Awareness and Utilisation of Artificial Intelligence for Cancer Health Information among Women in Erode District, Tamil Nadu: An Empirical Study.

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ABSTRACT
Cancer in India is a public health problem and early diagnosis is heavily reliant on the level of knowledge about symptoms, risk factors and screening services for the prevention of cancer. Information and Communication Technology (ICT) such as smart phones, internet, social media, online videos and health portals are one of the important sources of information and play a significant role in the dissemination of health information but little is known about the effectiveness of ICT in cancer awareness in semi-urban and rural settings in western Tamil Nadu. This descriptive cross-sectional study was conducted with 150 women respondents in Erode district using a structured, 48 item questionnaire which includes ICT access and usage, cancer awareness, sources of information, perceived effectiveness of ICT (10 item 5-point Likert scale, $\alpha = 0.92$), digital health services, trust, barriers and future needs. Percentages, mean and standard deviation, one sample t-test, one-way ANOVA (Kruskal-Wallis test), chi-square test, and Spearman's rank correlation were used for data analysis. 96.7% of respondents had internet access, 36.7% rated their cancer awareness as high or very high and 33.3% knew about screening programmes.96.7% of respondents said they had access to the internet, 36.7% said cancer awareness is high or very high and 33.3% said they knew about screening programmes. The mean perceived-effectiveness score was 3.39 (SD = 0.69) which was significantly higher than the neutral score of 3 ($t = 6.96$, $p < 0.001$). The effectiveness scores varied significantly by residence, with higher scores in rural areas (3.62) than semi-urban (3.48) and urban (3.06) areas ($p < 0.001$), and were positively associated with the cancer-awareness index ($\rho = 0.51$, $p < 0.001$). The top source of cancer information was still doctors (70.0%), while lack of digital skills (56.7%) and lack of awareness, and lack of trust, were the primary obstacles. The study finds that ICT is moderately effective for cancer awareness, and suggests that trusted, Tamil-language, doctor-approved digital content, as well as digital-literacy training and rural outreach programs are recommended.
Keywords: ICT; cancer awareness; digital health; health communication; Erode; Tamil Nadu; digital literacy

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1 INTRODUCTION
One of the top ten causes of death globally, cancer is estimated to cause 19.3 million new cases and nearly 10 million deaths in 2020 (Sung et al., 2021). In India, the incidence of over 1.4 million is estimated every year and the major burden of cancers is on breast, oral, cervical and lung cancers (Mathur et al., 2020; Sathishkumar et al., 2022). Many cases are diagnosed at a late stage making treatment more difficult and survival rates lower. So, awareness of warning signs, risk factors and screening services is the first line of defence and low cost too.

Smartphones and cost-effective mobile data have altered people's search habits for health information. In addition to doctors, television and newspaper, search engines, YouTube, WhatsApp, and social media, as well as mobile health applications and online portals, are sources of health knowledge (Chou et al., 2009; Eysenbach, 2008). Digital channels can be used to reach large audiences quickly and in local language, but this will only be beneficial if the users are digitally and health literate

(Norman & Skinner, 2006; Neter & Brainin, 2012) and if the information circulated is reliable; misinformation about cancer on social media is a recognised concern (Swire-Thompson & Lazer, 2020; Johnson et al., 2022).

Erode district in Tamilnadu's western part has urban, semi-urban and rural communities, and has a majority population speaking Tamil, thus providing an ideal setting for the study of the use of ICT to facilitate cancer-health education. Researcher's interest has been with national or metropolitan samples only and there is limited evidence at the district level of the use and effectiveness of ICTs in the context of cancer information, as well as what

prevents their use. This is an experiment to fill in that gap. This is an experiment to fill that gap.

2. Review of Literature

The importance of communication in cancer control is emphasized through global strategies, such as the cervical cancer elimination strategy (WHO, 2021; WHO, 2022) and the Global Breast Cancer Initiative (IARC, 2024; WHO, 2024), which both depend on public education to promote vaccination, screening and timely care, and the Global Cancer Observatory (GCO) provided by IARC is meant to support evidence-based planning. Previous studies have reported the information needs of cancer patients to be different throughout the cancer care pathway (Finney Rutten et al., 2005).

There is potential for digital interventions. Social media interventions have been shown to enhance cancer prevention knowledge (Han et al., 2018), mHealth messages and calls to increase participation in cancer screening, particularly when combined (Schliemann et al., 2022), and mobile devices to help meet information needs not in the hospital setting (Richards et al., 2018). A mobile application was introduced in India to assist CHWs with population-based screening (Hariprasad et al., 2025). Internet usage is also linked to psychological outcomes in cancer care (Lleras de Frutos et al., 2020), and information seeking online could change the patient–physician relationship (Tan & Goonawardene, 2017).

I. 3. Objectives of the Study

1. To describe the socio-demographic profile of the respondents and their access to and use of ICT.
2. To assess the level of awareness of cancer – its types, signs and symptoms, early detection, screening and risk factors – among the respondents.
3. To identify the sources of cancer information, with particular reference to ICT sources.
4. To examine the perceived effectiveness of ICT tools in improving cancer health awareness.
5. To study the respondents' awareness of digital health services and their trust in online cancer information.
6. To identify the barriers to accessing cancer information through ICT.
7. To suggest measures for the effective use of ICT, including AI-based and Tamil-language services, for cancer awareness in Erode district.

II. 4. Hypotheses of the Study

The following null hypotheses were posed and tested at 5% significance level:

- The mean perceived effectiveness of the ICT tools for cancer awareness is not different from the neutral value (3) (H01).
- H02: The effectiveness of ICT tools is not significantly different among the respondents based on their place of residence (rural, semi-urban and urban).
- No significant association between place of residence and level of cancer awareness exists.
- The current study does not reveal any significant relationship between the cancer-awareness index and the effectiveness of ICT tools, based on the following results:
- No significant relation between the frequency of viewing cancer-awareness content on the Internet and the cancer-awareness index was found.

5. Research Methodology

A. 5.1 Research design and study area

The study follows a descriptive, cross-sectional survey design. The field of study is Erode district, Tamil Nadu, and respondents were drawn from the taluks of Erode, Perundurai, Kodumudi, Bhavani, Modakurichi and others listed in Table 1.

B. 5.2 Sample and sampling

The number of respondents for the primary data was 150 through convenience sampling. For all the respondents the age range was 21-60 years, the majority of whom were women, and who resided in rural (40), semi-urban (65) and urban (45) areas.

5.3 Research instrument

A structured questionnaire consisting of 48 questions across nine sections was used to collect data: (I) Demographic data; (II) access and use of ICTs; (III) awareness of cancer; (IV) sources of information regarding cancer; (V) effectiveness of ICTs tools; (VI) digital health services; (VII) trust and reliability; (VIII) barriers; and (IX) future of ICTs in cancer awareness. Ten statements are included in Section V and are on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) (Likert, 1932). The majority of the other questions are closed with one or more answers. The internal consistency of the ten-item scale for effectiveness was high (Cronbach's $\alpha = 0.92$; Cronbach, 1951).

C. 5.4 Variables and scoring

- Perceived-effectiveness score: Average of the 10 statements from Section V (range 1-5); a score > 3 means a positive perception.
- Any of the four awareness items for the signs and symptoms, screening programmes and risk factors (Yes = 2, Partially = 1, No = 0) and importance of early detection (Yes = 2, Not sure = 1, No = 0) count towards the Cancer-awareness index (0–8).
- For the chi-square test, the categories Very High and High were combined to form "High" and Moderate and Low were combined to form "Moderate / Low" of self-rated awareness level.
- Multiple-response items (ICT tools used, cancer types known, source of information, barriers) are reported as the percentages of respondents who checked each response, which results in totals that are greater than 100%.

5.5 Statistical tools

Profile, usage, awareness, sources, services, trust and barriers – percentage analysis and frequency

distribution. Mean and standard deviation – statements and composite scores on a Likert scale. Cronbach's alpha – reliability of the effectiveness scale. One sample t-test (with non-parametric check Wilcoxon signed-rank test) – H01. One-Way ANOVA and Kruskal-Wallis H test – H02. The chi-square test of independence was used to analyze the relationship between two categorical variables, with Cramér's V as the effect size – H03. Spearman's rank-order correlation – H04 and H05. Data were analysed using SPSS 30.0. The Cohen's (1988) conventions were used to interpret effect size and results are considered significant when $p < 0.05$.

III. IV. 6. Results and Discussion

A. 6.1 Socio-demographic profile

Table 1. Socio-demographic profile of the respondents (N = 150)

Characteristic	Frequency	Percentage
Age (years): 21-30	100	66.7
31-40	35	23.3
41-50	10	6.7
51-60	5	3.3
Educations: Undergraduate	15	10.0
Postgraduate	110	73.3
Professional	15	10.0
Other	10	6.7
Occupation: Student	115	76.7
Employee	15	10.0
Homemaker	15	10.0
Professional	5	3.3
Residence: Rural	40	26.7
Semi-Urban	65	43.3
Urban	45	30.0

100% of respondents were women and 66.7% of the women respondents were between 21-30 years of age, with 73.3% of women respondents being post graduates. The largest group of students was in the 'students' occupational category (76.7%). The semi-urban group was the largest (43.3%) while urban (30.0%) and rural (26.7%) were the next largest groups respectively. Erode taluk contributed over half (56.7%) of the respondents. The sample is young, highly educated and female, so this needs to be considered when generalizing the findings.

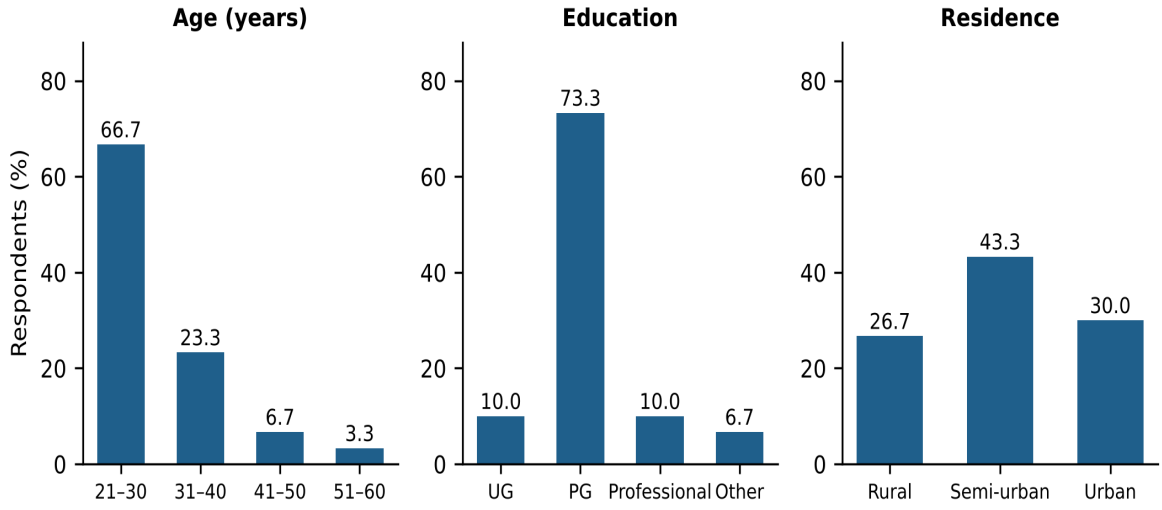


Figure 1. Socio-demographic profile of the respondents (N = 150)

B.

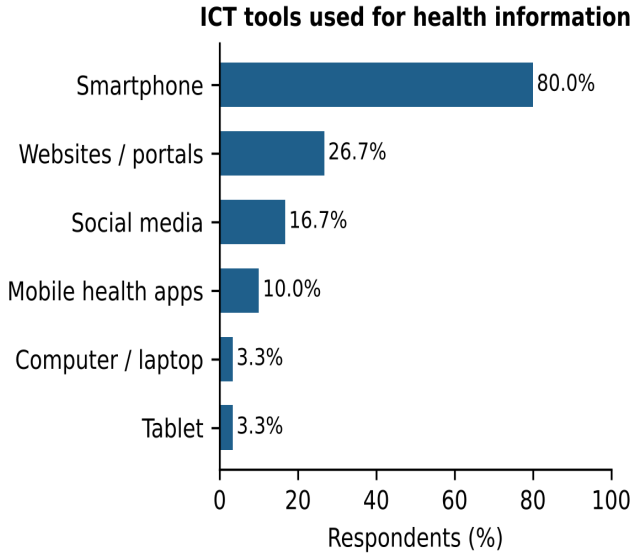
C. 6.2 ICT access and usage

Table 2. ICT access and usage (N = 150)

Item	Frequency	Percentage
Owns a smartphone: Yes	150	100.0

Has internet access: Yes	145	96.7
No	5	3.3
Frequency of internet use: Daily	125	83.3
Frequently	20	13.3
Sometimes	0	0.0
Rarely	5	3.3
Never	0	0.0
ICT tools used for health information: Smartphone	120	80.0
Websites / online portals	40	26.7
Social media	25	16.7
Mobile health apps	15	10.0
Computer / laptop	5	3.3
Tablet	5	3.3
Frequency of searching for health information using ICT: Daily	10	6.7
Frequently	50	33.3
Sometimes	55	36.7
Rarely	25	16.7
Never	10	6.7

The access to ICTs was almost universal: every one of the respondents owned a smartphone and 96.7% had access to internet while 83.3% used it every day. The most widely used health information tool was by far the smartphone (80.0%), followed by websites and online portals (26.7%) and social media (16.7%). There was, however, a significant difference between the frequency of health-information searching and that of general internet use: only 40.0% search the internet for health information every day or very often compared to 23.3% who search rarely or never. Access is not the barrier - converting access into health-information use is the barrier.



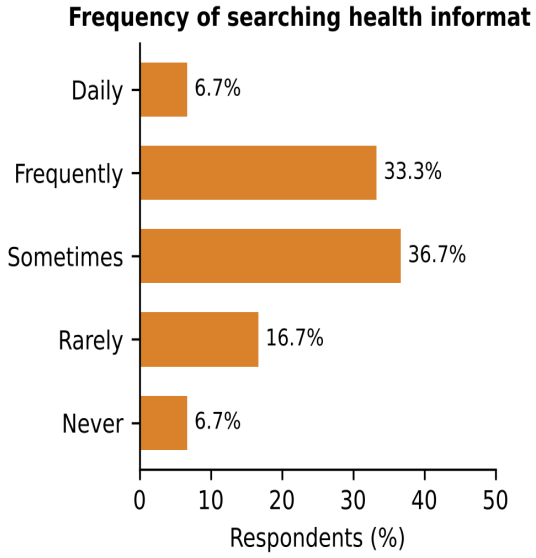


Figure 2. ICT tools used for health information and frequency of searching (N = 150)

D. 6.3 Cancer awareness

Table 3. Awareness of cancer (N = 150)

Item	Frequency	Percentage
Heard about cancer: Yes	120	80.0
No	30	20.0
Self-rated awareness of cancer: Very High	20	13.3
High	35	23.3
Moderate	85	56.7
Low	10	6.7
Types of cancer known: Breast cancer	105	70.0
Lung cancer	90	60.0
Oral cancer	50	33.3
Cervical cancer	30	20.0
Other (blood cancer)	5	3.3
Aware of common signs and symptoms: Yes	50	33.3
Partially	55	36.7
No	45	30.0
Aware that early detection is important: Yes	70	46.7
Not sure	30	20.0
No	50	33.3
Aware of cancer screening programmes: Yes	50	33.3
Partially	70	46.7
No	30	20.0
Aware of major cancer risk factors: Yes	50	33.3
Partially	65	43.3
No	35	23.3

80.0% of respondents had heard of cancer, but one in five (20.0%) had not. The level of self-rated awareness was mostly moderate (56.7%) with 36.7% rating it as high or very high. Knowledge of cancer types was restricted to breast cancer (70.0%) and lung cancer (60.0%), while knowledge of cervical cancer was low at 20.0%, which is a largely preventable cancer, with screening and HPV vaccination. Specific knowledge was low: around 1 in 3 reported knowing the common signs (33.3%), main risk factors (33.3%) or screening programmes (33.3%) and 53.3% were unsure or didn't know that early detection matters. The mean cancer awareness index was 4.40 (SD = 2.56) out of a total of 8.

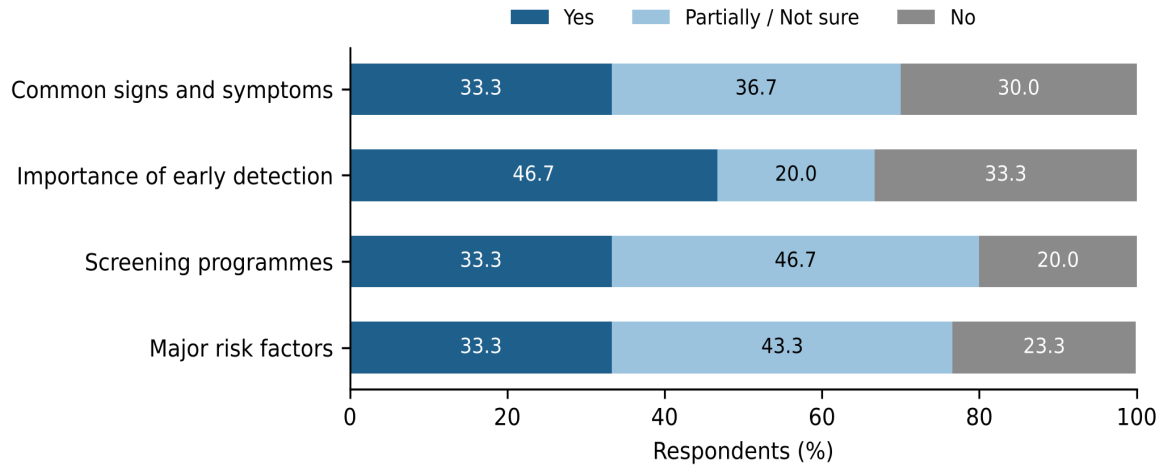


Figure 3. Awareness of cancer signs, early detection, screening and risk factors (N = 150)

E. 6.4 Sources of cancer information

Table 4. Sources of cancer information (N = 150)

Item	Frequency	Percentage
Main source of cancer information: Doctors / healthcare professionals	105	70.0
Television / radio	45	30.0
Google / search engines	35	23.3
YouTube	20	13.3
Facebook / Instagram	20	13.3
Newspapers	10	6.7
WhatsApp	5	3.3
Hospital websites	5	3.3
Most useful ICT source: Social Media	55	36.7
Online Health Portals	35	23.3
Mobile Apps	20	13.3
Websites	15	10.0
Social media and online health portals (both)	15	10.0
YouTube	10	6.7
Frequency of viewing cancer-awareness content online: Very Often	15	10.0
Often	35	23.3
Sometimes	70	46.7
Rarely	25	16.7
Never	5	3.3

Government websites and mobile health applications were not selected as a main source by any respondent.

70.0% of respondents reported TV/Radio as their primary source, followed by doctors and healthcare professionals (65.0%), Google (23.3%) and YouTube (13.3%). Social media was given the highest rating as being useful alone (36.7%) and in combination with online health portals (46.7%), followed by online health portals. Interestingly, no respondent mentioned a government website or a mobile health app as their primary source, indicating that official digital resources are not yet getting to this audience. Only 33.3% read awareness information about cancer on the internet often or very often.

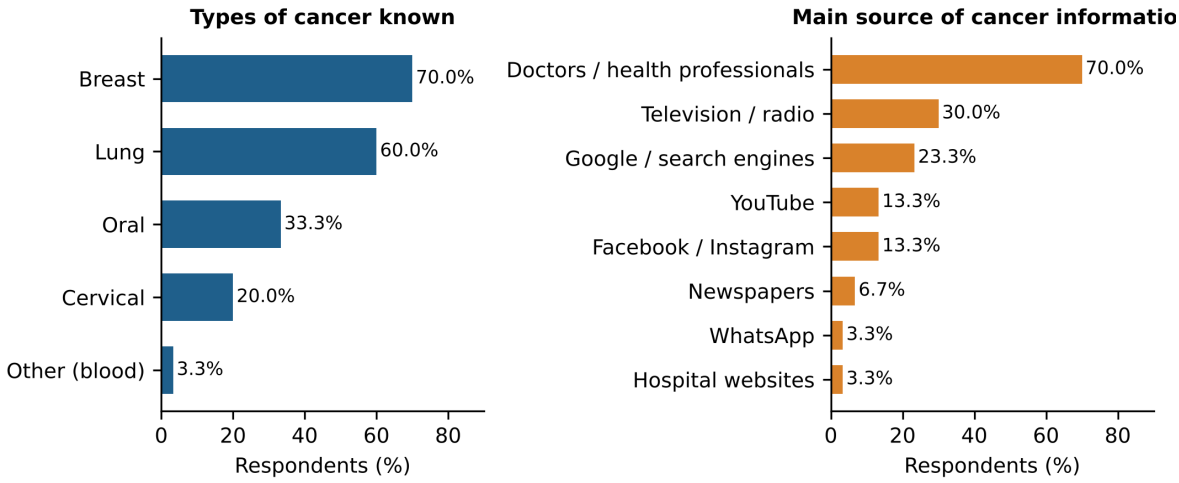


Figure 4. Types of cancer known and main sources of cancer information (N = 150)

F. 6.5 Effectiveness of ICT tools in cancer awareness

Table 5. Perceived effectiveness of ICT tools (N = 150)

Q	Statement	Agree / SA n (%)	Neutral n (%)	Disagree / SD n (%)	Mean	SD	Rank	t	p
22	ICT provides quick access to cancer information	50 (33.3)	80 (53.3)	20 (13.3)	3.20	0.91	9	2.69	0.008
23	Smartphones are useful for cancer awareness	75 (50.0)	50 (33.3)	25 (16.7)	3.47	1.03	5	5.56	<0.001
24	Social media increases cancer awareness	80 (53.3)	50 (33.3)	20 (13.3)	3.40	0.96	6	5.13	<0.001
25	Online videos make cancer information easier to understand	90 (60.0)	40 (26.7)	20 (13.3)	3.60	0.88	1	8.33	<0.001
26	ICT helps people learn about cancer prevention	65 (43.3)	70 (46.7)	15 (10.0)	3.33	0.91	7	4.49	<0.001
27	ICT helps people identify cancer warning signs	65 (43.3)	65 (43.3)	20 (13.3)	3.53	0.99	3	6.57	<0.001
28	ICT promotes awareness of cancer screening	45 (30.0)	90 (60.0)	15 (10.0)	3.23	0.81	8	3.54	<0.001
29	ICT encourages people to seek professional medical advice	80 (53.3)	55 (36.7)	15 (10.0)	3.57	0.85	2	8.20	<0.001
30	ICT improves cancer awareness among rural communities	50 (33.3)	65 (43.3)	35 (23.3)	3.07	0.93	10	0.88	0.382
31	ICT is an effective tool for cancer health education	70 (46.7)	75 (50.0)	5 (3.3)	3.53	0.72	4	9.07	<0.001

	Overall effectiveness score (mean of 10 items)				3.39	0.69		6.96	<0.001

Test value = 3 (neutral). Agree / SA = Agree + Strongly Agree; Disagree / SD = Disagree + Strongly Disagree.

The response was fairly positive. The average of all ten statements was 3.39 (SD = 0.69) with nine of the ten statements being significantly higher than neutral. Items rated as the highest were "Online videos make cancer information easier to understand" (M = 3.60), "ICT encourages people to seek professional medical advice" (M = 3.57) and "ICT helps people identify cancer warning signs" (M = 3.53) indicating the importance of visual and video based content, and ICT as a stimulus to seeking a doctor. The lowest rated items were quick access (3.20) and screening awareness (3.23) and rural reach (3.07), which was not significantly different from neutral (p = 0.382). Many (27-60%) responses were "neutral", indicating that there has yet to be a clear opinion or that the experience with ICT with regard to cancer information is limited

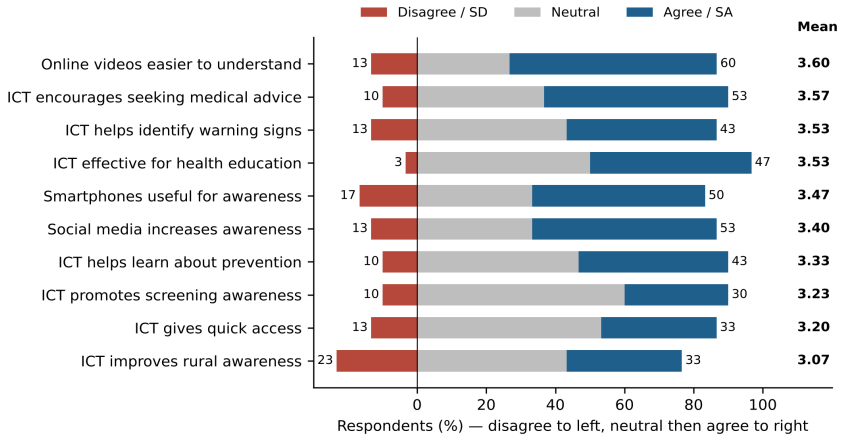


Figure 5. Perceived effectiveness of ICT tools: response distribution and mean score per statement (N = 150)

G. 6.6 Digital health services

Table 6. Awareness and willingness to use digital health services (N = 150)

Item	Frequency	Percentage
Aware of online cancer-awareness programmes: Yes	65	43.3
Partially	40	26.7
No	45	30.0
Aware of telemedicine / online consultation: Yes	55	36.7
No	95	63.3
Aware of online hospital appointment services: Yes	90	60.0
No	60	40.0
Aware of government cancer-related health programmes: Yes	55	36.7
Partially	50	33.3
No	45	30.0
Would use digital services for reliable cancer information: Yes	55	36.7
Maybe	45	30.0
No	50	33.3

The understanding of digital services was variable. Online appointment booking was the most widely known (60.0%), telemedicine was known to 36.7% and online cancer-awareness programmes to 43.3%. Only 36.7% knew of government cancer programmes completely. The acceptance of using digital services for reliable cancer information, was low to moderate: 36.7% agreed, 30.0% said maybe and 33.3% disagreed. The acceptance for using digital services for reliable cancer information was modest: 36.7% agreed, 30.0% maybe and 33.3% no, but this means that there is a large proportion that could be reached by credible and easy-to-use services.

H. 6.7 Trust and reliability of online cancer information

Table 7. Trust and reliability (N = 150)

Item	Frequency	Percentage
Reliability of online cancer information: Reliable	35	23.3
Moderate	90	60.0

Less Reliable	15	10.0
Not Reliable	10	6.7
Verifies online information with a healthcare professional: Always	5	3.3
Often	30	20.0
Sometimes	75	50.0
Rarely	35	23.3
Never	5	3.3
Social media can spread cancer misinformation: Strongly Agree	15	10.0
Agree	65	43.3
Neutral	40	26.7
Disagree	20	13.3
Strongly Disagree	10	6.7
Prefers information from government / recognised organisations: Yes	60	40.0
Sometimes	65	43.3
No	25	16.7

The majority of the respondents (60.0%) considered online cancer information as moderately reliable, 23.3% considered it as reliable and 16.7% considered it as less or not reliable. 53.3% believed that social media can be used to spread misinformation regarding cancer. Verification behaviour was limited – 23.3% always or often checked online information with a professional – and 40.0% (plus 43.3% 'sometimes') trusted health professionals or known health organisations. When combined with Section 5.4, the pattern is evident: People use social platforms because they are convenient and fun, but they know that these platforms are not perfect, and they seek out doctors and official bodies as a source of authority.

I. 8.8 Barriers to accessing cancer information through ICT

Table 8. Barriers, language and training needs (N = 150)

Item	Frequency	Percentage
Major barriers: Lack of digital literacy	85	56.7
Lack of awareness	55	36.7
Lack of trust	50	33.3
Difficulty understanding medical information	40	26.7
Poor internet connectivity	20	13.3
Language problems	15	10.0
Lack of devices	0	0.0
Cost of internet / data	0	0.0
Adequate cancer information available in Tamil online: Yes	40	26.7
To Some Extent	75	50.0
No	35	23.3
Needs training to use ICT for reliable cancer information: Yes	35	23.3
Maybe	65	43.3
No	50	33.3

Lack of digital literacy was the most frequently reported barrier (56.7%), followed by lack of awareness (36.7%), lack of trust (33.3%) and difficulty understanding medical information (26.7%). Less often, infrastructure barriers – poor connectivity (13.3%) – were experienced, and none of the respondents experienced lack of devices or cost of data. Barriers are therefore primarily skill, knowledge and trust based. Only 26.7% reported that they feel the information about cancer is available in Tamil language on-line (23.3% said no, and 43.3% said “maybe”).Just 26.7% reported that they feel information about cancer is available in Tamil language on-line (23.3% reported no, and 43.3% reported “maybe”).

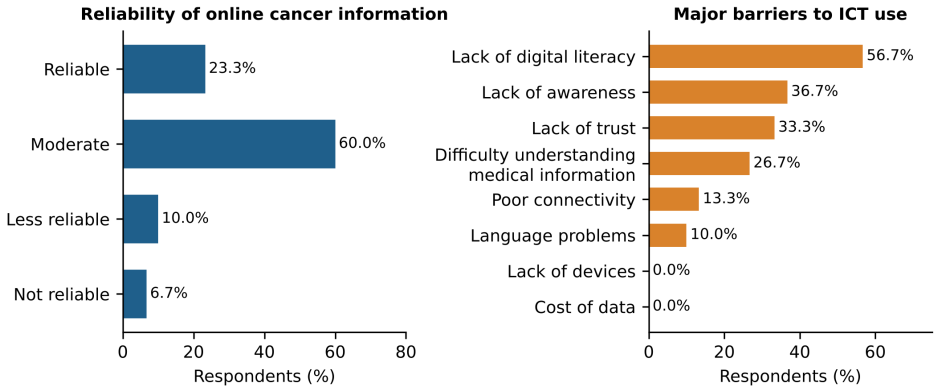


Figure 6. Reliability of online cancer information and barriers to ICT use (N = 150)

J. 6.9 Future of ICT for cancer awareness

Table 9. Opinions on the future use of ICT (N = 150)

Statement	Agree / SA n (%)	Neutral n (%)	Disagree / SD n (%)	Mean	SD	p (vs 3)
ICT should be used more extensively for cancer awareness in Erode district	55 (36.7)	75 (50.0)	20 (13.3)	3.27	0.86	<0.001
Digital cancer-awareness programmes should be conducted in rural areas	85 (56.7)	50 (33.3)	15 (10.0)	3.53	0.89	<0.001
Cancer information should be provided through Tamil-language digital platforms	70 (46.7)	55 (36.7)	25 (16.7)	3.33	0.91	<0.001
Artificial Intelligence can support cancer-health awareness and information services	60 (40.0)	70 (46.7)	20 (13.3)	3.27	1.03	0.002
Overall, ICT tools are effective in improving cancer health awareness in Erode district	70 (46.7)	60 (40.0)	20 (13.3)	3.40	1.02	<0.001

Respondents were favorable to the extension of ICT awareness; best noted support was for ICT programmes in rural areas (M = 3.53, 56.7% agreed) and ICT in Tamil (M = 3.33) and overall, respondents agreed that ICT is effective in Erode (M = 3.40). Support for the use of AI information services was positive but fairly split (M = 3.27; 40.0% agree, 13.3% disagree) and 46.7% were neutral – which means that AI tools will need to be introduced with explanation and clinical supervision.

K. 6.10 Testing of hypotheses

Table 10. One-sample t-test of the effectiveness score against 3

Statistic	Value
Mean (SD)	3.39 (0.69)
t (df = 149)	6.96
p-value (two-tailed)	<0.001
Wilcoxon signed-rank p	<0.001
Decision	H01 rejected

The mean score is significantly higher than 3, so H01 is rejected: respondents perceive ICT tools as effective for cancer awareness, although the margin (0.39 points) is moderate.

Table 11. Perceived effectiveness score by residence

Residence	n	Mean	SD / test result
Rural	40	3.62	0.86
Semi-Urban	65	3.48	0.42
Urban	45	3.06	0.73
ANOVA		F = 9.06	p <0.001
Kruskal–Wallis		H = 17.23	p <0.001

Decision: H02 rejected.

There was also a significant difference in effectiveness scores between residence groups (F(2, 147) = 9.06, p <0.001) confirmed by Kruskal–Wallis, p <0.001, which led to rejection of H02. The rural (3.62) and semi-urban (3.48) respondents were more favourable towards the use of ICT than the urban respondents (3.06), which were close to neutral. This plausible explanation is that those with less convenient access to hospitals and specialists are more impressed by the value of ICT, while the urban respondents are less so, because there are fewer face-to-face options available. This explanation would need to be tested in future studies.

Table 12. Residence and self-rated awareness of cancer

Residence	High	Moderate / Low	% High
Rural	15	25	37.5
Semi-Urban	15	50	23.1
Urban	25	20	55.6
χ^2 (df = 2)		12.10	p 0.002
Cramér's V			0.28

Decision: H03 rejected. All expected cell counts > 5.

Awareness differed by residence (χ^2 = 12.10, df = 2, p 0.002; Cramér's V = 0.28, a small-to-moderate effect), so H03 is rejected. It was found that the proportion of people who rated their awareness as high was highest among the urban respondents (55.6%) while the rural (37.5%) and semi-urban (23.1%) respondents did so in the lowest proportion. Interestingly, the group that is least enthusiastic about ICT is the group with the lowest awareness of it (semi-urban) while the group with the highest awareness is the least convinced of its effectiveness (urban).

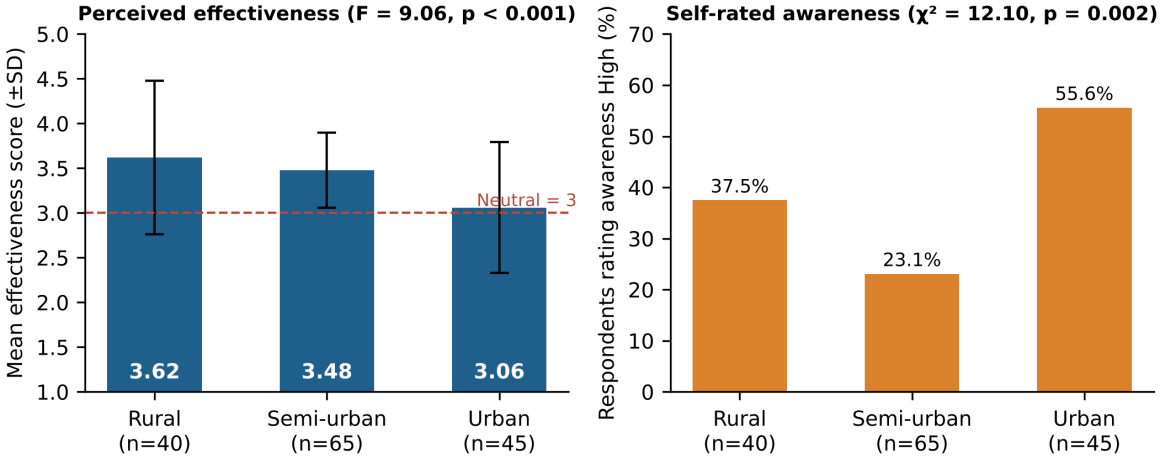


Figure 7. Perceived effectiveness and high self-rated awareness by place of residence

Table 13. Spearman's rank correlations

Variable pair	ρ	p-value	Decision
Cancer-awareness index and effectiveness score (H04)	0.51	<0.001	H04 rejected
Frequency of viewing cancer content online and awareness index (H05)	0.36	<0.001	H05 rejected

Respondents who had higher awareness scores knew ICT was more effective (moderate-to-strong positive correlation, ρ = 0.51, p <0.001), and those who saw the cancer-awareness content more frequently had higher awareness indices (moderate relationship, ρ = 0.36, p <0.001). The null hypotheses are both rejected. A direction

of causality cannot be determined from cross sectional data; exposure to ICTs can increase awareness, or, the more aware can be more likely to seek out and value content – likely both.

V. 7. Major Findings

- Nearly everyone has access to ICTs (100% smartphone ownership, 96.7% internet access), however only 40.0% use these technologies regularly to access health information.
- The awareness of cancer is moderate (36.7% say high), and only about a third know the warning signs, risk factors or screening programmes. Only the most little-known of the major cancers (20.0%) is cervical cancer.
- Doctors are still the primary source of cancer information (70.0%), with social media being most useful with ICT sources, and government websites and health apps not being used as main sources.
- ICT is judged as moderately effective (M = 3.39) which is above neutral level with the highest rating for video-based content and the role of ICT in prompting medical consultation.
- The perceived effectiveness varies depending on the residence, with the highest level in rural (3.62) and the lowest level in urban (3.06) areas and increases with the awareness level.
- The level of trust is conditional: online information is moderately trusted (60.0%) and most respondents trust official sources at least some of the time (53.3%), but see social media as a source of misinformation (53.3%).
- No digital literacy is the top barrier (56.7%) and lack of awareness is also a common barrier, along with lack of trust – not devices or data costs. Most respondents feel that there is lack of content in Tamil language.
- Respondents are supportive of the broad and rural based ICT programmes in Tamil and are tentatively accepting the idea of information services assisted by AI.

VI. 8. Suggestions

- Make trusted content easily accessible: government and hospital health bodies (district health office, government medical colleges) should post short videos and WhatsApp/YouTube content on the health warning signs, screening and risk factors; these should be promoted to appear where people are looking for them.
- Leverage doctors as a face of digital content. One way to combine reach with credibility is to have doctors endorse the videos or via live Q&A sessions and "verify with your doctor" prompts.
- Deliver digital-literacy and e-health-literacy training at the level of the village health nurse, the self-help-group and the college on searching for, judging and taking actions on health information.
- Focus on rural and semi-urban outreach and pay special attention to cervical and oral cancers and to screening programmes, where awareness is limited.
- Address misinformation using badges of trust, fact check drives and collaboration with social-media creators and community influencers.
- Implement AI-powered Tamil Chatbots/voice assistants for providing simple cancer information and reminders for cancer screening; ensure that there is clear clinical supervision and referral to human health care workers.
- Connect awareness content to services – online appointment booking, tele-consultation and Government screening programmes – to enable awareness to lead to action.

VII. 9. Limitations and Scope for Further Research

VIII. The sample size was 150 women selected by convenience sampling and were young, highly educated and were restricted to Erode taluk and hence may not be representative of the rest of the district or men or older people or less educated women. Self-reports of awareness and perceptions. The cross-sectional design only allows for associations, not causal claims. Further studies should adopt probability sampling in all taluks, involve men and older adults, use test items to measure knowledge as opposed to self-reported knowledge, and investigate specific ICT interventions (e.g. Tamil videos or chatbots) in an experimental manner.

IX. 10. Conclusion

In this study, the role of ICT tools in spreading cancer awareness among 150 women of Erode district, Tamil Nadu was discussed. The devices and connectivity available to respondents is suitable for digital health communication and they have a moderate belief in ICT as an effective way of enhancing cancer awareness ($M = 3.39$; $p < 0.001$), especially via videos and as a reminder to consult a doctor. Perceptions of effectiveness were different for each residence and were related to awareness in a positive way. However, cancer awareness of the signs, risk factors and screening is low, and individuals rarely seek out health information online, and when they do, it isn't always trusted. Skills, understanding, trust and a lack of tamil language content are the main challenges, rather than access to technology. Therefore, doctors and health workers should be seen as complementary to, rather than a substitute for, the use of ICT. When trusted and used in conjunction with digital-literacy training and rural outreach, digital information in Tamil language, endorsed by a doctor, can be a powerful low-cost tool for early detection and prevention of cancer in Erode district.

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