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ASSESSMENT OF KNOWLEDGE ABOUT SOCIAL NETWORKS AMONG COLLEGE STUDENTS USING A STANDARDIZED KNOWLEDGE QUESTIONNAIRE: IMPACT OF AN EDUCATIONAL INTERVENTION

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ABSTRACT

Social networking platforms such as Facebook, WhatsApp, Instagram, and TikTok are integral to the daily lives of college students, influencing communication, learning, and socialization. However, excessive and unsafe use exposes students to risks including misinformation, addiction, privacy breaches, cyberbullying, and unhealthy lifestyle changes. Structured educational interventions aimed at enhancing digital literacy are essential to promote safe and responsible social media use. **Methods**: A comparative experimental study was conducted with 400 college students aged 18–23 years in Chennai, divided equally into experimental and control groups. A standardized 20-item knowledge questionnaire assessing awareness of social networks, risks, and safe practices was administered as a pretest and posttest. The experimental group received a two-week Information Education Communication (IEC) package covering social network basics, risks, privacy, addiction management, and safe usage guidelines. Data analysis included descriptive statistics, chi-square tests, and paired t-tests, with significance set at $p < 0.05$. **Results**: Pre-intervention, most participants demonstrated inadequate or moderate baseline knowledge, with no significant difference between groups. Post-intervention, the experimental group showed a significant increase in adequate knowledge (76% vs. 3% in controls, $p < 0.001$). Marked improvement was seen in recognizing professional networks, addiction thresholds, and safe sharing practices. The control group showed minimal or no improvement. **Conclusion**: The standardized questionnaire effectively assessed college students' digital literacy regarding social networks. The IEC educational intervention significantly improved knowledge and promoted safer social media behaviors. Integrating such educational programs into college curricula can foster responsible technology use and enhance students' online well-being.

Keywords: Social networks, IEC intervention, college students, knowledge assessment, digital literacy, educational intervention

INTRODUCTION

Social networking platforms have become integral to the daily lives of college students, influencing communication, knowledge acquisition, and lifestyle behaviors. Popular digital platforms such as Facebook, WhatsApp, Instagram, and TikTok serve as means for academic collaboration, social engagement, and entertainment [1]. However, increased usage also brings

risks including misinformation, addiction, privacy breaches, cyberbullying, and unhealthy lifestyle changes like reduced physical activity and poor sleep quality [2,3].

The growing penetration of electronic gadgets and internet access presents both opportunities and challenges [4,5]. To mitigate adverse effects and promote responsible use, educational strategies aimed at enhancing digital literacy are essential [6]. A standardized knowledge assessment is a crucial tool to objectively gauge baseline awareness and evaluate the impact of such interventions [7,8].

This study aimed to assess college students' knowledge about social networks using a 20-item questionnaire and to evaluate the effectiveness of an IEC educational package in improving knowledge and promoting healthier digital habits.

NEED FOR THE STUDY

The widespread use of social networks like Facebook, WhatsApp, Instagram, and TikTok among college students has transformed how they communicate, learn, and socialize. However, this digital engagement comes with challenges including reduced physical activity, poor sleep quality, and exposure to cyber threats. The growing penetration of technology necessitates structured educational strategies to build awareness and foster healthy online behaviors. Without proper guidance, students may lack adequate understanding of safe practices, privacy settings, and the psychological impacts of excessive use. Therefore, assessing baseline knowledge and implementing targeted interventions are crucial steps in promoting digital well-being.

AIM OF THE STUDY

The study aimed to assess college students' knowledge of social networks using a 20-item questionnaire and evaluate an IEC package's effectiveness in improving awareness. It focused on understanding risks like addiction and cyberbullying, recognizing professional platforms, and promoting safe sharing. Pre- and post-test comparisons validated the tool's usefulness and the impact of structured digital literacy education.

METHODS

Study Design and Participants

A comparative experimental study was conducted involving 400 college students aged 18–23 years, recruited from selected colleges in Chennai. The participants were randomly assigned to two equal groups: an experimental group (n=200) receiving the IEC intervention, and a control group (n=200) not receiving the intervention.

Knowledge Questionnaire

A standardized knowledge questionnaire was developed to assess students' understanding of social networks. The questionnaire comprised 20 multiple-choice questions covering:

- Definition and purpose of social networks
- Identification of popular social media platforms

- Recognizing risks such as addiction, cyberbullying, and privacy issues
- Safe and responsible social media practices

Each correct answer was scored 1 mark; incorrect or unanswered items scored 0. The total possible score was 20.

Knowledge levels were categorized as follows:

- Inadequate knowledge: 0–10 marks (0–50%)
- Moderate knowledge: 11–15 marks (51–75%)
- Adequate knowledge: 16–20 marks (76–100%)

Intervention

The IEC package consisted of structured educational materials and activities delivered over two weeks, covering:

- Basics of social networks
- Benefits and potential risks
- Safe usage guidelines
- Digital privacy and security
- Managing screen time and addiction risks

The package was administered only to the experimental group after the pretest assessment.

Data Collection and Analysis

The questionnaire was administered as a pretest to both groups before the IEC intervention and as a posttest after two weeks. Data were analyzed using descriptive statistics to determine mean scores and percentages. Chi-square tests assessed categorical differences in knowledge levels between groups, and paired t-tests compared pre- and posttest mean scores within groups. A significance level of $p < 0.05$ was used.

RESULTS

Demographic Characteristics

The demographic and social media usage characteristics among the experimental and control groups in this study, each comprising 200 participants, reveal a broadly comparable distribution across key socio-economic and behavioral variables, as reflected by the statistical analysis of the tabulated data. The age profile indicates that most participants were within the 18–21 year bracket, with 43.00% and 52.00% in experimental and control groups, respectively, aged 20–21 years, and marginal differences in the younger and older cohorts affirming demographic equivalence (Chi-square test, $P > 0.05$). Sex ratios were similar, with slightly more females present particularly in the experimental group (61.50% vs. 56.50%), but with no statistically significant difference identified. Parental educational status was well distributed; the majority of fathers and mothers had completed primary or secondary school, with higher secondary and graduate qualifications more prevalent among fathers in the control group. Monthly income levels, both paternal and maternal, primarily clustered in the Rs. 20,001–50,000 range (66.00% and 74.00%), while only a minority reported incomes above Rs. 50,000 or below Rs. 20,000

for both parental categories. Family structure was dominated by nuclear families (65.50% experimental, 63.50% control), with joint and extended family types less commonly reported. Most participants resided in rural areas (62.00% experimental, 54.50% control), and the majority lived with parents, though a notable proportion stayed in hostels or with relatives. Occupational status for fathers was mainly daily wage labor (68.00% experimental, 65.00% control), with business, private, and government employment representing smaller fractions; mothers overwhelmingly engaged in daily wage work. Social media access was predominantly via smartphones (89.50% experimental, 86.00% control), with only a few using laptops or multiple devices. Usage patterns indicated WhatsApp and Instagram as the most frequented apps, complemented by Facebook, YouTube, and diverse app combinations, signifying broad digital engagement. Academic and entertainment purposes drove social network usage, with content engagement heavily favoring photos, videos, educational material, memes, and news articles. Regarding privacy, most participants expressed substantial or moderate concern, and their emotional response to social media leaned strongly toward feelings of positivity and connection—though anxiety and indifference were present in notable subsets. Daily usage rates were highest in the 1–2 hour group, with extended periods being rare. Device ownership skewed toward Android phones, while iPhone and button phone use remained marginal. Generation type usage largely reflected 4G predominance, although substantial numbers also accessed 5G networks. Throughout all categories, Chi-square tests consistently yielded non-significant results ($P > 0.05$), establishing that the experimental and control samples were statistically equivalent across demographic, economic, social, and technological dimensions. This parity substantiates the validity of further analysis and comparisons between the groups *for subsequent outcome evaluation and hypothesis testing within the thesis framework.*

Pretest level of knowledge score between the Experimental and control groups

Table 1: Pretest Knowledge Score Comparison between Experimental and Control Groups

Knowledge Level	**Experimental Group (n=200)**	**Control Group (n=200)**	**Chi-Square (df=1)**	**p-value**
Inadequate (0–10)	88 (44.0%)	96 (48.0%)	0.64	0.42 NS
Moderate (11–15)	112 (56.0%)	104 (52.0%)		
Adequate (16–20)	0 (0%)	0 (0%)		

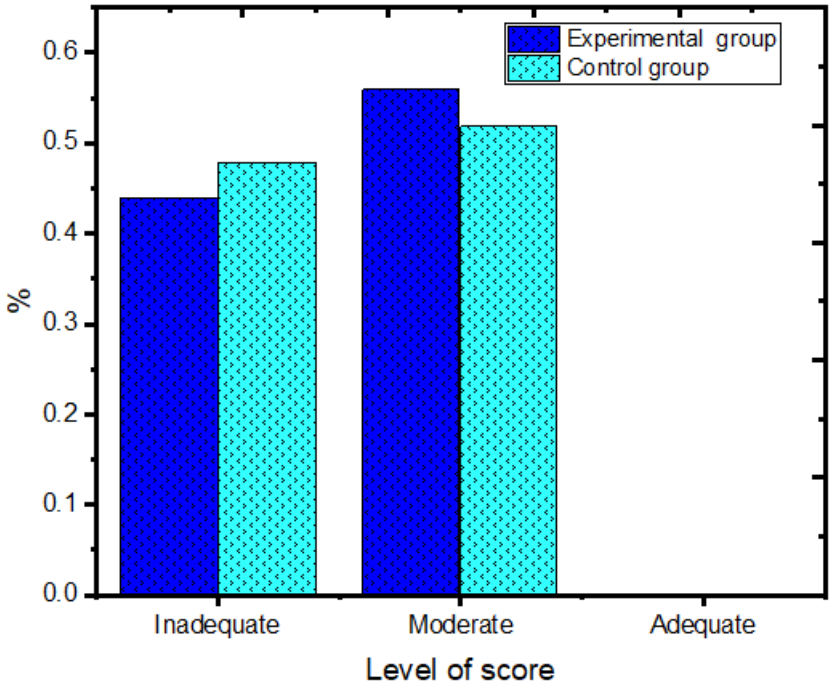

Fig. 1 Comparison of Pretest Knowledge Scores Between Experimental and Control Groups

The distribution of pretest knowledge scores, as presented in Table 1, revealed that a substantial proportion of participants in both the experimental and control groups exhibited only moderate or inadequate levels of baseline knowledge prior to intervention, with no individuals demonstrating adequate knowledge in either group. Specifically, 44.0% of the experimental group and 48.0% of the control group fell into the inadequate category, while 56.0% and 52.0% were classified as having moderate knowledge, respectively. The absence of participants in the adequate knowledge category underscores a universal knowledge deficit among the sampled population. The chi-square analysis indicated no statistically significant difference between the groups (χ^2=20.64, p=0.42, df=1), suggesting comparable baseline characteristics and supporting the assumption of homogeneity with respect to knowledge scores prior to the intervention.

Comparison of Posttest Level of Knowledge Score Between Experimental and Control Groups

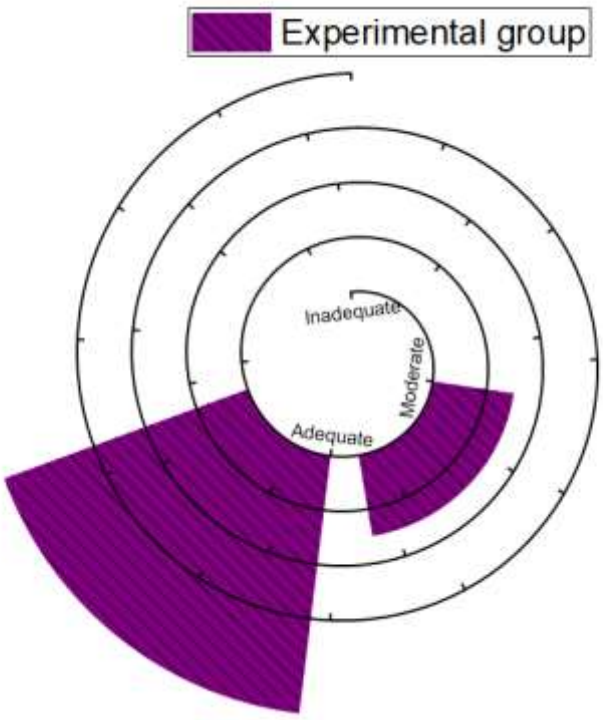

Fig. 2 Comparison of posttest level of knowledge score among experimental group

Fig. 2 presents a detailed comparison between the experimental group and the control group regarding their posttest knowledge scores categorized into three levels: Inadequate, Moderate, and Adequate. The data indicate that in the experimental group, none of the participants fell into the Inadequate category, demonstrating a significant improvement in knowledge acquisition compared to the control group, where 44.5% (89 out of 200) of participants remained in the Inadequate category. For the Moderate category, the experimental group had 24% (48 participants) while the control group had a higher proportion of 52.5% (105 participants), indicating a moderate level of knowledge among about half of the control participants. The most striking difference was observed in the Adequate knowledge level, where 76% (152 participants) of the experimental group achieved this highest category compared to only 3% (6 participants) in the control group. The chi-square test analysis revealed a highly significant association between group membership (experimental vs. control) and posttest knowledge levels, with a chi-square value of 245.14, degrees of freedom 2, and a p-value of 0.001 ($p < 0.01$), indicating that the experimental intervention had a statistically significant effect in improving knowledge scores. This substantial difference underscores the effectiveness of the intervention deployed in the experimental group, as it markedly enhanced knowledge levels compared to the control group, which showed minimal improvement.

Table 2: Statement-wise Percentage Correct Response Pretest and Posttest (Experimental Group)

Statement	**Pretest (%)**	**Posttest (%)**	**Gain (%)**
Meaning of social network	58	88.5	30.5
Awareness of social networks (Twitter, WhatsApp, etc)	58	80	22
Linked In as professional network	45.5	90	44.5
Cyberbullying meaning	65	93	28
Excessive social media use consequences	44.5	84	39.5
Social network addiction defined (> hours use)	35.5	74	38.5
Safe sharing practices	52.5	85	32.5
Posting offensive content	50	85.5	35.5

A comprehensive analysis of the pretest and posttest percentage scores of the experimental group, as presented in Table 2, reveals a marked improvement in knowledge acquisition following the intervention. The data details the participants' understanding across a diverse set of social network concepts, ranging from the basic meaning of social networking to specific platform functionalities, security aspects, and responsible online behavior. Notably, the pretest scores across most statements were moderate, typically between 35.50% and 78.50%, indicating a baseline understanding but also room for considerable growth. The posttest scores consistently exhibited a significant increase, with gains ranging from 11.00% to as high as 44.50%, reflecting the effectiveness of the instructional strategy. For instance, the recognition of LinkedIn as a specific type of network saw knowledge scores rise from 45.50% to 90.00%, representing a substantial 44.50% gain, while understanding excessive social media use and its consequences improved by 39.50%. Topics such as cyberbullying, safe information sharing, and social network addiction also demonstrated robust improvements, with gains exceeding 28.00%. These patterns of knowledge achievement were not isolated, as almost every statement exhibited notable increments, including an increase of 38.50% in the comprehension of social network addiction and a 35.50% rise in awareness about posting offensive content. Even concepts with higher pretest scores—such as identifying entertainment-related platforms—recorded posttest increases, affirming that prior familiarity did not preclude further learning. Collectively, these results validate the targeted educational framework, highlighting its capacity to elevate participants' knowledge in both breadth and depth, especially in key domains of safe and informed social networking practices across contemporary digital platforms. The pronounced improvement demonstrated in posttest scores, irrespective of the initial baselines, underscores the intervention's success in achieving its intended learning outcomes.

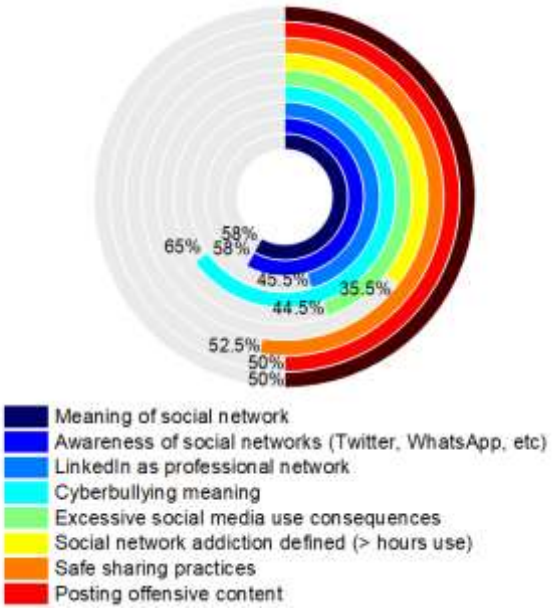

Fig. 3 Pre-test percentage of knowledge score (experimental group)

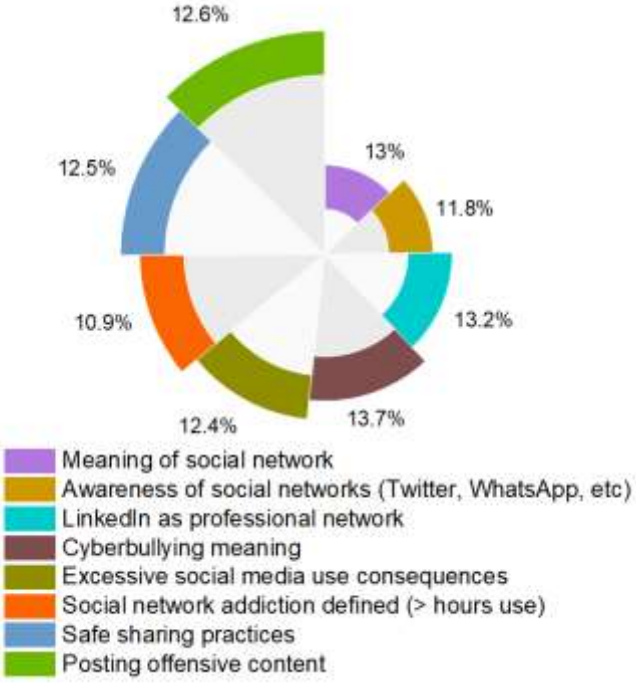

Fig. 4 Post-test percentage of knowledge score (experimental group)

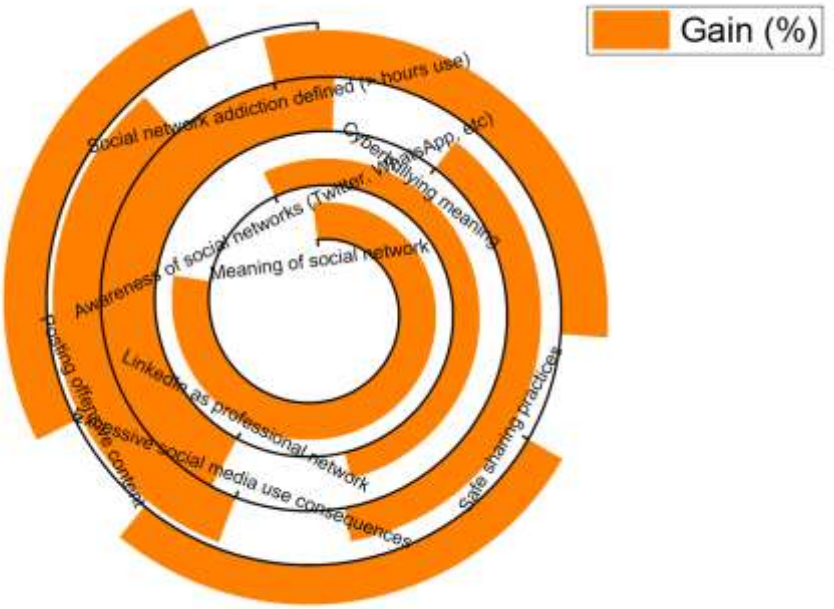

Fig. 5 Statement-wise Percentage Correct Response (Gain %)

DISCUSSION

The present study highlights the significant impact of a structured Information Education Communication (IEC) intervention in enhancing college students' knowledge about social networks. Prior to the intervention, both experimental and control groups exhibited inadequate to moderate awareness regarding the nature, risks, and safe practices of social media use. This baseline deficiency underscores a critical gap in digital literacy, despite the ubiquitous presence of social networking platforms in students' daily lives. The use of a 20-item standardized questionnaire developed by Malak et al., Nazari et al., Shabur et al. provided a robust and objective measure of digital literacy improvements following the intervention [1,9,10].

Following the two-week IEC package, the experimental group showed substantial improvements in their understanding of key concepts such as privacy concerns, recognition of professional social networks, definitions of addiction, cyberbullying, and responsible content sharing. These findings are consistent with previous research that demonstrates the effectiveness of targeted educational programs in mitigating the negative consequences of social media overuse and misinformation. The significant disparity in posttest knowledge between the experimental and control groups affirms the value of structured digital literacy interventions tailored to the college demographic [11].

The intervention's success may be attributed to its comprehensive curriculum covering both theoretical knowledge and practical guidelines for safe social media navigation. Given that contemporary youth are heavily engaged with multiple platforms, equipping them with the skills to critically assess content and protect their digital privacy is paramount. Furthermore,

raising awareness about the psychological implications of excessive use may foster healthier screen time habits, contributing to overall well-being.

Despite the positive outcomes, this study is limited by its short follow-up period and geographic confinement to Chennai, which may affect broader applicability. Future research should explore the long-term retention of knowledge and observe behavioral changes resulting from such educational efforts. Expanding the intervention to diverse populations and incorporating periodic reinforcement could further enhance its impact.

CONCLUSION

The study demonstrated that college students had predominantly inadequate to moderate baseline knowledge regarding social networks, highlighting a clear gap in digital literacy despite high levels of daily social media use. Using a standardized 20-item questionnaire, the intervention successfully identified deficits in understanding of core concepts such as privacy, cyberbullying, addiction, and safe sharing practices, thereby justifying the need for a structured educational approach. Implementation of the two-week IEC package led to a marked and statistically significant improvement in overall knowledge scores in the experimental group compared with the control group, with a large proportion of students achieving adequate knowledge following the intervention. This shift was evident across statements addressing platform awareness, recognition of professional networks, and awareness of risks and protective strategies, indicating that the content and format of the IEC package were well aligned with learner needs. These findings suggest that embedding structured digital literacy and safe social networking education within college curricula can be an effective strategy to promote responsible technology use, reduce vulnerability to online risks, and support students' academic and psychosocial well-being. At the same time, the single-city setting and short follow-up period point to the need for multi-center studies with longer-term evaluation to determine knowledge retention and actual behavioral change, and to adapt similar interventions for diverse educational and cultural contexts.

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Data Availability: Data will be made available upon request made to the corresponding author.

Ethical statement

Formal ethical approval was obtained from the Institutional Ethics Committee of Meenakshi Academy of Higher Education and Research (CMCH-21-PR-323). All participants and, when necessary, their legal guardians were fully informed about the purpose, procedures, benefits, and potential risks of the study. Voluntary participation was emphasized, and it was clearly communicated that individuals had the right to withdraw from the study at any point without any consequences to their care.

Patient Consent for Publication: Not applicable.

Competing Interests: All authors confirm that they do not have any conflicts of interest to disclose.

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