Treatment experience and other health characteristics among patients with cancer from a large US population-based survey

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Background

- Cancer mortality rates in the United States (US) declined by 34% from 1991 to 2022.[1]
- Depression and anxiety impact up to 20% and 10% of cancer patients, respectively, regardless of their stage in the cancer journey.[2]
- Research has shown that informational support from family and emotional support from a partner together help reduce symptoms in cancer patients.[3]
- Despite the decline in cancer mortality in the US, gaps in the treatment journey persist and must be addressed to achieve better patient outcomes. Similarly, improving mental health support and strengthening social support systems can further enhance patient well-being and overall outcomes.

Objective

This research examines treatment journey gaps, mental health, and social support among adults with cancer in a general population survey, in particular, those with breast, prostate, and skin cancers.

Methods

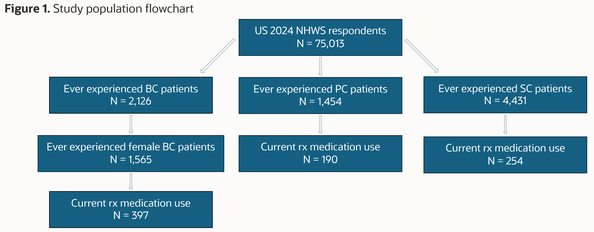
Data source

- This study used cross-sectional data from the 2024 National Health and Wellness Survey (NHWS). It is an annual, self-administered, internet-based, nationwide survey comprised of ~75,000 US adults (age 18 or older) each year.
- Participants are recruited through an existing, general-purpose web-based consumer panel. The final sample matches the demographic composition of the US on age, gender, and racial/ethnic groups, based on data from the Current Population Survey of the US Census.

Study population

- The respondents who self-reported using prescription medications specifically for the treatment of breast cancer, prostate, or skin cancer at the time of the survey.

Figure 1. Study population flowchart



BC = Breast cancer; SC = Skin cancer; PC = Prostate cancer, Rx = Prescription

Study measures

- Treatment journey gaps were assessed using a series of Likert scale questions on diagnostic and treatment experience, ranging from strongly disagree to strongly agree. 'Strongly disagree' indicates less understanding of the treatment journey, whereas 'strongly agree' indicates better understanding of the treatment journey.
- Mental health at the time of the survey was evaluated using the RAND-36 Mental Health Composite (MHC)[4]. Higher scores on the MHC indicate better mental health.
- Social support was measured from the Modified Medical Outcomes Study Social Support Survey (mMOS-SS)[5]. Higher scores indicate higher level of social support available to the participant.
- Sociodemographic and mental health in the past 12 months (via self-reported experience of depression and anxiety in the past 12 months) were also examined.

Statistical analyses

- Descriptive statistics were calculated, including counts and percentages for categorical variables, and means with standard deviations for continuous variables.
- Chi-square tests were used to compare groups for categorical variables, while ANOVA was used to compare groups for continuous variables. An alpha level of p<0.05 was considered statistically significant.

Results

Sociodemographic Characteristics

- Breast cancer (BC) patients were younger (mean=62 years) than prostate cancer (PC) patients (mean=65 years) and skin cancer (SC) patients (mean=63 years) (p=0.021).
- The majority of patients across all cancer types were White and married or living with a partner.
- Most BC patients had less than a university degree (51.5%), while most PC and SC patients held a university degree or higher (64.5% and 59.7%, respectively) (p<0.001)
- The largest proportion of BC patients reported an annual household income between $50,000 to <$100,000 (33.8%), while the largest proportion of both PC and SC patients reported incomes $100,000 and above (45.9% and 44.2%, respectively) (p=0.002).

Table 1. Sociodemographic characteristics across participants with different types of cancer.

Sociodemographic variables	Breast cancer (N = 394)		Prostate cancer (N = 172)		Skin cancer (N = 233)		p-value
	N	%	N	%	N	%	
Age (years) [mean (SD)]	62.14	12.93	65.67	14.60	63.03	14.98	**0.021**
Gender							
Male	0	0.0%	**172**	**100.0%**	**142**	**60.9%**	**<0.001**
Female	**394**	**100.0%**	0	0.0%	91	39.1%	
Race							
White	**291**	**73.9%**	**128**	**74.4%**	**208**	**89.3%**	**<0.001**
Black/African American	47	11.9%	26	15.1%	5	2.1%	
Asian	17	4.3%	3	1.7%	1	0.4%	
Hispanic	29	7.4%	12	7.0%	14	6.0%	
Multi-race/some other race or origin	10	2.5%	3	1.7%	5	2.1%	
Census region							
Northeast	72	18.3%	26	15.1%	43	18.5%	0.901
Midwest	82	20.8%	33	19.2%	41	17.6%	
South	**157**	**39.8%**	**72**	**41.9%**	**97**	**41.6%**	
West	83	21.1%	41	23.8%	52	22.3%	
Rural location							
Yes	53	13.5%	20	11.6%	18	7.7%	0.092
No	**341**	**86.5%**	**152**	**88.4%**	**215**	**92.3%**	
Education							
Less than university degree	**203**	**51.5%**	61	35.5%	94	40.3%	**<0.001**
University degree	191	48.5%	**111**	**64.5%**	**139**	**59.7%**	
Annual Household Income							
<$25,000	51	12.9%	15	8.7%	18	7.7%	**0.002**
$25,000 to <$50,000	79	20.1%	23	13.4%	36	15.5%	
$50,000 to <$100,000	**133**	**33.8%**	53	30.8%	69	29.6%	
$100,000 +	116	29.4%	**79**	**45.9%**	**103**	**44.2%**	
Decline to answer	15	3.8%	2	1.2%	7	3.0%	
Marital Status							
Married/living with a partner	**214**	**54.3%**	**132**	**76.7%**	**171**	**73.4%**	**<0.001**
Single, not married/divorced/ separated/widowed	179	45.4%	39	22.7%	62	26.6%	
Decline to Answer	1	0.3%	1	0.6%	0	0.0%	

Mental health and social support

- MHC scores were similar across participants with different types of cancer, with the average score ranging from 43 to 45.
- PC patients reported the highest mMOS-SS score (mean=72.9), followed by SC (mean=69.0) and BC patients (mean=66.5) (p=0.044).
- A significantly higher proportion of SC patients reported experiencing anxiety or depression in the past 12 months (at 37.3% and 32.6%, respectively) compared to both BC and PC patients.

Table 2. Mental health and social support across participants with different types of cancer.

Mental health and social support variables	Breast cancer (N = 394)		Prostate cancer (N = 172)		Skin cancer (N = 233)		p-value
	N	%	N	%	N	%	
RAND-MHC score [mean (SD)]	44.75	12.01	44.67	11.34	45.34	12.09	0.327
mMOS-SS score [mean (SD)]	66.51	27.66	72.87	27.46	69.02	28.71	**0.044**
Anxiety experienced in the past 12 months	139	35.3%	45	26.2%	87	37.3%	**0.046**
Depression experienced in the past 12 months	103	26.1%	34	19.8%	76	32.6%	**0.015**

Gaps in the treatment journey

- Overall, BC patients had a better understanding of their cancer treatment journey compared to both PC and SC patients.
  - Between 84% to 88% of BC patients responded agree/strongly agree.
  - Between 72% to 85% of PC patients responded agree/strongly agree.
  - Between 73% to 79% of SC patients responded agree/strongly agree.
- For BC patients, the item that had the lowest proportion of agree/strongly agree was recognizing symptoms that would cause them to get screened and understand the diagnosis process (84.3%). However, this number is still higher than PC and SC patients (PC=74.4%; SC=77.7%) (p=0.009).
- For both PC and SC patients, the item that had the lowest proportion of agree/strongly agree was recognizing symptoms of side effects or disease progression and knowing when to follow up with their doctor (PC=71.5%; SC=73.0%) .

Table 3. Treatment journey gaps across different cancer types.

Treatment journey gaps variables	Breast cancer (N = 394)		Prostate cancer (N = 172)		Skin cancer (N = 233)		p-value
	N	%	N	%	N	%	
Recognizing symptoms that would cause you to get screened and understanding the diagnosis process							
Strongly Disagree	1	0.3%	6	3.5%	9	3.9%	**0.009**
Disagree	7	1.8%	8	4.7%	7	3.0%	
Neither	54	13.7%	30	17.4%	36	15.5%	
Agree	202	51.3%	87	50.6%	114	48.9%	
Strongly Agree	130	33.0%	41	23.8%	67	28.8%	
Understanding your condition, treatment options, and treatment administration (dosing, timing, etc.)							
Strongly Disagree	3	0.8%	3	1.7%	9	3.9%	**0.011**
Disagree	11	2.8%	8	4.7%	6	2.6%	
Neither	36	9.1%	22	12.8%	35	15.0%	
Agree	199	50.5%	92	53.5%	120	51.5%	
Strongly Agree	145	36.8%	47	27.3%	63	27.0%	
Recognizing symptoms of side effects or disease progression and when to follow up with your doctor about these symptoms							
Strongly Disagree	3	0.8%	2	1.2%	8	3.4%	**0.001**
Disagree	10	2.5%	7	4.1%	7	3.0%	
Neither	46	11.7%	40	23.3%	48	20.6%	
Agree	204	51.8%	83	48.3%	103	44.2%	
Strongly Agree	131	33.2%	40	23.3%	67	28.8%	
Understanding importance of adhering to your medication schedule							
Strongly Disagree	3	0.8%	3	1.7%	8	3.4%	**<0.001**
Disagree	9	2.3%	5	2.9%	7	3.0%	
Neither	34	8.6%	18	10.5%	42	18.0%	
Agree	164	41.6%	82	47.7%	103	44.2%	
Strongly Agree	184	46.7%	64	37.2%	73	31.3%	

Gaps in treatment journey – by depression and anxiety

- Among PC patients, those who experienced anxiety or depression in the past 12 months were less likely to identify understanding the importance of medication adherence as a gap in treatment journey compared to those without anxiety or depression (agree/strongly agree = 87.2% vs. 80.0%; p=0.005).
- In contrast, among SC patients, those with anxiety or depression were more likely to identify this gap compared to those without it (agree/strongly agree = 71.7% vs. 79.2%; p=0.027).
- No significant difference was found among BC patients.
- No significant differences were observed across the other domains for any cancer type by depression and anxiety.

Figure 2. Understanding the importance of adhering to medication schedule by depression or anxiety experience in the past 12 months among PC patients.

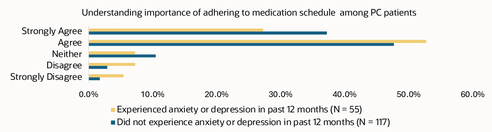
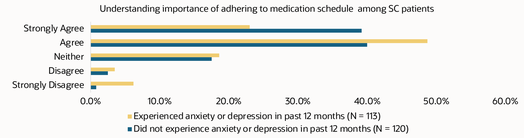


Figure 3. Understanding the importance of adhering to medication schedule by depression or anxiety experience in the past 12 months among SC patients.



Conclusion

- SC patients reported a greater mental health burden compared to BC and PC patients.
- PC patients reported better social support than BC and SC patients.
- Overall, BC patients reported a better understanding of their treatment journey compared to their counterparts.
- Further research in the treatment journey gaps by cancer types could improve patient experience.

References

1. American Cancer Society. (2025). *Cancer facts & figures 2025*.
2. Pitman, A., Suleman, S., Hyde, N., & Hodgkiss, A. (2018). Depression and anxiety in patients with cancer. *Bmj*, *361*.
3. Ruiz-Rodríguez, I., Hombrados-Mendieta, I., Melguizo-Garín, A., & Martos-Méndez, M. J. (2022). The importance of social support, optimism and resilience on the quality of life of cancer patients. *Frontiers in psychology*, *13*, 833176.
4. Hays RD, Morales LS. The RAND-36 measure of health-related quality of life. Ann Med. 2001;33(5):350-357.
5. Moser, A., Stuck, A. E., Silliman, R. A., Ganz, P. A., & Clough-Gorr, K. M. (2012). The eight-item modified Medical Outcomes Study Social Support Survey: psychometric evaluation showed excellent performance. *Journal of clinical epidemiology*, *65*(10), 1107-1116.

PCR193