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MITIGATING THE ECONOMIC BURDEN OF CANCER THROUGH LIFESTYLE MODIFICATIONS AND HEALTH INSURANCE.

Dr. Sathvik Reddy Mopuri[1], Dr. Bheemathati Rangarao[2]*.
[1]Junior Resident, Department of Hospital Administration, Kamineni Institute of Medical Sciences.
[2]Professor & HOD, Department of Hospital Administration, Kamineni Institute of Medical Sciences.

Correspondence:
Dr. Bheemathati Rangarao.
Professor & HOD, Department of Hospital Administration, Kamineni Institute of Medical Sciences.

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Abstract

Background: Cancer is one of the most important health issues in the world, and it is very costly for patients, families, and health care systems. High incidence and treatment costs, plus lost productivity, create significant financial burden. Making lifestyle changes and access to health insurance are found to be key interventions to lower the risk of cancer and its economic burden. ***Objective:*** To evaluate the impact of lifestyle changes and health insurance on economic costs of cancer among adult participants. ***Materials and Methods:*** A cross-sectional study was done using 300 respondents who were adult respondents by using structured questionnaire. Socio-demographic information, knowledge of cancer risk factors, lifestyle practices, health insurance status and the perceived financial burden of cancer care were obtained. Descriptive and inferential statistics were used to analyze data. ***Results:*** Results of the study showed moderate-high awareness of lifestyle related risk factors for cancer, with highest awareness regarding tobacco use. Awareness of obesity and physical inactivity, however, was relatively low. Many participants reported the use of healthful lifestyle choices, including physical activity and a healthy diet. Significant associations were found between health insurance coverage and reduced financial burden and increased financial security in case of cancer-related expenses ($p < 0.05$). Those who engaged in several healthy habits had lower concerns about future cancer-related expenses. ***Conclusion:*** Lifestyle changes and health insurance coverage complement each other to lessen the economic impact of cancer. Combining the three elements of preventive health education, promotion of healthy behaviors, and access to affordable health insurance coverage could help to strengthen cancer prevention, financial protection, and financial resources.

Keywords: Cancer prevention, cancer and health insurance, cancer and the economy, cancer and lifestyle, cancer and financial toxicity.

INTRODUCTION

Cancer is one of a major public health and social burden, both in terms of morbidity and mortality, but also for patients and families and for national economies. With the advent of better diagnostic processes and therapeutic treatments, the survival rates of many cancers have improved, but so have the associated costs of health care.(1)

Cancer's impact on the economy also includes lost productivity, long-term disability, lower income in the home and psychological stress. (2)For many people, the financial toll of cancer treatment is as severe as the cancer. Several genetic, environmental and behavioral factors have been proposed as the causes of the increased prevalence of cancer. (3)Of these, lifestyle-related risk factors, such as tobacco use, unhealthy diets, physical inactivity, obesity, excessive alcohol consumption and environmental carcinogens are important in the development of many malignancies. There is evidence that many cancers can be prevented by changing these risk factors.(4)

Lifestyle interventions, therefore, have become a cost-effective approach to reduce cancer incidenceas well as long-term financial burden from cancer diagnosis and treatment. Preventive health behaviors have the potential to significantly decrease the need for costly medical interventions.(5)

The effectiveness of smoking cessation, physical activity, balanced nutrition, weight management and cancer screening is proven in reducing cancer risks and early detection.(6)Early diagnosis is especially crucial because cancer diagnosed early usually can be treated more lightly leading to better clinical outcomes and less health care costs. Thus, investments in health promotion and disease prevention can bring substantial economic returns at both the personal and societal levels.(7)

Even with the promise of preventive strategies, there are also many people who are experiencing a great deal of financial hardship after being diagnosed with cancer. The cost of consultations, diagnostic tests, medicines, surgery, chemotherapy,

radiotherapy and supportive care may quickly add up, particularly in LMICs, where there may be insufficient healthcare financing mechanisms.(8) In other circumstances, patients have to sacrifice savings, go into debt or forgo treatment because they simply cannot pay. This is called "financial toxicity" and is a growing concern as a major contributor to non-adherence to treatment and quality of life in the cancer patient. (9)

Health insurance is an essential safeguard against the possibility of ruinous health costs. A comprehensive insurance plan can help make it easier for patients and their families to access timely preventive, diagnosis and evidence-based treatment, while decreasing the financial burden. Insurance programs also help to improve healthcare use, treatment adherence, and survival.(10)

Moreover, the spread of costs of healthcare services through population-wide insurance schemes brings cancer care to be more affordable and sustainable from a public health point of view.(11) Lifestyle modification and effective health insurance coverage are a good strategy to reduce the increasing economic impact of cancer. (12)Lifestyle interventions aim to reduce the likelihood of the disease, and to ensure that when it does occur it is detected early on, whereas health insurance systems seek to ease the financial impact if cancer occurs.(13) These strategies can help to establish a more disease preventive, equitable, and economically sustainable model for cancer control.(14)

A key lesson for policy-makers, health care providers, and public health professionals in curbing the cost of cancer and enhancing patient outcomes is the synergistic effect of lifestyle changes and health insurance. This article discusses the role of preventive health behaviors and financial protection mechanisms in helping to ease the economic burden of cancer and ensure long-term healthcare sustainability.

MATERIALS AND METHODS

This cross-sectional descriptive study was done for 6 months in the Department of Community Medicine/Public Health of a tertiary care teaching hospital. The objective of this study was to assess the public's perception of the role, the lifestyle changes and health insurance play in reducing the economic burden due to cancer.

The study population consisted of adults (18 years and older) who were seen in outpatient clinics, community health centers, and public awareness programs during the study period. Participants who gave informed consent and could read and fill out the study questionnaire were recruited. Participants who had cognitive problems or missing data were excluded from the analysis.

The sample size was determined to be 300 with a 95% confidence level and a 5% margin of error. Convenient sampling was used to select the participants. A structured, pre-validated questionnaire, developed following a comprehensive literature review was used to gather data.

The questionnaire included four parts: demographics, knowledge and awareness of lifestyle-related risk factors for cancer, health insurance knowledge and utilization and perceptions of the financial burden of cancer treatment. Lifestyle factors evaluated included smoking, drinking alcohol, nutrition habits, exercise, weight control, and cancer screening.

Data on health insurance coverage, type of coverage, cancer-related health care expenses and financial protection were also gathered. The questionnaire was pre-tested on 20 persons before the data were collected to test the clarity and reliability of the questionnaire. Participants' feedback was considered and necessary changes were made.

The study was granted ethical approval by the Institutional Review Board prior to the study beginning. All participants signed an informed consent form and the confidentiality of all information gathered was respected. The data analyzed with Statistical Package for the Social Sciences (SPSS) version 26.0 was entered.

Demographic data and answer to the questionnaires were summarized using descriptive statistics. Data were presented as mean ± standard deviation for continuous variables and frequencies and percentages for categorical variables. The Chi-square test was used to determine the association between awareness levels, lifestyle practices, insurance coverage and the perceived economic burden. The p value of < 0.05 was considered as statistically significant.

RESULTS

A total of 300 participants were enrolled in the study. The mean age of the participants was 42.8 ± 13.6 years (range: 18–78 years). Females constituted 52.0% of the study population, while males accounted for 48.0%.

Table 1: Demographic Characteristics of Study Participants (n = 300)

Variable	Frequency (n)	Percentage (%)
Age Group (years)		
18–30	72	24.0
31–45	108	36.0
46–60	84	28.0
>60	36	12.0
Gender		
Male	144	48.0
Female	156	52.0
Education Level		
Primary	54	18.0
Secondary	96	32.0
Graduate	108	36.0
Postgraduate	42	14.0
Monthly Household Income		
Low	126	42.0
Middle	132	44.0
High	42	14.0

The majority of participants (82.0%) recognized smoking as a major risk factor for cancer, while awareness regarding obesity and physical inactivity was comparatively lower.

Table 2: Awareness of Lifestyle-Related Cancer Risk Factors

Risk Factor	Aware n (%)	Not Aware n (%)
Tobacco Use	246 (82.0)	54 (18.0)
Alcohol Consumption	222 (74.0)	78 (26.0)
Unhealthy Diet	198 (66.0)	102 (34.0)
Obesity	174 (58.0)	126 (42.0)
Physical Inactivity	168 (56.0)	132 (44.0)
Family History	210 (70.0)	90 (30.0)

Regarding lifestyle practices, 62.0% reported engaging in regular physical activity, while 68.0% stated that they consumed fruits and vegetables on most days of the week.

Table 3: Lifestyle Practices among Participants

Lifestyle Practice	Frequency (n)	Percentage (%)
Regular Physical Activity	186	62.0
Non-Smoker	231	77.0
Healthy Dietary Habits	204	68.0
Participation in Cancer Screening	117	39.0
Weight Management Efforts	162	54.0

Health insurance coverage was reported by 180 participants (60.0%), while 120 participants (40.0%) lacked any form of health insurance.

Table 4: Health Insurance Status of Participants

Variable	Frequency (n)	Percentage (%)
Insured	180	60.0
Uninsured	120	40.0
Government Insurance	96	32.0
Private Insurance	84	28.0
No Insurance	120	40.0

Among insured individuals, 78.9% believed that insurance coverage would substantially reduce the financial burden of cancer treatment compared to only 31.7% among uninsured individuals.

Table 5: Perception of Financial Protection Offered by Health Insurance

Perceived Financial Protection	Insured (n=180)	Uninsured (n=120)	p-value
Yes	142 (78.9%)	38 (31.7%)	<0.001
No	38 (21.1%)	82 (68.3%)	

Participants who practiced at least three healthy lifestyle behaviors reported significantly lower concern regarding future cancer-related healthcare expenses compared with those having fewer healthy behaviors (p = 0.002).

Table 6: Association Between Healthy Lifestyle Behaviors and Concern About Cancer-Related Financial Burden

Number of Healthy Behaviors	High Financial Concern n (%)	Low Financial Concern n (%)	p-value
<3 Behaviors (n=126)	88 (69.8)	38 (30.2)	
≥3 Behaviors (n=174)	76 (43.7)	98 (56.3)	0.002

Overall, participants demonstrated moderate awareness regarding cancer prevention through lifestyle modification. Individuals with health insurance and healthier lifestyle practices showed significantly greater confidence in their ability to manage potential cancer-related expenses. These findings suggest that both preventive health behaviors and financial protection mechanisms play important roles in reducing the perceived economic burden associated with cancer.

DISCUSSION

Cancer is a significant public health problem globally for two reasons: as a cause of morbidity and mortality, and because of the economic costs of the disease to individuals, families, health systems and societies. In the present study, cancer's financial impact was examined and the potential for mitigating the financial impact through lifestyle changes and health insurance coverage. The results showed that the general levels of awareness of lifestyle-related cancer risk factors were good and that adopting positive lifestyle habits and having health insurance were linked to low concerns about cancer-related financial hardship.

The most commonly known cancer risk factor in the present study was the use of tobacco products, with over 4/5 of the participants recognizing this risk. The results are consistent with previous studies which have reported the effectiveness of public health campaigns at raising awareness about smoking-related cancers. However, other modifiable risk factors like obesity and physical inactivity had lower awareness. The same has been noted by Islami et al., who noted that while tobacco control has worked well in many populations, awareness of the role of obesity and sedentary lifestyles in cancer development is limited in some areas. The results indicate the need for a more comprehensive education campaign for multiple lifestyle risk factors to enhance cancer prevention. (15)

Results of the current study also revealed that a significant percentage of respondents participated in positive health behaviors, such as physical activity and a healthy diet. There is an increasing body of evidence that lifestyle interventions are important in helping to prevent several common cancers. Eating a healthy diet, exercising regularly, and keeping a healthy body weight are all proven to lower the risk of colorectal, breast, endometrial, and other cancers, according to the World Cancer Research Fund.(16)These preventive strategies can lead to lower rates of disease and better health and, ultimately, lower health-care costs for cancer diagnosis and treatment.

The moderate level of awareness of cancer prevention with a relatively low participation rate in cancer screening programs was also an important finding. Early detection continues to be one of the most cost-effective methods to lower cancer deaths and treatment costs. The research has been consistent that earlier detection leads to less aggressive treatment and less health care expenses for cancers. So, promoting access to screening activity and participation in screening activity via community-based awareness-raising activities could have clinical and economic benefits.(17)

Financial protection from cancer-related costs was strongly impacted by having health insurance. Those who had insurance were much more likely than those without insurance to feel able to afford treatment if it were needed. This is consistent with earlier research that showed that health insurance increases access to health care, lowers OOP costs and buffers households against catastrophic health spending. Insurance coverage has been demonstrated to increase timely diagnosis and treatment, and to decrease delays that can lead to worsened disease outcomes, and higher treatment costs.(18) In the last decade, financial toxicity has received increasing focus in the field of oncology.

Cancer therapy typically requires multiple long-term, costly treatments such as surgery, chemotherapy and radiation therapy, targeted therapy and supportive care. In countries with healthcare systems, patients often times find themselves in a financial bind as a direct and indirect consequence of the treatment. The economic impact may be even more devastating in low and middle-income countries where insurance coverage is lacking.(19) The results of the present study align with the idea that increasing access to low-cost health insurance can be a powerful tool to alleviate financial toxicity among cancer patients and their families.

One of the key findings of this study was the strong link between multiple healthy lifestyle habits and decreased concern about the financial burden associated with cancer in the future. There was also a higher level of anxiety regarding potential healthcare costs among participants with fewer than 3 healthy behaviors than among those who engaged in 3 or more healthy behaviors. This connection could be linked to greater concern about health, reduced perceived risk of disease, and greater use of preventive health care. These results have been replicated in population-based studies which have reported that preventive health behaviors are associated with better future health outcomes, as well as lower future health care utilization and costs.(20)

Lifestyle modification and health insurance together is a whole-of-care solution to lower the economic impact of cancer. Health insurance addresses the financial consequences of disease, whereas lifestyle interventions address the prevention and reduction of the risk of developing disease. All these strategies can help increase the accessibility of healthcare, improve treatment adherence, limit catastrophic costs and add to long-term sustainability of health services. (21)As such, the greatest national effort should be made to implement both cancer prevention programs and increased insurance coverage as complementary elements of national cancer control strategies.

The present study has some limitations. The cross-sectional design does not allow for causal relationships among variables in the study. Furthermore, there could be recall bias and reporting bias in the use of self-reported information. The survey was carried out among a small sample of a population and does not necessarily reflect the views of the larger community. Larger and more diverse multicenter studies are recommended to further assess the economic benefits of preventive health behaviors and insurance coverage in cancer control in the future. The results of this study support the increasing body of evidence indicating that a return on investment to cancer preventive lifestyle interventions and universal health insurance is significant enough to make the policy worthwhile. These interventions can help to create more resilient health systems, better financial security, and better health outcomes in the future.

CONCLUSION

The findings of this study highlight the important role of both lifestyle modifications and health insurance in mitigating the economic burden of cancer. Participants who adopted healthier behaviors and possessed health insurance coverage demonstrated greater awareness of cancer prevention and reported lower concerns regarding cancer-related financial hardship. Promoting healthy lifestyles, encouraging participation in screening programs, and expanding access to affordable health insurance can collectively reduce cancer incidence, facilitate early detection, and protect individuals from catastrophic healthcare expenditures. Integrating preventive health strategies with comprehensive financial protection mechanisms should therefore be considered a key component of sustainable cancer control policies and public health planning.

REFERENCES

1. Lei YY, Ho SC, Cheng A, Kwok C, Lee CI, Cheung KL, et al. Adherence to the World Cancer Research Fund/American Institute for Cancer Research Guideline Is Associated With Better Health-Related Quality of Life Among Chinese Patients With Breast Cancer. J Natl Compr Canc Netw. 2018;16(3):275-85.
2. Inoue-Choi M, Lazovich D, Prizment AE, Robien K. Adherence to the World Cancer Research Fund/American Institute for Cancer Research recommendations for cancer prevention is associated with better health-related quality of life among elderly female cancer survivors. J Clin Oncol. 2013;31(14):1758-66.
3. Jones P, Cade JE, Evans CEL, Hancock N, Greenwood DC. Does adherence to the World Cancer Research Fund/American Institute of Cancer Research cancer prevention guidelines reduce risk of colorectal cancer in the UK Women's Cohort Study? Br J Nutr. 2018;119(3):340-8.
4. Lope V, Guerrero-Zotano Á, Fernández de Larrea-Baz N, Antolín S, Benavent Viñuales M, Bermejo B, et al. Cross-sectional and longitudinal associations of adherence to WCRF/AICR cancer prevention recommendations with health-related quality of life in breast cancer survivors. Health-EpiGEICAM study. J Nutr Health Aging. 2024;28(8):100312.
5. Reading JM, Solk P, Starikovsky J, Song J, Hasanaj K, Wang S, et al. Effects of a Physical Activity mHealth Intervention (Fit2Thrive) on WCRF/AICR Cancer Prevention Recommendations among Breast Cancer Survivors: A Secondary Data Analysis. Cancer Epidemiol Biomarkers Prev. 2025;34(8):1322-31.
6. Terranova CO, Winkler EAH, Healy GN, Demark-Wahnefried W, Eakin EG, Reeves MM. Dietary and Physical Activity Changes and Adherence to WCRF/AICR Cancer Prevention Recommendations following a Remotely

Delivered Weight Loss Intervention for Female Breast Cancer Survivors: The Living Well after Breast Cancer Randomized Controlled Trial. J Acad Nutr Diet. 2022;122(9):1644-64.e7.
7. Elkin EB, Bach PB. Cancer's next frontier: addressing high and increasing costs. Jama. 2010;303(11):1086-7.
8. Yabroff KR, Zhao J, Han X, Zheng Z. Prevalence and Correlates of Medical Financial Hardship in the USA. J Gen Intern Med. 2019;34(8):1494-502.
9. Zafar SY, Abernethy AP. Financial toxicity, Part I: a new name for a growing problem. Oncology (Williston Park). 2013;27(2):80-1, 149.
10. Theodoropoulos N, Xie H, Wang Q, Wen C, Li Y. Rural-urban differences in breast and colorectal cancer screening among US women, 2014-2019. Rural Remote Health. 2022;22(3):7339.
11. Farina KL. The economics of cancer care in the United States. Am J Manag Care. 2012;18(1 Spec No.):Sp38-9.
12. Manchikanti L, Hirsch JA. Issues in health care: interventional pain management at the crossroads. Pain Physician. 2007;10(2):261-84.
13. Manchikanti L, Boswell MV. Interventional techniques in ambulatory surgical centers: a look at the new payment system. Pain Physician. 2007;10(5):627-50.
14. Fadelu T, Rebbeck TR. The rising burden of cancer in low- and middle-Human Development Index countries. Cancer. 2021;127(16):2864-6.
15. Islami F, Goding Sauer A, Miller KD, Siegel RL, Fedewa SA, Jacobs EJ, et al. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States. CA Cancer J Clin. 2018;68(1):31-54.
16. Clinton SK, Giovannucci EL, Hursting SD. The World Cancer Research Fund/American Institute for Cancer Research Third Expert Report on Diet, Nutrition, Physical Activity, and Cancer: Impact and Future Directions. J Nutr. 2020;150(4):663-71.
17. Bray F, Laversanne M, Weiderpass E, Soerjomataram I. The ever-increasing importance of cancer as a leading cause of premature death worldwide. Cancer. 2021;127(16):3029-30.
18. Carrera PM, Kantarjian HM, Blinder VS. The financial burden and distress of patients with cancer: Understanding and stepping-up action on the financial toxicity of cancer treatment. CA Cancer J Clin. 2018;68(2):153-65.
19. Finkelstein EA, Trogdon JG, Cohen JW, Dietz W. Annual medical spending attributable to obesity: payer-and service-specific estimates. Health Aff (Millwood). 2009;28(5):w822-31.
20. Ward EM, Sherman RL, Henley SJ, Jemal A, Siegel DA, Feuer EJ, et al. Annual Report to the Nation on the Status of Cancer, Featuring Cancer in Men and Women Age 20-49 Years. J Natl Cancer Inst. 2019;111(12):1279-97.
21. Raber M, Jackson A, Basen-Engquist K, Bradley C, Chambers S, Gany FM, et al. Food Insecurity Among People With Cancer: Nutritional Needs as an Essential Component of Care. J Natl Cancer Inst. 2022;114(12):1577-83.