

Predictors of Palliative Care Knowledge: Findings from the Health Information National Trends Survey

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ABSTRACT

Background: Palliative care plays an important role in improving the quality of life for patients with cancer and their caregivers and has been associated with increased patient satisfaction. However, palliative care knowledge in the general population is limited, and often physician referral occurs late in prognosis. The objective of this analysis was to examine factors associated with palliative care knowledge.

Method: Using data from the 2018 NCI's Health Information National Trends Survey (HINTS) 5 Cycle 2, descriptive statistics, bivariate analyses, and multivariable logistic regressions were used to assess factors associated with respondents' palliative care knowledge using ORs and 95% confidence intervals as measures of association. The outcome of interest was measured with the item "How would you describe your level of knowledge about palliative care?" Possible response selections were "I've never heard of it," "I know a little bit about palliative care," and "I know what palliative care is and could explain it to someone else." To reduce the risk of type 1 error, jackknife variance estimations with repeated replications were used. All analyses were conducted with the SURVEYLOGISTIC command using

SAS 9.4 (SAS Institute Inc.), and the statistical significance level was set at $P < 0.05$.

Results: A total of 3,450 respondents (weighted sample size: 249,489,772) met the inclusion criteria. About 89% ($n = 3,000$) of all respondents had inadequate knowledge of palliative care. Multivariable analyses indicated that frequent health care utilization as defined as ≥ 2 times per year [OR, 3.01; 95% confidence interval (CI), 2.65–3.58], female gender (OR, 2.15; 95% CI, 1.31–3.59), being married (OR, 2.02; 95% CI, 1.14–3.59), having a college degree or higher (OR, 13.83; 95% CI, 1.71–12.04), and having a regular source of care (OR, 2.67; 95% CI, 1.37–1.90) had greater odds of adequate palliative care knowledge. Those without a cancer diagnosis were less likely to have adequate knowledge of palliative care (OR, 0.49; 95% CI, 0.41–0.89).

Conclusions: Knowledge of palliative care in the United States is low, particularly for those not already actively using their available healthcare system. Public health education efforts are needed to target subgroups of the U.S. population identified by this analysis to increase palliative care knowledge.

Impact: Healthcare providers have a major role to play in improving palliative care knowledge.

Introduction

Palliative care is an approach to provide optimal physical, emotional, and practical support to patients with serious illnesses. In the past decade, the practice of palliative care has rapidly grown (1). While the primary goal of palliative care is to relieve a patient's pain and suffering, there is substantial evidence that suggests that it can simultaneously improve patient outcomes, such as symptom burden and quality of life (2–4). The American Society of Clinical Oncology recommends that all patients with advanced cancer receive palliative care and treatment concurrently (5). Likewise, the National Comprehensive Cancer Network (NCCN) Guidelines in Oncology recommends that all patients and/or caregivers should be familiarized

with the importance of palliative care in a patient's overall cancer care (6). Despite these recommendations and increased access to outpatient palliative care services in the United States, many people fail to receive necessary palliative care (1).

Several studies reported barriers to palliative care to include referrer hesitancy, rationed program eligibility, and patient/family reluctance (3, 7). Among healthcare providers, additional barriers to palliative care implementation include inadequate knowledge, attitudes, as well as personal and professional lack of experience with palliative care (8, 9). Several factors reported to be associated with higher knowledge levels of palliative care include physician's prior personal experience with palliative care, health care providers' exposure to oncologic and geriatric patients, and palliative care education (9, 10). Likewise, for the patients, female gender, high socioeconomic status, and increasing age have also been found to be associated with a higher knowledge of palliative care in several convenience sample populations (11–13). Understanding and exploring these perceptions, as well as factors associated with knowledge, on the nationally representative U.S. level are essential, as palliative care has been associated with improved quality of life for both cancer patients and their caregivers (4, 14, 15).

Therefore, the purpose of this analysis was to identify factors associated with knowledge of palliative care, independent of health care utilization, using a nationally representative sample of the U.S. population. This information will help identify subgroups of the U.S. population in which public health education efforts are needed to increase palliative care knowledge and potential downstream benefits of use.

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Materials and Methods

Data and study population

This retrospective, cross-sectional study analyzed the 2018 NCI Health Information National Trends Survey (HINTS) 5, Cycle 2, to evaluate respondents' level of knowledge of palliative care as well as its correlates. Each year, the HINTS collects nationally-representative data about the United States' use of cancer-related information via a mail-in survey offered in either English or Spanish (16). The HINTS target population is civilian and non-institutionalized adults (≥ 18 years) living in the United States. Using sampling frame of addresses, the HINTS data group addresses in areas with low and high concentrations of minority populations. The survey also increases the precision of estimates for minority subpopulations by oversampling the high-minority strata (17).

Also, the HINTS 5 Cycle 2 survey utilized a two-stage sampling strategy design. The first stage involved selecting a stratified sample of addresses from a file of residential addresses. In the second and final stage, one adult is selected from each sampled household (17). To derive population-level point estimates, the sample weights included in each household-level base weights are calibrated for person-level weights to population counts. The HINTS 5, Cycle 2 was unique; it was the first HINTS dataset to date to capture information regarding palliative care. The HINTS 5, Cycle 2 data were collected from January to May 2018 and possesses information collected from 3,504 respondents (18).

Study variables

Knowledge of palliative care

The outcome of interest was measured with the item "How would you describe your level of knowledge about palliative care?" Possible response selections comprised of: "I've never heard of it," "I know a little bit about palliative care," and "I know what palliative care is and could explain it to someone else." For this analysis, the first two responses were further categorized into "inadequate knowledge," while the latter, "adequate knowledge."

Sociodemographic, clinical, and healthcare utilization variables

Independent variables included self-reported respondent socio-demographic characteristics (race, age, gender, employment status, marital status, education, health insurance status) and clinical characteristics (current health status, most recent checkup (length of time since last routine checkup), regular source of care, cancer diagnosis, and cancer recurrence worry). The respondent's race/ethnicity was grouped into four classes: non-Hispanic White, non-Hispanic Black, Hispanic, and other. The age information was classified into four groups: 18–34 years, 35–39 years, 40–44 years, and 45 years or older. Healthcare utilization proxy variables were measured by the frequency of visits with health professionals within the past 12 months (dichotomized as ≤ 1 time vs. ≥ 2 times) and regular source of care.

Statistical analysis

The HINTS dataset consists of household-level base weights, which were used to adjust for household nonresponse and extrapolate person-level weights to population-level point estimates. Sampling weights and stratification adjustments provided by and calculated from the HINTS complex sample design (19) were used in the data analysis. More details regarding the survey methodology can be found in the HINTS methodology report (17).

Descriptive statistics, performed through bivariate analyses, were conducted to determine the relationship between the outcome of interest—knowledge of palliative care – and clinical and sociodemographic variables. SURVEYFREQ procedure was used to derive the SEs and nationally representative estimates for the bivariate analyses. Multivariable logistic regressions, incorporating the sample weights, were used to identify the role of healthcare utilization controlling for relevant clinical and sociodemographic variables using the SURVEY-LOGISTIC command. Jackknife replicate weights were used for population-level estimates. All analyses were conducted using SAS 9.4 SURVEYLOGISTIC (SAS Institute Inc.), and the significance level was set at $P < 0.05$.

Results

Demographics and clinical characteristics

A total of 3,504 respondents were surveyed in the HINTS 5, Cycle 2 dataset. Among these respondents, 3,450 (weighted sample size: 249,489,772) responded to the question on palliative care, and these were included in the final dataset. Sixty-five percent of our respondents identified as non-Hispanic White ($n = 1,961$), and 60% ($n = 2,542$) identified as over the age of 45 years. More than 90% ($n = 3,204$) of the samples reported having health insurance, and 60% ($n = 1,889$) reported utilizing the healthcare system more than twice in the past 12 months. About half of the participants reported their health as "very good" to "excellent", with greater than 60% ($n = 2,511$) reporting a healthcare checkup within the past year. Less than 10% ($n = 585$) of those had a previous cancer diagnosis, and only 23% ($n = 616$) were "not at all" worried about cancer recurrence. Overall, 89% ($n = 3,000$) of our population had inadequate knowledge of palliative care, and only 11% ($n = 450$) had adequate knowledge. In the bivariate analysis, only the variable - "most recent checkup" did not show any statistically significant difference in knowledge of palliative care. As a result, this variable was excluded in the final logistic regression model. **Table 1** includes a summary of these findings.

Logistic regression model

The results of the multivariable logistic regression model are shown in **Table 2**. Higher odds of having adequate knowledge of palliative care were observed in respondents who had higher frequency (≥ 2 times) of health care utilization [OR, 3.01; 95% confidence interval (CI), 2.65–3.58; $P < 0.05$] compared with those in the lower frequency group (≤ 1 time). Compared with men, women (OR, 2.15; 95% CI, 1.31–3.59; $P < 0.05$), being married (OR, 2.02, 95% CI, 1.14–3.59; $P < 0.05$) compared to being single, and having at least a college degree (OR, 13.83; 95% CI, 1.71–12.04; $P < 0.05$) compared to having less than high school degree were demographic factors that were predictive of higher odds of adequate palliative care knowledge. Compared with those without a regular source of care, having a regular source of healthcare (OR, 2.67; 95% CI, 1.37–1.90; $P < 0.05$) was associated with up to three times higher odds of adequate knowledge of palliative care. Those without a cancer diagnosis were 0.49 times less likely (OR, 0.49; 95% CI, 0.41–0.89; $P < 0.05$) to have adequate knowledge of palliative care. The logistic regression analysis is displayed in **Table 2**.

Furthermore, a subgroup analysis stratifying for cancer history and adjusting for regular source of care and healthcare utilization to predict knowledge of palliative care was conducted. In the subgroup of those with a cancer diagnosis, none of the predictor variables were significant. However, in the subgroup of those without a cancer diagnosis,

Table 1. Associations between respondents' sociodemographic characteristics and knowledge of palliative care (*n* = 3,450).

Characteristics	Full sample <i>N</i> (weighted %)	No knowledge (<i>n</i> = 2,288, 71.2%) <i>n</i> (weighted %)	Inadequate knowledge (<i>n</i> = 712, 17.9%) <i>n</i> (weighted %)	Adequate knowledge (<i>n</i> = 450, 10.8%) <i>n</i> (weighted %)	<i>P</i>
Health care utilization					
≤1 time	1,006 (40.7)	707 (30.6)	175 (6.3)	124 (3.8)	
2 times or more	1,889 (59.3)	1,235 (41.1)	410 (11.3)	244 (6.9)	<0.05
Race/ethnicity					
Non-Hispanic White	1,961 (65.0)	1,165 (42.8)	505 (14.5)	291 (7.7)	<0.001
Non-Hispanic Black	432 (10.7)	328 (8.0)	64 (1.6)	40 (1.1)	
Hispanic	453 (15.8)	356 (13.2)	58 (1.5)	39 (1.1)	
Other	260 (8.5)	178 (6.6)	44 (1.0)	38 (0.92)	
Age (years)					
18–34	405 (23.9)	294 (19.2)	65 (3.1)	46 (1.6)	<0.001
35–39	201 (6.7)	134 (4.8)	42 (1.2)	25 (0.66)	
40–44	214 (9.4)	138 (6.7)	40 (1.2)	36 (1.4)	
45+	2,542 (60.1)	1,660 (40.7)	546 (12.3)	336 (7.2)	
Gender					
Male	1,380 (49.0)	1,032 (38.6)	232 (7.1)	116 (3.3)	<0.001
Female	2,011 (51.0)	1,205 (32.6)	473 (10.8)	333 (7.6)	
Employment status					
Employed	1,694 (58.4)	1,047 (40.2)	378 (10.9)	269 (7.4)	<0.001
Unemployed	1,647 (41.6)	1,160 (30.9)	317 (7.4)	170 (3.4)	
Marital status					
Married	1,726 (52.6)	1,101 (35.3)	392 (10.4)	233 (6.9)	
Divorced, widowed, separated	1,072 (16.9)	717 (11.9)	209 (3.3)	146 (1.8)	<0.05
Single	595 (30.4)	430 (24.3)	100 (4.1)	65 (2.0)	
Education					
Less than high school	263 (8.7)	240 (8.0)	16 (0.6)	7 (0.1)	
High school graduate	617 (22.1)	505 (19.0)	85 (2.4)	27 (0.7)	<0.001
Some college	1,022(40.2)	710 (28.7)	195 (7.3)	117 (4.2)	
College or higher	1,496 (29.0)	794 (15.7)	407 (7.6)	295 (5.7)	
Health insurance status					
Insured	3,204 (91.4)	2091 (63.5)	685 (17.5)	428 (10.5)	<0.001
Uninsured	179 (8.6)	147 (7.6)	16 (0.6)	16 (0.4)	
Current health status					
Excellent	410 (14.8)	233 (9.7)	90 (2.8)	87 (2.3)	
Very good	1,264 (35.8)	754 (23.4)	319 (7.6)	191 (4.8)	
Good	1,194 (34.7)	858 (26.3)	214 (5.5)	122 (2.9)	<0.001
Fair	444 (11.9)	337 (9.8)	69 (1.4)	38 (0.7)	
Poor	98 (2.8)	71 (2.0)	18 (0.7)	9 (0.2)	
Most recent checkup					
Within the past year	2,511 (67.6)	1,650 (47.3)	528 (12.9)	333 (7.5)	0.3871
>1 year	808 (30.9)	535 (22.1)	169 (5.3)	104 (3.4)	
Never	34 (1.5)	25 (1.3)	6 (0.1)	3 (0.1)	
Regular source of care					
Yes	2,434 (65.8)	1,511 (43.1)	571 (14.1)	352 (8.6)	<0.001
No	963 (34.2)	739 (27.9)	135 (4.1)	89 (2.2)	
Diagnosed with cancer					
Yes	585 (9.4)	378 (6.2)	112 (1.7)	95 (1.6)	<0.05
No	2,847 (90.6)	1,893 (65.0)	599 (16.3)	355 (9.3)	
Cancer recurrence worry					
Not at all	616 (22.9)	461 (18.6)	92 (2.4)	63 (1.94)	
Slightly	767 (27.9)	467 (19.0)	198 (5.9)	102 (2.9)	
Somewhat	820 (27.3)	528 (18.4)	182 (5.7)	110 (3.2)	<0.001
Moderately	411 (14.7)	257 (9.6)	95 (3.3)	59 (1.8)	
Extremely	182 (7.2)	144 (6.1)	23 (0.6)	15 (0.4)	

Note: Percentages were calculated from the number of weighted population and because of rounding, may not total 100% within each category. Values in bold are statistically significant at *P* < 0.05.

the odds of adequate knowledge of palliative care was more than two times higher among those with a regular source of care (OR, 2.35; 95% CI, 1.34–4.12; *P* < 0.05) compared with those without. **Tables 3 and 4** contain the results of this subgroup analysis.

Discussion

Using a nationally representative sample of the U.S. population from the most recent HINTS dataset that captured information on

Table 2. Weighted multivariate logistic regression model of predictors of knowledge of palliative care^a adjusted for healthcare utilization ($n = 3,450$).

Parameters	OR	Beta (SE)	95% CI	P
Health care utilization				
≤1 time ^b				
2 times or more	3.01	1.22	2.65–3.58	0.0012
Race				
Non-Hispanic White ^b				
Non-Hispanic Black	1.75	0.39	0.79–3.84	0.1620
Hispanic	0.76	0.37	0.36–1.58	0.4513
Other	0.74	0.37	0.35–1.56	0.4177
Age (years)				
18–34 ^b				
35–39	1.30	0.41	0.57–2.96	0.5216
40–44	1.96	0.45	0.79–4.86	0.1421
45+	1.67	0.32	0.87–3.18	0.1191
Gender				
Male ^b				
Female	2.15	0.25	1.31–3.59	0.0032
Employment status				
Unemployed ^b				
Employed	1.44	0.23	0.91–2.26	0.1149
Marital status				
Single ^b				
Married	2.02	0.29	1.14–3.59	0.0174
Divorced, widowed, separated	1.54	0.36	0.75–3.15	0.2353
Education				
Less than high school ^b				
High school graduate	2.56	1.10	0.28–23.35	0.3924
Some college	6.27	1.03	0.79–49.61	0.0807
College or higher	13.83	1.04	1.71–12.04	0.0149
Health insurance status				
Insured ^b				
Uninsured	0.51	0.52	0.18–1.45	0.2028
Current health status				
Excellent ^b				
Very good	0.89	0.29	0.50–1.59	0.6919
Good	0.80	0.36	0.39–1.65	0.5441
Fair	0.49	0.50	0.18–1.34	0.1605
Poor	0.75	0.99	0.10–5.53	0.7751
Regular source of care				
No ^b				
Yes	2.67	1.29	1.37–1.90	0.0031
Diagnosed with cancer				
Yes ^b				
No	0.49	0.23	0.41–0.89	0.0063
Cancer recurrence worry				
To a degree ^b				
Not at all	1.18	0.23	0.74–1.88	0.4714

Note: Values in bold are statistically significant at $P < 0.05$.

^aDependent variable: adequate knowledge of palliative care ($n = 3,504$); dependent variable was dichotomized as adequate knowledge vs. inadequate knowledge (those with none and inadequate knowledge), with adequate knowledge as the reference category.

^bReference category.

palliative care knowledge, we found that higher versus lower healthcare utilization, including frequent doctor visits and having a regular source of healthcare, was associated with up to three times higher odds of self-reported adequate knowledge of palliative care. Our estimate of 89% prevalence of inadequate knowledge of palliative care is almost 20% higher than previous estimates using HINTS (20). This is likely due to how the outcome variable—knowledge of palliative care—was categorized. In our study, we dichotomized this variable while a handful of

studies maintained the initial categorization (20–22). The high proportion of respondents in our study without adequate knowledge of palliative care suggests how the inherent benefits of palliative care in alleviating pain and symptoms from chronic illnesses are largely unknown to a wide number of the people who might someday benefit from it.

However, our results of demographic and socioeconomic correlates (22) of increased palliative care knowledge are congruent with

Table 3. Subgroup logistic regression analysis of predictors of knowledge of palliative care among those with a cancer diagnosis (*n* = 498)^a.

Parameter	OR	Beta (SE)	95% CI	P
Health care utilization				
≤1 time ^b				
2 times or more	1.03	0.53	0.35–3.03	0.9504
Regular source of care				
No ^b				
Yes	1.21	0.88	0.14–7.09	0.8324

^aDependent variable: Dependent variable was dichotomized as adequate knowledge vs. inadequate knowledge (those with none and inadequate knowledge), with adequate knowledge as the reference category.

^bReference category.

prior evaluations of factors associated with palliative care knowledge in U.S. populations (20, 21, 23). Consistent with prior studies, being married and female gender were also found to be significant predictors of palliative knowledge in our study (13, 20, 22). This higher knowledge level in women is most likely due to women’s tendencies to be more proactive with information-seeking about treatment options (13). Similar to findings from other studies (21, 22), higher level of education (college degree or higher) was significantly associated with having knowledge of palliative care. Although speculative at best, it is possible that having higher education levels equates to better access to health care, having high literacy levels, and, therefore, higher knowledge levels (21). Nonetheless, interventions aimed at improving palliative care knowledge should target those with lower levels of education.

Palliative care is no longer just offered to individuals at the end of life in the form of hospice. Instead, it may be offered at the beginning of a serious illness to improve the quality of life (24) by providing additional support, even when patients are undergoing curative or life-sustaining treatment. The Institute of Medicine’s 2014 consensus report recommends the delivery of palliative care early in the course of treatment for any serious illness (25). To complement the increasing utility of palliative care across the healthcare spectrum, palliative care programs in U.S. hospitals more than tripled from 2000 to 2010 (26). Using data from the American Hospital Association, 90% of hospitals with 300+ beds had established palliative care programs in 2012–2013 (1). Yet, disparities exist—palliative care programs are more common among not-for-profit and public hospitals and also differ geographically. Given the evolving models for care delivery and patient engagement, it is important to monitor changes in the public’s knowledge about palliative care via nationally representative surveys

such as those used in our analysis. Including palliative care questions in future iterations of HINTS surveys will allow researchers to assess trends in knowledge over time and compare knowledge against the increasing utility of palliative care in hospital and healthcare settings. National, as well as regional strategies to promote palliative care knowledge and education prior to the immediate need for palliative care services, can help individuals make informed decisions about the palliative care process in individuals with serious illness rather than only at the end of life.

Early integration of palliative care benefits a variety of patients, yet challenges to knowledge and adoption remain. Patients with heart failure enrolled in palliative care services had improved patient outcomes and decreased healthcare utilization (27). Similarly, early palliative care for patients with lung cancer was associated with extended survival (28). Palliative systemic therapy in advanced non-small cell lung cancer (NSCLC) was associated with improved overall survival and quality of life (29). Furthermore, studies reveal that palliative care is associated with lowered medical expenditures, ICU admissions, hospital admissions, and/or hospital days (30–32). Yet, palliative care conversations are intimate, multifaceted, and obviously challenging for healthcare providers to navigate with patients. These challenges are amplified when considering the spectrum of diverse cultural perspectives about end-of-life processes, perspectives, and attitudes (33). Barriers to learning about palliative care may mirror the barriers to accessing palliative care, including patient and family reluctance, lack of awareness of resources, and worry about inferior survival (3). A prior study in the same HINTS cohort examined knowledge of and beliefs about palliative care and found that higher knowledge levels was not necessarily associated with having positive beliefs about palliative care (21). Therefore, improving knowledge

Table 4. Subgroup logistic regression analysis of predictors of knowledge of palliative care among those without a cancer diagnosis (*n* = 2,395)^a.

Parameter	OR	Beta (SE)	95% CI	P
Health care utilization				
≤1 time ^b				
2 times or more	0.93	0.20	0.62–1.40	0.7219
Regular source of care				
No ^b				
Yes	2.35	0.28	1.34–4.12	0.0037

Note: Value in bold is statistically significant at *P* < 0.05.

^aDependent variable: dependent variable was dichotomized as adequate knowledge vs. inadequate knowledge (those with none and inadequate knowledge), with adequate knowledge as the reference category.

^bReference category.

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levels may not necessarily improve attitudes about or willingness to use palliative care services.

Contrary to findings from Trivedi and colleagues (20) and Huo and colleagues (22), in our study, a cancer history was significantly associated with higher palliative care knowledge. This could conceivably be due to interactions patients with cancer have with healthcare systems, which could have increased exposure to palliative care knowledge. Palliative care may be associated with increased patient satisfaction, a better understanding of symptoms and prognosis, and more family-centered care for patients with cancer (26, 34). However, in the subgroup analysis stratifying by cancer diagnosis, in the sample of participants without a cancer diagnosis, palliative care knowledge was significantly associated with having a regular source of care. A plausible explanation for this could be the increased interaction of the general public with the healthcare system via their healthcare providers. This further lays a strong foundation for the importance of healthcare providers in improving palliative care knowledge. Targeted interventions should focus on healthcare providers when addressing some knowledge gaps noted in this study.

In this study, healthcare utilization was included as an independent variable; a unique contribution to the current literature compared to other studies that examined palliative care knowledge using HINTS data (20–22, 35, 36). Frequent exposure to the healthcare system (as operationally defined as healthcare utilization) was a significant predictor of palliative care knowledge. This shows the relative importance of healthcare providers in increasing palliative care knowledge. Studies have reported health care providers as the most preferred and trusted source of palliative care information (22, 35). Given their accessibility to and acceptability by the public, healthcare providers can leverage their position to increase palliative care awareness through educating the public not only about the benefits of palliative care but also how it can be accessed. For this public education aspect to be effective and successful, more studies are needed to understand the most poorly understood aspect of palliative care. This is especially important considering the relatively low knowledge levels of palliative care among the general public (37).

Our study was conducted in a nationally representative sample of the U.S. population, yet limitations are present. First, we are unable to differentiate among respondents who had been diagnosed with a serious illness other than cancer. It is possible that people with serious illness and their caregivers were more likely to be aware of palliative care. Furthermore, because HINTS is a cross-sectional survey, it is not possible to infer causal relationships between constructs or items in the survey.

Also, this was a cross-sectional survey study that was designed to be administered only in English or Spanish. Those who would like to complete the survey in Spanish must request a paper copy be mailed to their postal address. These factors may cause selection and response bias and mask or exacerbate demographic disparities in palliative care knowledge. Because the survey can only be taken in English or Spanish, it does not capture minorities with limited English proficiency who speak other languages. The knowledge of palliative care is difficult to

quantify, as access to palliative care and types of palliative care services and quality may vary nationally by community or hospital (1). We also lack information on the healthcare providers' attitudes towards palliative care. This limitation should be considered when designing specific interventions to improve palliative care awareness like PalliCOVID, which is a web-based palliative care platform (38).

Because knowledge was operationalized with three items in this study, a more comprehensive measure of knowledge using a multi-item scale is needed to understand the full range of domains underpinning knowledge as a construct. Exploring such domain-level information will help distinguish areas of possible misconceptions and inaccuracies for potential interventions in the general public.

Despite the limitations noted above, this study has some strengths. First is the use of national surveillance data, which is, distributed among the general population, making the findings more generalizable compared to data from local or hospital-based surveys. Second and final is the use of HINTS sampling weights, which oversamples minorities and thus enhances the precision of measurements from these subpopulations.

Conclusion

Our results confirm low knowledge levels of palliative care in the general U.S. population, particularly for those who are not already actively engaged within the healthcare system. Palliative care is expanding nationwide through high-level policy commitments, but service provision, education, and funding do not match rapidly growing needs (39). Addressing the knowledge gap in a variety of health-provider, web-based, community, or other communication-based settings is a priority to change norms around using palliative care services. Given that palliative care services have significantly increased in the last decade, it is imperative to keep assessing the public's perceptions and knowledge regarding palliative care so as to increase uptake when needed.

Authors' Disclosures

No disclosures were reported.

Authors' Contributions

M.E. Ogunsanya: Conceptualization, software, formal analysis, supervision, validation, methodology, writing—original draft, project administration, writing—review and editing. **E.A. Goetzinger:** Conceptualization, validation, methodology, writing—original draft, project administration, writing—review and editing. **O.F. Owopetu:** Conceptualization, supervision, validation, writing—original draft, writing—review and editing. **P.D. Chandler:** Conceptualization, supervision, validation, methodology, writing—original draft, writing—review and editing. **L.E. O'Connor:** Conceptualization, formal analysis, supervision, validation, methodology, writing—original draft, writing—review and editing.

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