Assessing the Efficacy of Ai-Generated Anti-Drug Abuse Messages on Social Media Platforms among Youths in Anambra State

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ABSTRACT

The study assessed the efficacy of AI-generated anti-drug abuse messages on social media platforms among youths in Anambra State. Specifically, it examined the level of youth engagement with AI-generated messages, assessed their effectiveness in changing attitudes toward drug abuse, and determined the role of AI in improving message personalization and persuasion. The study employed a quantitative survey method. Data were gathered from 386 respondents and analyzed using frequency tables, percentages, and chi-square goodness-of-fit tests. Findings revealed that a majority of the respondents engage with AI-generated messages at least occasionally, and this engagement pattern differed significantly from chance ($\chi 2 = 22.99$, $df = 3$, $p < .001$). AI-generated messages were perceived by a plurality of respondents to positively influence attitudes toward drug abuse, and personalized, persuasive AI-driven messaging was perceived as more effective than traditional anti-drug campaigns by a majority of respondents. In light of these findings, the study recommends that health agencies, educators, and communication professionals adopt AI tools to create targeted, engaging, and behaviour-changing anti-drug content for youth audiences across digital platforms.

Keywords: AI-generated messages, Drug Abuse, Youths, Social Media.

INTRODUCTION

The rapid expansion of artificial intelligence (AI) in digital communication has transformed the design and delivery of public health campaigns worldwide. One emerging application is the use of AI-generated messages to prevent drug abuse among young social media users. Substance abuse among youths is a growing global concern that affects individuals, families, and societies. The abuse of illicit substances such as cannabis, cocaine, heroin, tramadol, and codeine, as well as the misuse of prescription drugs, has become widespread among young people, particularly in developing countries like Nigeria, with a scoping review of epidemiological studies reporting drug abuse prevalence rates of 20–40% among students and 20.9% among youths generally (Jatau et al., 2021). In Anambra State, drug abuse among youths has escalated in recent years, contributing to school dropouts, mental health difficulties, and reduced productivity among young people, consistent with the broader national burden documented in the Nigerian drug abuse literature (Jatau et al., 2021; United Nations Office on Drugs and Crime [UNODC], 2018). Despite numerous government and non-governmental interventions aimed at curbing drug abuse, traditional anti-drug campaigns have often failed to achieve meaningful engagement with youths, necessitating the exploration of innovative approaches such as artificial intelligence (AI)-generated messaging on social media platforms.

Social media has emerged as a dominant communication channel among youths, significantly influencing their behaviours, attitudes, and decision-making processes (Ekong & Johnson, 2022). Platforms such as Facebook, Twitter, Instagram, TikTok, and WhatsApp have transformed how information is disseminated and consumed. Unlike conventional media, social media allows for real-time interactions, personalized messaging, and user-generated content, making it an effective tool for public health campaigns. The introduction of AI in digital communication has further changed social media messaging by enabling the automated generation of personalized and persuasive content tailored to specific audiences, as AI-powered systems analyse user behaviour, preferences, and online interactions to generate content relevant to specific audiences (Kaplan & Haenlein, 2020). AI-driven algorithms analyze user behaviour, preferences, and engagement patterns to create messages that resonate with individuals, thereby increasing the likelihood of influencing attitudes and behaviours toward drug abuse prevention.

In Nigeria, efforts to address drug abuse have traditionally relied on television and radio campaigns, school-based drug education programs, and community outreach initiatives. While these strategies have raised awareness, evidence from a recent assessment of a major agency's social media anti-drug campaign found that although youths perceived the messages as clear and relevant, actual engagement, adherence, and knowledge retention remained only moderate (Adeoye & Akoja, 2025), suggesting that message reception alone does not guarantee sustained engagement among digital-native youths. Additionally, traditional anti-drug messages tend to be generic, failing to address the unique experiences, motivations, and perceptions of young people regarding substance use. AI-generated messaging offers a possible solution by delivering personalized and contextually relevant content that appeals to the target audience.

Despite the growing adoption of AI in health communication, its application in drug abuse prevention remains underexplored. While a scoping review of AI applications in health communication suggests that AI-generated content can enhance engagement and behaviour change across a range of health interventions (Weingott & Parkinson, 2025), there is limited empirical research on its effectiveness in influencing youth perceptions of drug abuse in Nigeria specifically. Understanding how youths interact with AI-generated anti-drug messages on social media is therefore important for determining whether AI can serve as a viable tool for reducing substance abuse and promoting healthier choices.

This study seeks to assess the efficacy of AI-generated anti-drug abuse messages among youths in Anambra State. By examining engagement levels, message comprehension, and the potential impact on behavioural change, this research contributes to the existing literature on AI applications in public health communication. Furthermore, the study identifies challenges associated with AI-driven messaging, such as misinformation, algorithmic bias, and ethical concerns, to provide recommendations for enhancing the effectiveness of AI-powered anti-drug abuse campaigns.

As AI continues to shape digital communication, evaluating its role in addressing critical social issues like drug abuse is essential. By leveraging AI-generated messages on social media, public health organizations, policymakers, and educators can develop more effective strategies to curb drug abuse among youths. However, the success of such initiatives depends on the authenticity of AI-generated content, regulatory oversight, and the integration of AI-driven messaging with broader drug prevention programs. This study, therefore, aims to provide empirical evidence on the potential of AI in combating drug abuse among Nigerian youths while highlighting best practices for optimizing AI-powered interventions.

Statement of Problem

The abuse of drugs and addictive substances among youths, particularly in Nigeria, has become a growing public health and societal concern. This trend is linked to various negative outcomes, including mental health disorders, academic setbacks, risky behaviours, criminal involvement, and, in extreme cases, premature deaths. Many young people are increasingly engaging in substance use such as cannabis, tramadol, codeine, and other psychoactive drugs, often driven by peer pressure, stress, social influence, and inadequate awareness about the consequences. In Anambra State, the situation is further complicated by youths' increasing exposure to drug-related content on social media platforms. Platforms with high visual and interactive engagement, such as

Facebook, Instagram, and TikTok, can influence perceptions and normalize drug use through glamorized or misleading portrayals. At the same time, these platforms offer opportunities for counter-interventions and awareness creation, especially through emerging technologies like Artificial Intelligence (AI).

Artificial Intelligence is increasingly being adopted to generate tailored health communication messages, including memes, videos, and chatbots aimed at curbing drug abuse among young audiences. AI-generated messages offer the possibility of delivering engaging, relatable, and persuasive content at scale. However, the effectiveness of such AI-driven anti-drug campaigns among youths, particularly in Anambra State, remains underexplored. Despite ongoing efforts by governmental and non-governmental organizations to combat drug abuse, there is limited empirical data on how young people interact with, interpret, and are influenced by AI-generated anti-drug abuse messages disseminated via social media. Understanding the efficacy of these digital interventions is critical for designing communication strategies that resonate with youths and effectively promote behaviour change. This study, therefore, seeks to assess the efficacy of AI-generated anti-drug abuse messages on social media platforms among youths in Anambra State. It aims to investigate the extent to which youths are exposed to such messages, how they perceive and respond to them, and whether these messages influence their attitudes or behaviours toward drug use. The findings are expected to guide the development of more targeted, technology-driven intervention strategies to address youth drug abuse in the digital age.

Objectives of the Study

The main objective of this study is to assess the efficacy of AI-generated anti-drug abuse messages on social media platforms among youths in Anambra State. The following specific objectives guide the study:

1. Examine the level of engagement with AI-generated anti-drug abuse messages among youths in Anambra State.

2. Assess the effectiveness of AI-generated messages in changing attitudes toward drug abuse.

3. Determine the role of AI in improving message personalization and persuasion.

Research Questions

The following research questions guide the study:

1. To what extent do youths in Anambra State engage with AI-generated anti-drug abuse messages?

2. How effective are AI-generated messages in changing youth attitudes toward drug abuse?

3. What role does AI play in personalizing anti-drug abuse messages for better effectiveness?

CONCEPTUAL REVIEW

Drug Abuse Among Youths in Nigeria

Drug abuse among youths in Nigeria has attracted sustained scholarly attention, with conceptualizations converging on drug abuse as a deviation from medically or culturally sanctioned patterns of substance use. Drug abuse is explained as the excessive and persistent self-administration of a drug without regard to medically or culturally accepted patterns, interfering with an individual's health and social functioning (NDLEA, as cited in Fareo, 2012). Fareo (2012) further characterizes drug abuse as the arbitrary overdependence or misuse of a particular drug with or without prior medical diagnosis, extending to unlawful overdose. Eze and Omeje (1999) similarly root the phenomenon in the misapplication of substances outside their intended therapeutic purpose, framing abuse as fundamentally a departure from accepted use rather than substance use in itself. Beyond definition, scholars have sought to explain why youths engage in drug abuse. Fareo (2012) notes that drug abuse is a problem causing serious concern to individuals and governments worldwide, prevalent particularly among adolescents who are often unaware of the dangers inherent in addiction. Bandura's (1986) Social Cognitive

Theory offers a widely applied explanatory lens here, framing behaviour as arising from the reciprocal interaction of personal disposition, environment, and behaviour itself — suggesting that youth drug use is substantially shaped by observational learning, peer modeling, and environmental reinforcement rather than personality traits alone. This theoretical positioning helps account for the social transmission of drug-related behaviour among youth peer groups, a recurring theme across the Nigerian literature.

A scoping review of epidemiological studies found drug abuse prevalence rates of 20–40% among students and 20.9% among youths generally in Nigeria, with cannabis, cocaine, amphetamine, heroin, diazepam, codeine, cough syrup, and tramadol identified as commonly abused substances (Jatau et al., 2021). Substance use among students has similarly been found prevalent and linked to identifiable social and environmental factors in urban Nigerian settings (Oshodi, Aina, & Onajole, 2010), while undergraduate-focused research has documented comparable perceptions and patterns of drug abuse among Nigerian tertiary students (Oshikoya & Alli, 2006). Taken together, these empirical findings corroborate the conceptual definitions above, confirming that what is defined as abuse in theory manifests as a measurable and widespread pattern of behaviour in practice.

The consequences of this abuse, as documented across these studies, extend from declining academic performance and deteriorating physical and mental health to broader social dysfunction, reinforcing the urgency of interventions capable of reaching youths before or during the onset of use — a concern that anchors the present study's interest in AI-generated anti-drug abuse messaging as a preventive communication strategy.

The Role of Social Media in Drug Abuse and Prevention

Social media has become one of the most influential platforms in shaping youth behaviours and attitudes globally. In the context of drug abuse, its role is dual-faceted: while it contributes to the normalization and promotion of drug use among youths, it also presents significant opportunities for prevention and intervention campaigns. The influence of social media is particularly pronounced in Nigeria, where a high percentage of the youth population actively engages with platforms like Facebook, Instagram, Twitter (X), TikTok, and WhatsApp on a daily basis (Statista, 2023).

The proliferation of social media platforms among Nigerian youths has introduced a dual role in the discourse on drug abuse — functioning simultaneously as a channel of exposure and as a potential tool of prevention. On one hand, social media exposes young people to content that can normalize or glamorize substance use; platforms where youths are exposed to the lifestyles of celebrities and influencers provide a powerful observational framework, in which public figures serve as either positive or negative role models capable of shaping behaviour toward or away from drug-free lifestyles (Ekong & Johnson, 2022). Relatedly, celebrities who promote drug and alcohol use on social media, portraying such behaviour as fashionable, encourage young viewers to experiment with the same substances, positioning social media as a dual source of influence through both peer behaviour and advertising exposure (Eze, 2023). This observational dimension aligns closely with Bandura's (1986) Social Cognitive Theory, extending its logic from face-to-face peer modeling into the mediated, algorithm-driven environment of social platforms, where behavioural cues are now transmitted digitally rather than solely through direct social contact.

On the other hand, the same platforms have been mobilized as instruments of sensitization and behaviour change. This preventive potential has been tested empirically: a social media-based intervention among Nigerian youth produced a significant reduction in drug abuse propensity among participants in the treatment group compared to the control group, with the reduction sustained over a two-year follow-up (Ahmad et al., 2022). This finding is significant because it demonstrates, with longitudinal evidence, that social media is not merely a passive risk factor but can be deliberately structured into an effective prevention mechanism. Taken together, this body of work supports a conceptual framework in which social media operates along two competing pathways — exposure/normalization on one side, and structured, tailored intervention on the other — with the balance between these pathways determined largely by the intentionality, design, and targeting of the content youths encounter. It is precisely this second pathway, the deliberate design of persuasive prevention content, that anchors the present study's interest in the efficacy of AI-generated anti-drug abuse messages on social media platforms among youths in Anambra State.

Social media therefore plays a complex role in the drug abuse landscape in Nigeria. While it contributes to the normalization and spread of substance abuse, it also provides a powerful platform for education, prevention, and behavioural intervention. The effectiveness of social media as a preventive tool lies in how well stakeholders can harness its unique features, such as interactivity, visual appeal, and viral potential, while mitigating its risks through content moderation, digital literacy, and innovative strategies like AI-generated messaging.

Artificial Intelligence (AI) in Health Communication

Artificial intelligence has increasingly become embedded in the design, delivery, and evaluation of health communication, reshaping how health messages are produced and how audiences engage with them. The integration of AI technologies, including machine learning and natural language processing, with established communication, behavioural, and social theories has been shown to enhance health behaviour interventions across diverse health issues, including smoking cessation, chronic disease management, and mental health, primarily through AI-driven tools such as chatbots and mobile applications (Weingott & Parkinson, 2025). To address the persistent gap between rapid technical advancement and the theoretical grounding needed to explain how these tools produce behavioural change, the AI Impact Communications Model (AI-ICM) has been proposed as a structuring framework linking AI's technical capabilities to theory-informed communication design (Weingott & Parkinson, 2025).

Artificial Intelligence (AI) is increasingly transforming the landscape of health communication by improving how health messages are created, tailored, delivered, and received. AI technologies such as machine learning, natural language processing (NLP), computer vision, and chatbots are now being applied to public health campaigns, patient education, mental health support, and drug abuse prevention. As digital platforms become more central to communication — especially among youths — AI provides novel ways to reach audiences more effectively and efficiently (Topol, 2019).

Parallel to this, health communication scholarship has documented how generative AI specifically has expanded the channels through which health information reaches the public, offering new opportunities for both professionals and lay audiences to access and act on health information, while simultaneously introducing the risk of deepening existing health disparities depending on who has access to and literacy in these tools (Uddin, Feng, & Xu, 2025). This body of work frames generative AI's role in health promotion through established behavioural lenses, including the Technology Acceptance Model, the uses and gratifications theory, and the knowledge gap hypothesis, situating AI-generated health content within long-standing theories of media adoption and information-seeking behaviour rather than treating it as an entirely novel phenomenon (Uddin, Feng, & Xu, 2025).

Taken together, this literature positions AI in health communication along two connected dimensions: first, AI as a technical enabler of tailored, adaptive, and scalable health messaging, most effective when anchored to communication and behavioural theory rather than deployed as a standalone technical novelty; and second, AI as a force that can either narrow or widen public health disparities, depending on the accessibility, design, and reach of the platforms through which it operates. This framework is directly relevant to the present study, which examines a specific application of this broader phenomenon — the use of AI-generated messaging, delivered through social media, to influence anti-drug abuse attitudes among youths — situating it within a wider, globally-evidenced conversation about AI's capacity to shape health behaviour through digital communication channels.

Empirical Review

Empirical studies on drug abuse among youths and the role of communication interventions have consistently used quantitative and mixed-method designs to assess prevalence, exposure, and behavioural outcomes. Soremekun, Folorunso, and Adeyemi (2020) conducted a cross-sectional survey among secondary school students aged 10 to 15 years in two local government areas of Lagos State to measure the prevalence and perception of drug use. Their findings confirmed that non-medical drug use was already present among young adolescents, reinforcing the view that exposure to substances begins earlier than commonly assumed and that school-based populations remain a critical target for early intervention.

Building on this concern with prevention, Adeoye and Akoja (2025) carried out a quantitative study assessing youth exposure to and engagement with the National Drug Law Enforcement Agency's (NDLEA) social media anti-drug campaign in the Ojo Local Government Area of Lagos State. Using a structured questionnaire administered to 662 young respondents, the study found that youths generally perceived the NDLEA's social media messages as clear, relevant, and effective; however, actual engagement, adherence, and knowledge retention remained only moderate. This finding is significant because it demonstrates a gap between message reception and behavioural response — youths may acknowledge a message as well-designed without it translating into meaningful behaviour change, a distinction central to evaluating message efficacy rather than mere message exposure.

This gap between perception and behavioural impact was addressed more directly in an intervention study by Ahmad et al. (2022), who tested the effectiveness of a social media-based intervention in reducing drug abuse propensity among Nigerian youth using a two-way ANOVA with repeated measures and the Substance Abuse Proclivity scale. Their results showed that participants who received the social media-based intervention exhibited a significant reduction in drug abuse propensity compared to a control group, and this reduction remained evident at a two-year follow-up. Notably, the study also found that interventions using a skills-training approach were more effective than those relying solely on motivational interviewing, suggesting that the design and pedagogical structure of a message matters as much as the platform through which it is delivered.

Taken together, these empirical works establish three important patterns: prevalence data confirm that drug exposure among Nigerian youths begins early and remains widespread; perception-based studies show that youths can rate anti-drug messages positively without necessarily acting on them; and controlled intervention studies demonstrate that well-designed, theory-informed social media interventions can produce measurable and lasting reductions in drug abuse propensity. This body of evidence directly supports the rationale for the present study, which investigates whether AI-generated anti-drug abuse messages — a more recent and less-tested form of message design — can replicate or exceed the behavioural impact demonstrated by earlier human-designed social media interventions among youths in Anambra State.

Theoretical Framework

This study is anchored on Technological Determinism Theory (TDT), a communication theory widely associated with the works of Marshall McLuhan and Harold Innis. Although earlier scholars such as Thorstein Veblen examined the relationship between technology and social development, McLuhan's contributions established technological determinism as a major perspective in media and communication studies. The theory argues that technological innovations are powerful forces that shape patterns of communication, influence social interactions, and transform cultural practices (McLuhan, 1964). Its central proposition is that communication technologies do not merely serve as neutral channels for transmitting information; rather, they actively influence how people think, behave, and interact within society.

According to McLuhan (1964), the characteristics of a communication medium often exert greater influence on society than the specific content it conveys, a notion captured in his well-known expression that the medium itself constitutes the message. This perspective suggests that emerging communication technologies fundamentally alter how information is produced, distributed, accessed, and interpreted. As digital technologies continue to evolve, Artificial Intelligence (AI) has become one of the most transformative innovations in contemporary communication. AI-powered systems can analyse user behaviour, preferences, and online interactions to generate personalised messages that are more engaging, timely, and relevant to specific audiences (Kaplan & Haenlein, 2020). Consequently, AI is increasingly being integrated into health communication campaigns to enhance audience engagement and improve message effectiveness.

The relevance of Technological Determinism Theory to this study lies in its explanation of how technological innovations influence communication processes and audience responses. AI-generated anti-drug abuse messages represent a technologically driven approach to health communication in which algorithms personalise message content based on users' interests, online behaviour, and demographic characteristics. Through social media platforms, these messages are disseminated rapidly and interactively, increasing the likelihood that young

audiences will encounter health information in forms that are attractive, relatable, and responsive to their communication preferences. The theory therefore provides a useful framework for understanding how AI-powered communication technologies can shape youths' engagement with anti-drug abuse messages, influence their perceptions of message credibility and relevance, and improve the persuasive potential of health campaigns.

However, Technological Determinism Theory has been criticised for placing excessive emphasis on technology as the primary driver of social change while paying insufficient attention to human agency, cultural context, and institutional factors that also influence communication outcomes (Chandler & Munday, 2020). Critics argue that technology alone does not determine behaviour; rather, individuals actively interpret, negotiate, and respond to technological innovations based on their social environments and personal experiences. Despite these criticisms, the theory remains appropriate for this study because the research specifically examines AI as an emerging communication technology whose capacity for automation, personalisation, and data-driven message design has the potential to transform anti-drug abuse communication among youths on social media platforms. Thus, Technological Determinism Theory provides a suitable conceptual lens for explaining the relationship between AI-generated messages, audience engagement, message effectiveness, and persuasion.

Area of Study

The study was conducted in Onitsha Metropolis, Anambra State, Nigeria. The metropolis, comprising Onitsha North and Onitsha South Local Government Areas, is one of the largest commercial and urban centres in southeastern Nigeria, with a large youthful population and widespread use of social media platforms such as Facebook, WhatsApp, Instagram, TikTok, and X (formerly Twitter). The choice of Onitsha Metropolis was informed by its high level of urbanisation, extensive internet penetration, and active youth engagement on digital platforms, making it a suitable location for examining the efficacy of AI-generated anti-drug abuse messages among youths (National Population Commission [NPC], 2006; National Bureau of Statistics [NBS], 2024).

METHODOLOGY

The survey research method was adopted for this study. This method was chosen because it enables the collection of large amounts of data efficiently from a diverse group of respondents. The target population comprised youths residing in Onitsha, Anambra State, who are active users of social media platforms such as Facebook, Instagram, and TikTok. The population of Onitsha metropolis according to the 2006 National Population Census was 261,604. A sample size of 391 respondents was determined using Taro Yamane's formula, and the purposive sampling technique was employed to select participants who met the criteria of being youths and active users of at least one major social media platform. This approach ensured the inclusion of individuals most relevant to the study's objective.

Data Analysis and Presentation

Out of the 391 copies of questionnaire distributed, 386 copies were returned and found usable, representing a 98.7% return rate. The data analysis presented below is based on these 386 valid responses. In addition to frequencies and percentages, a chi-square goodness-of-fit test was computed for each research question to determine whether respondents' answers were distributed evenly across response categories or reflected a genuine pattern in the data.

Answers to Research Questions

Answers to the research questions guiding the study are presented below, based on the corresponding items in the questionnaire administered to respondents.

Research Question One

To what extent do youths in Anambra State engage with AI-generated anti-drug abuse messages?

Table 1: Respondents' Engagement with AI-Generated Anti-Drug Messages

Variable	Frequency	Percentage
Frequently	82	21
Occasionally	134	35
Rarely	98	25
Never	72	19
Total	386	100

Source: Field survey, 2025.

Table 1 indicates that 35% of respondents (n = 134) occasionally engage with AI-generated anti-drug messages on social media, while 25% (n = 98) rarely engage with such messages, and 21% (n = 82) frequently engage with them. The remaining 19% (n = 72) reported never engaging with AI-generated anti-drug content. Combining the frequently and occasionally categories, 56% of respondents (n = 216) engage with AI-generated anti-drug messages at least occasionally, indicating that a majority of youths in Anambra State have some level of exposure to this form of messaging. A chi-square goodness-of-fit test confirms that responses were not evenly distributed across the four categories, $\chi 2(3, N = 386) = 22.99$, $p < .001$, indicating that the concentration of responses in the "occasionally" and "rarely" categories reflects a genuine pattern rather than chance variation.

Research Question Two

How effective are AI-generated messages in changing youth attitudes toward drug abuse?

Table 2: Perceived Effectiveness of AI-Generated Messages in Influencing Youth Attitudes Toward Drug Abuse

Variable	Frequency	Percentage
Yes	164	43
No	144	37
Can't Say	78	20
Total	386	100

Source: Field Survey, 2025.

Table 2 indicates that 43% of respondents (n = 164) reported that AI-generated anti-drug abuse messages have influenced their opinion or attitude about drug use, making this the single largest response category. Meanwhile, 37% of respondents (n = 144) stated that such messages have not influenced their attitude, and 20% (n = 78) said they could not say whether their opinions had been influenced. This result suggests that while AI-generated messages are perceived as effective by a plurality of youths in Anambra State, a substantial proportion remain unconvinced or uncertain, indicating that the persuasive effect of such messages, while real, is not yet universal among the youth population studied. A chi-square goodness-of-fit test indicates that these responses were not evenly distributed, $\chi 2(2, N = 386) = 31.48$, $p < .001$.

Research Question Three

What role does AI play in personalizing anti-drug abuse messages for better effectiveness?

Table 3: Respondents' Opinion on the Effectiveness of AI-Generated Messages versus Traditional Campaigns

Variable	Frequency	Percentage
Strongly Agree	108	28
Agree	96	25
Neutral	80	21
Disagree	62	16
Strongly Disagree	40	10
Total	386	100

Source: Field Survey, 2025.

Table 3 indicates that 28% of respondents (n = 108) strongly agreed that AI-generated messages are more effective in discouraging drug abuse among youths than traditional campaigns, and a further 25% (n = 96) agreed with this view, bringing the combined agreement to 53% (n = 204). Meanwhile, 21% of respondents (n = 80) held a neutral opinion, 16% (n = 62) disagreed, and 10% (n = 40) strongly disagreed that AI-generated anti-drug messages are more effective than traditional campaigns. This suggests that a majority of respondents perceive AI-generated messages as relatively more effective tools in combating drug abuse among youths in Anambra State. A chi-square goodness-of-fit test confirms this is not an artifact of chance, $\chi 2(4, N = 386) = 37.89$, $p < .001$.

DISCUSSION OF FINDINGS

The data show a significant level of engagement with AI-generated anti-drug abuse messages among youths in Anambra State. This finding is reflected in Table 1, where 56% of respondents (n = 216) indicated frequent or occasional engagement with AI-generated messages on social media, a distribution that a chi-square goodness-of-fit test confirms is unlikely to have occurred by chance, $\chi 2(3, N = 386) = 22.99$, $p < .001$. This supports the view that AI-driven communication tools are gaining traction among youths, particularly in health-related campaigns, consistent with broader accounts of AI-based communication enhancing message dissemination and interactivity among tech-savvy populations like Nigerian youths (Onuoha & Chiemelu, 2022).

In Table 2, findings indicate that AI-generated messages are perceived by a plurality, though not a majority, of respondents as influential on their attitudes toward drug abuse: 43% of respondents (n = 164) affirmed that such messages had influenced their opinions, compared with 37% who said they had not and 20% who were unsure. This more tempered pattern is broadly consistent with research suggesting that AI-tailored interventions can improve health behaviour outcomes, including in drug-related counseling and prevention messaging, while cautioning that such effects are rarely uniform across an entire audience (Okonkwo & Adebanjo, 2023). Similarly, work on digital personalization in Nigerian health communication emphasizes that increased personalization tends to raise message receptivity without guaranteeing universal behavioural impact (Chukwu & Alabi, 2021).

Examining Table 3, the study found that a majority of respondents (53%, n = 204) strongly agreed or agreed that AI-generated messages are more effective than traditional drug prevention campaigns, a distribution a chi-square goodness-of-fit test confirms is statistically significant, $\chi 2(4, N = 386) = 37.89$, $p < .001$. This supports the view that AI systems, particularly those capable of personalizing content based on user data, can increase user attention, relatability, and response relative to generic, one-size-fits-all campaigns (Bello & Musa, 2024). UNESCO (2023) similarly acknowledges the potential of AI in supporting youth-targeted communication on

social issues such as substance abuse, while cautioning that this potential should be pursued within clear ethical guidelines.

These findings are broadly consistent with Technological Determinism Theory, which posits that the characteristics of a communication technology shape patterns of communication and social behaviour independently of the specific content it carries (McLuhan, 1964). In the context of this study, the use of AI to generate personalized anti-drug messages illustrates how an emerging communication technology can reshape the modes and, to a meaningful but incomplete degree, the effectiveness of health communication among young people. The pattern across all three research questions — majority engagement, a plurality reporting attitude change, and majority perceived superiority over traditional campaigns — suggests that AI-generated messaging represents a genuine addition to the anti-drug communication toolkit in Anambra State, though the moderate size of the "no" and "undecided" groups in Table 2 indicates that AI-generated messaging alone is unlikely to be a complete substitute for broader, multi-channel prevention strategies.

CONCLUSION

Drawing from the data obtained in the study, the research concludes as follows:

First, AI-generated anti-drug abuse messages are actively engaged with by youths in Anambra State, with a majority of respondents frequently or occasionally interacting with such content on social media. This highlights the growing relevance of AI in digital communication and its increasing adoption among tech-savvy young users.

Second, AI-generated messages have shown a meaningful, though not universal, impact on changing youth attitudes toward drug abuse. A plurality of respondents acknowledged that these messages influenced their opinions and behaviours, indicating that AI-powered interventions can shape health-related perspectives for a substantial share of the youth audience, even as a considerable minority remain unconvinced or undecided.

Third, AI plays a meaningful role in personalizing anti-drug abuse campaigns, making them more effective than traditional approaches in the view of a majority of respondents. Many respondents agreed that AI-generated content is more tailored, relatable, and engaging, which increases its influence in discouraging drug use among young people. This underscores the value of integrating AI into public health messaging alongside, rather than as a replacement for, existing prevention strategies.

RECOMMENDATIONS

Based on the findings, the following recommendations are put forward:

1. Government and health agencies should invest in the development and deployment of AI-powered communication tools that can deliver personalized and engaging anti-drug abuse messages tailored specifically to youths across various digital platforms.

2. Technology and communication regulators should partner with social media companies to ensure that AI-generated anti-drug messages are prominently promoted and that harmful or misleading content is filtered out effectively.

3. Educational institutions in Anambra State should incorporate digital literacy and AI awareness programs into their curricula to help students interact meaningfully with AI-driven health messages and apply them to real-life choices.

4. Health communication professionals and NGOs should leverage AI to generate data-driven insights for designing more effective, targeted anti-drug campaigns that resonate with different segments of the youth population.

5. Continuous sensitization programs using AI tools such as chatbots, recommendation systems, and interactive platforms should be adopted by both public and private health sectors to maintain consistent engagement with

youths and reinforce anti-drug messages over time, alongside — not in place of — traditional community-based interventions.

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