

Disaggregating Gender Inequality Globally: Health Systems, Gender Inequality, and Female Pan-Cancer Outcomes

Asher J. Shin, BS¹ ; Shivaek Venkateswaran, BS^{1,2} ; Yue Helen Zhang, MD¹ ; Frances Dominique V. Ho, MD^{3,4} ; Stephanie Wang, BS⁵ ; Khushi Kohli, BS⁶ ; Megan Lorenza L. Cabaero, BS⁷; Adrian E. Go, MD⁸ ; Rohit V. Mantena, BS^{1,9} ; Milit S. Patel, BS^{1,10} ; Ranvir Iyengar, BS¹; Jessica Ma, BS¹; Deena R. Gold, BS^{1,11}; Isabella Nguyen, BS¹; Lilac Nguyen, BS¹; James Fan Wu, MD¹² ; Jonas Willmann, MD^{13,14} ; Fabio Ynoe Moraes, MD, PhD^{15,16} ; Luisa E. Jacomina, MD¹⁷ ; Kara Magsanoc-Alikpala, BS¹⁸; Edward Christopher Dee, MD¹ ; and Erin Jay G. Feliciano, MD, MBA^{19,20} 

DOI <https://doi.org/10.1200/GO-25-00473>

ABSTRACT

PURPOSE Gender inequality shapes women's cancer outcomes through social, economic, and health system factors. This study disaggregated the Gender Inequality Index (GII) to identify which dimensions—reproductive health, educational attainment, workforce participation, and political empowerment—independently influence global female cancer outcomes.

METHODS We conducted an ecologic, cross-national analysis using data from 185 countries. Age-standardized female cancer mortality-to-incidence ratios (MIRs) were derived from GLOBOCAN 2022. Independent variables included the composite GII and its five components: maternal mortality ratio, adolescent birth rate, female secondary education, labor force participation, and parliamentary representation. Univariable (Bonferroni-corrected significance threshold $\alpha = .01$) and multivariable ($\alpha = .05$) linear regressions assessed associations between these indicators and MIR, adjusting for health system variables including universal health coverage (UHC) index, gross domestic product (GDP) per capita, workforce availability, health spending, and radiotherapy access.

RESULTS Univariable analyses showed that GII and all components associated with higher MIR ($P < .001$ for all except labor participation, $P = .026$). Upon examining GII components in a multivariable model, higher adolescent birth rate ($\beta = .0014$, $P < .001$), lower female secondary education ($\beta = -.0020$, $P < .001$), and lower women's parliamentary representation ($\beta = -.0022$, $P < .001$) were independently associated with higher female MIR ($N = 168$, $R^2 = 0.70$). In fully adjusted models accounting for national wealth and system capacity ($N = 124$, $R^2 = 0.88$), higher UHC index ($P < .001$) and GDP per capita ($P = .007$) predicted lower MIR, while adolescent birth rate may be positively associated ($P = .084$).

CONCLUSION Structural gender inequalities, particularly those related to reproductive burden, education, and political representation, are linked to poorer female cancer outcomes. Advancing gender equity through reproductive health access, girls' education, and women's leadership is integral to improving cancer outcomes globally.

Accepted April 20, 2026

Published July 9, 2026

JCO Global Oncol 12:e2500473

© 2026 by American Society of
Clinical Oncology

Creative Commons Attribution
Non-Commercial No Derivatives
4.0 License

INTRODUCTION

Cancer is among the leading causes of morbidity and mortality globally, with an estimated 29.9 million new cancer cases and 15.3 million deaths worldwide by 2040.^{1,2} The global distribution of cancer burden is profoundly unequal: lower- and middle-income countries are projected to bear the majority of cancer-related mortality in the coming decades.^{3–6} Additionally, in many cases women are disproportionately affected by inequities in cancer care because of

broad and diverse structural barriers.^{7–11} Gender inequality shapes women's cancer risk and outcomes through multiple, intersecting pathways, ranging from early marriage and adolescent pregnancy to lower educational attainment, economic dependence, and restricted participation in decision making.^{7,10,11}

Although men continue to face higher overall cancer mortality worldwide,¹² disparities in cancer care and survival persist for women and demand attention.¹³ For example,

CONTEXT

Key Objective

How is global gender inequality associated with cancer outcomes and which specific components of the Gender Inequality Index (GII) are independently associated with female pan-cancer mortality-to-incidence ratio (MIR) ratios globally?

Knowledge Generated

In univariable analyses across 185 countries, GII and all five components were associated with higher female MIR (labor force participation $P = .026$; others $P < .001$). In multivariable models ($n = 168$; $R^2 = 0.70$), higher adolescent birth rate and lower women's parliamentary representation and secondary education were independently associated with higher MIR (all $P < .001$). In a fully adjusted model including health-system covariates ($n = 124$; $R^2 = 0.88$), higher Universal Health Coverage Service Coverage Index (UHC index) and gross domestic product per capita were associated with lower MIR ($P < .001$ and $P = .007$), and adolescent birth rate may be associated ($P = .084$).

Relevance

Findings can guide cancer-control planning by prioritizing investments and policy that expand UHC and strengthen reproductive health, while aligning screening, diagnosis, and treatment programs with policies that reduce adolescent pregnancy and improve girls' education and women's representation in leadership.

cervical cancer mortality is several-fold higher in low-human development index (HDI) versus very high-HDI countries because of limited human papillomavirus vaccination, screening, and timely treatment, despite cervical cancer being largely preventable and highly curable when detected early.¹⁴ These disparities are projected to grow in the coming decades, with the steepest increases expected in regions with low-HDI scores and limited progress on gender equity.^{15,16}

To address cancer disparities, significant attention has been directed toward understanding the role of national health systems in cancer control.^{17–20} A recent study² found that universal health coverage (UHC) and gross domestic product (GDP) per capita are key independent indicators of improved cancer outcomes, as measured by the mortality-to-incidence ratio (MIR) across 185 countries. Importantly, gender equity, as measured by the Gender Inequality Index (GII), demonstrated a possible association with cancer outcomes.²

The GII is a composite index developed by the United Nations Development Program (UNDP) to capture gender-based disadvantage in three dimensions: reproductive health, empowerment, and labor market participation.²¹ Although prior research suggests a possible association between GII and female pan-cancer MIR,² the relative contributions of the individual GII dimensions to cancer outcomes remain unexplored. This knowledge gap is critical because identifying the most influential aspects of gender inequality could inform more targeted and effective policy interventions.

In this study, we examine the individual components of GII: maternal mortality, adolescent birth rate, female secondary education, female labor force participation, and political

representation. We sought to determine which components, if any, are independently associated with cancer outcomes among women, and whether the specific components of the index provide information beyond the sum of the parts. We also assess the stability of these associations after accounting for broader health system characteristics previously shown to influence cancer control. Evaluating these upstream factors is therefore critical to achieving equitable cancer outcomes globally, a gap our analysis seeks to address by disentangling which specific components of gender inequality most strongly predict women's cancer survival worldwide.

METHODS

We conducted an ecologic, cross-national analysis of female cancer outcomes using publicly available global data sets. Cancer incidence and mortality statistics were obtained from the International Agency for Research on Cancer (IARC) GLOBOCAN 2022 database. GLOBOCAN 2022 estimates site-, sex- and age-specific cancer incidence and mortality for 185 countries by projecting recent national registry or vital registration data to 2022 where available, and otherwise deriving rates from subnational registries, modeled mortality-to-incidence (or incidence-to-mortality) ratios or neighboring-country proxies.¹ This approach ensures internal consistency and comparability across countries and over time. GLOBOCAN serves as a reference standard for international comparisons of cancer burden and is widely used in global oncology research and policy planning.^{1,4} The outcome variable was the female age-standardized MIR, a proxy for cancer survival at the population level.²

The pan-cancer MIR was calculated as the ratio of the pan-cancer age-standardized mortality rate (ASMR) to the pan-

TABLE 1. Univariable Comparisons Between GII, GII Breakdown Components, and Female Pan-Cancer Mortality-to-Incidence Ratio

Predictor	Beta	Lower CI	Upper CI	P	Countries With Data
GI	0.6764	0.616	0.737	<.001	165
Maternal mortality ratio	0.000478	0.000398	0.000558	<.001	175
Adolescent birth rate	0.00290	0.00251	0.00330	<.001	176
Share of seats in parliament held by women	−0.00391	−0.00572	−0.00210	<.001	176
Female labor participation	−0.00175	−0.00328	−0.000215	.026	168
Proportion with secondary education	−0.00382	−0.00430	−0.00334	<.001	168

Abbreviation: GI, Gender Inequality Index.

cancer age-standardized incidence rate (ASIR) among women (MIR = ASMR/ASIR), consistent with prior global cancer outcomes studies.^{1,2,22}

Independent variables included the GI from 2022, which is defined and reported by the UNDP. The GI was introduced by the UNDP in the Human Development Report 2010 to quantify gender-based disadvantage across three dimensions: reproductive health (maternal mortality ratio and adolescent birth rate), empowerment (female secondary education and share of parliamentary seats held by women), and labor market participation (female labor force participation rate). The GI measures the loss in potential human development because of inequality between women and men, with values ranging from 0 (perfect equality) to 1 (complete inequality).^{21,23}

UNDP validates the GI through annual methodologic reviews, data quality checks, and cross-source harmonization using inputs from international databases including WHO, the World Bank, UNESCO, and others.²³ The methodology employs normalization and geometric aggregation to balance indicators of differing units, ensuring cross-country comparability.²³ Since its inception, the core structure of the GI has remained stable, although periodic revisions are made to update indicator definitions, improve data completeness, and expand country coverage as new data sources become available.²³

We explored the GI's five components: maternal mortality ratio (deaths per 100,000 live births), adolescent birth rate (annual number of live births per 1,000 women age 15–19 years, reflecting reproductive health and social conditions among adolescent girls), proportion of parliamentary seats held by women, female labor force participation (age 15 years and older), and percentage of women with secondary education (age 25 years and older), all using data from the UNDP's 2022 estimates of GI.

We conducted univariable linear regression analyses to evaluate the association between female pan-cancer MIR and the GI, as well as each of its five individual components. Statistical significance was defined as $\alpha = .01$ using Bonferroni correction to account for five comparisons.

We then constructed multivariable models to assess the independent associations between GI components and female cancer MIR. Given the ecologic nature of the analysis, a significance threshold of $\alpha = .05$ was applied for the multivariable models.

A subsequent multivariable model additionally adjusted for a comprehensive set of health system indicators, including UHC index, GDP per capita, health expenditure as a percentage of GDP, clinical workforce capacity (physicians, nurses and midwives, and surgeons), availability of pathology and radiotherapy services, and out-of-pocket health expenditure as a proportion of total health expenditure ($\alpha = .05$). Data sources for these variables have been previously described.^{2,24,25}

Multicollinearity in multivariable models was evaluated using variance inflation factors (VIF). We excluded variables with $VIF > 10$.^{25–27} Model fit was assessed using R^2 . Analyses were conducted using Stata S/E (version 16.1).

RESULTS

Data on female cancer age-standardized incidence and mortality were available from 185 countries via IARC GLOBOCAN 2022. Data availability for gender inequality components and health system metrics ranged from 165 to 176 countries (Table 1).

On univariable analysis, greater maternal mortality ratio was associated with greater pan-cancer MIR (Fig 1A). Greater adolescent birth rate was also associated with greater pan-cancer MIR among women (Fig 1B). In contrast, a greater share of seats in parliament was weakly associated with lower pan-cancer MIR among women (Fig 1C). Additionally, the proportion of women with secondary education was also associated with lower pan-cancer MIR among women (Fig 1D; $P < .001$ for all, Table 1). Only female labor force participation (Fig 1E) was not associated with female pan-cancer MIR ($P = .026$).

On multivariable analysis, the independent components of gender inequality (particularly those reflecting reproductive burden, educational attainment, and political

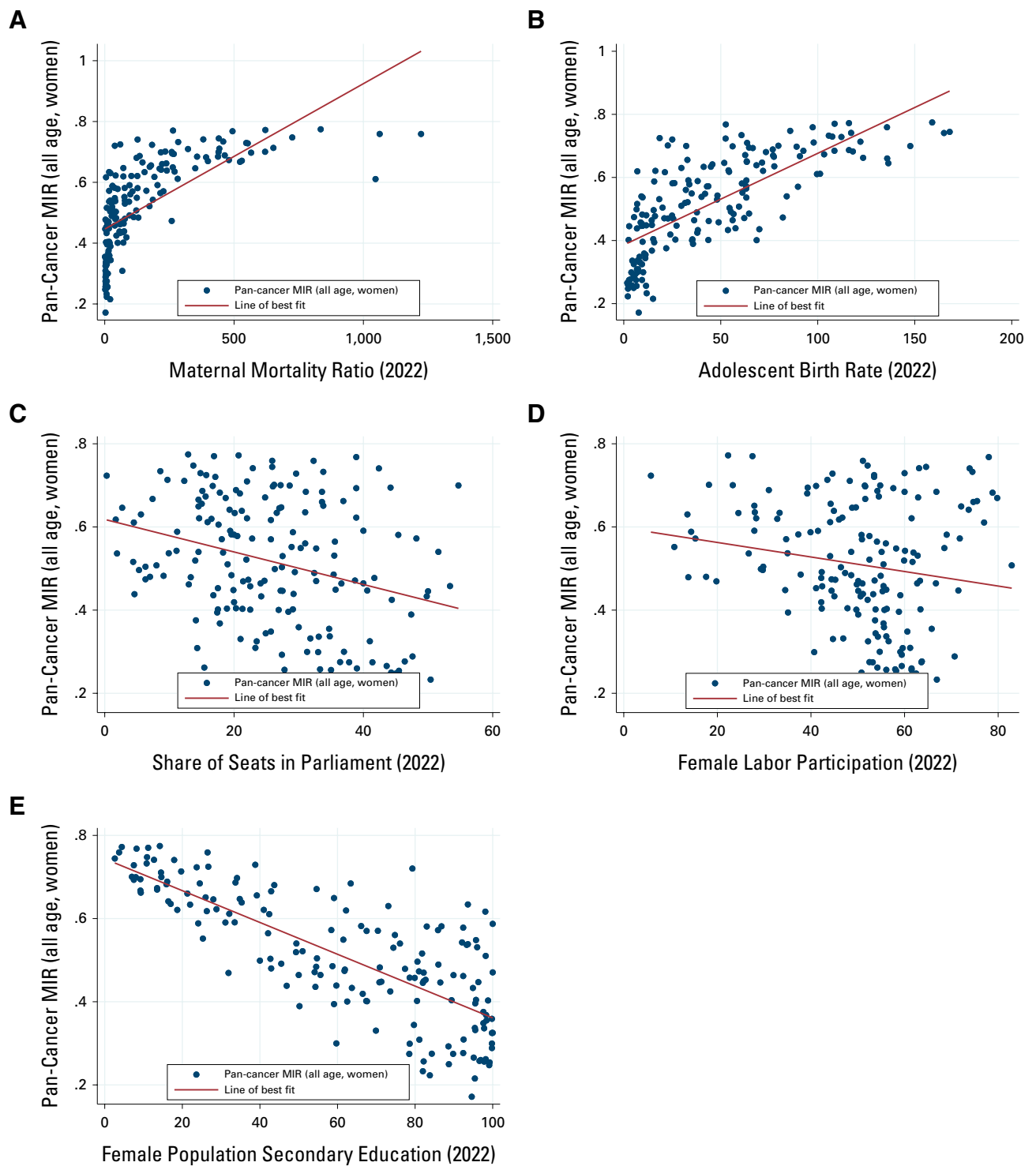


FIG 1. Univariable associations between the outcome and the GII and its five component indicators: (A) maternal mortality ratio, (B) adolescent birth rate, (C) proportion of parliamentary seats held by women, (D) proportion of women with at least secondary education, and (E) female labor force participation. GII, Gender Inequality Index; MIR, mortality-to-incidence ratio.

representation) were significantly associated with female cancer outcomes. In the multivariable model of GII components ($N = 168$, $R^2 = 0.70$ indicating strong predictive

power), adolescent birth rate ($\beta = .0014$, $P < .001$), lower female parliamentary representation ($\beta = -.0022$, $P < .001$), and lower female educational attainment ($\beta = -.0020$,

TABLE 2. Multivariable Analysis of Gender Inequality Index Component Metrics and Their Association With Pan-Cancer Mortality-to-Incidence Ratio (N = 168, R² = 0.7029)

Predictor	Beta	Lower CI	Upper CI	P	VIF
Maternal mortality ratio	0.000063	-0.0000289	0.000155	.178	2.96
Adolescent birth rate	0.00143	0.000857	0.00199	<.001	2.49
Share of seats in parliament held by women	-0.00223	-0.00334	-0.00113	<.001	2.37
Proportion with secondary education	-0.00203	-0.00269	-0.00137	<.001	1.05

Abbreviation: VIF, variance inflation factors.

P < .001) remained independently associated with higher female MIR (Table 2). VIF values were all <3, suggesting limited multicollinearity.

A final multivariable model adjusting for both gender inequality components and broader health system metrics (N = 124, R² = 0.88) revealed that greater UHC index ($\beta = -.0042$, P < .001) and GDP per capita ($\beta = -1.14\text{E-}06$, P = .007) were independently associated with lower female MIR (Table 3). Among the GII components, higher adolescent birth rate trended toward an association with higher female MIR after adjustment for health system covariates (P = .084). VIF values across all predictors remained acceptable (all with VIF <7.5), and no variable was excluded for multicollinearity.

DISCUSSION

This global analysis found that several gender inequality indicators, including higher adolescent birth rate, higher maternal mortality ratio, lower proportion of secondary education for women, and lower representation in national parliaments by women, were linked to higher female cancer MIRs in univariable models. When modeled together, adolescent birth rate, education, and parliamentary

representation remained independently significant of each other, with adolescent birth rate trending toward an association with higher MIRs even after accounting for national wealth and health system characteristics. These results shed light on the complex and multifaceted nature of gender inequality and its role in shaping population-level cancer outcomes for women.^{2,7,10}

High adolescent birth rates and elevated maternal mortality often signal deeper weaknesses in reproductive and maternal health services.²⁸ These deficiencies may limit access to early diagnosis and timely cancer care, as countries with underdeveloped reproductive health systems frequently exhibit parallel deficiencies in screening, vaccination, and treatment infrastructure for women's cancers such as cervical and breast cancer.^{15,16,29} The Philippines, for example, leads Southeast Asia in breast cancer mortality and exhibits among the highest cervical cancer rates in the region⁴; low rates of screening, associated with high out-of-pocket costs and sociocultural contexts,²⁹ are likely associated with the high proportions of advanced stage at diagnosis (>50% for breast cancer, >70% for cervical cancer).^{29,30} Strengthening reproductive and maternal health systems, such as through investments in primary care, contraception access, and women-centered health

TABLE 3. Multivariable Model of Gender Inequality Index Components and Broader Health Systems Variables (N = 124, R² = 0.8767)

Predictor	Beta	Lower CI	Upper CI	P	VIF
Health spending as % of GDP	-0.00160	-0.00625	0.00306	.498	7.2
Physicians per 1,000 population	-0.00460	-0.0182	0.00905	.506	5.93
Nurses/midwives per 1,000 population	-0.00499	-0.0102	0.000193	.059	5.46
Surgical workforce per 1,000 population	-0.000158	-0.000710	0.000395	.573	4.69
UHC index	-0.00419	-0.00590	-0.00248	<.001	4.26
Pathology services (yes v no)	-0.00925	-0.0434	0.0249	.593	3.55
RT centers per 1,000 population	-9.59	-22.3	3.08	.137	3.45
GDP per capita	-1.14E-06	-1.97E-06	-3.20E-07	.007	3.02
Out of pocket (%)	-8.57E-06	-0.000758	0.000741	.982	2.38
Maternal mortality ratio	1.53E-06	-0.000082	0.000085	.971	1.88
Adolescent birth rate	0.000436	-0.0000594	0.000932	.084	1.62
Share of seats in parliament held by women	0.000530	-0.000595	0.00166	.352	1.55
Proportion with secondary education	-0.000061	-0.000807	0.000685	.872	1.43

Abbreviations: GDP, gross domestic product; RT, radiotherapy; UHC, Universal Health Coverage; VIF, variance inflation factors.

delivery, has been shown to yield broad downstream improvements in women's health, including reductions in preventable mortality and gains in cancer prevention and survival.^{7,30}

Lower educational attainment and reduced political representation among women were also found to be associated with worse female cancer outcomes. This is consistent with prior work showing that social and political power directly affect women's ability to seek and receive medical care.^{7,18,31} In many countries, women may face legal or cultural restrictions that prevent them from accessing services independently; in many settings, women need permission from male relatives before seeing a doctor, which delays timely diagnoses and treatments.⁷ For instance, in Afghanistan, women's access to health facilities is often contingent on being accompanied by a male guardian.^{32,33} In Pakistan, sociocultural norms similarly limit women's health-seeking autonomy, with national surveys showing that more than half of married women report needing spousal or familial permission to obtain medical care, contributing to delays in cancer screening and treatment.³⁴ These findings align with global evidence that cancer disparities are not only a function of clinical gaps but are also shaped by broader patterns of social inequality.^{7,10,15}

Previous work has found a direct relationship between more female political participation and improved population health outcomes. One ecologic study that evaluated female political participation across Canadian provinces found that as the cumulative average percentage of women rose in government, total mortality rates for both male and female populations decreased.³⁵ A cross-analysis of 49 European countries also found that greater female political representation was associated with better population health and smaller inequalities (lower infant mortality, narrower self-reported health gaps, fewer pollution-related disability-adjusted life years, and higher life expectancy) for both women and men.³⁶ Taken together, these findings suggest that expanding women's political representation, via leadership pipelines and equitable governance, may be a powerful, system-level lever to advance cancer control and equity, even as causal pathways warrant further examination.^{7,18,30}

Interestingly, female labor force participation did not show a significant relationship with MIRs after correcting for multiple potential confounders. This suggests that employment alone does not guarantee power or autonomy.^{37,38} A study from Nepal found that women's participation in household decision making and control over personal health care were limited despite high rates of economic activity.³⁷ In some settings, women may work with limited control over their income or health decisions, which limits any potential benefit from economic participation.⁷ Additionally, we acknowledge that the systematic undercounting of informal (especially female) work may blunt the observed association between women's labor participation and MIRs.³⁹

Our findings have practical implications for both health systems and policy.¹⁸ By identifying adolescent birth rate, women's secondary education, and parliamentary representation as independent predictors of female cancer outcomes, this analysis may help to guide prioritization of interventions that integrate gender equity goals into national cancer control planning.^{7,18,40-43} Strengthening reproductive health programs, improving access to girls' education, and promoting women's participation in leadership and governance may yield synergistic benefits for early detection, treatment access, and survival.⁴⁰⁻⁴² Although our analysis reflects cross-sectional data, trends in indicators over the past two decades show gradual declines in adolescent birth rates and rising female education levels in many regions,⁴⁴ suggesting that continued investments in these domains could translate into long-term reductions in cancer mortality among women.

An example of this integrated, equity-oriented approach can be seen in the work of the ICanServe Foundation in the Philippines, which has demonstrated how civil society leadership and women's advocacy can drive both access to cancer screening and care, as well as broader inclusive cancer policy reforms.³⁰ Majority of ICanServe's leadership, political partners, and patient navigators are female, serving as an example of women's leadership in health governance. Such efforts can link grassroots education, early detection programs, and legislative engagement to tangible improvements in access and outcomes for women with cancer.³⁰

There are several limitations to this study. Because the data are ecologic, the results describe national trends and do not allow for conclusions about individuals. Nevertheless, we intentionally relied on data from GLOBOCAN, the United Nations, and the World Bank to elucidate macrolevel patterns. Although multicollinearity was addressed and VIFs remained within acceptable levels, the overlap between gender inequality and broader health system indicators makes it difficult to fully separate their effects.

Indeed, because this study used national-level data, the associations observed are inherently diffuse and reflect the complex interplay of social, economic, and health system determinants rather than individual-level causation. The spread of data points across countries underscores the intersectionality of these structural factors and the contextual heterogeneity inherent to real-world global data sets.^{10,11} Accordingly, the observed relationships should be interpreted as ecologic associations that highlight broad patterns rather than precise causal effects.

Additionally, the meaning of variables such as labor force participation or education may vary between countries. Informal work, for example, is often undercounted in national surveys, which may obscure the true relationship with cancer outcomes. Future work should explore how gender inequality interacts with national health system

capacity, social policy, and cultural context to shape women's cancer outcomes, ideally through longitudinal and mixed-methods approaches that can disentangle these complex relationships.

Finally, because this study examined aggregate, pan-cancer outcomes, the analysis does not capture site-specific patterns that may differ across cancer types. In particular, breast and cervical cancers, two leading causes of female cancer death worldwide, are shaped by distinct biologic, behavioral, and health system factors that may interact differently with gender inequality.^{7,14,15} Future site-level analyses could therefore clarify whether the same social determinants identified here exert comparable effects on specific cancers, and whether tailored gender-equity interventions could yield greater impact for these priority diseases.

Future research should further elucidate the pathways through which gender inequality shapes cancer outcomes across the cancer control continuum.⁷ Although our findings demonstrate associations between gender inequality indicators and female cancer MIRs, additional work is

needed to clarify the mechanisms linking these structural factors to cancer outcomes. Gender inequality may influence multiple stages of cancer control, including risk exposure, screening uptake, diagnosis, treatment access, and survivorship, through pathways related to health literacy, decision-making autonomy, economic dependence, and sociocultural norms. In addition, studies incorporating subnational data and intersectional frameworks may provide deeper insight into how gender inequality operates within countries, including differences related to rural versus urban residence, socioeconomic status, and ethnicity and how these factors shape access to cancer care and outcomes.

In conclusion, structural gender inequality, particularly in areas related to reproductive health, education, and political representation, appears to contribute to national-level differences in female cancer outcomes. Efforts to improve cancer survival must go beyond health system reforms and also address barriers that limit women's power and access to resources. Policies that integrate cancer care with broader goals of gender equity may be important for reducing mortality worldwide.

AFFILIATIONS

¹Department of Radiation Oncology, Memorial Sloan Kettering Cancer Center, New York, NY

²College of Arts and Sciences, University of Pennsylvania, Philadelphia, PA

³College of Medicine, University of the Philippines, Manila, Philippines

⁴Philippine Institute for Development Studies, Manila, Philippines

⁵Harvard College, Cambridge, MA

⁶Harvard Medical School, Harvard University, Boston, MA

⁷Duke–NUS Medical School, Singapore, Singapore

⁸Cebu Institute of Medicine, Cebu City, Philippines

⁹School of Medicine, University of Pittsburgh, Pittsburgh, PA

¹⁰Department of Molecular Biosciences, The University of Texas at Austin, Austin, TX

¹¹New York University, New York, NY

¹²Division of Hematology and Oncology, Department of Medicine, Medical College of Wisconsin, Milwaukee, WI

¹³Department of Radiation Oncology, University Hospital Zurich, University of Zurich, Zurich, Switzerland

¹⁴Department of Medical Physics, Memorial Sloan Kettering Cancer Center, New York, NY

¹⁵Department of Oncology, Global Oncology Program, Queen's University, Kingston, ON, Canada

¹⁶Department of Radiology and Oncology, University of São Paulo Medical School, São Paulo, Brazil

¹⁷Department of Radiation Oncology, Benavides Cancer Institute, University of Santo Tomas Hospital, Manila, Philippines

¹⁸ICanServe Foundation, Manila, Philippines

¹⁹School of Medicine and Public Health, Ateneo de Manila University, Pasig City, Philippines

²⁰Department of Medicine, NYC Health + Hospitals/Elmhurst, Icahn School of Medicine at Mount Sinai, Queens, NY

EQUAL CONTRIBUTION

A.J.S. and S.V. contributed as cofirst authors. E.C.D. and E.J.G.F. contributed as cosenior authors.

SUPPORT

Supported in part through the Cancer Center Support Grant from the National Cancer Institute (P30 CA008748; to A.J.S., S.V., Y.H.Z., R.V.M., M.S.P., R.I., J.M., D.R.G., I.N., L.N., J.F.W., and E.C.D.). E.C.D. is also funded in part through the Prostate Cancer Foundation Young Investigator Award.

AUTHOR CONTRIBUTIONS

Conception and design: Ranvir Iyengar, Jessica Ma, James Fan Wu, Jonas Willmann, Edward Christopher Dee, Erin Jay G. Feliciano

Financial support: Edward Christopher Dee, Erin Jay G. Feliciano

Provision of study materials or patients: Edward Christopher Dee, Erin Jay G. Feliciano

Collection and assembly of data: Shivaek Venkateswaran, Megan

Lorenza L. Cabaero, Edward Christopher Dee, Erin Jay G. Feliciano

Data analysis and interpretation: Asher J. Shin, Shivaek Venkateswaran, Yue Helen Zhang, Frances Dominique V. Ho, Stephanie Wang, Khushi Kohli, Adrian E. Go, Rohit V. Mantena, Milit S. Patel, Deena R. Gold, Isabella Nguyen, Lilac Nguyen, James Fan Wu, Fabio Ynoe Moraes, Luisa E. Jacomina, Kara Magsanoc-Alikpala, Edward Christopher Dee, Erin Jay G. Feliciano

Manuscript writing: All authors

Final approval of manuscript: All authors

Accountable for all aspects of the work: All authors

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The following represents disclosure information provided by authors of this manuscript. All relationships are considered compensated unless otherwise noted. Relationships are self-held unless noted. I =

CORRESPONDING AUTHOR

Edward Christopher Dee, MD; e-mail: deee1@mskcc.org.

Immediate Family Member, Inst = My Institution. Relationships may not relate to the subject matter of this manuscript. For more information about ASCO's conflict of interest policy, please refer to www.asco.org/rwc or ascopubs.org/go/authors/author-center.

Open Payments is a public database containing information reported by companies about payments made to US-licensed physicians ([Open Payments](http://OpenPayments.org)).

Deena R. Gold

Employment: Center for Dermatology

Uncompensated Relationships: Memorial Sloan-Kettering Cancer Center

Jonas Willmann

Honoraria: RadFormation, AstraZeneca

Kara Magsanoc-Alikpala

Consulting or Advisory Role: Healthway Cancer Care Hospital

Edward Christopher Dee

This author is a member of the *JCO Global Oncology* Editorial Board. Journal policy recused the author from having any role in the peer review of this manuscript.

Other Relationship: NIH/NCI, Prostate Cancer Foundation.

No other potential conflicts of interest were reported.

REFERENCES

- Bray F, Laversanne M, Sung H, et al: Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 74:229-263, 2024
- Dee EC, Wu JF, Feliciano EJG, et al: National cancer system characteristics and global pan-cancer outcomes. *JAMA Oncol* 11:650-654, 2025
- Pramesh CS, Badwe RA, Bhoo-Pathy N, et al: Priorities for cancer research in low- and middle-income countries: A global perspective. *Nat Med* 28:649-657, 2022
- Dee EC, Laversanne M, Bhoo-Pathy N, et al: Cancer incidence and mortality estimates in 2022 in Southeast Asia: A comparative analysis. *Lancet Oncol* 26:516-528, 2025
- Chen J, Selokar A, Ho FDV, et al: Head and neck cancer in Southeast Asia: 2022 incidence, mortality, and projections to 2050. *Laryngoscope* 135:4742-4753, 2025
- Jain U, Rahim F, Jain B, et al: Cancer burden across the South Asian Association for Regional Cooperation in 2022. *BMJ Oncol* 3:e000466, 2024
- Ginsburg O, Vanderpuye V, Beddoe AM, et al: Women, power, and cancer: A Lancet Commission. *Lancet* 402:2113-2166, 2023
- Chen J, Ho FDV, Feliciano EJG, et al: Trends in female breast cancer among adolescent and young adults in Southeast Asia. *Lancet Reg Health Southeast Asia* 34:100545, 2025
- Tawfiles D, Chen J, Tawfiles M, et al: Female breast cancer burden among adolescent and young adults in North Africa. *Breast Cancer* 32:1336-1345, 2025
- Feliciano EJG, Ho FDV, Yee K, et al: Cancer disparities in Southeast Asia: Intersectionality and a call to action. *Lancet Reg Health* 41:100971, 2023
- Menon TP, Mathew A, Iyengar P, et al: Intersectionality of cancer disparities in south Asia. *Lancet Glob Health* 14:e272-e280, 2026
- Dong M, Cioffi G, Wang J, et al: Sex differences in cancer incidence and survival: A pan-cancer analysis. *Cancer Epidemiol Biomarkers Prev* 29:1389-1397, 2020
- Arevalo MVPN, Maslog EAS, Manlongat KD, et al: Social determinants of sex disparities in cancer in Southeast Asia. *iScience* 26:107110, 2023
- Li Z, Liu P, Yin A, et al: Global landscape of cervical cancer incidence and mortality in 2022 and predictions to 2030: The urgent need to address inequalities in cervical cancer. *Int J Cancer* 157:288-297, 2025
- Bizuayehu HM, Dadi AF, Hassen TA, et al: Global burden of 34 cancers among women in 2020 and projections to 2040: Population-based data from 185 countries/territories. *Int J Cancer* 154:1377-1393, 2024
- Bizuayehu HM, Ahmed KY, Kibret GD, et al: Global disparities of cancer and its projected burden in 2050. *JAMA Netw Open* 7:e2443198, 2024
- Patel MJ, Lopez AM, Blackstock W, et al: Cancer disparities and health equity: A policy statement from the American Society of Clinical Oncology. *J Clin Oncol* 38:3439-3448, 2020
- Dee EC, Eala MAB, Robredo JPG, et al: Leveraging national and global political determinants of health to promote equity in cancer care. *J Natl Cancer Inst* 115:1157-1163, 2023
- Romero Y, Tittenbrun Z, Trapani D, et al: NCCP Global Review Consortium: The changing global landscape of national cancer control plans. *Lancet Oncol* 26:e46, e54, 2025
- Dee EC, Magsanoc-Alikpala MJK, Moraes FY, et al: Political determinants of cancer health. *Lancet Reg Health Am* 43:101008, 2025
- United Nations: Gender Inequality Index. New York, NY, United Nations Development Programme (UNDP). <https://hdr.undp.org/data-center/thematic-composite-indices/gender-inequality-index>
- Li W, Huang S, Chen Q, et al: Global cancer statistics for children: Two decades of change and projections to 2050. *CA Cancer J Clin* 76:e70069, 2026
- Gender Inequality Index (GII). Geneva, Switzerland, World Health Organization (WHO). [https://www.who.int/data/nutrition/nlis/info/gender-inequality-index-\(gii\)](https://www.who.int/data/nutrition/nlis/info/gender-inequality-index-(gii))
- Wu JF, Feliciano EJG, Singh A, et al: National cancer system metrics and leukemia outcomes: An analysis of global data for pediatric and adult patients. *Leukemia* 39:1783-1786, 2025
- Dee EC, Iyengar R, Narayan A, et al: National cancer system characteristics and prostate cancer outcomes: An analysis of global data. *Prostate* 85:947-953, 2025
- Cotache-Condor C, Rice HE, Schroeder K, et al: Delays in cancer care for children in low-income and middle-income countries: Development of a composite vulnerability index. *Lancet Glob Health* 11:e505-e515, 2023
- Vittinghoff E, Glidden DV, Shiboski SC, et al: Regression Methods in Biostatistics: Linear, Logistic, Survival, and Repeated Measures Models. New York, NY, Springer Publishing, 2005, p xv; 340
- Alkema L, Chou D, Hogan D, et al: Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: A systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group. *Lancet (London, England)* 387:462-474, 2016
- Ho FDV, Arevalo MVPN, de Claro PTS, et al: Breast and cervical cancer screening in the Philippines: Challenges and steps forward. *Prev Med Rep* 29:101936, 2022
- Magsanoc-Alikpala MJK, Ylanan AMD, Rivera-Montales C, et al: Breast cancer survivor-led patient advocacy: The ICanServe experience from the Philippines. *Lancet Oncol* 26:287-289, 2025
- Patel T, Hammond A, Nasari A, et al: Protecting public health in Iran in the face of oppression. *Nat Med* 29:767-768, 2023
- Tawfiq E, Azimi MD, Feroz A, et al: Predicting maternal healthcare seeking behaviour in Afghanistan: Exploring sociodemographic factors and women's knowledge of severity of illness. *BMC Pregnancy Childbirth* 23:561, 2023
- Azimi MW, Yamamoto E, Saw YM, et al: Factors associated with antenatal care visits in Afghanistan: Secondary analysis of Afghanistan Demographic and Health Survey 2015. *Nagoya J Med Sci* 81:121-131, 2019
- Abbas S, Isaac N, Zia M, et al: Determinants of women's empowerment in Pakistan: Evidence from Demographic and Health Surveys, 2012-13 and 2017-18. *BMC Public Health* 21:1328, 2021
- Ng E, Muntaner C: The effect of women in government on population health: An ecological analysis among Canadian provinces, 1976-2009. *SSM Popul Health* 6:141-148, 2018
- Reeves A, Brown C, Hanefeld J: Female political representation and the gender health gap: A cross-national analysis of 49 European countries. *Eur J Public Health* 32:684-689, 2022
- Bhandari TR, Kutty VR, Ravindran TKS: Women's autonomy and its correlates in Western Nepal: A demographic Study. *PLoS One* 11:e0147473, 2016
- Navarro-Mantas L, de Lemus S, García-Sánchez E, et al: Defining power and agency in gender relations in El Salvador: Consequences for intimate partner violence and women's mental health. *Front Psychol* 13:867945, 2022
- Aronsson AE, de Soysa I: Informal employment, population health, and welfare policies: A global empirical analysis between 2011-2021. *PLoS One* 20:e0325277, 2025
- Veas C, Crispi F, Cuadrado C: Association between gender inequality and population-level health outcomes: Panel data analysis of organization for Economic Co-operation and Development (OECD) countries. *EclinicalMedicine* 39:101051, 2021
- Souza JP, Day LT, Rezende-Gomes AC, et al: A global analysis of the determinants of maternal health and transitions in maternal mortality. *Lancet Glob Health* 12:e306-e316, 2024
- Balaj M, Henson CA, Aronsson A, et al: Effects of education on adult mortality: A global systematic review and meta-analysis. *Lancet Public Health* 9:e155-e165, 2024
- Dee EC, Ang CDU, Ting FIL, et al: Improving cancer care in the Philippines: The need for deliberate and careful implementation of the National Integrated Cancer Control Act. *Lancet Reg Health West Pac* 28:100615, 2022
- Azzopardi PS, Hears SJC, Francis KL, et al: Progress in adolescent health and wellbeing: Tracking 12 headline indicators for 195 countries and territories, 1990-2016. *Lancet (London, England)* 393:1101-1118, 2019