



Effects of ICT on Improving Health and Hygiene Practices among Adolescents in Rural Bengaluru

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Abstract

Health and hygiene play crucial roles in overall well-being, particularly in rural areas with limited access to healthcare and sanitation facilities. In urban settings, many adolescents utilize wearable technology, such as smartwatches and fitness trackers, to monitor their physical activity and sleep patterns. The use of information and communication technology (ICT) in promoting health and hygiene not only encourages healthy behaviours and lifestyles but also improves healthcare services. However, such practices are minimal among rural communities. By adopting ICT in classrooms, rural adolescents can learn about maintaining a healthy diet, engaging in physical exercise, and preventing illnesses through health education programs. Therefore, this study aims to assess the level of awareness and media usage among adolescents and explore how ICT influences behaviours related to health and sanitation in rural communities. The findings of this study highlight the necessity of raising awareness about technological adoption among rural adolescents in rural Bengaluru. Peer influence (76.4%) ranks the highest, followed by television (48.3%), while social media influence stands at 13.8%. The study also emphasizes the importance of waste management awareness programs, as 44.8% of adolescents still need to practice a systematic waste management system. 79.3% of educational institutions hold an SDG 6 awareness program for students, while 20.7% do not. However, it is concerning that 20.7% of the participants surveyed still need to receive SDG 6 awareness programs. Without such awareness programs, adolescents may lack knowledge about the significance of SDG 6.

Keywords: Effects of ICT, Health & hygiene, adolescents, rural Bengaluru, classroom learning, SDG 6

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Introduction

Promoting health and hygiene practices among adolescents is essential for their overall health, well-being, and future success. Working collaboratively to offer adolescents the information, tools, and support they need to adopt and uphold healthy behaviours and hygiene practices is crucial for parents, educators, government, and healthcare professionals. Today adolescents have access to various health-related information, tools, and services that can help them maintain excellent health and hygiene because cell phones, tablets, and laptops are so widely available. They can now readily and conveniently obtain health-related information via numerous digital platforms. Health-related websites, applications, and social media platforms are now frequently used sources. Wearable technology such as fitness trackers, smartwatches, and health monitoring devices can track various health parameters such as heart rate, blood pressure, and sleep patterns. Mobile apps that provide personalized health coaching, diet planning, and exercise programs have also become popular. ICT adoption in the healthcare sector is a major area focus across the globe due to its significance in supporting humankind.

A study conducted by Alshammari, Sarker, et al. (2022) titled "Technology-driven 5G enabled e-healthcare system during COVID-19 pandemic" investigates the potential of 5G technology in revolutionizing healthcare delivery and addressing the challenges posed by the COVID-19 pandemic. The findings highlight the benefits of utilizing 5G technology in healthcare during the pandemic. The authors demonstrate how 5G networks can provide high-speed and low-latency connectivity, enabling real-time communication between healthcare professionals and patients. They emphasize the potential of 5G-enabled technologies, such as augmented reality (AR), virtual reality (VR), and the Internet of Things (IoT), in enhancing remote diagnostics, monitoring, and treatment. Another article by Ramos, Nangit, et al. (2007) serves as a valuable resource for scholars, policymakers, and practitioners interested in implementing ICT-enabled distance education for community development. It provides a comprehensive analysis of the Philippine context and offers insights into such initiatives' potential benefits and challenges. When such transformations are gaining global momentum, the realities of rural India remain unnoticed. In rural India, there are significant disparities in internet connectivity, digital infrastructure, and availability of resources compared to urban areas.

A study by Vanan and Subramani (2015) examines the differences in technology acceptance attitudes between rural and urban college students. The study's findings indicate significant differences in technology acceptance attitudes between rural and urban college students. The authors note that urban students generally have more positive attitudes towards technology acceptance than their rural counterparts. Furthermore, a similar divide exists even today. Several studies have been conducted on various aspects of promoting health and hygiene practices in India—one of the major studies that draw our attention towards the technological acceptance gap among healthcare professionals. Hiregoudar, Rajashekar, and Raghuram's (2015) paper, "Evaluation and analysis of technology acceptance of Healthcare professionals in

Karnataka, South India,"discusses the implications of technology acceptance in healthcare, particularly in the context of EHRs and telemedicine. It highlights the potential benefits of technology adoption, such as improved efficiency, accuracy, and patient care. The authors also address the challenges and barriers that hinder technology acceptance, including resistance to change, lack of training, and infrastructure constraints.

Sundari (2016) conducted a study titled "Role of ICT Initiatives in sustainable progress of rural women in India," which explores the impact of ICT interventions on empowering rural women and improving their lives. The study examines various ICT initiatives implemented in rural areas and their effects on women's education, health, employment, and overall empowerment. The findings highlight the positive outcomes of these initiatives. ICT contributes to the sustainable progress of rural women by increasing access to education through e-learning platforms, providing health information and services via mobile applications, and creating income generation and entrepreneurial opportunities through online platforms. Notably, the current study reveals a gap in understanding the impact of ICT on adolescents in rural areas. Adolescents, defined by UNESCO as individuals aged 10 to 19, experience significant physical, cognitive, emotional, and social changes, along with increased independence and decision-making capabilities. Research on adolescents provides valuable insights into the factors that shape their development, including family dynamics, peer relationships, education, and cultural influences. Understanding these factors helps create targeted interventions, policies, and support systems that foster healthy development during this crucial stage. Additionally, this study is significant in designing empowerment strategies specifically tailored to address rural adolescents' unique needs and challenges.

Objectives

- To assess the health and hygiene practices among adolescents in rural Bengaluru.
- To identify the most effective ICT tools and messaging strategies for promoting health and hygiene practices among adolescents.
- To examine the influence of ICT on altering behaviours related to health and sanitation among rural communities

Methodology

This descriptive research aims to depict the reality of technology usage among adolescents in terms of empowerment. The research approach involves conducting a survey and analyzing the data. A questionnaire containing open-ended and closed-ended questions was distributed to adolescents in rural Bengaluru. Data collection utilized both online and paper-based questionnaires. The analysis was based on 344 responses received until March 9, 2023, using a multistage cluster sampling technique. Text analysis was employed to analyze the open-ended questions, while the closed-ended data was interpreted using statistical methods such as the Chi-square test and percentage analysis.

Findings and analysis

The distribution of respondents showed that 58.1% were boys, while 41.9% were girls. The independent sample t-test conducted among the respondents revealed a statistically significant relationship between gender and technology adoption at a 5% significance level. 74 % of the respondents opined that they do not use health applications. Factors contributing to the digital divide in rural India include limited or unreliable internet connectivity, inadequate telecommunications infrastructure, lack of affordable devices, and low digital literacy levels. These challenges hinder fully benefiting from the opportunities and services provided by digital technologies, such as access to information, education, healthcare, and economic opportunities.

In order to assess the health and hygiene practices among the adolescents, the researcher asked them about the various techniques adopted by the village in waste management.

Dumping the waste in common disposable areas	44.8%
Separating it into wet and dry waste	20.7%
Burning the waste	13.8%
Reusing it for farming purposes	20.7%

The most common waste management practice reported by respondents was "dumping the waste in common disposable areas," with 44.8% reporting this as their practice. This suggests that many residents in these villages need access to formal waste management systems and rely on informal disposal methods such as common dump sites. Such practices can lead to environmental pollution and health hazards. The second most reported practice, with 20.7% of the respondents following it, was "separating the waste into wet and dry waste." This practice indicates that some residents know the importance of segregating waste, which can aid in proper disposal and recycling. The same percentage of respondents, 20.7%, reported "reusing waste for farming purposes." This indicates that some residents use waste as a resource for farming, which can have environmental and economic benefits, such as reducing the need for chemical fertilizers. 13.8% of the respondents reported "burning waste," which is a harmful waste management practice that can lead to air pollution and health hazards. It depicts that waste management practices in these villages need improvement, and there is a need for greater awareness and adoption of sustainable waste management practices.

Table 2: Chi-square analysis of gender perception on the role of ICT in creating health and hygiene awareness among adolescents				
Gender	Agree	Neutral	Disagree	Total
Boys	44.00	14	42	100.00
Girls	54.17	17.36	28.47	100.00
Total	48.26	15.41	36.34	100.00
Pearson chi2(2) = 6.6235 Pr = 0.036				

Table 2 presents the results of a chi-square analysis that examines the relationship between gender and perception of the role of ICT in creating health and hygiene awareness among adolescents. The chi-square test results test the hypothesis that there is no relationship between gender and perception of the role of ICT in creating health and hygiene awareness among adolescents. The test indicates that the Pearson chi-square statistic is 6.6235, with a p-value of 0.036. This suggests a statistically significant relationship between gender and perception of the role of media campaigns in creating health and hygiene awareness among adolescents.

Table 3: Popular Mediums that aid in the transmission of health and hygiene awareness	
Television	48.3%
Social Media	13.6%
Self-awareness	33%
Newspaper	5.1%

According to Table 3, 48.3% of the respondents reported that television is a medium that aids in transmitting hygiene and health awareness. Television is a popular medium for disseminating information about health and hygiene practices. This is likely because television is a widely accessible and pervasive medium in many parts of the world, including rural areas. In comparison, 13.6% of the respondents reported social media as a medium for transmitting hygiene and health awareness. This suggests that social media is a relatively less popular medium for disseminating information about health and hygiene practices compared to

television. However, social media's popularity is increasing, particularly among younger populations. Newspapers are used by 5.1 % of adolescents, and this requires much attention. 33% of the respondents reported self-awareness as a medium for transmitting hygiene and health awareness. This suggests that many respondents believe individuals can increase their awareness and knowledge about health and hygiene practices through self-reflection and personal education. This highlights the importance of individual agency and self-education in promoting health and hygiene practices.

Classroom communication is widely regarded as more effective than electronic or print media in terms of its impact. Among the participants, 79.3% of educational institutions reported conducting an awareness program on SDG 6 for students, while the remaining 20.7% did not. SDG 6 focuses on clean water and sanitation, and the awareness program aims to promote the significance of access to clean water and sanitation facilities and encourage adolescents to adopt sustainable practices related to water and sanitation. Further efforts are needed to increase awareness among schools that do not hold such programs and to encourage them to adopt sustainable practices and incorporate them into their curriculum.

Table 4: Adolescents' opinion on media and peer group influence						
Variables	Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Total
Media provides innovative ideas	163 (47.4)	8 (2.3)	66 (19.2)	106 (30.8)	1 (0.3)	344
Friends provide usefultips	160 (46.5)	5 (1.5)	75 (21.8)	103 (29.9)	1 (0.3)	344

As seen in Table 4, 47.4% of adolescents agreed that media provides innovative ideas about health and hygiene practices, while only 2.3% disagreed with this statement. Many respondents (30.8%) strongly agreed that the media provides innovative ideas about health and hygiene practices. However, a relatively large proportion of respondents (19.2%) were neutral about the statement, indicating that they needed clarification about the role of media in providing innovative ideas on health and hygiene practices. When the adolescents' opinions on peer influence were sorted, 46.5% agreed that friends provide better ideas of health and hygiene, while only 1.5% disagreed. A significant number of respondents (29.9%) strongly agreed that friends provide better ideas of health and hygiene. However, a relatively large proportion of respondents (21.8%) were neutral about the statement, indicating that they needed clarification about the role of friends in providing better ideas on health and hygiene practices. This study suggests that media and peer groups provide adolescents with innovative and useful health and hygiene practices ideas. However, a significant proportion of adolescents need clarification about the role of media and peer group influence, which leads to the scope of further research.

E-content development is essential to provide comprehensive and age-appropriate health education programs in schools and colleges. These programs should cover personal hygiene, nutrition, sexual and reproductive health, mental health, substance abuse prevention, and healthy lifestyle choices. Emphasize the importance of practising good hygiene habits and their impact on overall health. Sustained efforts and a holistic approach involving multiple stakeholders are essential for effectively improving health and hygiene practices among adolescents in rural Bengaluru.

Conclusion

In order to effectively utilize ICT tools for health and hygiene promotion, individuals must possess sufficient technological literacy and skills. However, the need for familiarity and understanding ICT technologies hinders their adoption and usage. The absence of SDG 6 awareness among the 20 per cent of institutions not conducting awareness programs underscores the importance of ensuring comprehensive and widespread education on SDG 6. Encouraging and supporting all educational institutions in implementing awareness programs is crucial. This can be achieved through collaboration among relevant stakeholders, including government bodies, non-governmental organizations, and educational authorities. Providing resources, training, and guidance to institutions that currently do not conduct such programs can promote the necessary awareness. Efforts should continue to improve infrastructure, enhance digital literacy, and address socioeconomic disparities. Public-private partnerships, community engagement, and capacity-building initiatives are essential for successful ICT adoption and to unlock the full potential of technology in rural development. Future research can build upon this study to explore the latest trends and advancements in technology available in rural areas and its impact on healthcare outcomes.

Reference

- Alibaygi, A., Karamidehkordi, M., & Karamidehkordi, E. (2011). Effectiveness of rural ICT centres: A perspective from west of Iran. *Procedia Computer Science*, 3, 1184-1188.
- Alshammari, N., Sarker, M. N. I., Kamruzzaman, M. M., Alruwaili, M., Alanazi, S. A., Raihan, M. L., & AlQahtani, S. A. (2022). Technology-driven 5G enabled e-healthcare system during the COVID-19 pandemic. *IET Communications*, 16(5), 449-463.
- Hiregoudar, G. S., Rajashekar, H., & Raghuram, K. S. (2015, June). Evaluation and analysis of technology acceptance of healthcare professionals in Karnataka, South India. In 2015 IEEE International Advance Computing Conference (IACC) (pp. 507–512). IEEE.
- Ramos, A. J., Nangit, G., Ranga, A. I., & Trinona, J. (2007). ICT-enabled distance education in community development in the Philippines. *Distance education*, 28(2), 213-229.
- Soundari, M. H. (2016). Role of ICT initiatives in sustainable progress of rural women in India. *European Journal of Sustainable Development*, 5(1), 39-39.
- Vanan, C. K., & Subramani, R. (2015). Digital divide: rural and urban college students' attitude towards technology acceptance. *International Journal of Communication and Media Studies (IJCMS)*, 5(4), 1-8.