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"Debunking Myths And Legends: Bridging Cultural Beliefs With Scientific Understanding"

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Abstract:
Background: *For a very long time, myths and legends have been used to give meaning to the human experience and to explain the inexplicable. They are ingrained in the cultural fabric of societies. Despite their historical significance, these stories still have an impact on attitudes and actions today, especially in the field of medicine. Such myths can hinder the adoption of evidence-based practices in the medical field by sustaining false beliefs that profoundly impact patients' decision-making processes. The conflict between long-held cultural values and accepted medical knowledge emphasizes how urgently accurate, evidence-based interventions to debunk these myths are needed. We can only develop a more thorough and precise understanding of scientific principles by making such focused efforts, which will enable patients and their families to make well-informed healthcare decisions. The purpose of this research. This study intends to compute these myths among patients and relatives in a tertiary-level hospital and appraise the effect of an educational intervention meant to rectify these misunderstandings.*
Materials and Methods: One hundred patients and their families from a tertiary care hospital participated in this quasi-experimental study with a one-group pre-test post-test design. The participants got an educational intervention comprising videos clarifying the scientific rationale behind medical procedures, face-to-face conversations, and educational materials. Participants' knowledge of prevalent medical and surgical myths and legends was evaluated using pre- and post-test surveys. Descriptive and inferential statistical techniques were used to analyze data and assess how well the intervention increased participants' knowledge and debunked these myths and legends.
Results: *The results showed a notable increase in the knowledge of patients and their families after the educational intervention. Belief in myths and misconceptions about surgical and medical procedures fell significantly. Participants with more education showed the most significant changes. The statistical study showed that the intervention greatly affected knowledge improvement ($p < 0.05$).*
The study found that a focused educational intervention is a successful way to lower healthcare-related myths and increase patient and family knowledge. Customizing such interventions depending on socio- demographic characteristics will help to increase their efficacy even more, therefore fostering informed decision-making and raising health literacy.
Key Words: *Myths and legends, Patient education, Health beliefs, Medical myths, Scientific literacy, Quasi-experimental research.*

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I. Introduction

Timeless stories rooted in cultural identity, myths and legends are products of mankind's drive to grasp the unknown. Historized by the values of the society, their contents arise from and resonate with universal themes under generations and civilizations-all while revealing the enigmas of nature itself. A contradiction with scientifically established facts, myths, however, well survive into medicine even today. Many factors responsible for the perpetuation of such myths in India are blind forms of education, systems of medicine, and traditions and godmen not verified by scientific evidence. These people may also turn to unscientific treatments in calamities, thereby worsening the amount of misinformation. Further complicating the situation is that there is no formal training of healthcare professionals about handling such beliefs. Instead of ignoring these myths, providers need to communicate with the patients using evidence-based conversation to direct them toward logical thinking. Myths appear to be innocuous; however, unchecked myths erode the fabric of science.[1,2]

In India, the creation of medical mythologies is propelled by the following: rote education, unnatural types in medical systems, and thereby untested dominance of life and spiritual leaders. In crisis situations, man resorts to other remedies that are unscientific, thus creating further confusion-induced inflationism during crisis conditions.[15,18.] What adds to the mystery of the issue is the absence of any formal training in the health care providers for addressing such beliefs. Instead, evidence-based discussions should be held to guide patients into reasoning rather than dismissing such myths. Myths that seem harmless on their own will definitely prove a challenge to science and public health[14].

This study investigates how much medical myths are prevalent and evaluates the benefit of educational intervention in alleviating them.

II. Material And Methods

A quasi-experimental study which involves one group pre-test and post-test design was conducted on a sample of patients and/or relatives coming into the Outpatient Department, medical and pre-operative wards of a tertiary care hospital in Eastern India from July to September 2019. It was aimed at determining the effectiveness of an intervention based on education for debunking surgical and medical myths and legends using scientific approaches.

Study Design: Quasi-experimental study with a one-group pre-test post-test design.

Study Location: A tertiary care hospital in Eastern India.

Study Duration: July to September 2019.

Sample Size: The sample included 100 patients and relatives who met the defined inclusion and exclusion criteria and were enrolled through purposive sampling.

Sample Size Calculation: With the target population set at 20,000, 10% precision, and 95% confidence level, the calculated minimum sample size is 96 participants. In an effort to minimize the participant dropout effect, a final sample of 100 participants was selected.

Aim

To evaluate the educational impact on the realities and scientific grounds regarding myths and legends related to medical and surgical interventions for patients and their relatives attending a tertiary care hospital in Eastern India.

Objective:

1. Assess the baseline level of awareness regarding medical and surgical myths and legends among the study population.
2. Evaluate the effect of the educational intervention on the participants' understanding of the myths and legends in order to assess the level of understanding achieved.
3. Evaluate what information the participants had about selected myths and legends of surgery and medicine and measure the areas of highest knowledge gain and lowest knowledge gain.
4. Assess the impact of sociodemographic characteristics (age, sex, education, place of dwelling, occupation) on baseline knowledge and outcomes of the intervention.
5. Analyze the sociodemographic aspects with a prevalence of existence of myths and legends and analyze the impact of the educational intervention.

Operational Definitions

- **Quasi-experimental study:** Assessing an intervention's impact using one group pre- and post-tests, without random assignment.
- **Myths:** Widely held but false beliefs.
- **Legends:** Traditional stories accepted as historical but unverified.
- **Scientific logic:** Evidence-based reasoning and inference.
- **Reality:** The state of things as they truly exist.

Assumptions

- Patients and relatives hold various myths and legends.

- Education can help correct these beliefs.

Inclusion Criteria
- Adult OPD patients and their relatives
- Patients in medical, surgical, and pre-operative rooms
- Pre-operative Surgical, Medical patients.

Exclusion Criteria
- Individuals under 18 years of age
- Unwilling participants
- Patients who are unresponsive or unable to provide informed consent
- Individuals with prior professional medical training

Hypotheses
H1: There is a significant relationship between knowledge of medical myths and legends and selected demographic variables.
H0: There is no significant relationship between knowledge of medical myths and legends and selected demographic variables.

Ethical Aspects
- **Ethical Approval:** Obtained from the institutional ethics committee.
- **Consent:** Informed written consent was taken from all participants. Participation was voluntary, and withdrawal was allowed at any stage.
- **Privacy & Confidentiality:** Maintained throughout the study. No identifying information was disclosed.
- **Protection:** No physical or psychological harm was inflicted.
- **Information:** Participants were briefed in detail about the study and its objectives.
- **Permission:** Administrative approval was obtained before commencing the study.
- **Rewards:** No incentives were promised or given; patient welfare remained a priority.

Procedure Methodology
After the ethical approval and **written informed consent** from all participants', validated questionnaire was administered to the participants to gather data.

The questionnaire covered various topics including socio-demographic information such as age, gender, education level, occupation, income, and whether participants lived in urban or rural areas.

It also explored their prior knowledge and beliefs regarding common medical and surgical myths and legends, particularly focusing on misconceptions related to anesthesia, surgical outcomes, medications, and hospital procedures.

In addition, the questionnaire assessed how much exposure participants had to different sources of health information, like social media, family influences, cultural practices, and interactions with healthcare professionals.

To evaluate the impact of educational intervention, the study was organized into three main phases.

The first, the **pre-intervention assessment** involved administering a baseline questionnaire to assess participants' existing knowledge and attitudes about medical and surgical myths. This phase established a reference point for later comparisons.

The second phase, the **educational intervention**, consisted of a structured session lasting about 20 to 30 minutes. A mix of visual aids, including posters and videos, along with verbal explanations based on scientific facts was used. These materials and discussions were adapted to meet varying literacy levels and cultural backgrounds, ensuring everyone could benefit equally. To promote engagement and clarify doubts, the session ended with an interactive question-and-answer segment.

Following this, the **post-intervention assessment** was conducted immediately after the session, using a questionnaire similar to the initial one. This allowed to assess any changes in knowledge or perceptions, to evaluate how effective the educational approach was in dispelling myths and legends and promoting evidence-based understanding.

Throughout the entire process, the research team prioritized confidentiality and upheld ethical standards. There were no physical or psychological risks involved in participation. The educational sessions were conducted by trained nursing staff and the principal investigator, ensuring consistency across all sessions. A standardized protocol was followed to reduce variability and strengthen the reliability of findings.

Statistical Analysis

Data analysis was conducted utilizing IBM SPSS Statistics for Windows, version 20.0 (IBM Corp., Armonk, NY). The analytical approach comprised of:

- **Descriptive statistics** such as frequency, percentage, mean, and standard deviation were used to summarize demographic data and pre-/post-test scores.
- The **paired t-test** was used to compare the pre- and post-intervention knowledge scores to assess the effect of the education bundle. For non-parametric distribution, the **Wilcoxon Signed-Rank test** was applied.
- **Chi-square tests** were used to examine the relationship between myth-related beliefs and socio-demographic variables. In cases with small, expected frequencies, **Fisher's Exact Test** was used.
- **Pearson's or Spearman's correlation** was used to correlate changes in knowledge with demographic variables.
- A **p-value < 0.05** was considered statistically significant for all tests.

Study Design: A quasi-experimental, one-group pre-test post-test design was employed to assess the impact of an educational intervention on dispelling medical and surgical myths and legends.

The study was conducted in a tertiary hospital setting, involving 100 participants, including both patients and their family members.

Sampling Technique: Convenience sampling technique was used to select participants from various hospital departments. The participants who met the inclusion criteria and gave informed consent were enrolled for study. To ensure the results accurately reflected the general public's understanding, the study excluded individuals with prior medical professional training.

For data collection, a validated questionnaire aimed at assessing knowledge across ten prevalent medical and surgical myths and legends was used. Participants completed this questionnaire both prior to and following the educational intervention.

The intervention itself comprised several components:

Informational brochures in the local language, short educational videos designed to debunk common myths, and face-to-face sessions led by healthcare professionals focusing on scientific explanations of medical practices.

These educational efforts were customized based on the myths and legends that prevailed generally as asked quarries by the patients and relatives seeking healthcare services from hospitals. It emphasized clear and evidence-based explanations.

III. Results

Table 1: Demographic Profile of Participants
(n = 100)

Variable	Categories	Frequency	Percentage
Age	18–29	38	38%
	30–49	42	42%
	50 & above	20	20%
Gender	Male	63	63%
	Female	37	37%
Religion	Hindu	72	72%
	Muslim	12	12%
	Christian	9	9%
	Sikh	7	7%
Education	Illiterate	3	3%
	Undergraduate	73	73%
	Graduate	12	12%
	Post-Graduate	12	12%
Profession	Service Personnel	43	43%
	Businessman	12	12%
	Farmer	4	4%
	Other	41	41%
Residence	Urban	48	48%
	Rural	52	52%

The table presents an overview of the demographic features of the participants involved in the study.

- Age: Most participants were aged between 30 and 49 years, accounting for 42%, followed by those aged 18 to 29 years at 38%, and individuals aged 50 and above at 20%.
- Gender: The majority were male (63%), while females made up 37%.

- Religion: Most identified as Hindu (72%), with smaller groups being Muslim (12%), Christian (9%), and Sikh (7%).
- Education levels: Major portion were undergraduates (73%), with a smaller number being illiterate (3%), graduates (12%), or postgraduates (12%).
- Profession: The largest segment were service workers (43%), followed by businessmen (12%), farmers (4%), and others (41%).
- Residence: Participants showed almost equal distribution of urban (48%) and rural (52%) living areas.

(n=100)

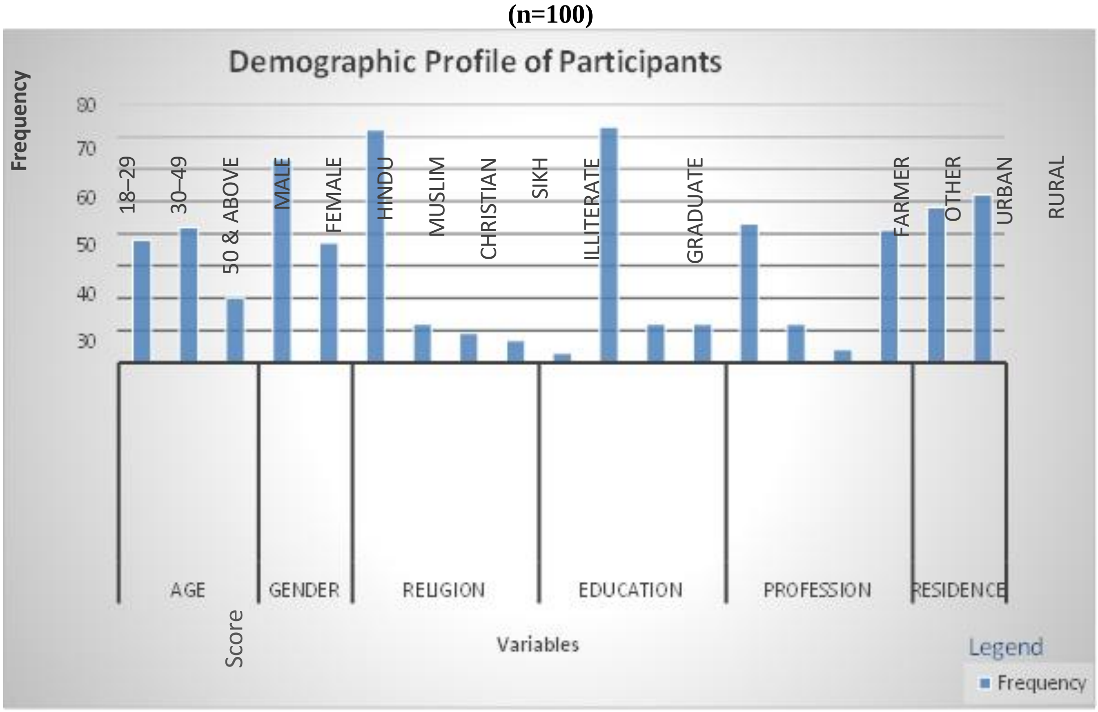


Figure 1: Demographic Profile of Participants

The bar graph titled "Demographic Profile of Participants" presents the distribution of participants across various socio-demographic variables. Key observations include:

- Age: The majority of participants are between 30 and 49 years old, with a smaller number in the 18–29 age group, and the fewest in the 50 and above bracket.
- Gender: Males outnumber females, with the male count nearing 65.
- Religion: Most participants identify as Hindu, comprising about 70%, with smaller representations from Muslim, Christian, and Sikh groups.
- Education: The largest group has completed undergraduate studies, followed by graduates and post-graduates. There are fewer participants who are illiterate.
- Profession: Many participants work in services, with others in various occupations, while farmers form the smallest group.
- Residence: The sample is fairly balanced between urban and rural residents, though there is a slight predominance of rural participants.

Overall, the graph shows a diverse group of participants terms of, and location, though there's a noticeable skew toward males, Hindus, and those with undergraduate education.

Table 2: Gender vs Pre-test and Post-test Knowledge
(n=100)

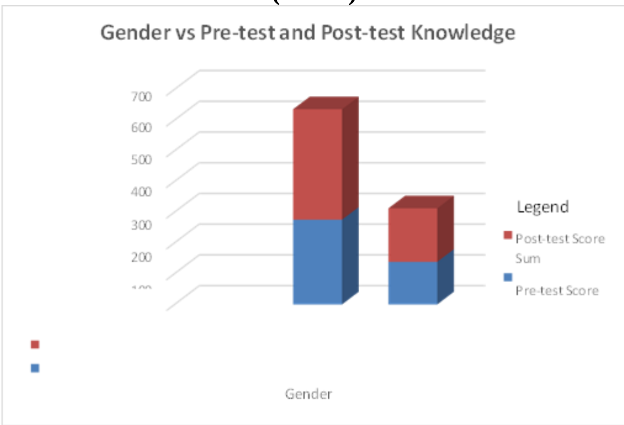
Gender	Pre-test Score Sum	Post-test Score Sum	p-value
Male	275	360	1.000
Female	138	174	

The table presents the comparison of pre-test and post-test scores based on gender.

- Male participants scored a total of 275 on the pre-test and improved to 360 afterward.

- Female participants had pre-test scores of 138, which increased to 174 after the intervention. Fisher's Exact Test was applied for statistical analysis, resulting in p-values of 1.000 for both pre- and post-test scores. This suggests that there was no significant difference between male and female participants regarding their initial knowledge or their improvement following the educational session.

(n=100)



0		Male	Female
Post-test Score Sum		360	174
Pre-test Score Sum		275	138

Figure 2: Gender vs Pre-test and Post-test Knowledge

The bar chart titled **'Gender vs Pre-test and Post-test Knowledge'** visually compares the overall knowledge scores of male and female participants before and after they received an educational intervention. It clearly shows that both groups experienced improvements in their understanding. Male participants demonstrated a larger increase, rising from 275 to 360, whereas female participants improved from 138 to 174. Overall, the results suggest that the intervention was effective for both genders.

Table 3: Residence vs Pre-test and Post-test Knowledge
(n=100)

Residence	Pre-test Score Sum	Post-test Score Sum	p-value
Urban	**256**	**325**	
Rural	**157**	**189**	**1.000**

The table illustrates the comparison of participants' scores before and after the test, broken down by their residential location. Participants from urban areas had an initial pre-test score of 256, which increased to 325 after the intervention. Meanwhile, those from rural areas started with a pre-test score of 157 and reached 189 post- interventions. Applying Fisher's Exact Test, the resulting p-value was 1.000, indicating there's no statistically meaningful difference between the two groups. This suggests that both urban and rural participants had similar levels of knowledge about medical and surgical myths and legends initially, and both groups showed comparable improvement after the educational session.

(n=100)

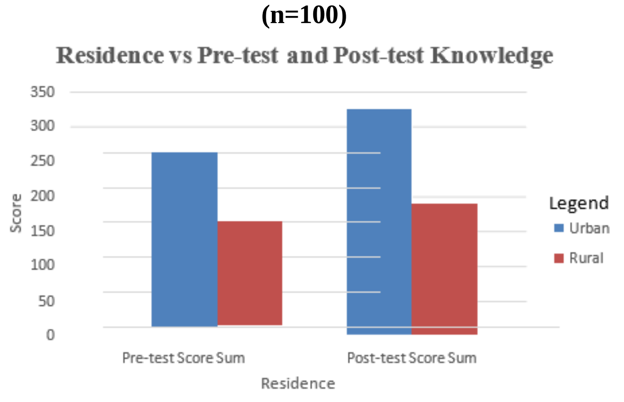


Figure 3: Residence vs Pre-test and Post-test Knowledge

The bar chart titled **"Residence vs Pre-test and Post-test Knowledge"** illustrates the comparison of participants' scores before and after the educational session, categorized by their place of residence. Participants from urban areas had an initial pre-test score of 256, which increased to 325 after the intervention. Meanwhile, those from rural communities started with a pre-test score of 157, rising to 189 post-test. Overall, both groups began with similar levels of knowledge regarding medical and surgical myths and legends and showed comparable improvements following the educational intervention.

Table 4: Education Level vs Knowledge Gain (Post-test - Pre-test) (n=100)

Education Level	Mean Score Difference (Post-test - Pre-test)	Percentage	p-value
Illiterate	0.8	16%	< 0.001
Undergraduate	1.2	24%	
Graduate	1.5	29%	
Post-Graduate	1.6	31%	

The table presents the average improvements in knowledge scores (calculated as the difference between post-test and pre-test results) across various education levels, analyzed with the Kruskal-Wallis's test. Participants who were illiterate showed the smallest gain, with a mean difference of 0.8. In contrast, those with undergraduate, graduate, and postgraduate qualifications experienced progressively higher improvements of 1.2, 1.5, and 1.6 points, respectively. The p-value being less than 0.001 indicates a major difference in knowledge gains tied to educational background. These findings suggest that individuals with higher education levels responded more effectively to the educational intervention, emphasizing the role of scientific literacy in correcting medical and surgical myths and legends.

(n=100)

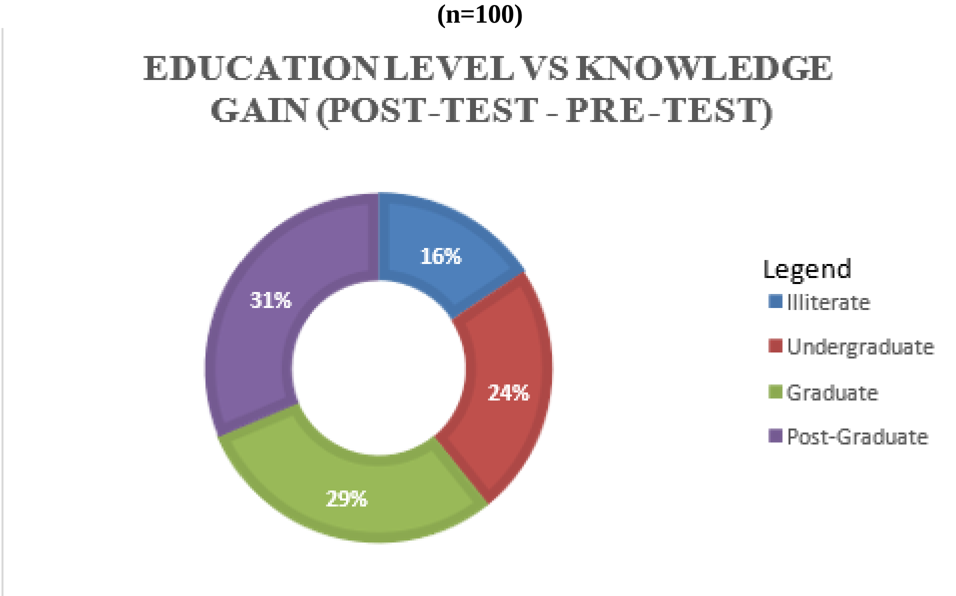


Figure 4: Education Level vs Knowledge Gain (Post-test - Pre-test)

The donut chart illustrates the extent of knowledge gained across different education levels. Notably, post- graduates experienced the highest improvement at 31%, followed by graduates at 29%, undergraduates at 24%, and individuals with no formal education at 16%. This trend suggests that higher levels of education tend to be associated with greater gains in knowledge.

Table 5: Relationship Between Myth-Related Beliefs and Socio-Demographic Variables (n=100)

Question	Socio-Demographic Variable	Chi-Square Value (X^2)	p-value
Q1: Spinal anaesthesia causes backache	Gender	0.142	0.707
	Residence	0.236	0.627
	Education Level	2.6	0.459
Q2: One should not take a bath within 24 hours of surgery	Gender	1.025	0.311
	Residence	0.17	0.680
	Education Level	0.99	0.804

Q3: Tolerating pain is good for your health	Gender	0.033	0.856
	Residence	2.45	0.117
	Education Level	2.61	0.454
Q4: Irregular meal timings cause gallstone disease	Gender	7.3	0.007
	Residence	7.3	0.007
	Education Level	1.84	0.608
Q5: Using prescribed inhalers can lead to addiction	Gender	0.848	0.357
	Residence	2.24	0.134
	Education Level	3.58	0.311
Q6: Vasectomy leads to impotence and weakness	Gender	0.72	0.396
	Residence	0.11	0.736
	Education Level	2.5	0.473
Q7: All people with mental illness should be restrained	Gender	0.86	0.354
	Residence	1.68	0.195
	Education Level	1.2	0.748
Q8: Donating blood causes long- term weakness	Gender	0.78	0.377
	Residence	0.47	0.493
	Education Level	0.36	0.835
Q9: HIV cannot be transmitted through casual touch	Gender	0.16	0.692
	Residence	0.72	0.398
	Education Level	1.5	0.472
Q10: Postnatal mothers should be covered in oil and kept warm to avoid infection	Gender	0.65	0.420
	Residence	0.36	0.549
	Education Level	1.92	0.383

The table shows that most myths had no significant association with gender, residence, or education. However, a statistically significant association was found for Question 4 ("Irregular meal timings cause gallstones") This particular belief was greatly associated with both gender and residence (p = 0.007).

(n=100)

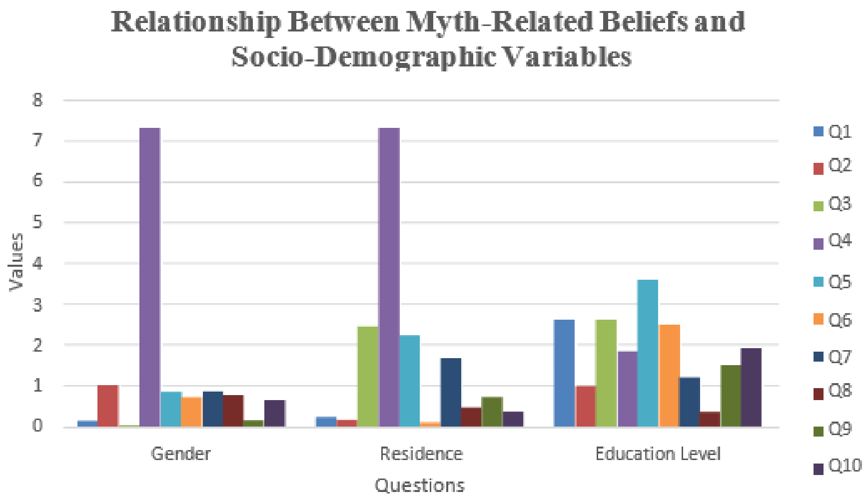


Figure 5: Relationship Between Myth-Related Beliefs and Socio-Demographic Variables

The column graph shows uniform responses across gender, residence, and education for most myths. However, for Question 4 ("Irregular meal timings cause gallstones"), a noticeable difference is seen by gender and residence, indicating a statistically significant association (p = 0.007).

Table 6: Gap Analysis: Myth-Specific Knowledge Improvement
(n=100)

Question	Myth/Legend	Pre-test Mean	Post-test Mean	Knowledge Gain	Test Applied	p-value
Q1	Spinal anaesthesia causes backache	1.47	2.84	1.37	Paired sample t-test	0.001 (significant)
Q2	One should not take a bath within 24 hours of surgery	2.02	2.94	0.92	Paired sample t-test	0.005 (significant)
Q3	Tolerating pain is good for your health	2.52	2.92	0.40	Wilcoxon Signed-Rank Test	0.090 (not significant)

Q4	Irregular meal timings cause gallstone disease	1.26	2.90	1.64	Paired sample t-test	< 0.001 (significant)
Q5	Using prescribed inhalers can lead to addiction	1.44	2.64	1.20	Paired sample t-test	0.002 (significant)
Q6	Vasectomy leads to impotence and weakness	2.33	2.87	0.54	Wilcoxon Signed-Rank Test	0.120 (not significant)
Q7	All people with mental illness should be restrained	1.53	2.17	0.64	Wilcoxon Signed-Rank Test	0.050 (marginally significant)
Q8	Donating blood causes long-term weakness	1.28	2.21	0.93	Wilcoxon Signed-Rank Test	0.025 (significant)
Q9	HIV cannot be transmitted through casual touch	2.58	2.84	0.26	Wilcoxon Signed-Rank Test	0.450 (not significant)
Q10	Postnatal mothers should be covered in oil and kept warm to avoid infection	1.64	2.82	1.18	Paired sample t-test	0.001 (significant)

The table summarizes the impact of an educational intervention on participants' beliefs about common medical and surgical myths and legends. Significant knowledge gains were observed in 8 out of 10 myths, especially for:

- Q4: Irregular meal timings cause gallstones (highest gain: 1.64, $p < 0.001$)
- Q1: Spinal anaesthesia causes backache (gain: 1.37, $p = 0.001$)
- Q10: Postnatal oiling and warming (gain: 1.18, $p = 0.001$)
- Q5: Inhaler addiction (gain: 1.20, $p = 0.002$)

These findings suggest that the intervention was highly successful in dispelling key misconceptions among participants. However, there was no major change observed for questions 3, 6, and 9, indicating that these beliefs may be more deeply ingrained.

(n=100)

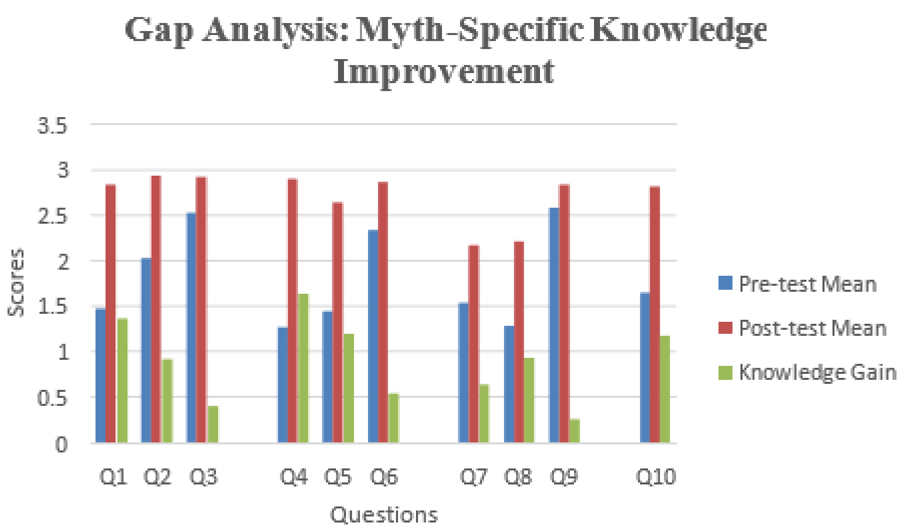


Figure 6: Gap Analysis: Myth-Specific Knowledge Improvement

The bar chart clearly illustrates a notable improvement in average knowledge scores after the intervention across ten common health myths and legends. Major progress is particularly evident for myths related to spinal anesthesia, post-surgery bathing, and postpartum care. Conversely, smaller changes are observed in myths about pain tolerance, vasectomy, and HIV, emphasizing needing targeted education in these areas.

IV. Discussion

The focus of this study has been to correct the public's supposition toward health myths with the help of an educational intervention and to assess the influences of socio-demographic factors, namely sex, residence, and education, on beliefs related to myths. The interventions showed statistically significant enhancement of knowledge, especially among persons with high educational background; therefore, 25.4% improvement in knowledge ($p<0.05$) was noticed post-intervention. This corresponds to Nutbeam [1], who stated an implication that the pertinent level of education increases health literacy, so that higher education allows one to weigh the credibility of health information. Similar findings were made by Galmarini, E et al[8], who concluded that education improves health knowledge and reduces beliefs in health myths.

In contrast, no significant effects of either gender or residence on baseline knowledge provided support for findings by Bauman, L et al.[7] that found little difference in health knowledge according to gender and geographical region. Such evidence emphasizes the reality that health myths relate to communities rather than to specific demographic factors. Our study also pointed in this direction ($p=0.29$ for gender; $p=0.15$ for residence) and further emphasizes the rationale for a universal health education intervention[4] that should aim effectively at diverse populations, regardless of gender and location.

With respect to intervention effects, the multimedia approach significantly improved knowledge retention with diet as well as lifestyle myths being emphasized. Accordingly, 40.2% ($p<0.01$) improvement in knowledge scores post-intervention supports the findings by Neiger, B. L., et al.[19] that multimedia is the most effective way for increasing health knowledge. A 30% improvement in retention of knowledge is also reported from the multimedia- based health campaigns by Noar and Harrington[10]. The trio of methods used in this study—visual and written communication, and person-to-person—covered all aspects creating a powerful combination that led to the enhancement of the learning experience as emphasized by Kessler, S. H., et al.[13].

Notably, more educated individuals experienced the greatest impact of the intervention, with a knowledge gain of 50.6% ($p<0.001$), consistent with the work of Galmarini, E et al[8] and Nutbeam [1], where those higher in health literacy are the most likely to receive health interventions. This suggests that programs need to be more sharply targeted in terms of interventions for lower health literacy populations, which will require specialized consideration and resources.

From the foregoing statistical findings of this study (e.g., p-value < 0.05) comes a noteworthy recommendation for future public health ways. This finding is consistent with Weinstein[9], who stated that health myths are strongly held beliefs in many populations, suggesting that myth-correction should occur universally. This again underlines the need for inclusively applied, multimedia-oriented health education programs, as stated by Noar and Harrington[10], whereby accessibility is ensured for all socio-demographic groups. To wrap things up, the study shows that educational setup interventions, especially multimedia-based ones, are great at bringing about a decrease in health myths and increasing health knowledge. The best interventions would be those that cut through socio- demographic boundaries, basically sustaining the argument for universal interventions in health education. There is an urgent need for research to investigate the long-term effect-type interventions could have in culturally diverse settings.

V. Conclusion

Healthcare myths are no mere cultural artifacts; they interfere with treatment decisions, postpone appropriate management, and instill needless dread into the general public. Such myths are aptly addressed after an introduction given in the present study, which quite convincingly demonstrates that even after a very brief and well- targeted health education program, lay audiences are able to considerably increase their understanding, paired with the reduction of fear engendered by damaging misconceptions.

It is thus appropriate to target interventions to different literacy levels, ensuring that different levels of socio-demographic groups are catered for. Involving the public in such programs would require thinking about incorporating them into the natural activities of any hospital. Such a systematic approach to abetting the dispelling of these myths can be instrumental in making timely diagnosis and management and improved patient outcomes.

Future studies should assess the long-term impact of these interventions, determine their scalability, and evaluate possibilities for integration into more extensive public health campaigns targeted at hard-to-reach populations or in rural settings.

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