RESEARCH ARTICLE

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Knowledge, Attitudes and Practices among Cancer Patients and Their Caregivers: Insights from a Cross-Sectional Study

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Abstract

Objective: To evaluate the levels of knowledge, attitudes, and practices (KAP) regarding cancer among patients and their caregivers, and to determine how these factors influence health-seeking behavior and early detection practices. Additionally, the study aimed to identify key gaps and barriers that may hinder effective cancer prevention and timely treatment. **Methods:** A cross-sectional study was conducted with 140 participants, using a structured, pretested questionnaire. KAP scores were analyzed using descriptive statistics, t-tests, and regression analysis to determine the predictors of health behaviors. Correlation analysis was used to assess the interrelationships among KAP components. **Result:** Moderate levels of knowledge (mean score: 62.2 ± 9.7) and attitudes (71.1 ± 8.0) were observed, with notable gaps in awareness of risk factors and early detection methods. Practice scores (82.6 ± 9.5) were influenced by both attitude and knowledge levels, with knowledge showing the strongest correlation with practice ($r = 0.51$, $p < 0.001$). Regression analysis identified education level ($\beta = 0.33$, $p < 0.001$) and economic status ($\beta = 0.23$, $p = 0.03$) as significant predictors of KAP scores. **Conclusion:** Knowledge and attitudes are key determinants of cancer-related health behaviors. Enhancing awareness and fostering positive attitudes through targeted educational interventions can improve early detection, treatment adherence, and preventive practices. Strengthening public health initiatives, addressing stigma, and improving access to healthcare are critical for optimizing cancer outcomes and promoting sustainable behavioral change.

Keywords: Health education intervention- Psychosocial determinants- Sociocultural barriers- Stigma and misconceptions

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Introduction

Cancer is a leading cause of death worldwide, accounting for approximately 10 million deaths annually, making it one of the most significant public health challenges globally [1]. Despite substantial advances in cancer treatment and diagnostic technologies, the global burden of cancer continues to rise, driven largely by aging populations, lifestyle changes, and delays in early detection [2, 3]. The importance of early detection and preventive practices is well-documented, with early diagnosis significantly improving prognosis and reducing treatment costs [4]. However, the success of early diagnosis efforts and treatment adherence largely depends on the awareness, attitudes, and behaviors of individuals toward cancer screening, prevention and treatment. Specifically, knowledge, attitude, and practice (KAP) assessments have become pivotal in understanding public health behavior and identifying barriers to effective cancer control strategies [5].

The World Health Organization (WHO) has emphasized the role of knowledge and awareness in reducing the cancer burden, advocating for widespread health education initiatives aimed at improving public understanding of cancer risk factors, symptoms, and the benefits of early diagnosis and treatment [6]. Public knowledge is essential in recognizing early warning signs of cancer, promoting adherence to recommended screening schedules, and reducing stigma associated with the disease [7]. The term "knowledge" within this context refers to a person's understanding of cancer's risk factors, symptoms, and available preventive and therapeutic options. Studies indicate that a lack of awareness or misconceptions about cancer risks and symptoms can contribute to delays in seeking medical care, often resulting in diagnoses at advanced stages when treatment outcomes are less favorable [8].

Attitudes toward cancer play an equally critical role in shaping health behaviors and practices. Attitudes encompass the beliefs and perceptions that individuals hold about cancer, including feelings toward prevention, screening, and treatment [9]. Positive attitudes toward early detection and treatment have been shown to encourage adoption of preventive health behaviors, such as adherence to screening guidelines and lifestyle modifications [10]. On the other hand, negative attitudes,

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often rooted in fear or stigma, can lead to avoidance of health services, delay in seeking care, and resistance to discussing cancer-related topics. Particularly in low- and middle-income countries, stigma surrounding cancer remains a significant barrier to care, impacting both patients and their families [11]. Stigmatizing beliefs, such as viewing cancer as an incurable or contagious disease, can deter people from participating in early screening and reduce their willingness to adopt preventive health practices [12].

The practical component of KAP, referred to as "practice" or "behavior", encompasses an individual's actual actions in relation to cancer prevention, such as participation in screenings, adopting healthier lifestyles, seeking timely medical consultation wherever required and following treatment instructions. Regular cancer screening and preventive lifestyle practices, including tobacco cessation, reduced alcohol consumption, healthy dietary choices, and physical activity, are associated with lower cancer incidence and better prognoses [13]. However, studies highlight that there remains a significant gap between knowledge and practice, even in populations with high levels of cancer awareness [14]. This gap indicates that knowledge alone is insufficient to drive preventive behaviors; supportive infrastructure and positive attitude reinforcement are necessary for sustained health behavior changes [15].

The role of care giver, is essential in shaping cancer-related KAP among patients, especially in complying with treatment after diagnosis of cancer. Family members are often the primary caregivers, providing emotional, financial, and logistical support throughout the cancer journey. When caregivers are well-informed about cancer risks, prevention and treatment, they can play a supportive role in reinforcing healthy behaviors and encouraging adherence to treatment and follow-up care [16]. Moreover, caregivers' attitudes and practices regarding cancer significantly influence patients' outlook and willingness to engage in preventive and curative measures. Studies show that patients who receive positive reinforcement from caregivers are more likely to seek early diagnosis and adhere to treatment plans [17-20].

Despite the recognized importance of KAP assessments in cancer prevention and treatment, there is a paucity of research in India specifically addressing the knowledge, attitudes, and practices of both cancer patients and their caregivers. Understanding the KAP of these populations can offer valuable insights into the barriers and facilitators of cancer prevention and care adherence. Cross-sectional studies examining KAP can reveal common knowledge gaps and identify misconceptions prevalent in specific populations, providing data that can guide tailored educational interventions [21]. Various studies have confirmed widespread misconceptions regarding cancer causation and prevention, highlighting the need for culturally adapted educational programs that address local beliefs and practices [22]. Cancer awareness programs tailored to local contexts can improve knowledge, modify attitudes, and encourage preventive practices in diverse populations [23]. In line with these findings, several countries have implemented family-focused interventions and community outreach programs that aim to promote cancer awareness among both patients and their caregivers, with promising results in improving KAP scores [24, 25].

This study aimed to assess the KAP of cancer patients and their caregivers, focusing on their understanding of cancer risk factors, screening practices, and attitudes toward preventive measures that might affect the health behavior in the region of Saurastra in the state of Gujarat, India. By analyzing KAP levels among both patients and caregivers, the study sought to identify gaps in cancer knowledge and barriers to 'seeking cancer treatment' behavior in this region.

Materials and Methods

This cross-sectional study assessed the knowledge, attitude, and practices (KAP) related to cancer among cancer patients and their caregivers. The study aimed to explore awareness levels, attitudes toward treatment, and behavior towards scientific treatment as well as caregiving practices to understand their influence on patients' care and potential areas for intervention.

The study was conducted in the Department of Radiotherapy and Oncology of a tertiary-care hospital. The study population consisted of two groups: cancer patients diagnosed with cervical, breast, lung, or head and neck cancers, and their immediate or primary caregivers.

Sample Size and sampling strategy

The final sample size of 140 participants (70 patients and 70 caregivers) was based on feasibility and the number of eligible individuals presenting during a two-week study window. The design is consistent with exploratory KAP studies, where feasibility-based sampling is commonly used to obtain reliable estimates of domain scores and inter-relationships. The sample size also meets statistical adequacy for correlation and regression analyses, ensuring at least 10-20 observations per variable.

We specifically included patients who were in the middle of their treatment course. Patients at this stage have usually completed initial counselling, diagnostic work-up and at least part of their planned therapy, which provides them and their caregivers with adequate opportunity to interact with the health system and receive cancer-related information. This timing reduces the bias that may arise if patients are recruited immediately at diagnosis (when distress and uncertainty are highest) or at completion (when recall and motivation may differ). Consequently, KAP responses obtained at mid-treatment are more likely to reflect stable, experience-based knowledge, attitudes and practices.

A consecutive sampling method was used. All eligible patients receiving active treatment during the specified two-week period were approached. For each patient recruited, their immediate primary caregiver was also included to create patient-caregiver dyads and reduce selection bias.

Inclusion criteria comprised adult cancer patients (aged ≥18 years) diagnosed with cervical, breast, lung, or head and neck cancers and receiving care at the study site. Their immediate family members or primary caregivers,

also aged 18 years or older and actively involved in the patient's day-to-day care, were likewise included. Participants were recruited only if they were able and willing to provide informed consent. Individuals were excluded if they had cognitive impairment that could interfere with their ability to understand or respond to the questionnaire, or if either the patient or caregiver was unable to provide informed consent.

Data Collection

Data were collected using a structured, pre-tested questionnaire comprising three domains: knowledge, attitude, and practice. The knowledge domain included items assessing understanding of cancer types, risk factors, symptoms, and principles of early detection. Participants were asked about awareness of warning signs, familiarity with modifiable and non-modifiable risk factors such as smoking or genetic predisposition, and comprehension of available treatment modalities. The attitude domain explored participants' perceptions toward cancer diagnosis, treatment, prognosis, and preventive behaviors. This included attitudes toward early screening, beliefs regarding treatment efficacy, perceived barriers to care, and feelings about the curability of cancer. The practice domain assessed caregiving activities, adherence to medical advice, lifestyle modifications, and utilization of supportive or alternative therapies, including the type and frequency of support provided to patients and engagement in recommended behavioral changes.

Each section consisted of a combination of closed-ended items, including yes/no questions, multiple-choice responses, and Likert-scale statements, enabling the collection of quantifiable and comparable data. The questionnaire was administered through face-to-face interviews to minimize non-response, ensure comprehension, and maintain uniformity in data collection. Interviews were conducted separately for patients and caregivers to avoid mutual influence, with each session lasting approximately 20-30 minutes.

Scoring of Responses

Knowledge items were scored dichotomously, with correct responses assigned 1 point and incorrect or "don't know" responses scored as 0. Attitude items based on a Likert scale were assigned gradated scores, with higher values reflecting more favorable attitudes toward cancer prevention and care (e.g., a score of 5 for "Strongly Agree" regarding the importance of screening and lower scores for negative perceptions). Practice items were similarly scored, with positive health behaviors, such as adherence to treatment recommendations or engagement in screening, assigned 1 point, while non-engagement or negative practices were scored as 0.

Scores for each domain were summed and subsequently standardized to a 0-100 percentage scale to allow comparison across domains and participant groups. Mean and standard deviation values were calculated separately for patients and caregivers. Statistical analyses, including t-tests and regression models, were performed to compare KAP scores across demographic and educational categories and to examine interrelationships among the domains.

Results

Patients in this study were older than the caregivers, reflecting the age-related risks for certain cancers. Caregivers were younger, suggesting their supportive roles often fall to adult children or spouses. Education level also varies, with a slightly higher proportion of caregivers having college or university education (Table 1).

Caregivers showed higher knowledge and practice scores compared to patients, likely due to their active roles in caregiving and seeking cancer-related information to better support the patients. Conversely, patients demonstrate more positive attitudes, which may stem from their direct engagement in treatment and optimism about recovery (Table 2).

For remaining analysis, combine cohort was used

Table 1. Demographic Characteristics of Study Participants

Demographic Variable	Patients (n=70)	Caregivers (n=70)	Total (n=140)	p-value
Age (Mean ± SD)	55.8 ± 10.4	44.2 ± 11.9	50.0 ± 13.1	<0.001*
Gender				0.75
Male	29 (41.4%)	32 (45.7%)	61 (43.6%)	
Female	41 (58.6%)	38 (54.3%)	79 (56.4%)	
Education Level			0.38	
No Formal Education	12 (17.1%)	10 (14.3%)	22 (15.7%)	
Primary School	18 (25.7%)	20 (28.6%)	38 (27.1%)	
Secondary School	27 (38.6%)	25 (35.7%)	52 (37.1%)	
College/University	13 (18.6%)	15 (21.4%)	28 (20.0%)	
Cancer Type			-	
Cervical	20 (28.6%)	-	20 (14.3%)	
Breast	25 (35.7%)	-	25 (17.9%)	
Lung	15 (21.4%)	-	15 (10.7%)	
Head and Neck	10 (14.3%)	-	10 (7.1%)	
Caregiving Duration	-	2.5 ± 1.2 years	-	-

Table 2. Knowledge, Attitude, and Practice Scores

Measure	Patients (n=70)	Caregivers (n=70)	Total (n=140)	p-value
Knowledge (Mean ± SD)	58.9 ± 9.8	65.5 ± 8.1	62.2 ± 9.7	<0.001*
Attitude (Mean ± SD)	73.2 ± 6.9	69.1 ± 8.5	71.1 ± 8.0	0.02*
Practice (Mean ± SD)	79.4 ± 10.0	85.8 ± 7.6	82.6 ± 9.5	<0.001*

*Significant at $p < 0.05$

Table 3. Regression Analysis Predicting KAP Scores

Predictor Variable	Knowledge (β)	Attitude (β)	Practice (β)	p-value
Age	0.12	0.09	0.1	0.08
Education Level	0.33	0.24	0.30	<0.001*
Economic Status	0.20	0.17	0.23	0.03*
Gender (Male=1)	0.05	0.1	0.08	0.12

*Significant at $p < 0.05$

which included both patients and caregivers. The regression analysis highlights the significant role of education level and economic status in predicting KAP scores. Education emerged as the strongest predictor across all three domains (knowledge, attitude, and practice), suggesting that higher educational attainment imparts better understanding and practical skills of caregiving or self-management. Economic status significantly influences knowledge and practice, reflecting the importance of financial resources in accessing information and adhering to medical advice. While age and gender show weaker associations, their contributions to variability in KAP scores cannot be dismissed, indicating areas for targeted interventions (Table 3).

The correlations indicate meaningful relationships between knowledge, attitude and practice. Knowledge and practice show the strongest association ($r = 0.51$, $p < 0.001$), suggesting that individuals with better understanding are more likely to engage in beneficial practices. The moderate correlation between knowledge and attitude ($r = 0.43$, $p < 0.01$) highlights the role of awareness in shaping perceptions. Likewise, the link between attitude and practice ($r = 0.39$, $p < 0.01$) suggests that a positive outlook can drive actionable behaviors. These results underscore the interconnected nature of KAP domains and the importance of fostering knowledge to influence attitudes and practices positively (Table 4).

The mediation analysis illustrates that knowledge indirectly influences practice through its impact on attitude. The significant coefficient ($\beta = 0.45$, $p < 0.001$) indicates that individuals with greater knowledge are more likely to develop positive attitudes toward cancer treatment and caregiving. In turn, a positive attitude ($\beta = 0.37$, $p < 0.001$) significantly enhances practice, such as adherence to treatment and caregiving behaviors. These findings support the hypothesized sequential relationship within the KAP framework, highlighting the importance of educational interventions to boost knowledge, which can cascade into improved attitudes and actionable practices (Table 5).

The sample reflects a representative distribution of patients and caregivers, with notable differences in age and education levels. These variables influence KAP outcomes. Caregivers exhibit higher knowledge and practice scores, reflecting their role in caregiving, while patients show more positive attitudes due to direct involvement in treatment. Education level and economic status significantly predict all KAP scores, indicating the importance of socioeconomic factors. Knowledge positively correlates with attitude and practice, emphasizing the cascading effect of awareness. Knowledge enhances attitude, which subsequently improves practice, validating the hypothesized relationships.

Discussion

This study assessed the Knowledge, Attitude, and Practice (KAP) related to cancer among patients and caregivers in the region of Saurashtra, Gujarat, India, providing foundational insights that can guide the design and focus of larger community-based studies. The findings highlighted moderate overall KAP scores across domains, reflecting both strengths and persistent gaps in cancer-related awareness, perceptions, and behaviors. These results suggest specific areas for deeper investigation in a larger study, such as exploring the cultural and socioeconomic factors influencing KAP domains, the role of healthcare access in shaping practices, and the impact of educational interventions on improving knowledge and attitudes over time.

Table 4. Correlation Between KAP Scores

Variable Pair	Correlation (r)	p-value
Knowledge and Attitude	0.43	<0.01*
Attitude and Practice	0.39	<0.01*
Knowledge and Practice	0.51	<0.001*

*Significant at $p < 0.05$

Table 5. Mediation Analysis

Predictor Variable	Dependent Variable	β (Coefficient)	p-value
Knowledge	Attitude	0.45	<0.001*
Attitude	Practice	0.37	<0.001*

*Significant at $p < 0.05$

The overall knowledge score among participants was moderate, indicating that while there is some awareness of cancer risk factors, symptoms, and prevention, significant gaps remain. Patients and caregivers demonstrated a variable understanding of key issues, such as the benefits of early detection, common symptoms (e.g., unexplained lumps, weight loss, or bleeding), and modifiable risk factors (e.g., smoking and alcohol consumption). Misconceptions, such as the belief that cancer is contagious or always fatal, were particularly prevalent among participants with lower educational attainment.

Knowledge gaps about cancer are consistently observed in studies conducted in low- and middle-income countries (LMICs). A study by Yadav et al. found that most participants were aware of cancer, but knowledge about specific risk factors and warning signs was limited. In this study, only a few participants knew about the risk factors and warning signs for cervical and breast cancers. Participants with higher education levels had better knowledge of cancer risk factors, warning signs, and prevention methods [25]. Similarly, Pham et al. found in Vietnam that cancer knowledge varied widely, with many individuals lacking awareness of risk factors and preventive measures. Factors influencing knowledge included education level, exposure to cancer-related information, and direct experience with the disease. Patients, while having more positive attitudes, often had insufficient understanding of cancer risks [8]. The gaps were attributed to cultural beliefs, limited access to reliable information, and healthcare disparities.

In contrast, studies from high-income countries like the United Kingdom report higher knowledge scores, attributed to extensive public health campaigns and greater access to educational resources. However, these scores still fall short of expectations relative to their economic and social development [26].

Moderate cancer related knowledge scores in this study indicate an urgent need for structured educational interventions targeting communities at different levels. The results of this study can inform the design of such interventions by identifying specific knowledge gaps, such as misconceptions about cancer's curability and transmission, and tailoring content to address these areas. Additionally, the study highlights the importance of culturally sensitive approaches and the role of caregiver involvement, which can serve as a basis for developing effective educational strategies for larger-scale implementation. Efforts should focus on dispelling myths and misconceptions while providing accessible, culturally sensitive information about risk factors, symptoms, and preventive measures. Public health campaigns leveraging digital platforms, community health workers, and local healthcare facilities can bridge these gaps effectively. A larger study might evaluate the effectiveness of these interventions across different demographics or regions by analyzing their impact on awareness levels, screening participation, and lifestyle modifications, while also accounting for variations in socioeconomic and cultural factors.

The overall attitude scores were positive, with participants expressing optimism about cancer treatment and outcomes. Most respondents recognized the importance of regular screening and lifestyle changes to prevent cancer. However, some attitudes were negatively influenced by stigma, fear of diagnosis, and financial constraints. Caregivers, while knowledgeable, reported relatively lower attitude scores, potentially due to the psychological and emotional stress of caregiving.

Attitudes toward cancer often reflect fear, stigma, and misconceptions, influenced by cultural beliefs, lack of awareness, and inadequate access to education. Many individuals perceive cancer as a fatal or untreatable disease, which discourages early detection and prevention efforts. Healthcare infrastructure, socioeconomic status, and limited public health campaigns exacerbate these attitudes. Improving knowledge through education, fostering supportive environments, and addressing misconceptions can help reshape attitudes, encouraging proactive health behaviors and reducing stigma [27].

Positive attitudes are a crucial driver of health-promoting behaviors, yet they remain fragile in the face of stigma, fear, and resource limitations. Addressing these barriers through culturally sensitive counseling, community support groups, and public awareness campaigns can foster more resilient and proactive attitudes toward cancer prevention and treatment.

The overall practice scores were relatively high, indicating that many participants engaged in health-promoting behaviors, such as undergoing cancer screenings, adhering to treatment plans, and adopting lifestyle changes (e.g., quitting smoking or improving diet). However, barriers such as financial difficulties, lack of access to healthcare facilities, and limited awareness about screening schedules prevented some participants from fully engaging in recommended practices.

The practice domain often highlights disparities between knowledge and action. The disparities in cancer-related knowledge and practices noted in the study are influenced by socioeconomic status, education, and access to healthcare. These gaps result in lower participation in prevention and early detection efforts. The study by Pham et al, specifically highlights cultural beliefs, insufficient health education, and limited awareness campaigns as key causes [08]. Addressing these disparities requires tailored public health initiatives, improved access to information, and equitable healthcare services. The study in Turkey by Ozdemir et al found that rural populations exhibited lower adherence to screening schedules compared to urban counterparts, primarily due to access challenges [9].

In LMICs, practice scores are typically constrained by systemic barriers. Research in India by Sahu et al. found that while 65% of participants expressed willingness to undergo screenings, only 40% had actually participated in them, citing financial and logistical constraints as primary reasons7. In contrast, high-income countries report higher practice scores, supported by comprehensive healthcare policies, insurance coverage, and public health infrastructure.

High practice scores among caregivers and motivated patients highlight the potential of targeted support systems to sustain health-promoting behaviors. Expanding access to affordable screenings, enhancing healthcare

infrastructure, and providing financial assistance can further improve engagement in preventive and treatment-related practices.

The study demonstrated significant correlations among the KAP domains, with higher knowledge scores positively influencing attitudes and, subsequently, practices. Mediation analysis revealed that knowledge indirectly impacted practices through its effect on attitudes, emphasizing the sequential and interconnected nature of these domains. Similar findings have been reported in global literature. A study by Kolahdooz et al. on Indigenous populations in Canada found that knowledge significantly influenced both attitudes and practices, with culturally tailored interventions showing marked improvements in all three domains [5]. In Vietnam, Pham et al. reported that enhanced knowledge led to more proactive attitudes and practices, particularly in urban areas with better access to healthcare information [8].

The interdependence of KAP domains underscores the importance of holistic interventions that address all three dimensions simultaneously. Educational initiatives should be paired with attitude-shaping campaigns and practical support systems to maximize their impact on health behaviors.

Although this study's questionnaire did not include questions related to social beliefs and stigma, their impact on cancer-related health behavior is worth discussing. Social beliefs and stigma play a critical role in shaping health-related practices by influencing knowledge and attitudes. In many cultures, cancer is perceived as a fatalistic or shameful condition, discouraging individuals from seeking timely medical attention or participating in preventive measures. A study in rural India highlighted that beliefs associating cancer with punishment or hereditary curses led to delays in diagnosis and reduced participation in screening programs [28]. Similarly, fatalistic beliefs in Southeast Asia were found to dissuade individuals from adopting healthier lifestyles, as they perceived cancer as an inevitable outcome [29].

Stigma, particularly in low- and middle-income countries, exacerbates these challenges. Research in sub-Saharan Africa revealed that fear of social rejection and the perception of cancer as a contagious disease significantly hindered open discussions about symptoms and risk factors [30]. This stigma often extends to caregivers, who may face societal judgment for their association with a cancer patient, further limiting their willingness to seek support or share knowledge [18].

These beliefs and stigmas not only reduce participation in awareness campaigns but also negatively impact attitudes. A study Iran found that women with strong societal stigmas regarding breast cancer were less likely to undergo mammograms, even when aware of their benefits [31]. Addressing these deeply rooted beliefs through culturally sensitive educational programs and community engagement is vital to improving knowledge and fostering positive attitudes that translate into actionable health practices.

Broader Implications and Recommendations

a) Addressing Knowledge Gaps

Knowledge is the foundation for improved attitudes and practices. Tailored educational programs should prioritize:

• Dispelling common myths (e.g., cancer as contagious or incurable).

• Promoting awareness about early detection and preventive measures.

• Utilizing accessible platforms, such as mobile health apps and community health workers, to reach underserved populations.

b) Reducing Stigma and Shaping Attitudes

Stigma and fatalistic beliefs remain significant barriers to positive attitudes. Interventions should include:

• Community engagement programs to normalize discussions about cancer.

• Counseling services to address fears associated with diagnosis and treatment.

• Success stories and testimonials to foster hope and trust in medical care.

c) Strengthening Practices

Practical support systems are essential to sustain health-promoting behaviors. Key strategies include:

• Expanding access to affordable screenings and healthcare facilities.

• Providing financial subsidies or incentives for preventive measures.

• Enhancing caregiver support programs to reduce their emotional and logistical burdens.

d) Leveraging Policy and Infrastructure

Policymakers should integrate KAP-focused initiatives into broader public health strategies. Emphasis should be placed on:

• Addressing social determinants of health, such as education and economic status.

• Developing region-specific cancer awareness programs to accommodate cultural and contextual differences.

• Strengthening healthcare infrastructure to ensure equitable access to cancer care.

Although the study provides valuable insights, several limitations must be acknowledged. Its cross-sectional design restricts the ability to draw causal inferences, allowing only an assessment of associations between variables. The relatively small sample size of 140 participants, drawn from a single geographic region, further limits the generalizability of the findings to wider or more diverse populations. Additionally, the reliance on self-reported data introduces the possibility of social desirability bias, particularly in responses related to attitudes and practices, where participants may have provided socially acceptable rather than entirely accurate answers. Finally, by focusing exclusively on cervical, breast, lung, and head and neck cancers, the study may not fully capture the broader spectrum of experiences and challenges associated with other cancer types.

Despite these limitations, the study contributes important perspectives that can inform future research.

Future research should build upon these findings by incorporating longitudinal study designs that can track changes in knowledge, attitudes, and practices over time and evaluate the sustained impact of educational or behavioral interventions. Broadening the scope to include more diverse geographic regions and cultural contexts will help generate a more comprehensive understanding of cancer-related KAP across different populations. Additionally, targeted intervention studies; such as those evaluating mobile health tools, structured educational programs, or community-based outreach initiatives, are needed to identify effective strategies for improving cancer awareness and care. Further exploration of sociocultural influences through qualitative research can also provide deeper insights into the cultural, social, and behavioral determinants that shape attitudes and practices, thereby enriching the quantitative evidence and guiding more tailored interventions in the future.

In conclusion, our study demonstrates that while the overall KAP scores among cancer patients and caregivers indicate a moderate level of awareness, generally positive attitudes, and engagement in proactive practices. However, persistent gaps in knowledge and barriers to attitude and practice improvements highlight the need for targeted interventions. These findings align with trends observed in LMICs, where systemic challenges such as stigma, financial constraints, and limited healthcare access hinder progress.

Addressing these gaps through culturally sensitive educational programs, stigma reduction campaigns, and improved healthcare infrastructure can significantly enhance cancer prevention and care outcomes. By fostering a holistic approach that integrates knowledge, attitudes, and practices, healthcare providers and policymakers can empower individuals and communities to take control of their health and reduce the burden of cancer globally.

Author Contribution Statement

Dr Surendra Kumar Saini and Dr. Shelly Srivastava conceived and designed the study. Dr. X and Dr. Y collected the data. Dr. Saini and Dr. Srivastava drafted the manuscript, with critical inputs from Dr. X and Dr. Y. All authors reviewed and approved the final manuscript..

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Ethical Declaration

Ethical approval for this study was obtained from the Institutional Ethics Committee, M. P. Shah Government Medical College, Jamnagar. Written informed consent was obtained from all participants, and confidentiality was maintained throughout the study

Data Availability

Anonymized datasets generated during the study are available from the corresponding author upon reasonable request, in accordance with institutional data-sharing policies.

References

1. World health organization. Cancer. [internet]. 2020. Available from: Https://www.Who.Int/news-room/fact-sheets/detail/cancer.
2. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: Globocan estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2024;74(3):229-63. https://doi.org/10.3322/caac.21834.
3. Siegel RL, Giaquinto AN, Jemal A. Cancer statistics, 2024. CA: a cancer journal for clinicians. 2024 Jan;74(1):12-49. doi: 10.3322/caac.21820. Epub 2024 Jan 17. Erratum in: CA Cancer J Clin. 2024 Mar-Apr;74(2):203. https://doi.org/10.3322/caac.21830
4. Crosby D, Bhatia S, Brindle KM, Coussens LM, Dive C, Emberton M, et al. Early detection of cancer. Science. 2022;375(6586):eaay9040. https://doi.org/10.1126/science.aay9040.
5. Kolahdooz F, Jang SL, Corriveau A, Gotay C, Johnston N, Sharma S. Knowledge, attitudes, and behaviours towards cancer screening in indigenous populations: A systematic review. Lancet Oncol. 2014;15(11):e504-16. https://doi.org/10.1016/s1470-2045(14)70508-x.
6. WHO Report on Cancer: Setting Priorities, Investing Wisely and Providing Care for All. World Health Organization 2020. Available from: https://www.who.int/publications-detail/who-report-on-cancer-setting-priorities-investing-wisely-and-providing-care-for-all.
7. Sahu DP, Subba SH, Giri PP. Cancer awareness and attitude towards cancer screening in india: A narrative review. J Family Med Prim Care. 2020;9(5):2214-8. https://doi.org/10.4103/jfmpc.jfmpc_145_20.
8. Pham DX, Pham TTT, Pham TN, Bui TD. A cross-sectional study about knowledge, awareness and perception of risk factors for cancer among cancer-patients relatives and healthy adults in ho chi minh city, vietnam. Asian Pac J Cancer Prev. 2021;22(1):277-85. https://doi.org/10.31557/apjcp.2021.22.1.277.
9. Özdemir Ü, Kartın PT, Kalyoncuo S. Factors affecting attitudes towards cancer, cancer prevention, and early diagnosis behaviors among cancer patient relatives. J Prev (2022). 2023;44(5):639-62. https://doi.org/10.1007/s10935-023-00750-2.
10. Elangovan V, Rajaraman S, Basumalik B, Pandian D. Awareness and perception about cancer among the public in chennai, india. J Glob Oncol. 2017;3(5):469-79. https://doi.org/10.1200/jgo.2016.006502.
11. Elmaghraby DA, Alshalla AA, Alyahyan A, Altaweel M, Al Ben Hamad AM, Alhunfoosh KM, et al. Public knowledge, practice, and attitude regarding cancer screening: A community-based study in saudi arabia. Int J Environ Res Public Health. 2023;20(2). https://doi.org/10.3390/ijerph20021114.
12. Kataria I, Sethuraman L, Nayak P, Oswal K, Purushotham A. Measurement of cancer stigma in india: Challenges and opportunities. Lancet Reg Health Southeast Asia. 2024;24:100408. https://doi.org/10.1016/j.lansea.2024.100408.
13. Oh JK, Han M, Kim B, Park EY. Adherence to cancer prevention guidelines and cancer incidence and mortality: A population-based cohort study. Cancer Res Treat. 2023;55(1):15-27. https://doi.org/10.4143/crt.2021.1031.
14. Klein WMP, Rothman AJ, Suls J. Bridging behavioral science with cancer prevention and control: Contributions of an

nci working group (2009-2019). Cancer Prev Res (Phila). 2020;13(4):337-42. https://doi.org/10.1158/1940-6207.Capr-19-0484.
15. Bandura A. Health promotion by social cognitive means. Health Educ Behav. 2004;31(2):143-64. https://doi.org/10.1177/1090198104263660.
16. Molassiotis A, Wang M. Understanding and supporting informal cancer caregivers. Curr Treat Options Oncol. 2022;23(4):494-513. https://doi.org/10.1007/s11864-022-00955-3.
17. Wasmani A, Rahnama M, Abdollahimohammad A, Badakhsh M, Hashemi Z. The effect of family-centered education on the care burden of family caregivers of the elderly with cancer: A quasi-experimental study. Asian Pac J Cancer Prev. 2022;23(3):1077-82. https://doi.org/10.31557/apjcp.2022.23.3.1077.
18. Squiers L, Kataria I, Nyblade L, Bann CM, Dhillon PK, Siddiqui M, Aggarwal A, Lynch M. Perceived, experienced, and internalized cancer stigma. Perspectives of Cancer Patients and Caregivers in India [Internet]. Research Triangle Park (NC): RTI Press; 2021.
19. Daher M. Cultural beliefs and values in cancer patients. Ann Oncol. 2012;23 Suppl 3:66-9. https://doi.org/10.1093/annonc/mds091.
20. Hobbs GS, Landrum MB, Arora NK, Ganz PA, van Ryn M, Weeks JC, et al. The role of families in decisions regarding cancer treatments. Cancer. 2015;121(7):1079-87. https://doi.org/10.1002/cncr.29064.
21. Oh JK, Park E, Kim B, Choi YJ, Yun EH, Lim MK, et al. Awareness of and practice toward cancer prevention recommendations: Results of the korean national cancer prevention awareness and practice survey in 2021. Epidemiol Health. 2022;44:e2022068. https://doi.org/10.4178/epih.e2022068.
22. Pramesh CS, Badwe RA, Bhoo-Pathy N, Booth CM, Chinnaswamy G, Dare AJ, et al. Priorities for cancer research in low- and middle-income countries: A global perspective. Nat Med. 2022;28(4):649-57. https://doi.org/10.1038/s41591-022-01738-x.
23. Smith SG, Osborne K, Tring S, George H, Power E. Evaluating the impact of a community-based cancer awareness roadshow on awareness, attitudes and behaviors. Prev Med. 2016;87:138-43. https://doi.org/10.1016/j.ypmed.2016.02.034.
24. Shah SC, Kayamba V, Peek RM, Jr., Heimburger D. Cancer control in low- and middle-income countries: Is it time to consider screening? J Glob Oncol. 2019;5:1-8. https://doi.org/10.1200/jgo.18.00200.
25. Yadav K, Hariprasad R, Gupta R, Upadhayay S, Sharma V, Kumari M, et al. Cancer awareness & its association with demographic variables & mobile phone usage among the rural population of a district in north india. Indian J Med Res. 2022;156(1):94-103. https://doi.org/10.4103/ijmr.IJMR_3145_20.
26. Adlard JW, Hume MJ. Cancer knowledge of the general public in the united kingdom: Survey in a primary care setting and review of the literature. Clin Oncol (R Coll Radiol). 2003;15(4):174-80. https://doi.org/10.1016/s0936-6555(02)00416-8.
27. Befort CA, Nazir N, Engelman K, Choi W. Fatalistic cancer beliefs and information sources among rural and urban adults in the USA. J Cancer Educ. 2013;28(3):521-6. https://doi.org/10.1007/s13187-013-0496-7.
28. Kaul P, Choudhary D, Tiwari AR, Walia R, Sadhu S, Garg PK. Assessing the prevalent myths and misconceptions among caregivers of patients with cancer: A cross-sectional study. Cureus. 2023;15(12):e51332. https://doi.org/10.7759/cureus.51332.
29. Kim HK, Lwin MO. Cultural determinants of cancer fatalism and cancer prevention behaviors among asians in singapore. Health Commun. 2021;36(8):940-9. https://doi.org/10.1080/10410236.2020.1724636.
30. Akuoko CP, Armah E, Sarpong T, Quansah DY, Amankwaa I, Boateng D. Barriers to early presentation and diagnosis of breast cancer among african women living in sub-saharan africa. PLoS One. 2017;12(2):e0171024. https://doi.org/10.1371/journal.pone.0171024.
31. Shirzadi S, Allahverdipour H, Sharma M, Hasankhani H. Perceived barriers to mammography adoption among women in iran: A qualitative study. Korean J Fam Med. 2020;41(1):20-7. https://doi.org/10.4082/kjfm.18.0054.

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