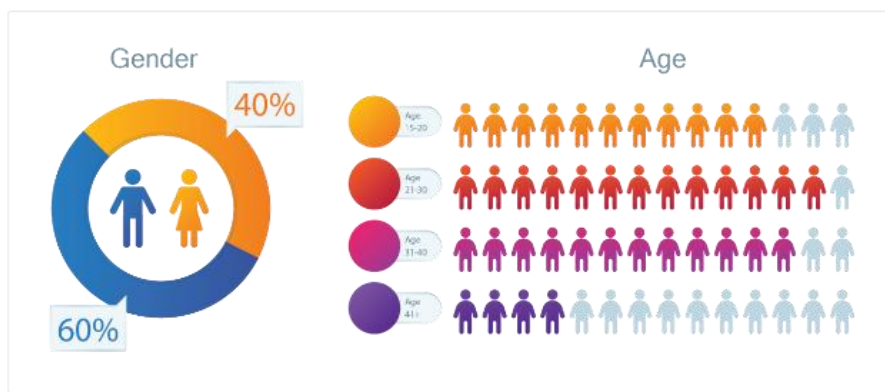


Fig. 3: Graphs show the male female ratio and the age category participants.

With regards to the participants in the survey, the age category between 15- 20 years, there were 6, 32, 24, 11 and 11 participants from Assam, Arunachal Pradesh, Jaipur, Uttarakhand and Tamil Nadu. In the age category between 21- 30 years, there were 55, 45, 69, 74, 70 participants from Assam, Arunachal Pradesh, Jaipur, Uttarakhand and Tamil Nadu. In the age category

between 31- 40 years, there were 24, 16, 5, 11, 13 participants from Assam, Arunachal Pradesh, Jaipur, Uttarakhand and Tamil Nadu. In the age category between 41- 50 years, there were 9, 5, 2, 4, 4 participants from Assam, Arunachal Pradesh, Jaipur, Uttarakhand and Tamil Nadu. In the age category between 51- 60 years, there were 6, 2, 0, 0, 2 participants from Assam, Arunachal Pradesh, Jaipur, Uttarakhand and Tamil Nadu. Table 2 shows the number of participants from the five different states with respect to the age category.

Table 2: The number of participants and their age category.

State	Age	Age	Age	Age	Age
	15-20	21-30	31-40	41-50	51-60
Assam	6	55	24	9	6
Arunachal Pradesh	32	45	16	5	2
Jaipur	24	69	5	2	0
Uttarakhand	11	74	11	4	0
Tamil Nadu	11	70	13	4	2

The breakdown of male and female participants from the five different states is shown in Table 3.

Table 3: The male-female participants and their age category.

State	Age	Age	Age	Age	Age
	15-20	21-30	31-40	41-50	51-60
Assam	M- 1	M-23	M- 18	M- 9	M- 5
	F- 5	F- 32	F- 6	F- 0	F- 1
Arunachal Pradesh	M- 8	M- 22	M- 12	M- 5	M- 2
	F- 24	F- 23	F- 4	F- 0	F- 0
Jaipur	M- 15	M- 31	M- 4	M- 2	M- 0
	F- 9	F- 38	F- 1	F- 0	F- 0
Uttarakhand	M- 3	M- 36	M- 10	M- 3	M- 0
	F- 8	F- 38	F- 1	F- 1	F- 0
Tamil Nadu	M- 2	M- 34	M- 10	M- 3	M- 2
	F- 9	F- 36	F- 3	F- 1	F- 0

Health infographics have potential for interpretation of complex health information when adapting visuals for diverse populations. The participants in the survey believe that health infographics should be tailored to different cultural backgrounds for better health outcomes. The participants feel that design elements are essential and important elements for ensuring cultural sensitivity in health infographics. Language barriers often hinder effective healthcare

communication, particularly in diverse populations. Health infographics provide a solution by transcending linguistic challenges through visual storytelling. Fig. 4 below shows the maximum participants from the five different states feel that healthcare infographics should be used for ensuring health information to the public and to reduce the communication gap.

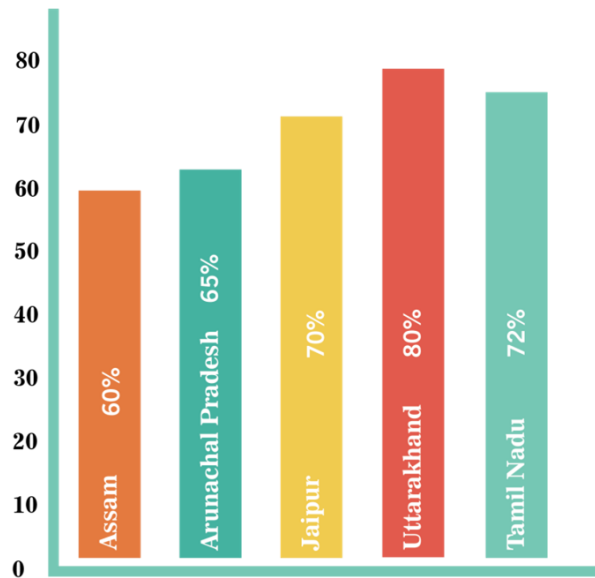


Fig. 4: Participants who feels that health infographics should be used for ensuring health information.

From the Fig. 4, we see that 60% from Assam, 65% from Arunachal Pradesh, 70% from Jaipur, 80% from Uttarakhand and 72% from Tamil Nadu population of the participants in the survey feels that healthcare infographics should be used for ensuring health information to the public. Many of the participants feel that language becomes a barrier which impacts the effectiveness of health information for diverse populations. During the survey, we also found that 80% of the participants in Assam, 85% of Arunachal Pradesh, 90% of Jaipur and 70% of Uttarakhand could read Hindi languages, while the remaining percentage can only speak Hindi but cannot read. English language is understandable in all the 4 states. Except for Tamil Nadu, the percentage of Hindi speaking and reading is 30% while English is 100%. Fig. 5 shows the percentage of the participants who can speak and read and understand the Hindi and the English Language.

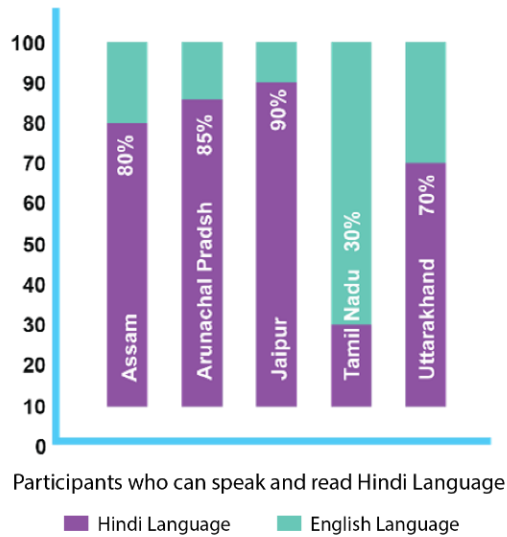


Fig. 5: Percentage of the participants who can speak and read Hindi Language.

Fig. 6 below shows the percentage of the participants who feel that language becomes a barrier in health communication with respect to different regions or states of the country due to different demographic and culture. 80% of the participants feels that language becomes a barrier in healthcare communication while the remaining 20% feels that language is not a barrier in healthcare communication.

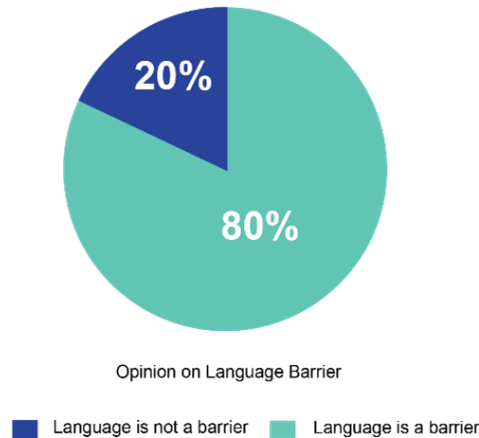


Fig. 6: Participants who feel that language becomes a barrier in health communication.

With regarding to the representation of health infographic designs on social media, most of the participants says that various health information is very common and available on platforms like Instagram, YouTube and Meta as ‘Shorts’ (video with duration between 10-25 seconds are commonly known as shorts). From the research it was also found that most of the audience prefer to watch “shorts” related to healthcare information rather than long duration videos across all platforms either at workplace, homes or during travel. The research shows that 85%,

87%, 83%, 81% and 84% from Assam, Arunachal Pradesh, Jaipur, Tamil Nadu and Uttarakhand states prefer to watch “shorts” (Short Videos) related to healthcare rather than videos with long duration. Fig. 7 below shows the participants who are interested in watching shorts and contents with longer time duration.

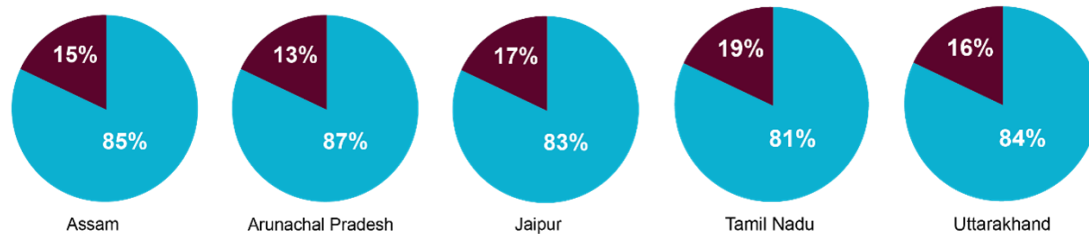


Fig. 7: Pie chart of participants who prefer shorts and long videos on online platforms.

5. Contribution

Health infographics serve as powerful tools for communicating health information in cultures with low literacy rates. By utilizing visual elements such as icons, symbols, and color-coded charts, infographics can convey complex health concepts clearly and quickly, regardless of literacy levels. This visual approach enhances accessibility and comprehension, ensuring that crucial health messages reach diverse populations effectively. In contexts where written information may be challenging to access or understand, infographics bridge communication gaps, empowering individuals to make informed decisions about their health and well-being. Social media platforms play a pivotal role in disseminating culturally sensitive health infographics by reaching diverse audiences worldwide. These platforms facilitate rapid sharing and engagement, allowing health information to transcend geographical and cultural barriers. Culturally tailored infographics can resonate more deeply with specific communities, promoting awareness and education on health issues relevant to their cultural contexts. By leveraging the viral nature of social media, health organizations and practitioners can amplify the impact of their messages, fostering informed decision-making and positive health behaviors across different demographics.

Health infographics should be meticulously tailored to accommodate diverse cultural backgrounds to ensure optimal comprehension and relevance. Cultural nuances in beliefs, language, and visual preferences significantly impact how health information is perceived and adopted. By incorporating culturally specific symbols, languages, and contextual references, infographics can resonate more deeply with various communities, promoting engagement and adherence to health recommendations. This approach not only enhances accessibility but also

fosters trust and respect for cultural diversity, ultimately improving health outcomes across diverse populations.

5.1 Discussions

It is crucial to emphasize the need for inclusivity and accuracy. Infographics play a pivotal role in conveying health information quickly and effectively, but their effectiveness can vary across diverse populations due to cultural differences. To enhance accessibility and relevance, infographics should incorporate culturally appropriate imagery, symbols, and languages that resonate with various communities. Moreover, considerations such as color symbolism, dietary preferences, and health beliefs must be considered to ensure information is both understandable and respectful. By consulting with community representatives and cultural experts during the design process, infographics can be tailored to reflect the diversity of the intended audience sensitively. This approach not only improves comprehension but also fosters trust and engagement, ultimately promoting better health outcomes across all demographics.

5.2 Limitations

One significant limitation in cultural sensitivity of health infographics is the potential for oversimplification or misinterpretation of complex health information when adapting visuals for diverse populations. Despite efforts to tailor content, nuances in cultural beliefs and contexts may not always be fully captured, leading to misunderstandings or incomplete comprehension among certain groups. Additionally, achieving universal cultural sensitivity across all demographics within a population poses challenges, as individual cultural backgrounds and preferences can vary widely. Moreover, ensuring continuous updates and adaptations to reflect evolving cultural dynamics and preferences requires ongoing resources and expertise, which may not always be readily available.

6. Conclusion

In conclusion, the integration of infographic designs into high school science education offers substantial benefits, but the effectiveness of static versus digital mediums varies significantly. Static infographics, characterized by their fixed, visually compelling format, are particularly valuable for presenting complex scientific information in a straightforward and digestible manner. Their clarity and ease of use make them ideal for physical classroom environments, where students can interact with printed materials during lessons or as part of study aids. The

permanence and simplicity of static infographics also ensure that key concepts are easily accessible and can be referred to repeatedly without the need for electronic devices.

Conversely, digital infographics bring a dynamic and interactive dimension to science education that static infographics cannot match. The use of digital platforms allows for the incorporation of multimedia elements such as animations, videos, and interactive simulations, which can significantly enhance student engagement and understanding. Digital infographics are particularly effective in catering to diverse learning styles, as they can offer interactive features that allow students to explore concepts at their own pace. Additionally, the ability to update and revise digital content in real-time ensures that information remains current and relevant, a critical advantage in the rapidly evolving field of science.

Incorporating both static and digital infographic designs into the science curriculum can provide a comprehensive educational experience. Static infographics offer stability and ease of access, while digital infographics bring interactivity and adaptability. By leveraging the strengths of both mediums, educators can create a more engaging and effective learning environment. This blended approach not only supports a deeper understanding of scientific concepts but also prepares students to navigate and utilize various types of information in their academic and future professional endeavors.

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