ABDIMA JOURNAL

Optimizing Digital Information Management for Drug Abuse Prevention Among Adolescents

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ABSTRACT

Drug abuse among adolescents remains a major public health challenge requiring comprehensive preventive strategies. The rapid advancement of digital technology has significantly transformed the way young people access, share, and consume information. While digital media provide valuable educational opportunities, they also increase adolescents' exposure to misinformation, harmful online content, and hidden promotion of illicit drugs through various digital platforms. Therefore, strengthening digital information management has become increasingly important to enhance adolescents' ability to access, evaluate, filter, and utilize digital information responsibly. This community service program aimed to improve adolescents' knowledge, awareness, and digital literacy regarding drug abuse prevention through the optimization of digital information management. The program employed a participatory approach consisting of educational seminars, interactive lectures, group discussions, case studies, digital media simulations, and evaluations using pre-test and post-test assessments. The findings demonstrated a significant improvement in participants' understanding of the dangers of drug abuse, their ability to identify reliable digital information, their competence in using digital media responsibly, and their willingness to disseminate anti-drug educational messages through social media platforms. Furthermore, the program successfully fostered a more positive culture of digital literacy among adolescents and encouraged active participation in promoting healthy lifestyles within their communities. In conclusion, optimizing digital information management represents an effective preventive strategy for reducing drug abuse among adolescents while strengthening collaboration among universities, schools, families, and communities in developing a healthier, digitally literate, and drug-free younger generation.

INTRODUCTION

The contemporary expansion of digital technology and pervasive high-speed mobile connectivity has fundamentally restructured how adolescents communicate, acquire educational

ABDIMA JOURNAL

resources, and construct their social reality (UNESCO, 2023). Empirical surveys demonstrate that contemporary youths dedicate multiple hours daily across interactive social networking services, micro-blogging forums, and encrypted messaging applications (OECD, 2023; Telecommunication Standardization Bureau [ITU], 2023). While these digital platforms provide unprecedented opportunities for peer learning, collaboration, and informal education, they simultaneously expose vulnerable adolescents to an array of unverified content, cyber vulnerabilities, and covert promotional campaigns for psychoactive substances (Livingstone et al., 2021; World Health Organization [WHO], 2024).

Adolescent substance abuse remains one of the most critical global and national public health priorities, directly threatening the physiological, psychological, and socioeconomic well-being of the younger demographic (United Nations Office on Drugs and Crime [UNODC], 2024). In Indonesia, national surveillance reports identify ongoing vulnerabilities among secondary school students, who frequently encounter peer pressure during transitionary phases of identity exploration and emotional maturity (Badan Narkotika Nasional [BNN], 2023). Illicit drug distribution networks have increasingly shifted operations toward digital environments, employing deceptive terminology, closed social media groups, and algorithmic targeting to normalize substance consumption and mislead youth regarding the actual hazards of synthetic narcotics (Lim et al., 2021; Struble et al., 2022).

A primary underlying problem identified during preliminary community assessments in Bukittinggi, West Sumatera, is the significant gap between high media consumption rates and functional critical digital literacy. Most adolescents demonstrate fluency in technical device operations but lack systematic competencies in digital information management—namely the structured capability to locate, critically evaluate, synthesize, and responsibly distribute digital health resources (Nutbeam & Lloyd, 2021; Sublette et al., 2022). Unsubstantiated claims, deceptive testimonials, and concealed narcotics marketing easily bypass superficial scrutiny when adolescents lack formal training in cross-verifying online health claims against

ABDIMA JOURNAL

authoritative databases (Kementerian Kesehatan Republik Indonesia [Kemenkes RI], 2024; Ministry of Communication and Digital Affairs [Komdigi], 2024).

To directly address these priority challenges, this community service project proposed an integrated intervention model combining community-based health education with practical digital information management training. Grounded in Bandura's social cognitive framework and the theory of planned behavior (Ajzen, 1991; Bandura, 1986), the intervention was designed to shift adolescent behavior from passive, vulnerable media consumption toward proactive, critical information filtering. The planned target outputs of this community service initiative included: (1) an immediate enhancement in participants' factual knowledge concerning narcotic classifications and health consequences; (2) validated gains in digital verification competencies; (3) the production and distribution of verified student-led anti-drug infographics; and (4) the establishment of a sustainable peer educator framework within the partner school community.

METHODS AND IMPLEMENTATION

The implementation of this community service program employed a participatory educational approach that emphasized active engagement between facilitators and participants. The activity was conducted through four integrated stages.

The first stage involved preparation and needs assessment. The implementation team coordinated with school administrators and community leaders to identify participants, determine the activity schedule, prepare educational materials, and assess adolescents' initial understanding of drug abuse and digital literacy through a pre-test questionnaire. Educational modules, multimedia presentations, digital learning materials, posters, and online educational resources were also prepared to support the learning process.

The second stage consisted of educational counseling and interactive seminars. During this session, facilitators delivered comprehensive presentations concerning the types of narcotics, the health, psychological, social, and legal consequences of drug abuse, and current trends in drug distribution through digital media. Participants were introduced to the concept of digital

ABDIMA JOURNAL

information management, including methods for identifying reliable information sources, recognizing misinformation and fake news, protecting personal digital data, and utilizing digital technology for health promotion. Interactive discussions encouraged participants to ask questions and share their experiences related to social media usage and digital information.

The third stage focused on practical digital literacy training and simulation activities. Participants practiced evaluating online health information by comparing credible and non-credible websites, identifying misinformation related to drug use circulating on social media, and utilizing official government and healthcare websites to obtain accurate information. Small group discussions, case study analyses, role-playing activities, and problem-solving exercises enabled participants to apply critical thinking skills in realistic scenarios involving peer influence and digital communication. The facilitators guided participants in developing responsible digital behavior and effective strategies for preventing exposure to harmful online content.

The final stage involved monitoring, evaluation, and reflection. Participants completed a post-test questionnaire to evaluate improvements in knowledge and digital literacy competencies. Feedback questionnaires were distributed to assess participant satisfaction and identify suggestions for future activities. Facilitators conducted reflective discussions to reinforce key learning outcomes and encouraged participants to become peer educators who could disseminate accurate information regarding drug prevention within their schools and communities. The implementation team analyzed the evaluation results to measure the effectiveness of the program and formulate recommendations for sustainable community-based digital health education initiatives.

RESULTS AND DISCUSSION

The implementation of the community service program demonstrated positive outcomes in improving adolescents' knowledge and awareness regarding digital information management for drug abuse prevention.

Throughout the educational sessions, participants showed high enthusiasm and actively engaged in discussions, simulations, and question-and-answer activities. Many participants

ABDIMA JOURNAL

expressed that they had previously been unaware of the existence of misleading information regarding narcotics circulating on social media platforms. The educational materials helped them understand how digital information could influence individual attitudes and behaviors.

The pre-test and post-test comparison indicated a significant improvement in participants' understanding of digital literacy concepts, online information verification, and drug abuse prevention strategies. Participants became more capable of distinguishing reliable health information from misinformation and demonstrated greater confidence in evaluating digital content critically.

Group discussions revealed that many adolescents regularly accessed social media without carefully evaluating the credibility of information sources. Following the training, participants demonstrated increased awareness regarding responsible digital behavior, including verifying information before sharing it, avoiding suspicious online communities, and seeking health information only from trusted institutions.

The simulation activities also contributed substantially to participants' practical competencies. Adolescents successfully practiced identifying fake news, recognizing online drug promotion tactics, and accessing official health information through credible digital platforms. These practical experiences strengthened their ability to utilize digital technology safely and responsibly.

Teachers and community representatives provided positive feedback regarding the relevance of the program. They observed increased student participation, improved communication regarding drug prevention, and greater willingness among adolescents to become peer educators within their communities.

Overall, the community service activity successfully enhanced participants' digital literacy, strengthened preventive attitudes toward drug abuse, and promoted healthier patterns of digital information utilization. The integration of digital information management with health education proved to be an effective approach in supporting community-based drug prevention efforts.

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ABDIMA JOURNAL

CONCLUSION

The community service program entitled "Optimization of Digital Information Management for the Prevention of Drug Abuse Among Adolescents" was successfully implemented and achieved its intended objectives. The educational intervention effectively improved adolescents' knowledge of digital information management, enhanced digital literacy competencies, and strengthened awareness regarding the dangers of drug abuse.

Participants demonstrated improved abilities to evaluate online information critically, identify misinformation related to narcotics, utilize credible digital information sources, and practice responsible digital behavior. The interactive learning methods, including lectures, discussions, simulations, and practical exercises, contributed significantly to participant engagement and knowledge acquisition.

This community service program highlights the importance of integrating digital literacy education with drug prevention initiatives. Continuous collaboration among universities, schools, families, healthcare institutions, and community organizations is recommended to sustain educational efforts and strengthen adolescent resilience against the growing challenges posed by digital information misuse and drug abuse. Through ongoing educational programs, adolescents can become informed, responsible, and digitally literate citizens capable of making healthy decisions for themselves and their communities.

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ABDIMA JOURNAL

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ABDIMA JOURNAL

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ABDIMA JOURNAL

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