

Original Paper

Prevalence and Age-Related Patterns in Health Information–Seeking Behaviors and Technology Use Among Skin Cancer Survivors: Survey Study

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Abstract

Background: Information is an unmet need among cancer survivors. There is a paucity of population-based data examining the health information–seeking behaviors and attitudes of skin cancer survivors.

Objective: We aimed to identify the prevalence and patterns of health information–seeking behaviors and attitudes among skin cancer survivors across age groups.

Methods: We analyzed population-based data from the 2019 Health Information National Trends Survey 5 (Cycle 3).

Results: The 5438 respondents included 346 (6.4%) skin cancer survivors (mean age 65.8 years); of the 346 skin cancer survivors, the majority were White (96.4% [weighted percentages]), and 171 (47.8%) were men. Most reported having ever looked for health- (86.1%) or cancer-related (76.5%) information; 28.2% stated their last search took a lot of effort, and 21.6% were frustrated. The internet was most often cited as being the first source that was recently used for health or medical information (45.6%). Compared to skin cancer survivors younger than 65 years old, those 65 years of age or older were more likely to see a doctor first for important health information (≥ 65 years: 68.3%; < 65 years: 36.2%; $P < .001$) and less likely to have health and wellness apps (≥ 65 years: 26.4%; < 65 years: 54.0%, $P = .10$), to have watched a health-related YouTube video (≥ 65 years: 13.3%; < 65 years: 27.4%; $P = .02$), and to have used electronic means to look for information (≥ 65 years: 61.4%; < 65 years: 82.3%, $P < .001$).

Conclusions: Searches for health information are common among skin cancer survivors, but behaviors and attitudes are associated with age, which highlights the importance of access to doctors and personalized information sources.

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KEYWORDS

skin cancer; melanoma; health information; HINTS; internet; cancer; dermatology; information; oncology; survey; analysis

Introduction

Information is an unmet need that is frequently reported by skin cancer survivors and patients [1-9]. An improved understanding of the etiology and risk factors of a disease and its prevention strategies could facilitate coping mechanisms and improve health care outcomes [10-12]. Most [13], but not all [14], individuals desire as much information as possible about their

disease and treatment [3]. A population-based survey [15] in 2003 found that approximately two-thirds of all cancer survivors sought cancer information and the predictors of information-seeking behaviors were younger age, female gender, higher income, and having a regular health care provider.

Few studies have examined information-seeking behaviors, attitudes, and preferences in skin cancer survivors. Survey studies of patients and survivors melanoma have found that

many individuals desired more information about their diagnosis, prognosis, or treatment options [4-6,9], expressed high levels of dissatisfaction with the information they received [5,6], and used the internet as a supplementary information resource to their physician [3,6,16]. Internet use and smartphone ownership are strongly associated with age [17,18], however, and melanoma websites have been reported to have poor readability and variable quality [16,19-23]. Patients and survivors of keratinocyte carcinoma who reported dissatisfaction with the information provided have been found to exhibit lower levels of health-related quality of life, increased worry [7], and increased skin cancer-specific and general distress [24,25]. Despite the differences in prognosis between keratinocyte carcinoma and melanoma, the needs, concerns, and levels of distress about diagnosis and need for follow-up appear to be similar in these individuals [8]. There has been recent interest in the development of smartphone and other mobile apps to provide information and education about skin cancer etiology and risk factors, ultraviolet radiation exposure advice, and skin self-examination, as well as tools for analysis or monitoring and tracking of skin lesions [26]. However, the overwhelming majority (99%) of survivors of melanoma have reported never having used a skin cancer-related app [27].

The purpose of this study was to describe and identify age-related factors associated with (1) health information-seeking behaviors and attitudes and (2) use and ownership of technology among a nationally representative sample of skin cancer survivors in the United States. The resultant data would be expected to aid the design of interventions to improve health care outcomes in this patient population.

Methods

Ethics

The study was exempt from institutional review board review under US federal regulation [28] because the data were publicly available.

Study Population, Design, and Setting

Data for this study were obtained from the 2019 Health Information National Trends Survey (HINTS) 5, Cycle 3 [29], which is a nationally representative survey of civilian, noninstitutionalized US adults 18 years or older that was administered by the National Cancer Institute. A detailed description of survey methodology has been published [29]. The sample frame was a random sample of nonvacant residential addresses in the Marketing Systems Group database and was grouped into strata having high or low concentrations of minority populations using census tract-level characteristics from the 2013-2017 American Community Survey data file. An equal-probability sample of addresses was selected from each sampling stratum but oversampling of the high-minority stratum was performed. The total number of addresses selected was 23,430; of these, 6690 (28.6%) were from low minority areas and 16,740 (71.4%) were from high-minority areas. One adult per sampled household was selected to participate in the survey using the next birthday method; a US \$2 prepaid

monetary incentive was used to encourage participation. The address sample was divided into 3 subsamples: traditional data collection sample using paper-mail survey (n=14,730), web option, offering respondents a choice between responding via paper (English or Spanish) or web (in English only) (n=4350), and web bonus, offering respondents a choice between responding via paper (English or Spanish) or web (in English only), with an additional US \$10 incentive for those responding via web (n=4350). The overall response rate for the 23,430 samples was 30.3% (paper-mail 30.2%, web option 29.6%, web bonus 31.5%) [29].

Study Variables and Statistical Analysis

Descriptive statistics and graphical methods were used to assess the distributions of study variables. The analytic goal was to assess the prevalence and relationships between respondent age and survey responses related to health information-seeking behaviors, attitudes toward health information-seeking, and ownership and use of technology (Multimedia Appendix 1). Respondent age was dichotomized (<65 years or ≥65 years). This age cut-off corresponds to the median age at diagnosis of melanoma [30] and the age for Medicare eligibility [31] in the United States. In addition to these primary independent variables, we also assessed the associations between respondent age and demographic variables, which included sex (male or female), highest grade or level of schooling completed (less than high school, high school, some college, or college), health care coverage (yes or no), respondent race (White, Black, multiple races), total household income (<\$50,000 or ≥\$50,000), and ability to speak English (very well, well, and not well).

Since the HINTS study has a complex survey design, we utilized jackknife replication weights to adjust standard error estimates. Chi-square statistics along with the weighted relative proportions were used to assess bivariate associations between age and demographic and health information-seeking survey responses. Logistic regression was used to examine the association between respondent age and health information-seeking variables while controlling for respondent demographic characteristics. As there were several modes of survey administration, we evaluated the distribution of demographic characteristics and selected survey responses by mode. Differences in the distribution of these variables by survey mode were assessed by linear regression and chi-square analysis using jackknife estimates (Table S1 in Multimedia Appendix 1). Data management and analysis were completed using StataMP software (version 16.1; StataCorp LLC). Analyses were conducted from March 2020 through January 2021.

Results

The 5438 HINTS respondents included 346 (6.4%) with self-reported history of any skin cancer (melanoma: n=59; nonmelanoma skin cancer: n=258; both melanoma and nonmelanoma skin cancer: n=29), with a mean age of 65.8 years. Of the 346 respondents with a history of skin cancer, the majority were White (96.4% [weighted percentages]), and 171 were men (47.8%) (Table 1; Table S2 in Multimedia Appendix 1).

Table 1. Demographic characteristics of skin cancer respondents stratified by age (<65 years vs ≥65 years).

Variable	Respondents, n (weighted %)	Respondents by age		P value
		<65 years, n (weighted %)	≥65 years, n (weighted %)	
Sex				.14
Missing	23 (5.1)	7 (3.5)	16 (6.4)	
Male	171 (47.8)	43 (40.4)	128 (53.5)	
Female	152 (47.0)	63 (56.1)	89 (40.1)	
Education				.08
Missing	2 (0.1)	0 (0)	2 (0.2)	
Less than high school	9 (3.2)	1 (0.5)	8 (5.3)	
High school	51 (22.1)	11 (16.1)	40 (26.6)	
Some college	102 (39.8)	29 (41.0)	73 (38.9)	
College	182 (34.8)	72 (42.5)	110 (28.9)	
Health insurance				.21
Missing	4 (1.3)	0 (0)	4 (2.3)	
Yes	339 (97.7)	112 (99.7)	227 (96.1)	
No	3 (1.0)	1 (0.3)	2 (1.5)	
Race				.003
Missing	14 (3.1)	2 (0.7)	12 (5.0)	
White	326 (96.4)	107 (98.4)	219 (94.9)	
Black	1 (0)	1 (0.1)	0 (0)	
Multiple	5 (0.4)	3 (0.9)	2 (0.1)	
Income				.23
Missing	34 (10.9)	6 (7.6)	28 (13.4)	
<\$50,000	141 (45.2)	41 (41.1)	100 (48.4)	
≥\$50,000	171 (43.9)	66 (51.4)	105 (38.2)	
Speaks English				.02
Missing	2 (0.5)	1 (0.6)	1 (0.4)	
Very well	318 (92.7)	109 (96.9)	209 (89.5)	
Well	21 (5.7)	1 (1.1)	20 (9.3)	
Not well	5 (1.1)	2 (1.5)	3 (0.7)	

Health Information–Seeking Behaviors

Overall, 86.1% of skin cancer survivors reported having ever looked for information about health or medical topics from any source and 76.5% reported having ever looked for information about cancer from any source (Table 2; Table S3 in Multimedia Appendix 1). During the most recent search for health or medical information, 55.3% reported looking for information for themselves, 11.9% reported looking for information for someone else, and 17.7% reported looking for information for both themselves and someone else. Respondents reported that the internet was the most recent source of health information (45.6%), followed by a doctor or health care provider (20.9%) or other sources (9.5%); 21.6% of respondents felt frustrated in their search for information, and 28.2% of respondents felt it took a lot of effort to get the information they needed.

Compared to survivors aged 65 years and older, survivors <65 years old were more likely to use the internet as their first source of information during their most recent search for information about health or medical topics (<65 years: 59.2%; ≥65 years: 35.2%; $P=.047$) and to have ever looked for information about cancer (<65 years: 86.0%; ≥65 years: 69.2%; $P=.02$). In the model adjusted for sex, income, and English-speaking ability, having ever looked for information about cancer was not associated with being 65 years and older (odds ratio [OR] 1.14, 95% CI 0.81-1.61; $P=.44$) and using the internet as the first source of information about health or medical topics was not associated with being 65 years and older (OR 0.40, 95% CI 0.08-2.08; $P=.27$) (Table 3). No other relationships between general health information–seeking behavior and age were identified.

Table 2. Distribution of health seeking behaviors by skin cancer respondents stratified by age (<65 years vs ≥65 years).

Variable	Respondents (n=346)	Respondents by age		P value
	n (weighted %)	<65 years (n=113), n (weighted %)	≥65 years (n=233), n (weighted %)	
Health information-seeking behaviors				
Have you ever looked for information about health or medical topics from any source?				.10
Missing	7 (1.5)	2 (1.0)	5 (1.8)	
Yes	304 (86.1)	103 (91.9)	201 (81.7)	
No	35 (12.4)	8 (7.1)	27 (16.5)	
Have you ever looked for information about cancer from any source?				.02
Missing	6 (1.6)	2 (1.9)	4 (1.4)	
Yes	262 (76.5)	93 (86.0)	169 (69.2)	
No	78 (21.9)	18 (12.1)	60 (29.4)	
The most recent time you looked for information about health or medical topics, who was it for?				.84
Missing	45 (15.1)	12 (10.2)	33 (19.0)	
Myself	187 (55.3)	60 (60.1)	127 (51.5)	
Someone else	47 (11.9)	16 (12.5)	31 (11.5)	
Both myself and someone else	67 (17.7)	25 (17.3)	42 (18.0)	
The most recent time you looked for information about health or medical topics, where did you go first?				.047
Missing	77 (24.0)	23 (18.6)	54 (28.1)	
Doctor	71 (20.9)	13 (14.7)	58 (25.5)	
Internet	168 (45.6)	69 (59.2)	99 (35.2)	
Other	30 (9.5)	8 (7.5)	22 (11.1)	
You felt frustrated during your search for the information.				.88
Missing	62 (18.6)	13 (10.3)	49 (24.9)	
Strongly agree	25 (6.6)	9 (5.7)	16 (7.3)	
Somewhat agree	59 (15.0)	20 (16.5)	39 (13.9)	
Somewhat disagree	76 (20.7)	26 (22.6)	50 (19.3)	
Strongly disagree	124 (39.1)	45 (45.0)	79 (34.6)	
It took a lot of effort to get the information you needed.				.21
Missing	47 (15.6)	12 (10.2)	35 (19.7)	
Strongly agree	30 (7.7)	11 (6.7)	19 (8.6)	
Somewhat agree	82 (20.5)	19 (17.1)	63 (23.1)	
Somewhat disagree	87 (23.4)	29 (22.6)	58 (24.0)	
Strongly disagree	100 (32.8)	42 (43.5)	58 (24.7)	
Attitudes toward health information-seeking				
Imagine that you had a strong need to get information about health or medical topics. Where would you go first?				<.001
Missing	17 (5.1)	7 (6.0)	10 (4.4)	
Doctor or health care	179 (54.4)	39 (36.2)	140 (68.3)	
Internet	128 (36.9)	60 (55.3)	68 (22.9)	
Other	22 (3.7)	7 (2.6)	15 (4.5)	
Overall, how confident are you that you could get advice or information about health or medical topics if you needed it?				.80

Variable	Respondents (n=346)	Respondents by age		P value
	n (weighted %)	<65 years (n=113), n (weighted %)	≥65 years (n=233), n (weighted %)	
Missing	10 (2.3)	3 (1.1)	7 (3.2)	
Completely confident	90 (29.4)	32 (28.4)	58 (30.2)	
Very confident	133 (37.4)	41 (39.0)	92 (36.2)	
Somewhat confident	94 (26.6)	28 (25.5)	66 (27.4)	
A little confident	10 (3.0)	6 (4.61)	4 (1.7)	
Not confident at all	9 (1.4)	3 (1.4)	6 (1.3)	
In general, how much would you trust information about health or medical topics from each of the following?				
A doctor				.52
Missing	7 (1.4)	2 (1.0)	5 (1.8)	
A lot	261 (79.3)	84 (81.8)	177 (77.4)	
Some-Not at all	78 (19.2)	27 (17.3)	51 (20.8)	
Family or friends				.82
Missing	17 (5.1)	3 (2.3)	14 (7.3)	
A lot	20 (6.8)	9 (7.5)	11 (6.3)	
Some-Not at all	309 (88.0)	101 (90.1)	208 (86.4)	
Government health agencies				.60
Missing	21 (5.0)	2 (1.0)	19 (8.2)	
A lot	59 (16.9)	25 (16.0)	34 (17.6)	
Some-Not at all	266 (78.0)	86 (83.0)	180 (74.2)	
Charitable organizations				.30
Missing	21 (5.3)	2 (1.0)	19 (8.6)	
A lot	5 (1.0)	3 (1.5)	2 (0.5)	
Some-Not at all	320 (93.8)	108 (97.5)	212 (90.9)	
Religious organizations and leaders				.57
Missing	20 (4.3)	2 (1.0)	18 (6.9)	
A lot	4 (2.9)	2 (4.1)	2 (2.0)	
Some-Not at all	322 (92.8)	109 (94.9)	213(91.2)	
Ownership and technology use				
Please indicate if you have each of the following.				.045
Missing	5 (1.6)	1 (1.5)	4 (1.6)	
Tablet computer	19 (8.5)	5 (7.8)	14 (9.0)	
Smartphone	99 (31.0)	35 (33.7)	64 (29.0)	
Basic cell phone only	45 (13.2)	6 (5.7)	39 (18.9)	
None	22 (4.7)	2 (1.1)	20 (7.5)	
Multiple devices selected	156 (41.1)	64 (50.2)	92 (34.1)	
On your tablet or smartphone, do you have any apps related to health and wellness?				.10
Missing	75 (19.7)	10 (8.4)	65 (28.3)	
Yes	138 (38.3)	66 (54.0)	72 (26.4)	
No	113 (30.2)	33 (30.2)	80 (30.2)	
Don't know	20 (11.8)	4 (7.4)	16 (15.1)	
In the past 12 months, have you used the internet to look for information about cancer for yourself?				.86

Variable	Respondents (n=346) n (weighted %)	Respondents by age		P value
		<65 years (n=113), n (weighted %)	≥65 years (n=233), n (weighted %)	
Missing	66 (23.8)	10 (11.5)	56 (33.2)	
Yes	93 (26.2)	38 (31.1)	55 (22.4)	
No	187 (50.0)	65 (57.4)	122 (44.4)	
In the last 12 months, have you used the internet to watch a health-related video on YouTube?				.02
Missing	6 (0.9)	0 (0)	6 (1.6)	
Yes	77 (19.4)	38 (27.4)	39 (13.3)	
No	263 (79.7)	75 (72.6)	188 (85.1)	
In the past 12 months, have you used a computer, smartphone, or other electronic device to look for health or medical information for yourself?				<.001
Missing	7 (2.0)	2 (1.8)	5 (2.2)	
Yes	236 (68.2)	93 (82.3)	143 (61.4)	
No	103 (29.8)	18 (15.9)	85 (36.5)	

Table 3. Associations between age (<65 years vs ≥65 years) and health information-seeking variables for skin cancer survivors.

Variable	Unadjusted odds ratio (95% CI)	P value	Adjusted ^a odds ratio (95% CI)	P value
Have you ever looked for information about health or medical topics from any source?				
Yes	2.59 (0.7-9.58)	.15	1.09 (0.76-1.57)	.62
No	1.0 ^b	— ^c	1.0 ^b	—
The most recent time you looked for information about health or medical topics, who was it for?				
Myself	0.93 (0.41-2.11)	.86	0.91 (0.37-2.23)	.83
Someone else	1.0 ^b	—	1.0 ^b	—
Both myself and someone else	1.13 (0.46-2.76)	.79	1.17 (0.42-3.25)	.75
The most recent time you looked for information about health or medical topics, where did you go first?				
Doctor	1.18 (0.26-5.30)	.83	1.16 (0.2-5.9)	.86
Internet	0.40 (0.09-1.83)	.23	0.40 (0.08-2.08)	.27
Other	1.0 ^b	—	1.0 ^b	—
Have you ever looked for information about cancer from any source?				
Yes	1.14 (0.95-1.36)	.16	1.14 (0.81-1.61)	.44
No	1.0 ^b	—	1.0 ^b	—
Please indicate if you have a tablet, smartphone, cell phone, basic cell phone, none, or multiple devices.				
Tablet computer	1.7 (0.21-13.94)	.61	1.55 (0.09-26.82)	.76
Smartphone	1.27 (0.65-2.47)	.48	1.44 (0.62-3.36)	.39
Basic cell phone	4.88 (1.24-19.24)	.03	3.64 (0.7-18.95)	.12
None	10.36 (0.82-130.35)	.07	8.13 (0.64-102.8)	.10
Multiple devices	1.0 ^b	—	1.0 ^b	—
On your tablet or smartphone, do you have any apps related to health and wellness?				
Yes	0.42 (0.25-0.70)	0.001	0.35 (0.13-0.93)	.04
No or don't know	1.0 ^b	—	1.0 ^b	—
In the last 12 months, have you used the internet to watch a health-related video on YouTube?				
Yes	0.42 (0.19-0.88)	0.02	0.38 (0.17-0.84)	.02
No	1.0 ^b	—	1.0 ^b	—
In the past 12 months, have you used a computer, smartphone, or other electronic device to get health-related information?				
Yes	0.23 (0.10-0.53)	.001	0.17 (0.05-0.56)	.004
No	1.0 ^b	—	1.0 ^b	—
Imagine that you had a strong need to get information about health or medical topics. Where would you go first?				
Internet	1.0 ^b	—	1.0 ^b	—
Doctor	4.56 (2.01-10.37)	.001	3.88 (1.82-8.23)	.001
Elsewhere	4.19 (0.9-19.46)	.07	5.24 (0.99-27.84)	.05
Overall, how confident are you that you could get advice or information about health or medical topics if you needed it?				
Completely confident	1.0 ^b	—	1.0 ^b	—
Very confident	0.87 (0.36-2.14)	.76	0.90 (0.37-2.20)	.82
Somewhat or not confident	0.91 (0.38-2.14)	.82	0.80 (0.33-1.92)	.61
You felt frustrated during your search for the information				

Variable	Unadjusted odds ratio (95% CI)	P value	Adjusted ^a odds ratio (95% CI)	P value
Strongly agree or somewhat agree	1.0 ^b	—	1.0 ^b	—
Somewhat disagree	0.89 (0.33-2.41)	.82	1.08 (0.38-3.04)	.88
Strongly disagree	0.8 (0.38-1.71)	.57	0.99 (0.43-2.26)	.97
It took a lot of effort to get the information you needed				
Strongly agree	1.0 ^b	—	1.0 ^b	—
Somewhat agree	1.05 (0.25-4.32)	.95	1.62 (0.33-8.08)	.55
Somewhat disagree	0.82 (0.19-3.52)	.79	1.69 (0.28-10.35)	.56
Strongly disagree	0.44 (0.12-1.58)	.20	0.64 (0.15-2.68)	.53

^aThe model was adjusted for respondent sex, income, and English-speaking ability.

^bReference.

^cNo data or not applicable.

Attitudes Toward Health Information–Seeking

A majority of skin cancer survivors (54.4%) reported that they would first go to their doctor if they had a strong need to get information about health or medical topics, followed by the internet (36.9%) or other sources (3.7%). Most respondents reported high levels of confidence in their ability to get advice or information about health or medical topics if needed, with 66.8% completely or very confident, 26.6% somewhat confident, and 4.4% a little confident or not at all confident. A plurality of skin cancer survivors reported a lot of trust in health information from a doctor (79.3%) but not in health information from government health agencies (16.9%), charitable organizations (1.0%), or religious organizations and leaders (2.9%) ($P < .001$ for all comparisons).

Compared to survivors aged 65 years and older, survivors <65 years old were less likely to first go to their doctor for health information (<65 years: 36.2%; ≥65 years: 68.3%; $P < .001$) and more likely to go to the internet (<65 years: 55.3%; ≥65 years: 22.9%; $P < .001$). In the model adjusted for sex, income, and English-speaking ability, going to their doctor first was strongly associated with being 65 years and older (OR 3.88, 95% CI 1.82-8.23; $P = .001$) compared to going to the internet first. No other relationships between general health information–seeking behavior and age were identified.

Ownership and Use of Technology

Although 81.0% of skin cancer survivors reported owning a smartphone or tablet device, 13.2% owned a basic mobile phone only. In the past 12 months, 68.2% of survivors had used a smartphone, computer, or other electronic means to look for health or medical information pertinent to their health, and 26.2% had used the internet to look for information about cancer. A minority of survivors reported having watched a health-related video on YouTube in the past 12 months (19.4%) or having apps related to health and wellness on a tablet or smartphone (38.3%).

Age was strongly associated with the ownership and use of technology (Table 2). Compared to survivors aged 65 years and older, survivors younger than 65 years old were more likely to have apps related to health and wellness (<65 years: 54.0%;

≥65 years: 26.4%; $P = .10$), more likely to have watched a health-related YouTube video (<65 years: 27.4%; ≥65 years: 13.3%; $P = .02$), and more likely to have used an electronic means to look for health and medical information (<65 years: 82.3%; ≥65 years: 61.4%; $P < .001$). After adjusting for sex, income, and English-speaking ability, having health and wellness apps (OR 0.35, 95% CI 0.13-0.93; $P = .04$), watching a health-related YouTube video (OR 0.38, 95% CI 0.17-0.84; $P = .02$), and using electronic means to look for health information (OR 0.17, 95% CI 0.05-0.56; $P = .004$) were associated with being <65 years old (Table 3).

Discussion

General

We found that health- and cancer-related information-seeking behaviors are common among skin cancer survivors but that 21.6% of respondents felt frustrated, and 28.2% felt that their most recent search for health information took significant effort. Age was strongly associated with survivor preferences and use of technology. Younger survivors were more likely to use and prefer technology-based means, such as the internet, health and wellness apps, or YouTube, to access information. These findings are relevant to clinical practice as well as to research efforts aimed at improving patient education and primary and secondary prevention behaviors, particularly as the population older than 65 years is rapidly expanding in the United States [32] and technology ownership and use varies by age [17,18,33].

Previous studies [3,34] have tended to survey survivors in tertiary-care specialty clinics, limiting generalizability. Brutting et al [3] found that the internet was strongly preferred as a media information resource by younger (<55 years) more than older patients with or who had a history of melanoma in Germany and that the information source most frequently used by patients with or who had a history of melanoma was their physician, followed by family or friends, other health care professionals, the internet, and booklets. Self-help groups, cancer counseling centers, and health insurance companies were infrequently used as an information resource [3]. Damude et al [34] conducted a prospective study in which, prior to an outpatient visit, a printed melanoma brochure and links to 2 educational YouTube videos

about skin self-examination were sent to Dutch stage I-II melanoma survivors, who subsequently reported that they preferred their treating physician over YouTube videos or printed brochures as the primary information source. Their findings [34] and ours highlight that skin cancer survivors strongly value their doctor as an information resource. In addition, the majority of melanoma survivors felt that YouTube videos gave complementary information, had additional value and increased their confidence; most would recommend them to other patients [34]. Interestingly, in our study, we found very low use of health-related videos from YouTube, which suggests that although there may possibly be interest in this medium among skin cancer survivors, they may not be aware of, or know how to, identify or access, reputable resources. This challenge was highlighted by Petukhova et al [35], who found that 87% of posts involving medical advice shared in Facebook support groups for keratinocyte carcinoma survivors included unsupported claims.

Web-based and print-based materials for melanoma education have been recently complemented by device (such as smartphone) apps, with which people interact with daily. With the rise in smartphone ownership, apps are a promising resource to help encourage patients and survivors to increase preventive health behaviors, including ultraviolet radiation protective behaviors and skin self-examinations [36-52]. However, because smartphone ownership varies by demographics [18], alternative strategies must be developed in parallel to prevent health care disparities.

Interestingly, few respondents reported high levels of trust in information about health or medical topics from government

health agencies. This is consistent with the findings of a 2021 survey [53] of 1305 US adults that showed that the American public has significantly higher trust in health care professionals than in public health institutions and agencies. Addressing concerns of a lack of trust in US public health institutions and agencies, therefore, appears to be an opportunity for improvement. This is particularly relevant for skin cancer as it is the most commonly diagnosed cancer in the United States, most cases are preventable, and it was the topic of the US surgeon general's 2014 call to action [54].

Limitations

Data were limited by the survey response rate and the potential for recall and selection biases. Additionally, these data were in relation to general health information and not specific to skin cancer-related information. Given the low number of non-White skin cancer survivors in the data set, our findings may not be generalizable to other races and ethnicities. Selection bias was limited by the use of data from a rigorously conducted, population-based, nationally representative sample, that provided modest monetary compensation. Finally, we did not analyze data from prior HINTS surveys to determine temporal changes in measures, and we did not assess similarities or differences in information-seeking behaviors and use of technology between skin cancer survivors and other individuals.

Conclusion

Searches for health information are common among skin cancer survivors. Although behaviors and attitudes are associated with age, individuals of all ages have varied preferences, highlighting the importance of access to doctors and personalized information sources.

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Authors' Contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by MAM, LS-G, SWD, JKN, and JLH. The first draft of the manuscript was written by MAM, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Conflicts of Interest

None declared.

Multimedia Appendix 1

Supplement.

[[DOCX File , 51 KB-Multimedia Appendix 1](#)]

References

1. Harrison JD, Young JM, Price MA, Butow PN, Solomon MJ. What are the unmet supportive care needs of people with cancer? a systematic review. *Support Care Cancer* 2009 Aug;17(8):1117-1128. [doi: [10.1007/s00520-009-0615-5](https://doi.org/10.1007/s00520-009-0615-5)] [Medline: [19319577](https://pubmed.ncbi.nlm.nih.gov/19319577/)]

2. Constantinidou A, Afuwape SA, Linsell L, Hung T, Acland K, Healy C, et al. Informational needs of patients with melanoma and their views on the utility of investigative tests. *Int J Clin Pract* 2009 Nov;63(11):1595-1600. [doi: [10.1111/j.1742-1241.2009.02096.x](https://doi.org/10.1111/j.1742-1241.2009.02096.x)] [Medline: [19832815](https://pubmed.ncbi.nlm.nih.gov/19832815/)]
3. Brütting J, Bergmann M, Garzarolli M, Rauschenberg R, Weber C, Berking C, NVKH supporting group. Information-seeking and use of information resources among melanoma patients of German skin cancer centers. *J Dtsch Dermatol Ges* 2018 Sep;16(9):1093-1101. [doi: [10.1111/ddg.13630](https://doi.org/10.1111/ddg.13630)] [Medline: [30091517](https://pubmed.ncbi.nlm.nih.gov/30091517/)]
4. Hetz SP, Tomasone JR. Supportive care needs of Canadian melanoma patients and survivors. *Can Oncol Nurs J* 2012;22(4):248-256. [doi: [10.5737/1181912x224248251](https://doi.org/10.5737/1181912x224248251)] [Medline: [23362658](https://pubmed.ncbi.nlm.nih.gov/23362658/)]
5. Husson O, Holterhues C, Mols F, Nijsten T, van de Poll-Franse LV. Melanoma survivors are dissatisfied with perceived information about their diagnosis, treatment and follow-up care. *Br J Dermatol* 2010 Oct;163(4):879-881. [doi: [10.1111/j.1365-2133.2010.09895.x](https://doi.org/10.1111/j.1365-2133.2010.09895.x)] [Medline: [20854404](https://pubmed.ncbi.nlm.nih.gov/20854404/)]
6. Mitchell J, Callaghan P, Street J, Neuhaus S, Bessen T. The experience of melanoma follow-up care: an online survey of patients in australia. *J Skin Cancer* 2014;2014:429149 [FREE Full text] [doi: [10.1155/2014/429149](https://doi.org/10.1155/2014/429149)] [Medline: [25535589](https://pubmed.ncbi.nlm.nih.gov/25535589/)]
7. Waalboer-Spuij R, Hollestein LM, Nijsten TEC, Group LV. Satisfaction with information provision and health-related quality of life in basal and squamous cell carcinoma patients: a cross-sectional population-based study. *Acta Derm Venereol* 2019 Sep 01;99(10):933-934 [FREE Full text] [doi: [10.2340/00015555-3226](https://doi.org/10.2340/00015555-3226)] [Medline: [31120545](https://pubmed.ncbi.nlm.nih.gov/31120545/)]
8. Bath-Hextall F, Nalubega S, Evans C. The needs and experiences of patients with skin cancer: a qualitative systematic review with metanalysis. *Br J Dermatol* 2017 Sep 22;177(3):666-687. [doi: [10.1111/bjd.15148](https://doi.org/10.1111/bjd.15148)] [Medline: [27775838](https://pubmed.ncbi.nlm.nih.gov/27775838/)]
9. Palesh O, Aldridge-Gerry A, Bugos K, Pickham D, Chen JJ, Greco R, et al. Health behaviors and needs of melanoma survivors. *Support Care Cancer* 2014 Nov;22(11):2973-2980. [doi: [10.1007/s00520-014-2286-0](https://doi.org/10.1007/s00520-014-2286-0)] [Medline: [24879390](https://pubmed.ncbi.nlm.nih.gov/24879390/)]
10. Bath-Hextall F, Jenkinson C, Kumar A, Leonardi-Bee J, Perkins W, Cox K, et al. Longitudinal, mixed method study to look at the experiences and knowledge of non melanoma skin cancer from diagnosis to one year. *BMC Dermatol* 2013 Oct 29;13:13 [FREE Full text] [doi: [10.1186/1471-5945-13-13](https://doi.org/10.1186/1471-5945-13-13)] [Medline: [24164857](https://pubmed.ncbi.nlm.nih.gov/24164857/)]
11. Affi WA, Weiner JL. Toward a theory of motivated information management. *Commun Theory* 2004 May;14(2):167-190. [doi: [10.1111/j.1468-2885.2004.tb00310.x](https://doi.org/10.1111/j.1468-2885.2004.tb00310.x)]
12. Derdiarian A. Informational needs of recently diagnosed cancer patients. a theoretical framework. part I. *Cancer Nurs* 1987 Apr;10(2):107-115. [Medline: [3646916](https://pubmed.ncbi.nlm.nih.gov/3646916/)]
13. Cassileth BR, Zupkis RV, Sutton-Smith K, March V. Information and participation preferences among cancer patients. *Ann Intern Med* 1980 Jun;92(6):832-836. [Medline: [7387025](https://pubmed.ncbi.nlm.nih.gov/7387025/)]
14. Case DO, Andrews JE, Johnson JD, Allard SL. Avoiding versus seeking: the relationship of information seeking to avoidance, blunting, coping, dissonance, and related concepts. *J Med Libr Assoc* 2005 Jul;93(3):353-362 [FREE Full text] [Medline: [16059425](https://pubmed.ncbi.nlm.nih.gov/16059425/)]
15. Mayer DK, Terrin NC, Kreps GL, Menon U, McCance K, Parsons SK, et al. Cancer survivors information seeking behaviors: a comparison of survivors who do and do not seek information about cancer. *Patient Educ Couns* 2007 Mar;65(3):342-350. [doi: [10.1016/j.pec.2006.08.015](https://doi.org/10.1016/j.pec.2006.08.015)] [Medline: [17029864](https://pubmed.ncbi.nlm.nih.gov/17029864/)]
16. Hamilton SN, Scali EP, Yu I, Gusnowski E, Ingledew P. Sifting through it all: characterizing melanoma patients' utilization of the internet as an information source. *J Cancer Educ* 2015 Sep;30(3):580-584. [doi: [10.1007/s13187-014-0711-1](https://doi.org/10.1007/s13187-014-0711-1)] [Medline: [25077770](https://pubmed.ncbi.nlm.nih.gov/25077770/)]
17. Young adults are most likely to use the internet, but seniors show faster adoption rates. Pew Research Center. 2015. URL: <https://tinyurl.com/33h2s59a> [accessed 2022-03-21]
18. Smartphone ownership is growing rapidly around the world, but not always equally. Pew Research Center. 2019. URL: <https://tinyurl.com/ywpub5p4> [accessed 2022-03-21]
19. Yen PP, Wiseman SM. Poor readability of online patient resources regarding sentinel lymph node biopsy for melanoma. *Cureus* 2019 Jan 13;11(1):e3877 [FREE Full text] [doi: [10.7759/cureus.3877](https://doi.org/10.7759/cureus.3877)] [Medline: [30899628](https://pubmed.ncbi.nlm.nih.gov/30899628/)]
20. Brütting J, Steeb T, Reinhardt L, Berking C, Meier F. Exploring the most visible german websites on melanoma immunotherapy: a web-based analysis. *JMIR Cancer* 2018 Dec 13;4(2):e10676 [FREE Full text] [doi: [10.2196/10676](https://doi.org/10.2196/10676)] [Medline: [30545808](https://pubmed.ncbi.nlm.nih.gov/30545808/)]
21. Alshaiikh EA, Almedimigh AF, Alruwaili AM, Almajnoni AH, Alhajahmed A, Almalki TS, et al. Patient-focused online resources for melanoma: highly variable content and quality. *J Cancer Educ* 2018 May 07:775-781. [doi: [10.1007/s13187-018-1372-2](https://doi.org/10.1007/s13187-018-1372-2)] [Medline: [29732480](https://pubmed.ncbi.nlm.nih.gov/29732480/)]
22. Ibrahim AMS, Vargas CR, Koolen PGL, Chuang DJ, Lin SJ, Lee BT. Readability of online patient resources for melanoma. *Melanoma Res* 2016 Feb;26(1):58-65. [doi: [10.1097/CMR.0000000000000210](https://doi.org/10.1097/CMR.0000000000000210)] [Medline: [26479217](https://pubmed.ncbi.nlm.nih.gov/26479217/)]
23. Kang R, Lipner S. Assessment of internet sources on subungual melanoma. *Melanoma Res* 2020 Aug;30(4):416-419. [doi: [10.1097/CMR.0000000000000508](https://doi.org/10.1097/CMR.0000000000000508)] [Medline: [30169432](https://pubmed.ncbi.nlm.nih.gov/30169432/)]
24. Winterbottom A, Harcourt D. Patients' experience of the diagnosis and treatment of skin cancer. *J Adv Nurs* 2004 Nov;48(3):226-233. [doi: [10.1111/j.1365-2648.2004.03191.x](https://doi.org/10.1111/j.1365-2648.2004.03191.x)] [Medline: [15488036](https://pubmed.ncbi.nlm.nih.gov/15488036/)]
25. Körner A, Garland R, Czajkowska Z, Coroiu A, Khanna M. Supportive care needs and distress in patients with non-melanoma skin cancer: nothing to worry about? *Eur J Oncol Nurs* 2016 Feb;20:150-155. [doi: [10.1016/j.ejon.2015.07.006](https://doi.org/10.1016/j.ejon.2015.07.006)] [Medline: [26236032](https://pubmed.ncbi.nlm.nih.gov/26236032/)]

26. Kassianos AP, Emery JD, Murchie P, Walter FM. Smartphone applications for melanoma detection by community, patient and generalist clinician users: a review. *Br J Dermatol* 2015 Jun;172(6):1507-1518. [doi: [10.1111/bjd.13665](https://doi.org/10.1111/bjd.13665)] [Medline: [25600815](https://pubmed.ncbi.nlm.nih.gov/25600815/)]
27. Steeb T, Wessely A, Mastnik S, Brinker TJ, French LE, Niesert A, et al. Patient attitudes and their awareness towards skin cancer-related apps: cross-sectional survey. *JMIR Mhealth Uhealth* 2019 Jul 02;7(7):e13844 [FREE Full text] [doi: [10.2196/13844](https://doi.org/10.2196/13844)] [Medline: [31267978](https://pubmed.ncbi.nlm.nih.gov/31267978/)]
28. §46.104 Exempt research. Office for Human Research Protections. URL: <https://www.hhs.gov/ohrp/regulations-and-policy/regulations/45-cfr-46/revised-common-rule-regulatory-text/index.html#46.104> [accessed 2022-03-21]
29. Health information national trends survey 5 (HINTS 5): cycle 3 methodology report. National Cancer Institute. 2019. URL: https://hints.cancer.gov/docs/Instruments/HINTS5_Cycle3_MethodologyReport.pdf [accessed 2022-03-21]
30. Cancer stat facts: melanoma of the skin. National Cancer Institute. 2020. URL: <https://seer.cancer.gov/statfacts/html/melan.html> [accessed 2022-03-21]
31. Who is eligible for Medicare? HHS.gov U.S. Department of Health & Human Services. URL: <https://tinyurl.com/2p8vb3pd> [accessed 2022-03-21]
32. 2020 Profile of older Americans. Administration for Community Living. URL: https://acl.gov/sites/default/files/Aging%20and%20Disability%20in%20America/2020ProfileOlderAmericans.Final_.pdf [accessed 2022-03-21]
33. Mobile fact sheet. Pew Research Center. 2019. URL: <https://www.pewresearch.org/internet/fact-sheet/mobile/> [accessed 2022-03-21]
34. Damude S, Hoekstra-Weebers JEHM, van LBL, Hoekstra HJ. Melanoma patients' disease-specific knowledge, information preference, and appreciation of educational YouTube videos for self-inspection. *Eur J Surg Oncol* 2017 Aug;43(8):1528-1535. [doi: [10.1016/j.ejso.2017.06.008](https://doi.org/10.1016/j.ejso.2017.06.008)] [Medline: [28684059](https://pubmed.ncbi.nlm.nih.gov/28684059/)]
35. Petukhova TA, Wilson BN, Gadjiko M, Lee EH, Wang J, Rossi AM, et al. Utilization of Facebook for support and education by patients with skin cancer. *Dermatol Online J* 2020 Mar 03;26(3):4 [FREE Full text] [Medline: [32609441](https://pubmed.ncbi.nlm.nih.gov/32609441/)]
36. Sar-Graycar L, Rotemberg VM, Matsoukas K, Halpern AC, Marchetti MA, Hay JL. Interactive skin self-examination digital platforms for the prevention of skin cancer: a narrative literature review. *J Am Acad Dermatol* 2021 May;84(5):1459-1468. [doi: [10.1016/j.jaad.2020.07.014](https://doi.org/10.1016/j.jaad.2020.07.014)] [Medline: [32659420](https://pubmed.ncbi.nlm.nih.gov/32659420/)]
37. Walter FM, Pannebakker MM, Barclay ME, Mills K, Saunders CL, Murchie P, et al. Effect of a skin self-monitoring smartphone application on time to physician consultation among patients with possible melanoma: a phase 2 randomized clinical trial. *JAMA Netw Open* 2020 Feb 05;3(2):e200001 [FREE Full text] [doi: [10.1001/jamanetworkopen.2020.0001](https://doi.org/10.1001/jamanetworkopen.2020.0001)] [Medline: [32101302](https://pubmed.ncbi.nlm.nih.gov/32101302/)]
38. Ribeiro N, Moreira L, Barros A, Almeida AM, Santos-Silva F. Guidelines for a cancer prevention smartphone application: a mixed-methods study. *Int J Med Inform* 2016 Oct;94:134-142. [doi: [10.1016/j.ijmedinf.2016.07.007](https://doi.org/10.1016/j.ijmedinf.2016.07.007)] [Medline: [27573321](https://pubmed.ncbi.nlm.nih.gov/27573321/)]
39. Ribeiro N, Moreira L, Almeida AMP, Santos-Silva F. Can smartphones promote cancer prevention behaviours in healthy young adults? a prospective study. *J Cancer Educ* 2019 Oct;34(5):847-853. [doi: [10.1007/s13187-018-1382-0](https://doi.org/10.1007/s13187-018-1382-0)] [Medline: [29931456](https://pubmed.ncbi.nlm.nih.gov/29931456/)]
40. Ribeiro N, Moreira L, Almeida AMP, Santos-Silva F. Pilot study of a smartphone-based intervention to promote cancer prevention behaviours. *Int J Med Inform* 2017 Dec;108:125-133. [doi: [10.1016/j.ijmedinf.2017.10.013](https://doi.org/10.1016/j.ijmedinf.2017.10.013)] [Medline: [29132617](https://pubmed.ncbi.nlm.nih.gov/29132617/)]
41. Murchie P, Allan JL, Brant W, Dennis M, Hall S, Masthoff J, et al. Total skin self-examination at home for people treated for cutaneous melanoma: development and pilot of a digital intervention. *BMJ Open* 2015 Aug 06;5(8):e007993 [FREE Full text] [doi: [10.1136/bmjopen-2015-007993](https://doi.org/10.1136/bmjopen-2015-007993)] [Medline: [26251412](https://pubmed.ncbi.nlm.nih.gov/26251412/)]
42. Mills K, Emery J, Lantaff R, Radford M, Pannebakker M, Hall P, et al. Protocol for the melatools skin self-monitoring trial: a phase II randomised controlled trial of an intervention for primary care patients at higher risk of melanoma. *BMJ Open* 2017 Nov 28;7(11):e017934 [FREE Full text] [doi: [10.1136/bmjopen-2017-017934](https://doi.org/10.1136/bmjopen-2017-017934)] [Medline: [29187412](https://pubmed.ncbi.nlm.nih.gov/29187412/)]
43. Marek AJ, Chu EY, Ming ME, Khan ZA, Kovarik CL. Impact of a smartphone application on skin self-examination rates in patients who are new to total body photography: a randomized controlled trial. *J Am Acad Dermatol* 2018 Sep;79(3):564-567 [FREE Full text] [doi: [10.1016/j.jaad.2018.02.025](https://doi.org/10.1016/j.jaad.2018.02.025)] [Medline: [29438760](https://pubmed.ncbi.nlm.nih.gov/29438760/)]
44. Marek AJ, Chu EY, Ming ME, Khan ZA, Kovarik CL. Piloting the use of smartphones, reminders, and accountability partners to promote skin self-examinations in patients with total body photography: a randomized controlled trial. *Am J Clin Dermatol* 2018 Oct;19(5):779-785 [FREE Full text] [doi: [10.1007/s40257-018-0372-7](https://doi.org/10.1007/s40257-018-0372-7)] [Medline: [30062632](https://pubmed.ncbi.nlm.nih.gov/30062632/)]
45. Manahan MN, Soyer HP, Loescher LJ, Horsham C, Vagenas D, Whiteman DC, et al. A pilot trial of mobile, patient-performed teledermoscopy. *Br J Dermatol* 2015 Apr;172(4):1072-1080. [doi: [10.1111/bjd.13550](https://doi.org/10.1111/bjd.13550)] [Medline: [25418126](https://pubmed.ncbi.nlm.nih.gov/25418126/)]
46. Kong F, Horsham C, Rayner J, Simunovic M, O'Hara M, Soyer HP, et al. Consumer preferences for skin cancer screening using mobile teledermoscopy: a qualitative study. *Dermatology* 2020;236(2):97-104 [FREE Full text] [doi: [10.1159/000505620](https://doi.org/10.1159/000505620)] [Medline: [32126557](https://pubmed.ncbi.nlm.nih.gov/32126557/)]
47. Janda M, Horsham C, Vagenas D, Loescher L, Gillespie N, Koh U. Accuracy of mobile digital teledermoscopy for skin self-examinations in adults at high risk of skin cancer: an open-label, randomised controlled trial. *Lancet Digital Health* 2020:e129-e137 [FREE Full text] [doi: [10.1016/s2589-7500\(20\)30001-7](https://doi.org/10.1016/s2589-7500(20)30001-7)] [Medline: [33334577](https://pubmed.ncbi.nlm.nih.gov/33334577/)]

48. Janda M, Horsham C, Koh U, Gillespie N, Loescher LJ, Vagenas D, et al. Redesigning skin cancer early detection and care using a new mobile health application: protocol of the SKIN research project, a randomised controlled trial. *Dermatology* 2019;235(1):11-18 [FREE Full text] [doi: [10.1159/000493729](https://doi.org/10.1159/000493729)] [Medline: [30404085](https://pubmed.ncbi.nlm.nih.gov/30404085/)]
49. Horsham C, Snoswell C, Vagenas D, Loescher LJ, Gillespie N, Soyer HP, et al. Is teledermoscopy ready to replace face-to-face examinations for the early detection of skin cancer? consumer views, technology acceptance, and satisfaction with care. *Dermatology* 2020;236(2):90-96 [FREE Full text] [doi: [10.1159/000506154](https://doi.org/10.1159/000506154)] [Medline: [32114570](https://pubmed.ncbi.nlm.nih.gov/32114570/)]
50. Horsham C, Loescher LJ, Whiteman DC, Soyer HP, Janda M. Consumer acceptance of patient-performed mobile teledermoscopy for the early detection of melanoma. *Br J Dermatol* 2016 Dec;175(6):1301-1310. [doi: [10.1111/bjd.14630](https://doi.org/10.1111/bjd.14630)] [Medline: [27037999](https://pubmed.ncbi.nlm.nih.gov/27037999/)]
51. Hall S, Murchie P. Can we use technology to encourage self-monitoring by people treated for melanoma? a qualitative exploration of the perceptions of potential recipients. *Support Care Cancer* 2014 Jun;22(6):1663-1671. [doi: [10.1007/s00520-014-2133-3](https://doi.org/10.1007/s00520-014-2133-3)] [Medline: [24510193](https://pubmed.ncbi.nlm.nih.gov/24510193/)]
52. Dennis M, Masthoff J, Smith K, Murchie P, Hall S. Designing a tablet-based intervention to support self-checking for melanoma. In: *Proceedings of the 5th International Conference on Digital Health. 2015 May 18 Presented at: 5th International Conference on Digital Health 2015; May 18-20, 2015; Florence, Italy* p. 79-86. [doi: [10.1145/2750511.2750518](https://doi.org/10.1145/2750511.2750518)]
53. Health H. The public's perspective on the United States public health system. Robert Wood Johnson Foundation/Harvard School of Public Health. 2021. URL: <https://www.rwjf.org/en/library/research/2021/05/the-publics-perspective-on-the-united-states-public-health-system.html> [accessed 2022-03-21]
54. The surgeon general's call to action to prevent skin cancer. U.S. Department of Health & Human Services. 2014. URL: <https://www.hhs.gov/sites/default/files/call-to-action-prevent-skin-cancer.pdf> [accessed 2022-03-21]

Abbreviations

HINTS: Health Information National Trends Survey

OR: odds ratio

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