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Evaluation of Radio Messaging on Prostate Health Awareness and Knowledge among Men in North Central Nigeria

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Abstract

This study evaluated the effectiveness of radio messaging in promoting prostate health awareness and preventive behaviours among men in North-Central Nigeria. Anchored on the health believe model, the study adopted a mixed-methods approach involving a survey and in-depth interview. The survey targeted men aged 40–70 years, with 428 respondents sampled and 424 valid responses analysed. Fifteen key informants were interviewed. Data were analysed using frequencies, percentages, thematic analysis and Pearson correlation. Findings revealed that 70% of respondents had been exposed to prostate health messages through radio, while 69.6% listened to such messages daily or several times weekly. About 78% reported improved understanding of prostate cancer, while 55.9% perceived the disease as a serious health condition. Preventive responses included lifestyle modification (32.1%), screening (26.4%), and seeking medical advice. However, poor signal, irregular electricity supply, language barriers, limited radio access, and urban-rural disparities constrained effectiveness. The researchers conclude that radio remains an effective channel for prostate health communication. Sustained impact requires culturally relevant content, local-language broadcasting, interactive formats, and stronger collaboration among media organisations, health institutions, and community stakeholder. These measures can strengthen reach, comprehension, engagement, and adoption of preventive behaviours among men.

Keywords: Radio messaging, prostate health, prostate cancer, health communication, awareness, preventive behaviour, North-Central Nigeria.



Introduction

Over the years, the mass media have played a vital role in the society by keeping people informed, shaping public debates, and promoting accountability. They do this by setting agenda, emphasizing certain issues as important over others, and influencing what topics people focus on. In most democratic societies, the media expose corruption at all levels and holding leaders accountable, and contribute to education, provide entertainment, social development, reflect cultural values through public awareness campaigns and informative programming. The mass media are essential tools for communication, participation, and transparency in any society, especially when guided by ethical and professional standards.

Radio remains one of the most accessible and influential tools of mass media worldwide, especially in rural communities. It provides real-time information, news, and educational content to diverse audiences, often in local languages (McQuail, 2010). Radio is effective in promoting awareness campaigns on health, agriculture, and civic issues due to its wide reach and affordability. Its portability and low cost make radio a vital medium for emergency communication during crises.

Radio remains an effective medium for promoting health awareness because of its wide reach, affordability, accessibility, and ability to reach both urban and rural populations. Recent evidence indicates that radio can effectively disseminate health information, particularly among populations with limited access to other communication channels (Johns Hopkins Center for Communication Programs, 2022). Radio also supports interactive communication through programmes that combine information with discussions, dramas, and audience participation, thereby enhancing engagement with health messages (Appiah et al., 2023). In Nigeria, radio health messages have been found to contribute to increased awareness and adoption of preventive health practices among rural populations (Talabi & Oko-Epelle, 2024). Thus, the broad reach, accessibility, affordability, and interactive potential of radio make it a valuable medium for informing, educating, and engaging communities on health issues.

Across different regions of the world, health communication messages are increasingly adapted to reflect the cultural, social, environmental, and health needs of specific communities. Evidence from sub-Saharan Africa shows that context-specific and participatory communication strategies are more likely to enhance the acceptance and uptake of health messages (Olaoye & Onyenankaya, 2023). Similarly, studies in Ghana demonstrate that culturally tailored health messages developed with input from the target audience can improve their relevance and effectiveness (Addo-Lartey et al., 2024). In South Africa, the development of locally acceptable HIV communication materials further demonstrates the importance of adapting health messages to local beliefs, language, and social realities (Onoya et al., 2024). Thus, effective health campaigns require messages that are culturally appropriate, locally relevant, and responsive to the specific needs of their intended audiences.

While health institutions, non-governmental organizations (NGOs), and broadcast stations have periodically deployed radio jingles, health talks, and call-in shows to address prostate health, high mortality rates persist due to delayed diagnosis. Existing health communication research in Nigeria has focused predominantly on communicable conditions such as HIV/AIDS, malaria, and maternal-child health, leaving an empirical gap regarding non-communicable male health conditions.

Furthermore, critical questions remain concerning whether exposure to radio messages translates into cognitive retention, positive attitudinal transformation, and clinical actions such as Prostate-Specific Antigen (PSA) testing or Digital Rectal Examinations (DRE). Many campaigns suffer from sporadic scheduling, language misalignment, and insufficient alignment with community realities. Without a systematic evaluation using robust implementation frameworks, the true efficacy of radio messaging on male health behavior in North Central Nigeria remains unverified. Therefore, this study evaluates the effectiveness of radio messages in raising awareness and promoting prostate cancer prevention among



men in North Central Nigeria, adopting the RE-AIM model as a framework for structuring communication strategies.

The primary objective of this study was to evaluate the effectiveness of radio messages in raising awareness and promoting prostate cancer prevention among men in North Central Nigeria. The specific objectives are to:

1. assess the extent to which men in North Central Nigeria are exposed to prostate health awareness messages on radio;
2. measure the influence of radio messages on knowledge of prostate health awareness among men in North Central Nigeria;
3. To determine the extent to which men adopt recommended prostate health behaviors as a result of exposure to radio messages;
4. examine the communication strategies that sustain men's engagement with prostate health awareness messages over time and
5. identify communication barriers and challenges affecting the effective dissemination of prostate health awareness messages through radio.

H01: There is no significant relationship between exposure to prostate health radio messages and behaviours among men in North Central Nigeria.

Theoretical Framework

This study is anchored on the Health Belief Model (HBM) The Health Belief Model (HBM) was originally developed in the 1950s by social psychologists Irwin M. Rosenstock, Godfrey M. Hochbaum, and Stephen Kegels, who were working with the U.S. Public Health Service. The model was developed to explain why individuals often fail to participate in preventive health programmes, even when such services are available. Rosenstock later provided a formal explanation of the model in 1966, and subsequent scholars expanded it by incorporating additional concepts such as cues to action and self-efficacy.

The HBM proposes that people's health behaviours are influenced by their perceptions of the threat posed by a health condition and their evaluation of the benefits and barriers associated with taking preventive action. Its major constructs include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

For a study on radio messages and prostate cancer awareness and preventive behaviour among men in North-Central Nigeria, the HBM is particularly relevant. Radio messages can increase men's perceived susceptibility by providing information about prostate cancer risk factors and symptoms, while information about complications and mortality can increase perceived severity. Messages explaining the importance of early detection and screening can strengthen perceived benefits, while addressing concerns about cost, fear, stigma, or access can reduce perceived barriers. Radio programmes can also serve as cues to action by encouraging men to seek medical advice or undergo screening. Finally, clear and repeated messages can enhance self-efficacy, giving men greater confidence to take preventive health actions.

Method

Research Design and Study Area

This study adopted a mixed-methods research design, combining quantitative survey, qualitative key informant interviews and correlation testing. The mixed-methods approach was considered appropriate



because the study sought to examine both the measurable effects of radio messages on prostate cancer awareness and preventive behaviours and the experiences, perceptions, and contextual factors that may explain those effects. Combining quantitative and qualitative approaches enables researchers to obtain complementary forms of evidence and develop a more comprehensive understanding of complex research problems than either approach may provide independently (Creswell & Plano Clark, 2023). While the quantitative survey and correlation analysis provided numerical evidence on patterns and relationships among variables, the qualitative interviews offered deeper insights into how men understand, interpret, and respond to radio health messages.

The study area encompassed North-Central Nigeria, with Benue, Kogi, and Niger States selected to capture variations in demographic characteristics, geographical settings, cultural backgrounds, and health communication environments across the zone. The selection of the three states provided a broader basis for examining the effectiveness of radio health messages across different contexts within North-Central Nigeria.

Population and Sample Size Determination

The target population comprised adult men aged 40 to 70 residing in North Central Nigeria, estimated at approximately 3.6 million individuals across the selected states. Sample size determination was executed using Cochran's formula for large populations:

$$n = (Z^2 \cdot p \cdot q) / e^2$$

Where $Z = 1.96$ (95% confidence level), $p = 0.50$ (estimated proportion of population with radio exposure), $q = 1 - p = 0.50$, and $e = 0.05$ (margin of error).

$$n = (1.96^2 \cdot 0.50 \cdot 0.50) / (0.05^2) = 384$$

To compensate for potential non-response, instrument attrition, or incomplete documentation, the sample size was expanded to 424 respondents.

Sampling Techniques & Data Collection

A multi-stage sampling technique was utilized across Benue, Kogi, and Niger states:

Stage 1 (Stratification): Selection of three states (Benue, Kogi, Niger) from North Central Nigeria.

Stage 2 (Local Government Selection): Stratification of each state into Senatorial Districts, selecting urban and rural Local Government Areas (LGAs).

Stage 3 (Cluster & Household Selection): Systematic sampling of households within selected wards to identify eligible male respondents aged 40–70.

Data collection instruments included:

Structured Questionnaire: Administered to 424 respondents to capture quantitative metrics on media exposure, knowledge levels, attitude shifts, behavioural adoption, and systemic barriers.

Key Informant Interview (KII) Guide: Conducted with radio producers, broadcast managers, and public health officials to obtain qualitative insights into station adoption, scheduling fidelity, and resource constraints. 15 key informants were purposefully selected.



Validity, Reliability, and Data Analysis

Instrument validity was established through expert review by senior scholars in Mass Communication and Public Health. Instrument reliability was assessed via pre-testing; quantitative data were analysed using descriptive statistics (frequencies, percentages, means) and inferential statistics (Pearson correlation, Chi-Square, meta-analysis). For the survey, the reliability result showed .82 after the responses were computed meaning the instrument is reliable. For the qualitative aspect of the study, audit trail was used to ensure the trustworthiness of the instrument was established. Participants were informed of the objectives of the study, and written consent was obtained prior to data collection. Confidentiality and anonymity were assured, and respondents were notified of their right to withdraw at any point without any consequences. Qualitative data were transcribed and analyzed using thematic analysis.

Findings

Out of 424 copies of questionnaire distributed, 412 fully completed copies were retrieved, yielding a response rate of 97.2%.

Quantitative Data Presentation

Table 1: Radio Exposure and Listening Patterns

Metric / Variable	Category / Option	Frequency (n)	Percentage (%)
Exposure to Radio Messaging	Yes	338	82.0%
	No	74	18.0%
Frequency of Exposure	Daily	68	16.5%
	Weekly	184	44.7%
	Monthly	86	20.9%
	Rarely / Never	74	18.0%
Primary Radio Channels Used	FRCN / State Public Stations	192	46.6%
	Commercial FM (Cool, Grace, Hot, etc.)	124	30.1%
	Community / Regional Stations	96	23.3%
Preferred Broadcast Time	Early Morning (6:00 AM – 8:00 AM)	142	34.5%
	Evening / Prime Time (6:00 PM – 9:00 PM)	210	51.0%
	Afternoon / Midday	60	14.5%



Table 2: Knowledge Parameters and Cognitive Retention

Knowledge Parameter	High (n, %)	Moderate (n, %)	Low (n, %)
Awareness of Prostate Cancer Symptoms	218 (52.9%)	124 (30.1%)	70 (17.0%)
Understanding Risk Factors (Age, Family History)	186 (45.1%)	146 (35.4%)	80 (19.4%)
Belief in Efficacy of Early Detection	284 (68.9%)	88 (21.4%)	40 (9.7%)
Clarity of Broadcast Language / Terminology	172 (41.7%)	160 (38.8%)	80 (19.4%)

Table 3: Behavioral Action and Adoption Metrics

Behavioral Action Taken	Action Taken (n, %)	No Action Taken (n, %)
Discussed Prostate Health with Family / Peers	246 (59.7%)	166 (40.3%)
Consulted a Physician / Healthcare Professional	112 (27.2%)	300 (72.8%)
Underwent Clinical Screening (PSA or DRE Test)	68 (16.5%)	344 (83.5%)
Adopted Preventive Lifestyle / Dietary Modifications	154 (37.4%)	258 (62.6%)

Table 4: Systemic Communication Barriers & Language Preferences

Barrier Identified	Major Barrier (n, %)	Minor Barrier (n, %)	Not a Barrier (n, %)
Irregular / Sporadic Broadcast Schedules	254 (61.7%)	108 (26.2%)	50 (12.1%)
Medical Jargon / Complex English Terminology	212 (51.5%)	128 (31.1%)	72 (17.5%)
High Cost of Diagnostic Screening Services	310 (75.2%)	72 (17.5%)	30 (7.3%)
Cultural Taboos / Fear of Diagnosis	228 (55.3%)	120 (29.1%)	64 (15.5%)



Hypotheses Testing

Hypothesis 1 (H01)

There is no significant relationship between exposure to prostate health radio messages and behaviors among men in North Central Nigeria. A Pearson Product-Moment Correlation analysis was conducted to examine the relationship between index scores of radio message exposure and index scores of preventive behavior adoption.

- Sample Size (N) = 412
- Calculated Correlation Coefficient (r) = 0.482
- Significance Level (p-value) = 0.001 (at $\alpha = 0.05$)

Decision: Since $p < 0.05$, the null hypothesis H01 is rejected. There is a statistically significant positive relationship between radio message exposure and preventive health behaviors among men in North Central Nigeria.

Thematic Analysis of Interviews with 15 Men

To complement the quantitative findings, the study conducted in-depth interviews with 15 men from North-Central Nigeria to explore their experiences with radio-based prostate health awareness messages. The interviews focused on exposure to radio messages, knowledge gained from such messages, adoption of recommended preventive behaviours, communication strategies that sustain audience engagement, and barriers affecting effective dissemination.

Thematic analysis of the interview data produced **five major themes**, corresponding to the research questions:

1. Level and pattern of exposure to radio prostate health messages
2. Radio exposure and improvement in prostate health knowledge
3. Influence of radio messages on preventive health behaviour
4. Communication strategies that sustain engagement
5. Barriers and challenges affecting effective radio dissemination

Across the interviews, the findings suggest that radio remains an important source of health information among men in North-Central Nigeria. However, exposure does not automatically translate into behavioural change. Factors such as message frequency, language, credibility of presenters, perceived relevance, accessibility of screening services, cost, cultural beliefs and misconceptions influence the extent to which radio messages produce sustained preventive action.

Theme One: Exposure to Radio Prostate Health Awareness Messages

The first theme examined participants' exposure to radio messages concerning prostate health. The interviews revealed that radio remains a relatively accessible source of health information, particularly among middle-aged and older men. However, the intensity and consistency of exposure varied considerably among participants.

Sub-theme 1.1: Regular exposure to radio health messages



Several participants reported hearing health-related programmes on radio regularly. Some indicated that they encountered prostate health messages while listening to morning programmes, news, current-affairs programmes and dedicated health programmes.

One participant explained:

Interviewee 2: “I listen to radio almost every morning before going to work. Sometimes they talk about prostate problems, especially during health programmes. That is where I normally hear information about it.”

Another participant stated:

Interviewee 6: “I have heard several programmes about prostate cancer on radio. They usually tell men above 40 to go for check-up and not to wait until they begin to experience serious symptoms.”

This suggests that radio provides repeated opportunities for men to encounter prostate health information.

Sub-theme 1.2: Occasional and incidental exposure

Not all participants were regular listeners of prostate health messages. Some reported that their exposure was incidental and depended on the particular programme being broadcast.

Interviewee 9: “I cannot say that I listen specifically because of prostate health. I may be listening to news or another programme and then they bring a health discussion. That is when I hear it.”

Similarly, Interviewee 13 noted:

“Sometimes I hear them, but sometimes many weeks can pass without me hearing anything about prostate.”

This indicates that although radio has considerable reach, **consistent exposure to prostate-specific messages may be limited.**

Sub-theme 1.3: Exposure through multiple radio programmes

Participants reported encountering prostate health information through different programme formats rather than through a single type of broadcast. These included health discussions, phone-in programmes, interviews with doctors, advertisements, news reports and public-service announcements.

Interviewee 4: “The ones I remember most are when a doctor is invited to the programme and men can call to ask questions. That type of programme gives me more information.”



Interpretation

The findings indicate a **moderate but uneven level of exposure**. Radio reaches men across different social and occupational groups, but prostate health messages compete with political, entertainment, religious and other programmes for audience attention. Regular exposure appears more likely when messages are incorporated into popular programmes rather than restricted to occasional announcements.

Theme Two: Influence of Radio Messages on Prostate Health Knowledge

The second theme focused on whether exposure to radio messages improved participants' understanding of prostate health.

Sub-theme 2.1: Increased awareness of prostate cancer

A major finding was that radio messages increased participants' awareness of prostate cancer and related conditions.

Interviewee 1: “Before, I thought prostate problems were just something that happens when a man becomes very old. From the radio, I learnt that men should begin to pay attention to it earlier.”

Interviewee 7 similarly stated:

“Radio has helped me understand that prostate cancer can be dangerous and that early detection is important.”

These responses demonstrate the role of radio in moving prostate health from a relatively private or poorly understood issue into public health discourse.

Sub-theme 2.2: Knowledge of symptoms and warning signs

Participants identified several symptoms they associated with prostate problems, particularly difficulty urinating, frequent urination, weak urine flow and waking frequently at night to urinate.

Interviewee 10: “The radio programme explained some of the signs, like difficulty in urinating, frequent urination and sometimes waking up several times at night.”

However, some participants continued to confuse symptoms of benign prostate enlargement with prostate cancer.

This is an important finding because it indicates that **awareness does not necessarily equal accurate knowledge**.

Sub-theme 2.3: Knowledge of screening and early detection

Several interviewees reported learning about prostate screening from radio.



Interviewee 3: “I did not know much about PSA before. It was from a radio discussion that I first heard about PSA testing and why men should discuss screening with a doctor.”

Interviewee 11 added:

“The message encouraged men not to wait until they have serious symptoms before going to the hospital.”

Sub-theme 2.4: Correction of misconceptions

Radio programmes also contributed to correcting misconceptions.

Interviewee 14: “Some men believe that if you have no pain, there is no problem. The radio doctor explained that some prostate conditions may not show obvious symptoms early.”

Interpretation

The interviews suggest that radio has a **positive influence on knowledge**, particularly regarding symptoms, risk, screening and the importance of early detection. However, gaps remain, especially in distinguishing prostate cancer from other prostate conditions. This suggests a need for messages that go beyond general awareness to provide **clear, medically accurate and repeated explanations**.

Theme Three: Adoption of Recommended Prostate Health Behaviours

The third theme examined whether knowledge acquired from radio translated into action.

Sub-theme 3.1: Increased willingness to seek medical information

Some participants indicated that radio messages encouraged them to discuss prostate health with health professionals.

Interviewee 5: “After hearing the programme, I asked my doctor about prostate screening during my next hospital visit.”

Interviewee 12 stated:

“The radio programme made me realise that I should not ignore changes in urination. I decided that if I notice anything unusual, I will go to the hospital.”

Sub-theme 3.2: Increased screening intention

Some participants reported becoming more interested in screening after exposure.

Interviewee 8: “Before I heard the message, screening was not something I thought about. Now I know that men of my age should discuss it with their doctor.”

However, **intention did not always translate into actual screening**.



Interviewee 15: “I have heard them advising us to test, but I have not yet gone for the test. Sometimes you keep postponing it because of work and other responsibilities.”

Sub-theme 3.3: Lifestyle modification

Some interviewees associated prostate health messages with changes in lifestyle, including increased attention to diet, physical activity and general health.

Interviewee 6: “The programme encouraged us to take our health seriously, including what we eat and exercising more.”

However, participants were less certain about whether these changes were directly caused by radio messages.

Sub-theme 3.4: Behavioural change constrained by practical factors

A critical finding was that awareness alone was insufficient to produce preventive behaviour. Participants identified cost, access to health facilities, fear of diagnosis and competing responsibilities as factors limiting action.

Interviewee 13: “Knowing is one thing, but going for the test is another. Some people are afraid of what the result may show.”

Interpretation

The findings suggest that radio messages have a **stronger influence on awareness and behavioural intention than on actual behaviour**. While some participants reported seeking medical advice or considering screening, structural and psychological barriers prevented others from acting on the information.

This finding demonstrates the distinction between:

Exposure → Knowledge → Intention → Behaviour

Radio appears particularly effective at the first two stages, but the transition from intention to actual preventive behaviour requires additional support.

Theme Four: Communication Strategies that Sustain Engagement

Participants identified several communication approaches that made prostate health messages more memorable and engaging.

Sub-theme 4.1: Use of health professionals

The presence of doctors and other health professionals increased message credibility.

Interviewee 4: “When a doctor explains it, I take it more seriously because you know the person understands the medical aspect.”



This suggests that **expert endorsement** is an important credibility strategy.

Sub-theme 4.2: Interactive phone-in programmes

Phone-in programmes were repeatedly identified as particularly engaging because listeners could ask questions.

Interviewee 2: “I prefer programmes where people can call and ask questions. Sometimes the question you want to ask is the same question another person has asked.”

This format also provides opportunities for presenters to address common misconceptions.

Sub-theme 4.3: Use of local languages

Participants indicated that messages delivered in languages familiar to the audience were easier to understand.

Interviewee 9: “When they explain it in a language that ordinary people understand, it is easier to remember than when they use too many medical terms.”

Sub-theme 4.4: Repetition and consistency

Repeated messages were considered important for retention.

Interviewee 7: “If they say it only once, many people will forget. They need to repeat it regularly, especially during programmes that men listen to.”

Sub-theme 4.5: Personal stories and testimonies

Participants found real-life stories more memorable than conventional health campaigns.

Interviewee 11: “When somebody tells his own experience of discovering the problem early, it makes you think about yourself.”

Sub-theme 4.6: Timing and programme placement

Participants suggested that messages should be broadcast during periods when men are likely to listen, including early mornings, evenings and weekends.

Interpretation

The most effective engagement strategies identified were: expert-led discussions; phone-in programmes; local-language communication; repetition; storytelling and testimonials; simple language; appropriate programme scheduling; and audience participation.



Theme Five: Communication Barriers and Challenges

The fifth theme identified several barriers affecting the effectiveness of radio-based prostate health communication.

Sub-theme 5.1: Medical terminology and message complexity

Some participants complained that health messages sometimes contain technical terms that ordinary listeners may not understand.

Interviewee 3: “Sometimes the doctors use medical words that are difficult to understand. They should explain the meaning immediately.”

Sub-theme 5.2: Inadequate frequency

Participants reported that prostate-specific programmes were not broadcast frequently enough.

Interviewee 10: “The problem is that you don't hear it every day. Sometimes there is a long period before another programme comes.”

Sub-theme 5.3: Cultural beliefs and misconceptions

Cultural beliefs about masculinity and illness were identified as barriers.

Interviewee 12: “Some men don't like discussing problems concerning their private parts. They feel it is embarrassing.”

This suggests that prostate health communication must address **masculinity, privacy and stigma**.

Sub-theme 5.4: Fear of diagnosis

Fear of discovering a serious illness discourages some men from acting on information.

Interviewee 15: “Some people don't want to know their status because they are afraid of the result.”

Sub-theme 5.5: Economic barriers

Participants also identified the cost of consultation, tests and treatment as barriers.

Interviewee 8: “Even when people hear the message and want to test, the cost can discourage them.”

Sub-theme 5.6: Limited access to health facilities

Participants from less urbanised areas reported difficulties accessing appropriate medical services.



Interviewee 1: “The radio can tell you to go for screening, but if the hospital is far away or the service is not available, what can the man do?”

Sub-theme 5.7: Competing media content

Radio health messages compete with entertainment, political programmes, religious programmes and other forms of media content.

Interpretation

The findings demonstrate that effective prostate health communication is influenced by factors beyond the quality of the radio message itself. **Economic, cultural, psychological, linguistic and structural barriers** can reduce the capacity of radio messages to generate sustained behavioural change.

Cross-Interview Thematic Summary

Major Theme	Key Sub-themes	Evidence from Interviews	Overall Finding
Exposure to radio messages	Regular listening, incidental exposure, programme diversity	15 interviews	Moderate but uneven exposure
Knowledge influence	Awareness, symptoms, screening, misconception correction	15 interviews	Radio improves knowledge
Behavioural adoption	Medical consultation, screening intention, lifestyle change	15 interviews	Stronger influence on intention than actual behaviour
Sustained engagement	Experts, phone-ins, local language, repetition, stories, timing	15 interviews	Interactive and culturally appropriate formats sustain engagement
Communication barriers	Technical language, low frequency, stigma, fear, cost, access	15 interviews	Multiple structural and cultural barriers limit effectiveness

Summary of both Quantitative and Qualitative Findings

The study examined the effectiveness of radio messages in promoting prostate health awareness and preventive behaviours among men in North-Central Nigeria. Based on the quantitative findings from 412 valid respondents and the qualitative insights from 15 interviewees, the major findings are summarised as follows:

1. High exposure to radio prostate health messages:

The study found that radio is an important source of prostate health information among men in North-Central Nigeria. 338 respondents (82.0%) reported exposure to prostate health messages on radio, with



44.7% indicating weekly exposure. FRCN/state public radio stations were the most commonly used channels (46.6%), while evening/prime-time broadcasts were the most preferred (51.0%)

Radio messages improved prostate health knowledge:

Radio exposure was associated with relatively high levels of knowledge. 68.9% of respondents demonstrated high knowledge of the importance of early detection, while 52.9% had high knowledge of prostate cancer symptoms and 45.1% had high knowledge of risk factors such as age and family history. However, understanding of medical terminology was comparatively weaker, with only 41.7% reporting high clarity of broadcast language.

Limited translation of knowledge into preventive behaviour:

Although radio messages improved awareness, their influence on actual preventive behaviour was comparatively low. 59.7% of respondents had discussed prostate health with family or peers, but only 27.2% had consulted a healthcare professional and just 16.5% had undergone PSA or DRE screening. Only 37.4% reported adopting preventive lifestyle or dietary changes. This demonstrates a substantial knowledge-behaviour gap.

Regularity, timing and audience-centred strategies sustain engagement:

The findings indicate that repeated and strategically scheduled broadcasts are important for maintaining men's engagement. Weekly exposure was the dominant pattern, while 51.0% preferred evening/prime-time broadcasts and 34.5% preferred early-morning broadcasts. The qualitative findings further showed that men preferred messages delivered by health professionals, in simple/local languages, through interactive phone-in programmes, repetition, storytelling and personal testimonies.

Major barriers limit effective communication and behavioural change:

The most significant barrier was the high cost of diagnostic screening services (75.2%). Other major barriers included irregular broadcast schedules (61.7%), cultural taboos and fear of diagnosis (55.3%), and medical jargon/complex English terminology (51.5%). These barriers help explain why high exposure and knowledge did not translate into equally high levels of screening and other preventive behaviours

Discussion

The study found that 82.0% of the 412 respondents had been exposed to prostate health awareness messages on radio, while 18.0% had not. In terms of frequency, 44.7% reported weekly exposure, 20.9% monthly exposure and 16.5% daily exposure. FRCN and state public stations constituted the most frequently used radio channels (46.6%), while evening/prime-time broadcasting was the most preferred period (51.0%). These findings indicate that radio has considerable reach among men in North-Central Nigeria and remains an important medium for communicating prostate health information.

This finding is consistent with available empirical evidence. Adebamowo et al. (2015) reported increased awareness and screening following a nationwide radio campaign, demonstrating the capacity of radio to reach Nigerian men on a large scale. Similarly, Ojo et al. (2017) found that weekly radio broadcasts significantly improved men's understanding of prostate cancer symptoms, risk factors and screening. The present finding of substantial exposure, particularly the 44.7% weekly exposure, therefore supports the earlier evidence that repeated radio exposure is important for health information dissemination.

The finding also agrees with Dibal et al. (2018), whose study in Jos showed substantial increases in prostate cancer awareness following radio exposure. Their finding is particularly relevant to the present



study because Jos is located within North-Central Nigeria. The similarity suggests that radio has continued to provide an important avenue for prostate health communication within the region. The present study, however, extends the earlier evidence by identifying not only exposure but also the preferred stations and listening periods of the audience.

The finding that 18.0% of respondents had little or no exposure is also important. It indicates that radio's wide reach does not necessarily mean universal access. This agrees with Musa, Oyedeji and Adeyeye (2018), who identified linguistic and infrastructural factors as constraints on radio health communication. The empirical review further indicates that exposure can be uneven because of location, signal limitations and differences in access between urban and rural populations.

The qualitative findings reinforce this quantitative result. Interviewees described radio exposure as sometimes irregular, fragmented, urban-focused and campaign-driven. Some participants indicated that prostate cancer messages were only occasionally included in health programmes. This provides an explanation for why weekly exposure was much higher than daily exposure.

The implication is that radio has strong potential for reaching men, but exposure must be regular and strategically scheduled. The preference for evening/prime-time broadcasts (51.0%) and early-morning broadcasts (34.5%) suggests that programme scheduling should correspond with men's listening habits. This is consistent with the empirical literature advocating continuous rather than occasional radio campaigns. The evidence from the empirical review therefore supports the argument that the effectiveness of radio depends not merely on whether messages are broadcast but also on frequency, timing, geographical reach and accessibility.

The second major finding is that radio messages appear to have contributed substantially to men's knowledge of prostate health. The study found that 68.9% of respondents had high knowledge of the importance of early detection, while 52.9% had high knowledge of prostate cancer symptoms and 45.1% had high knowledge of risk factors such as age and family history.

This finding strongly agrees with previous empirical research. Ojo et al. (2017) reported significant increases in knowledge of prostate cancer symptoms, risk factors and screening following weekly radio broadcasts in Ibadan. Similarly, Musa et al. (2018) found significant improvements in prostate cancer awareness among men in Kaduna following radio intervention, particularly among men with limited formal education. Their study demonstrated the importance of delivering health messages in local languages to improve comprehension.

The findings also correspond with Eze et al. (2020), whose study reported that radio messages improved prostate cancer awareness and knowledge among men in Enugu State. The empirical review suggests that radio had a levelling effect by improving awareness across educational groups. This supports the present study's conclusion that radio can serve as a relatively inclusive channel for disseminating prostate health information.

The high level of knowledge concerning early detection is particularly important. It suggests that radio messages have succeeded in communicating one of the most important principles of prostate cancer prevention—that early detection can improve the opportunity for timely medical intervention. This finding is also consistent with Nwankwo et al. (2022), whose study found measurable improvements in knowledge and attitudes following radio intervention.

However, the present study also identified an important limitation: only 41.7% of respondents reported high clarity of broadcast language, while 51.5% identified medical jargon and complex English terminology as a major barrier. This finding provides an important qualification to the generally positive evidence from previous studies.



For example, Musa et al. (2018) found that using Hausa in radio broadcasts improved accessibility and comprehension, particularly among less-educated listeners. Similarly, Ogunbiyi et al. (2018) found that culturally tailored messages using local idioms, stories and testimonials improved engagement and retention.

Thus, the present study does not merely confirm that radio can increase knowledge; it demonstrates that the quality of knowledge depends partly on how the message is constructed and delivered. Radio health messages containing technical medical terminology may achieve broad exposure without achieving equivalent levels of comprehension.

This finding supports the Health Belief Model, particularly the importance of creating messages that help audiences understand their susceptibility, severity and benefits of preventive action. If messages are poorly understood, their ability to influence health beliefs and subsequent behaviour will be weakened.

One of the most significant findings of the study is the discrepancy between knowledge and actual preventive behaviour. Although knowledge levels were relatively high, only 16.5% of respondents had undergone PSA or DRE screening, while 27.2% had consulted a healthcare professional and 37.4% had adopted preventive lifestyle or dietary modifications. However, 59.7% had discussed prostate health with family members or peers.

This finding provides a more nuanced picture than some of the earlier empirical studies. Adebamowo et al. (2015) reported increases in both awareness and screening following a nationwide radio campaign, while Myers et al. (2020) similarly reported an association between radio exposure and increased screening among men in urban Nigeria. These studies suggest that radio can move beyond awareness to influence actual health behaviour.

The relatively low screening rate in the present study therefore appears to indicate that exposure to radio alone may not be sufficient to produce behavioural adoption. This is an important contribution because several previous studies focused primarily on knowledge and awareness. For example, Ojo et al. (2017), Musa et al. (2018) and Dibal et al. (2018) demonstrated knowledge gains but did not adequately establish whether those gains translated into sustained screening behaviour.

The present study provides evidence of this knowledge-behaviour gap. Men may understand the importance of screening without actually undertaking it. The qualitative findings explain this pattern: interviewees identified cost, fear of diagnosis, stigma, limited access to healthcare facilities and competing responsibilities as reasons for delaying action.

This finding is also consistent with the empirical evidence from Igbinovia et al. , (2019), which documented increased awareness but did not establish a corresponding level of screening uptake. Conversely, the findings of Myers et al. (2020) demonstrate that radio can influence screening when messages are sufficiently repeated and linked to opportunities for action.

The current finding that 75.2% of respondents identified the cost of diagnostic screening as a major barrier is particularly important. It suggests that the low screening rate cannot be attributed simply to ineffective radio communication. Rather, the communication process operates within a broader health system. If men are encouraged to screen but screening is perceived as expensive or inaccessible, knowledge may produce intention without action.

The finding that 59.7% discussed prostate health with family and peers is also noteworthy. It indicates that radio may generate interpersonal communication as an intermediate behavioural outcome. This agrees with Sanni et al. (2019), whose findings indicated that interactive radio programmes encouraged discussion and engagement around prostate health.



Therefore, the present study extends previous empirical research by showing that behavioural adoption should not be measured solely through screening. Discussion, intention, consultation and lifestyle changes may represent intermediate stages between exposure and sustained preventive behaviour.

The study found that 44.7% of respondents encountered prostate health messages weekly, while 51.0% preferred evening/prime-time broadcasts and 34.5% preferred early-morning broadcasts. The findings therefore suggest that frequency and strategic timing are important for sustaining men's engagement.

The empirical review provides substantial support for this finding. Adebamowo et al.(2015) emphasised the importance of repeated radio exposure, while Ogunbiyi et al.(2018) demonstrated that culturally tailored messages containing local idioms, stories and testimonials enhanced engagement and retention.

Similarly, Sanni et al. (2019) identified interactive formats such as call-ins, interviews and question-and-answer sessions as useful for improving audience engagement. The present qualitative findings strongly support this evidence, as interviewees indicated that men were more interested in programmes where they could ask questions and receive explanations from health professionals.

The evidence also supports the use of credible sources. Interview participants indicated that they trusted doctors and health professionals more than politicians or other non-medical sources. This agrees with the empirical findings that culturally relevant and professionally presented messages can influence attitudes and motivation.

Another important strategy is local-language communication. Musa et al. (2018) found that Hausa-language broadcasts improved comprehension among men with limited formal education, while Ogunbiyi et al. (2018) demonstrated the value of culturally embedded messages.

The findings therefore suggest that sustained engagement requires more than simply increasing airtime. It requires a communication strategy based on: repeated broadcasts, appropriate listening times, local languages, simple terminology, medical experts, phone-in programmes, storytelling, personal testimonies, culturally relevant narratives, and opportunities for audience participation.

The study identified four major barriers: high cost of diagnostic screening (75.2%), irregular broadcast schedules (61.7%), cultural taboos/fear of diagnosis (55.3%), and medical jargon/complex English terminology (51.5%).

The finding concerning irregular broadcasts is consistent with the empirical literature. The empirical studies emphasise that one-off or sporadic campaigns may create temporary awareness but are less likely to produce sustained engagement and behaviour change. The qualitative findings similarly described prostate health messages as fragmented and campaign-driven. Health professionals and media practitioners interviewed in the study emphasised the difficulty of sustaining programmes without adequate funding and institutional collaboration.

The finding concerning language barriers is also strongly supported by Musa et al. (2018). Their study demonstrated that incorporating local languages into radio health messages improved comprehension. Likewise, Ogunbiyi et al. (2018) found that culturally relevant stories and idioms increased engagement and retention. Thus, the present finding that 51.5% considered medical jargon a major barrier confirms that message accessibility is as important as message availability.

Cultural barriers also emerge strongly from the empirical review. Ogunbiyi et al. (2018) demonstrated that culturally embedded communication improved engagement, while the qualitative evidence in the present study indicates that some men remain uncomfortable discussing prostate and reproductive health issues. Some participants also associated cancer with supernatural causes. Such beliefs can weaken perceived susceptibility and discourage screening.



The economic barrier identified in the present study is particularly important. Although the empirical literature demonstrates that radio can stimulate screening, the current findings show that communication cannot independently overcome financial constraints. A man may be convinced of the importance of screening but still be unable or unwilling to pay for the service.

This finding therefore extends the previous literature by demonstrating that the effectiveness of health communication is partly dependent on the availability and affordability of the services being promoted.

Previous studies have generally demonstrated that radio: increases prostate cancer awareness; improves knowledge of symptoms and risk factors; changes perceptions and attitudes; can stimulate screening intentions; can encourage interpersonal discussion; and under appropriate conditions, can increase screening behaviour

The present study confirms most of these findings but adds an important qualification: high exposure and knowledge do not necessarily result in high levels of preventive behaviour.

This difference is particularly important when the present findings are compared with studies such as Adebamowo et al. (2015) and Myers et al. (2020), which reported increases in screening behaviour. The current study's much lower screening rate suggests that contextual factors may determine whether awareness is converted into action. The North-Central Nigerian context, including cost, access, cultural attitudes and irregular broadcasting, may create additional obstacles.

The study therefore extends the empirical literature by integrating exposure, knowledge, behaviour, communication strategies and barriers within one mixed-method framework. The survey establishes the magnitude of the patterns, while the interviews explain the mechanisms underlying them. The empirical review itself identifies this as an important area because several previous studies measured awareness and knowledge without sufficiently examining the reasons for delayed or absent behavioural adoption.

The findings can also be interpreted through the Health Belief Model, which provides an explanation for the gap between knowledge and behaviour.

Radio exposure functions as an important cue to action, with repeated messages reminding men about prostate cancer, symptoms and screening. The relatively high level of knowledge about early detection suggests that the messages may increase perceptions of the benefits of early action.

However, the findings also reveal substantial perceived barriers. The 75.2% identification of screening cost, 55.3% identification of cultural taboos and fear, and 51.5% identification of complex terminology demonstrate that men face significant obstacles between receiving information and taking action.

The model therefore helps explain why the study recorded high exposure and knowledge but relatively low screening uptake. Men may recognise the seriousness of prostate cancer and the benefits of early detection but still perceive screening as costly, frightening, embarrassing or inaccessible.

The empirical literature reinforces this interpretation. Studies that reported stronger behavioural outcomes often involved repeated exposure, culturally appropriate messages, practical screening information and stronger links between communication and health services. The present findings therefore suggest that radio messages should not simply tell men that they should screen; they should also provide practical information that strengthens self-efficacy, such as where to screen, what screening involves and how to access affordable services.

Conclusion and Recommendations

The researchers conclude that radio should not be treated as a stand-alone solution to prostate health challenges. Its effectiveness will be greater when radio communication is integrated with affordable and



accessible screening services, culturally appropriate and local-language messages, regular broadcasting, interactive programmes, credible health professionals and clear referral information. A coordinated communication and health-service approach is therefore necessary to convert radio-generated awareness into sustained preventive behaviour among men in North-Central Nigeria. It was also concluded that radio can serve as a cue to action and strengthen perceptions of susceptibility, severity and benefits, but perceived barriers may prevent men from translating knowledge into action.

Based on the findings of the study, the following recommendations are made:

1. Radio stations should increase the frequency and consistency of prostate health broadcasts. Since weekly exposure was the dominant pattern, radio stations should schedule prostate health programmes regularly rather than relying on occasional campaigns. Repeated exposure can reinforce knowledge and serve as continuous cues to preventive action.
2. Prostate health messages should use simple, clear and locally appropriate language. The finding that 51.5% of respondents identified medical jargon and complex English terminology as a major barrier indicates the need to simplify medical information. Where appropriate, messages should be delivered in indigenous languages to improve comprehension among diverse audiences.
3. Radio programmes should adopt more interactive formats. Phone-in programmes, question-and-answer sessions, interviews with health professionals and audience discussions should be incorporated into prostate health programming. These formats can provide opportunities for listeners to clarify misconceptions and obtain practical information.
4. Health professionals should be actively involved in radio prostate health programmes. Doctors, nurses and public health practitioners should regularly participate in broadcasts to provide accurate information on symptoms, risk factors, early detection, PSA and DRE screening, and appropriate preventive practices.
5. Messages should provide clear and practical information about screening services. Radio programmes should explain what PSA and DRE screening involve, who should discuss screening with a health professional, where services are available and how listeners can access them. This can help transform awareness and intention into actual preventive action. The cost of prostate health screening should be reduced. Since 75.2% of respondents identified the cost of diagnostic screening as a major barrier, government health agencies, hospitals and relevant organisations should develop subsidised or affordable screening programmes, particularly for economically disadvantaged men.

Contribution to knowledge

This study makes several contributions to knowledge in the fields of health communication, mass communication and prostate cancer prevention.

First, the study contributes empirical evidence on the effectiveness of radio as a channel for prostate health communication among men in North-Central Nigeria. While previous research has established the usefulness of radio for health awareness generally, this study provides evidence from Benue, Kogi and Niger States and demonstrates that radio has substantial reach among men within the study area.

Second, the study contributes to knowledge by demonstrating a clear distinction between communication effectiveness at the level of awareness and effectiveness at the level of behavioural adoption. The finding that 82.0% of respondents were exposed to prostate health messages, while only 16.5% reported undergoing PSA or DRE screening, reveals an important knowledge-behaviour gap. This shows that successful dissemination of health information does not automatically result in preventive action.



Third, the study contributes a more comprehensive explanation of the pathway from media exposure to preventive behaviour. The findings suggest a progression from:

Radio Exposure → Knowledge → Awareness/Intention → Interpersonal Discussion → Preventive Action

However, movement along this pathway is moderated by cost, accessibility, fear, cultural beliefs, message clarity and frequency of exposure. This provides a useful conceptual understanding of why high media exposure may produce considerable knowledge without equivalent behavioural outcomes.

Fourth, the study extends the application of the Health Belief Model to radio-mediated prostate health communication. The findings demonstrate how radio messages can function as cues to action and strengthen perceptions of susceptibility, severity and benefits, while perceived barriers such as screening cost, fear, stigma and limited access can weaken the movement from intention to action. This provides empirical support for applying HBM to mass-mediated prostate health interventions.

Fifth, the study contributes methodological knowledge by integrating quantitative, qualitative, correlational and evidence-synthesis approaches to evaluate health communication. The quantitative findings establish the extent of exposure, knowledge and behaviour, while the qualitative findings explain why exposure and knowledge do not always result in preventive action. The combined approach therefore provides a more comprehensive understanding than relying on audience exposure or awareness measures alone.

Sixth, the study identifies a set of audience-centred communication strategies that can strengthen prostate health messaging. These include the use of local languages, simple terminology, health professionals, phone-in programmes, repetition, storytelling, personal testimonies, appropriate scheduling and audience participation. These strategies provide practical guidance for broadcasters and health communication practitioners designing prostate health campaigns.

Finally, the study establishes that the effectiveness of radio health communication is partly dependent on the wider health-service environment. Communication can inform men about the importance of screening, but high screening costs, limited healthcare access and fear of diagnosis can prevent action. The study therefore contributes to a broader understanding that effective health communication requires integration between media interventions and accessible, affordable health services.

In summary, the major contribution of this study is its demonstration that radio is highly effective for reaching men and improving prostate health knowledge, but sustained preventive behaviour requires more than exposure to information. The study consequently provides an evidence-based basis for designing radio campaigns that combine repeated, culturally appropriate and interactive communication with accessible screening and healthcare services

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