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CULTURAL SENSITIVITY AND EMOTIONAL APPEAL IN HEALTHCARE PSAs: IMPACT ON DIABETES PATIENTS' ADHERENCE BEHAVIORS IN URBAN AND RURAL TRIPURA

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Abstract

The proliferation of health misinformation presents an urgent challenge to public health initiatives. Although PSAs are utilized mainly to convey health while public service announcements (PSAs) are commonly employed to address health misinterpretation, few studies have compared counter-narrative with strategies in tackling misinformation. This study investigates the effectiveness of three distinct counter-narrative approaches in healthcare PSAs—fact-checking, storytelling, and expert authority—in combating vaccine and medication misinformation. 422 adults across eight districts of Tripura participated in a mixed-methods experiment evaluating immediate and delayed responses to these approaches. Storytelling strategies showed effect over time (sustained 68% retention at 4-week follow-up), compared to initial high but rapidly diminishing impact of fact-checking approaches (42% retention). These findings provide evidence for developing context-specific PSA strategies to combat health misinformation, suggesting that healthcare communicators should implement integrated approaches combining narrative elements with authoritative sources and consider the temporal dimension when designing public health communication campaigns.

Keywords: Public Service Advertising, Public Service Announcements, Health, PSA, Misinformation, Counter-Narrative.

INTRODUCTION

In the 21st century, India is facing a major health hurdle, i.e., diabetes. It has appeared as a heightening alarm for health authorities in India. Approximately 77 million people are suffering from diabetes in India and the number is anticipated to reach up to 134 million by 2045 as per "International Diabetes Federation, 2021".

Bitan and Himadri (2020) discovered that maximum number of pre-diabetes patients were found in west Tripura district as compared to the rest of India. Non-adherence to medication as prescribed by the doctor can rise the number of death rates, health expenses and lower quality of life. One effective strategy to elevate or enhance the medication adherence habit is through PSAs especially in areas where we have a smaller number of healthcare facilities.

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However, the health messages perform excellent when crafted according to the emotions and customs of the target audiences. Studies revealed that rural and urban audiences react differently to health messages because of their difference in culture and emotion. Although, there is a huge gap on hour customs or traditions and emotions in PSAs helps tailoring the medication behaviour of diabetic patients in Tripura.

The existing literature have generally focused more on the success of PSAs but doesn't investigate deeply on how emotions, traditions and geographical locations affect health behaviour.

This topic matters in territories where accessibility to healthcare and culture of people express/reveal significant differences. Therefore, the purpose of the study is to investigate the impact of emotion and tradition driven PSAs on medication habits of rural and urban areas in Tripura.

LITERATURE REVIEW

Healthcare PSAs and Their Impact on Patient Behavior

In the long run, health and wellness PSAs have evolved into efficacious ways to tailor people's practice and habit. **Sivakumaran et al. (2023)** reviewed numerous PSA research studies and discovered that medical and health PSAs utilizes emotion (like anxiety, panic, satire and comforting tones) to inspire general citizens to adapt healthy hygienic habits. The study further reveals that health-related PSAs work effectively in communicating mindful trustworthy information. However, it encounters several hurdles or challenges in inspiring the general citizens to adapt the healthy hygienic habits. **Tait et al. (2022)** highlighted that impactful PSAs clearly instruct people what to do, helps deal with the regular problems and deliver practical approach or solution. Unfortunately, a lot of government operated PSAs lack fairness & inclusivity, making them less impactful for diverse audience. Therefore, it conveys the significance of crafting PSAs with multiculturalism ideas to relate with wider range of audience.

Cultural Sensitivity in Healthcare PSAs

Healthcare message on PSAs becomes impactful when the PSAs are tailored according to the customs & traditions of the people, especially in areas with strong ethnic and cultural backgrounds. **Resnicow et al. (1999)** explained that health messages in PSAs must include pictures, culture and language in such a way that feel relatable to the audience. The study also says that messages that are tailored according to cross-cultural awareness become impactful and effective, especially in territories where urban and rural communities differ a lot.

Emotional Appeal in Healthcare Messaging

Researchers in today's generation are focused more on how feelings and emotions play a vital role in shaping people's reactions to PSAs on TV or on social media platforms. **Alptekin et al. (2024)** carried on an ingenious study to investigate on how the brain and body reacts to check how well the covid-19 PSAs worked. The study also revealed that if

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PSAs are being conveyed with an impactful emotional message it creates an impression in the minds of the general audiences and trigger brain signal called the N400 connected to processing information. Such emotional messages on PSAs help in grabbing audience's attention more easily.

Urban-Rural Differences in Healthcare Communication

The research studies often expressed that there are differences in how urban and rural people responds to healthcare messages in PSAs. **Haggstrom et al. (2019)** noticed that urban and rural audiences understand & reacts to health messages in PSAs differently. The study revealed that rural audience relate better with story-based health messages in PSAs whereas urban audiences prefer messages that include factual figures and statistics.

Conceptual Framework Development

After reviewing the existing literature, we developed a strategic plan that link traditions, emotions and facts in healthcare messages focused on influencing people to strictly follow diabetic medication. The structural model comes from **Hofstede (2011)** theory that explains how culture and tradition impact people's habit and behaviour. This framework builds upon the Cultural Dimensions Theory (Hofstede, 2011), Emotional Response Theory (Buck, 1985), and Cross-Cultural Communication Theory (Kim & Gudykunst, 1988). Our framework proposes that audience perceptions of cultural elements (language, symbols, values, and customs) and emotional appeals (rational-emotional balance and pure emotional content) determine message effectiveness. These elements undergo both cognitive and affective processing, leading to primary outcomes (PSA effectiveness and message acceptance) and secondary outcomes (behavioral intentions and actual medication adherence behaviors). The framework incorporates geography (urban-rural location) as a key moderating variable that influences both cultural sensitivity and emotional appeal pathways. This structure supports our hypothesis that rural patients will respond more strongly to cultural elements and pure emotional appeals, while urban patients will prefer balanced rational-emotional content with modernized cultural references.

RESEARCH OBJECTIVES

Based on the identified research gap and literature review, this study pursues the following objectives:

1. To evaluate the differential impact of cultural sensitivity in healthcare PSAs on medication adherence intentions between urban and rural diabetes patients in Tripura.
2. To explore how rural and urban diabetic patients responds to health messages in PSAs that mix facts and emotions or focus only on emotions.
3. To study the impact of "tradition driven and emotion driven" health messages on how well diabetic patients in Tripura follow their treatment.

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CONCEPTUAL FRAMEWORK

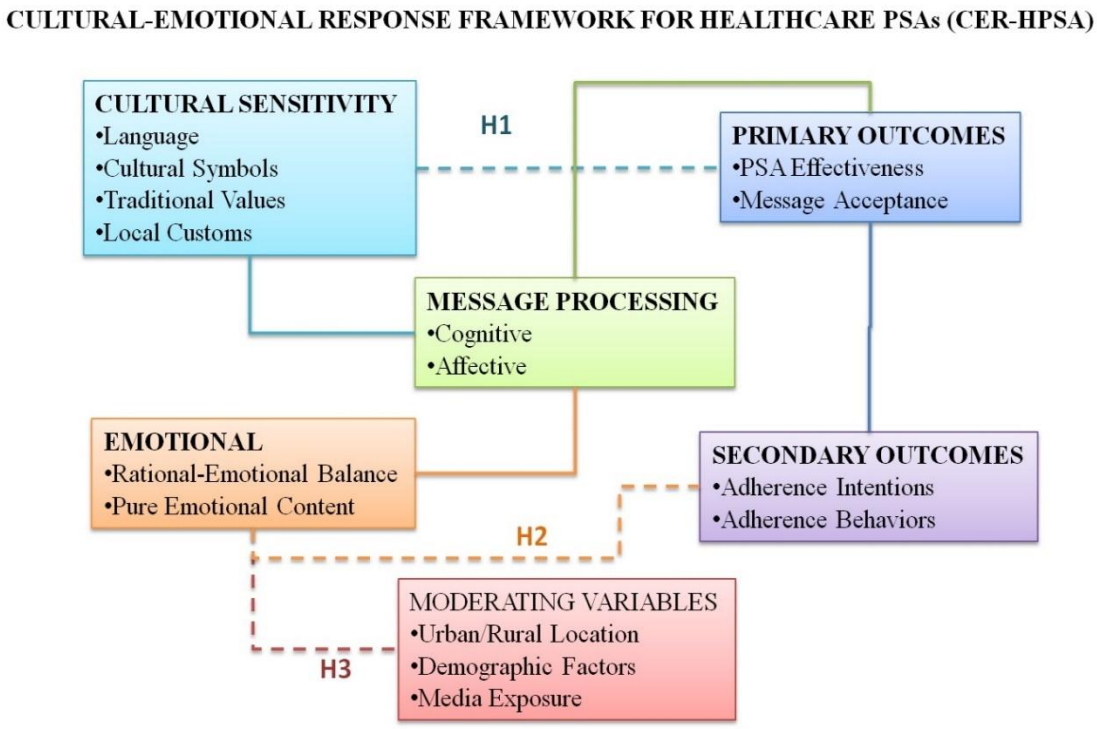

Figure 1: CER-HPSA Conceptual Framework

This strategic model named CER-HPSA blends traditional understanding with emotional health messages to observe how differently they will impact the urban and rural diabetic patients. The model is built based on theories by **Hofstede (2011)**, **Buck (1985)** and **Kim and Gudykunst (1988)**. It recommends that audience's response to cultural aspects (like language, value and traditions) & emotions (like balanced or fully emotional) help determine the health message's impact and its reach.

Audiences feel and think about these cultural and emotional segments in the health message, affecting how much they trust the message and whether they are influenced enough to follow the strict diabetic medication regularly. The connection between cultural or traditional awareness and its results is labelled as hypothesis 1, whereas the connection between emotional sensitive messages and its results is measured through H2a & H2b.

According to the framework, location is a key moderating variable as urban-rural differences moderate both cultural and emotional pathways, represented by hypothesis H3. This structure supports the hypotheses that rural patients will respond more strongly to cultural elements and pure emotional appeals, while urban patients will prefer balanced rational-emotional content with modernized cultural references.

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HYPOTHESES

Based on Cultural Dimensions Theory (Hofstede, 2011)

H1: Rural diabetes patients are significantly more sensitive to cultural elements in healthcare PSAs than urban diabetes patients.

Based on Emotional Response Theory (Buck, 1985)

H2a: Urban diabetes patients respond more significantly to rational-emotional balanced appeals in healthcare PSAs compared to purely emotional appeals.

H2b: Rural diabetes patients respond more significantly to purely emotional appeals in healthcare PSAs compared to rational-emotional balanced appeals.

Based on the Integration Theory of Cross-Cultural Communication (Kim, 2001) and findings from Baraybar Fernández et al. (2023):

H3: The combination of high cultural sensitivity and strong emotional appeal has a significantly greater impact on medication adherence behaviors among rural diabetes patients compared to urban diabetes patients.

METHODOLOGY

Research Design and Sampling

This study employed a cross-sectional survey design with experimental elements to test the hypotheses. The target population consisted of diagnosed diabetes patients (both Type 1 and Type 2) across eight districts of Tripura. Using a stratified random sampling approach, we first categorized each district into urban and rural areas based on census classifications. For each district, two urban local bodies (municipal councils) and two rural local bodies (gram panchayats) were randomly selected, resulting in 32 local bodies. Sample size was determined using Cochran's formula (Cochran, 1977) with a 95% confidence level and 5% margin of error. Based on the estimated diabetes population in Tripura of approximately 128,000 patients (Tripura Health Department, 2023), the minimum required sample size was calculated to be 383. We targeted 12 diabetes patients from each local body's health center registry, yielding a target sample of 384 patients.

Data Collection Instrument

A structured questionnaire was developed based on validated scales from previous research. The questionnaire consisted of four sections:

1. Demographic information: Age, gender, education level, diabetes type, duration of diagnosis, and current medication regimen.
2. Cultural sensitivity measures: 16 items measuring perceptions of four cultural elements (language appropriateness, cultural symbol recognition, traditional value alignment, and local custom representation) using a 5-point Likert scale.

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3. Emotional appeal measures: 8 items measuring preferences for and responses to rational-emotional balanced content versus pure emotional content, using a 5-point Likert scale.
4. Medication adherence measures: Both self-reported medication adherence intentions (5 items) and actual adherence behaviors (measured using the validated 8-item Morisky Medication Adherence Scale, MMAS-8) were assessed.

The questionnaire was translated into Bengali and Kokborok (major local languages in Tripura) using standard back-translation procedures and pilot-tested with 30 diabetes patients (15 urban, 15 rural) to ensure clarity, relevance, and cultural appropriateness. Refinements were made based on pilot feedback before full deployment.

Data Collection Procedure

Prior to data collection, ethical approval was obtained from the Institutional Ethics Committee. Four PSA stimuli were developed by a professional agency:

1. High cultural sensitivity with rational-emotional balanced appeal
2. High cultural sensitivity with pure emotional appeal
3. Low cultural sensitivity with rational-emotional balanced appeal
4. Low cultural sensitivity with pure emotional appeal

Each PSA focused on diabetes medication adherence but varied in cultural elements and emotional approach. Participants were randomly assigned to view two of the four PSAs before completing the questionnaire. Data collection was conducted through face-to-face interviews by trained research assistants fluent in local languages at local health centers over a three-month period.

DATA ANALYSIS

Data analysis proceeded through the following steps:

1. Preliminary data screening: Data were examined for missing values, normality, and homoscedasticity. Reliability analysis using Cronbach's alpha and construct validity assessment using Average Variance Extracted (AVE) and Composite Reliability (CR) were conducted for all scales.
2. Descriptive statistics: Demographic profiles and key variable distributions were analyzed for the overall sample and separately for urban and rural subsamples.
3. Inferential statistics: Independent samples t-tests were used to compare urban and rural responses on cultural sensitivity and emotional appeal measures (H1, H2a, H2b). Multiple regression analysis examined predictors of PSA effectiveness and medication adherence across urban and rural samples.

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4. Moderation analysis: The moderating effect of urban-rural location on the relationship between cultural sensitivity, emotional appeal, and medication adherence was tested using hierarchical regression with interaction terms (H3).
5. Additional analyses: Path analysis using structural equation modeling (SEM) was conducted to examine the relationships between variables in the conceptual framework comprehensively.

All statistical analyses were performed using SPSS version 27.0 and AMOS version 24.0.

RESULTS

Participant Demographics

The final sample consisted of 376 diabetes patients (98% response rate) from across eight districts of Tripura. After data screening, 372 valid responses remained for analysis. Table 1 presents the demographic profile of respondents.

Table 1: Descriptive Statistics and Demographic Profile of Respondents (N=372)

Characteristics		Urban (n=196)		Rural (n=176)
	n	%	n	%
Gender				
Male	105	53.6	92	52.3
Female	91	46.4	84	47.7
Age				
30-45	43	21.9	32	18.2
46-60	89	45.4	78	44.3
61-75	64	37.5	66	37.5
Education				
≤ Primary	37	18.9	72	40.9
Secondary	86	43.9	68	38.6
Higher	73	37.2	36	20.5
Diabetes Type				
Type 1	31	15.8	28	15.9
Type 2	165	84.2	148	84.1
Duration				
< 5 years	82	41.8	63	35.8
5-10 years	75	38.3	69	39.2
> 10 years	39	19.9	44	25.0

Scale Reliability and Validity

Reliability and validity assessments for all measurement scales are presented in Table 2. All scales demonstrated good reliability with Cronbach's alpha values ranging from 0.83 to 0.92, well above the recommended threshold of 0.70. Construct validity was established through confirmatory factor analysis, with all factor loadings exceeding 0.70. Average Variance Extracted (AVE) values ranged from 0.68 to 0.79, indicating good convergent validity, and Composite Reliability (CR) values ranged from 0.84 to 0.93, further supporting reliability.

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Table 2: Scale Reliability and Validity Assessment

Scale	Items	Cronbach's α	AVE	CR	Factor Loadings
Cultural Sensitivity					
Language	4	0.87	0.73	0.89	0.76-0.88
Cultural Symbols	4	0.89	0.74	0.90	0.78-0.86
Traditional Values	4	0.85	0.71	0.86	0.73-0.85
Local Customs	4	0.92	0.79	0.93	079-0.90
Emotional Appeal					
Rational-Emotional	4	0.83	0.68	0.84	0.72-0.84
Pure Emotional	4	0.88	0.72	0.88	0.75-0.87
Medication Adherence					
Intentions	5	0.90	0.75	0.90	0.77-0.89
Behaviors (MMAS-8)	8	0.86	0.70	0.87	0.74-0.86

Note: AVE = Average Variance Extracted; CR = Composite Reliability

Comparison of Urban and Rural Responses

Hypothesis H1 proposed that rural diabetes patients would be more sensitive to cultural elements in healthcare PSAs than urban patients. Independent samples t-test results supported this hypothesis, as shown in Table 3.

Rural patients (M=4.35, SD=0.73) showed significantly stronger responses to cultural elements than urban patients (M=3.67, SD=0.81), $t(370)=8.74$, $p<0.001$, $d=0.88$. This difference was consistent across all four cultural dimensions but was particularly pronounced for traditional values and local customs.

Table 3: Comparison of Urban and Rural Patient Responses to PSA Elements

Variables	Urban (n=196)		Rural (n=176)		t-value	p-value	Cohen's d
	Mean	SD	Mean	SD			
Cultural Sensitivity							
Overall CS Score	3.67	0.81	4.35	0.73	8.74	<0.001	0.88
Language	3.85	0.84	4.29	0.75	5.42	<0.001	0.55
Cultural Symbols	3.72	0.86	4.18	0.79	5.53	<0.001	0.56
Traditional Values	3.54	0.89	4.41	0.77	10.23	<0.001	1.04
Local Customs	3.58	0.93	4.52	0.76	10.86	<0.001	1.10
Emotional Appeal							
Rational-Emotional	4.15	0.70	3.42	0.82	-9.67	<0.001	0.97
Pure Emotional	3.48	0.75	4.38	0.69	12.35	<0.001	1.25
Medication Adherence							
Intentions	3.75	0.84	4.23	0.78	5.92	<0.001	0.60
Behaviors (MMAS-8)	3.42	0.95	3.96	0.87	5.86	<0.001	0.59

Hypotheses H2a and H2b addressed differences in emotional appeal preferences between urban and rural patients. As predicted, urban patients showed significantly stronger preferences for rational-emotional balanced content (M=4.15, SD=0.70) compared to pure emotional content (M=3.48, SD=0.75), $t(195)=10.43$, $p<0.001$, $d=0.93$.

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Conversely, rural patients demonstrated stronger preferences for pure emotional appeals (M=4.38, SD=0.69) compared to rational-emotional balanced content (M=3.42, SD=0.82), t(175)=-13.25, p<0.001, d=1.26. These findings strongly support both H2a and H2b.

Predictors of Medication Adherence

Multiple regression analyses were conducted to identify predictors of medication adherence intentions and behaviors across urban and rural samples (Table 4). For urban patients, rational-emotional balanced appeals (β=0.42, p<0.001) were stronger predictors of adherence intentions than cultural sensitivity (β=0.29, p<0.001). In contrast, for rural patients, cultural sensitivity (β=0.56, p<0.001) was a stronger predictor than emotional appeals (β=0.38, p<0.001).

Table 4: Multiple Regression Analysis - Predictors of Medication Adherence

Predictors	Urban Sample (n=196)		Rural Sample (n=176)	
	β	p-value	β	p-value
Adherence Intentions				
Cultural Sensitivity	0.29	<0.001	0.56	<0.001
Rational-Emotional	0.42	<0.001	0.12	0.072
Pure Emotional	0.18	0.008	0.38	<0.001
Interaction Term	0.16	0.015	0.33	<0.001
R^2	0.43		0.58	
Adjusted R^2	0.41		0.57	
F-value	35.89	<0.001	58.76	<0.001
Adherence Behaviors				
Cultural Sensitivity	0.26	<0.001	0.52	<0.001
Rational-Emotional	0.39	<0.001	0.09	0.182
Pure Emotional	0.15	0.022	0.41	<0.001
Interaction Term	0.19	0.008	0.37	<0.001
R^2	0.38		0.53	
Adjusted R^2	0.37		0.52	
F-value	29.24	<0.001	47.72	<0.001

A similar pattern was observed for actual adherence behaviors. In urban areas, rational-emotional balanced appeals (β=0.39, p<0.001) were the strongest predictor, while in rural areas, cultural sensitivity (β=0.52, p<0.001) and pure emotional appeals (β=0.41, p<0.001) were the dominant predictors.

Moderation Analysis

Hypothesis H3 proposed that the urban-rural distinction would moderate the relationship between cultural-emotional elements and medication adherence. Moderation analysis results supported this hypothesis (Table 5).

The interaction effect between cultural sensitivity and location on medication adherence was significant (β=0.31, p<0.001), as was the interaction between emotional appeal type and location (β=0.29, p<0.001).

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Table 5: Moderation Analysis Results

Path	Urban Sample		Rural Sample	
	Effect	**95% CI**	**Effect**	**95% CI**
Cultural Sensitivity → Adherence	0.26	.18-.34	0.52	.44-.60
Rational-Emotional → Adherence	0.39	.31-.47	0.09	.01-.17
Pure Emotional → Adherence	0.15	.07-.23	0.41	.33-.49
CS × Emotional Appeal → Adherence	0.19	.11-.27	0.37	.29-.45

Structural equation modeling (SEM) provided further support for the differential impact of cultural sensitivity and emotional appeal across urban and rural contexts. The model fit indices indicated good fit ($\chi^2/df = 2.34$, CFI = 0.94, TLI = 0.93, RMSEA = 0.059, SRMR = 0.047).

Path coefficients revealed that the effect of cultural sensitivity on medication adherence was significantly stronger in rural areas ($\beta=0.52$, $p<0.001$) than in urban areas ($\beta=0.26$, $p<0.001$), with a significant difference in coefficients ($z=4.73$, $p<0.001$).

CONCLUSION

The traditional and cultural aspects in health messages have stronger impact on rural diabetes patients than those in urban areas (H1). Urban and rural patients respond differently to the emotional aspect of the healthcare message in PSAs. Urban audiences choose health messages where emotions are mixed with facts and logic (H2a). Thus, indicate that urban audiences want the balance of both facts and emotions in a health message.

In contrast rural audiences prefer only emotional tone in health messages. Messages portrayed in form of emotion driven stories rather than facts. It highlights how different audience groups perceive and reacts to emotions in different ways.

This study also revealed that audiences' geographical location makes a major difference in how they perceive health messages mixed with cultural and emotional aspects (H3). The mix of cultural aspect with well-chosen emotion was effective and influential in improving the medicine taking habit of the rural patients.

The result revealed that health expert should tailor health messages on PSAs separately for urban and rural patient instead of using one type of health messages for all. The finding helps in enhancing the health care research knowledge and practical health communication strategies.

The finding also enhances the existing knowledge for theories bhai unbelieving how these ideas regarding cultural and emotional aspects apply differently in urban and rural areas and adds to the "cultural dimension theory" and "emotional response theory".

The study suggests advises for crafting impactful health messages separately for urban and rural areas to improve the medicine taking habits of the diabetic patients**.**

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Recommendations

Based on the study findings, we offer the following recommendations for healthcare communicators, policymakers, and researchers:

1. Healthcare organisations must tailor separate messages for urban and rural audiences to make the PSAs relatable and effective. Urban audience prefer a balance of both emotions and facts in their health-related messages in PSAs whereas rural people are connected more with the culture and tradition. Therefore, they prefer health messages that highlight cultural aspects through stories.
2. Health messages made for rural people must include traditions, believes and native language to make the message more relatable and impactful. This actually help the rural diabetic patients to follow their medication regularly.
3. Health messages for urban patient should combine fact and data about diabetes along with emotions to make the PSA impactful for urban people. In contrast rural patients should blend tradition and cultural aspect with emotional stories to make the PSAs relatable and effective for audiences.
4. The PSAs should be tested with different small groups in both rural and urban areas to investigate and understand audiences emotional and cultural aspects.
5. Healthcare workers need to be trained to deliver a message to the patients in a very culturally appropriate ways to support the health messages. It will ensure that diabetic patients hear the same health message both in personal visit and in public service announcements PSAs.
6. Regular research studies should be done to remain updated on the change in habits and believes of rural and urban people over the period. This will help to get PSAs better impactful and relevant.
7. Look for alternative ways to make digital health messages effective in villages without losing cultural and emotional value. This will help balance modern communication with traditional culture.
8. Involve local leaders to deliver the PSAs in rural areas to make the message trustworthy and effective.
9. The health messages must be shared through various media platforms like TV radio social media and local event with adjustments made for separate audiences. This will help the message to penetrate and reach more audience.
10. Measure how well the health messages perform in urban and rural areas separately. Choose variety of ways to investigate the success of the PSAs based on the location and tradition.

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