Palliative Care Knowledge and Attitudes: Results from National HINTS Data

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Research Articles
Published November 29, 2019

Abstract

Evidence demonstrates that palliative care for serious or terminal illness can improve quality of life and reduce health care spending, but it is still underused by many sub-populations. One possible barrier that contributes to underuse of palliative care may be a lack of knowledge about palliative care or, for those who are aware, confusion about the goals of palliative care. This study has two primary objectives: (1) describe the level of knowledge of palliative care among adults in the U.S. and (2) identify whether palliative care knowledge varies based on sociodemographic characteristics. A secondary objective is to (3) describe what participants think are the goals of palliative care. Data from the national Health Information National Trends Survey (HINTS) 5 cycle 2 was analyzed (n = 3,505). Frequencies and a multivariate logistic regression model were used to assess the relationship between independent variables of caregiving, cancer status, and rurality as predictors of palliative care knowledge. Weighted data estimated that 28.7% of the population has ever heard of palliative care. A logistic regression model showed a significant difference in knowledge of palliative care by caregiving status. Differences by cancer status and rurality were not statistically significant. Other statistically significant differences were found by age, sex, education, income, and ethnicity. Differences in palliative care knowledge may help inform communication efforts targeting these groups. Closing knowledge gaps based on this information may also help increase utilization of palliative care.

Background

Palliative care is a type of specialty medical care that focuses on improving the quality of life for patients with serious or terminal illness. The emphasis of palliative care is on symptom and stress relief and can also be practiced in conjunction with standard disease treatment. Palliative care in the U.S. has grown steadily; in 2000, only 25% of hospitals had a palliative care program, and that percentage grew to 75% in 2016 [1]. However, palliative care is still underused by many sub-populations, such as African Americans and rural residents [2, 3]. One possible barrier that contributes to underuse of palliative care may be lack of awareness of palliative care or, for those who are aware, misperceptions about what this care is. It is important to understand where knowledge gaps exist in the general public. If there are groups who are systematically less likely to be aware of palliative care, public health interventions should be designed to improve their awareness and ultimately increase access to and utilization of palliative care. Previous studies find that a better understanding of palliative care is associated with more receptivity for this type of care [4, 5].

Research about palliative care knowledge and attitudes has been largely focused on health care providers, though recent studies attempted to quantify public awareness of palliative care [6, 7]. Most studies have used relatively small sample sizes or were constrained to a single state, limiting their generalizability. Despite these limitations, studies have found a low awareness of palliative care broadly [6, 7]. This low awareness is even more pronounced among members of racial and ethnic minority groups and is associated with underutilization [8]. Studies suggest that mistrust of medical providers in some groups may limit the information available to them [2, 8, 9].

Only two national surveys addressing palliative care awareness among U.S. adults are readily available [6, 10]. The National Journal and Regence Foundation's survey titled "Living Well at the End of Life" was conducted in 2011 and found that 24% of participants were either "somewhat familiar" or "very familiar" with palliative care [10]. This survey did collect participants' demographic information, but correlations between this demographic data and their palliative care awareness have not been examined [10]. A more recent national survey using Amazon's Mechanical Turk database found that

46% of respondents had at least heard of palliative care, but using a measurement scale created by the researchers, they concluded that basic knowledge of palliative care is lacking in U.S. adults [6]. The researchers did analyze their findings among basic demographic groups, and found that women between the ages of 45 and 64 had, on average, a better score on their scale compared to men of the same age and to younger women or women over 65 years old [6]. The researchers hypothesized that this may be because women in this age group are more likely to be caregivers for their ageing parents, so they may have experience with palliative care or may have heard about it from their parents' health care providers [6].

While these results are informative, the population sampled using the Mechanical Turk database is not nationally representative, so the national prevalence of palliative care awareness is still unclear. To fill this gap, this present study uses data from the Health Information National Trends Survey (HINTS), a nationally representative survey conducted by the National Cancer Institute. In addition to measuring basic demographic information about respondents, this survey also captures whether a respondent is a caregiver. Thus, this data allows for further exploration of the relationship between caregiving and palliative care awareness, including the hypothesis proposed by a previous study that caregivers are more likely to have knowledge of palliative care compared to non-caregivers [6].

Public Health Significance

Palliative care is relevant to the field of public health because it focuses on care quality, impacts health care spending, and improves outcomes and quality of life for patients and families [11]. A randomized controlled trial showed increased patient satisfaction, reduced number of visits to the emergency room, and reduced number of hospitalizations in patients participating in an interdisciplinary in-home palliative care program compared to patients with usual care [11]. In this study, "Usual care" consisted of standard care following Medicare guidelines for home health care; therefore, patients in the control group received varying levels of at home care as well [11]. The outcome measures found in this study are important for patients and their caregivers or family members, sparing them the physical and emotional stress of going to the hospital. If palliative care can reduce hospital visits, this could also alleviate some of the burden on hospital health care workers and help hospitals focus on acute care.

In addition to improving quality of life for some patients and reducing hospital visits, palliative care has been shown to have cost-saving effects as well. One study found significant hospital cost savings for patients who had a hospital palliative care consult compared to patients who did not [12], and another found reduced medical costs for patients utilizing in-home palliative care [11]. These economic implications are of particular interest in public health currently, as total spending on health care continues to grow. Part of this spending growth is likely related to the aging of the U.S. population and the associated increase in prevalence of chronic conditions. This older population is the group that could benefit most from utilizing palliative care.

The benefits of palliative care are clear, for patients, their families, and the health care system. However, if the public does not have a foundational understanding of what palliative care is, individuals and the broader health care system may not be able to take advantage of these benefits. By better understanding the general public's knowledge and beliefs, this study can help inform communication interventions around palliative care, both with regard to interpersonal and mass communication. Furthermore, by identifying where the gaps are in palliative care knowledge, communication and public health professionals alike can target these groups when disseminating information. This could ultimately reduce the disparities seen in palliative care utilization.

Purpose and Objectives

The purpose of this study is to describe patterns of palliative care awareness and identify trusted sources of information about palliative care.

The specific objectives are to:

1. Describe the level of knowledge of palliative care among adults in the U.S.
2. Identify whether palliative care knowledge varies based on sociodemographic characteristics
3. Describe what participants think are the goals of palliative care

Second subheading

I used data from the Health Information National Trends Survey (HINTS) 5 cycle 2. This survey was collected by the National Cancer Institute from January through May 2018 and is the most recent version of the survey, which has been collected since 2003. The data consist of 3,504 complete responses, with a response rate of 24.2%. Each cycle of HINTS surveys a nationally-representative sample of non institutionalized adults in the U.S. age 18 and older [13].

HINTS 5 cycle 2 used a two-stage sampling design; the first stage sampled households and the second stage sampled an individual within that household [13]. In the first stage, addresses were randomly selected by Marketing Systems Group (MSG) [13]. The addresses were then stratified into two groups; one with high concentrations of minority populations and one with low concentrations of minority populations based on the 2012-2016 American Community Survey [13]. The second stage samples one individual within a household using the Next Birthday Method [13].

Surveys were conducted by mail using the Dillman approach consisting of four mailings [13]. A $2 incentive was included with the first mailing [13]. The packets also included two telephone numbers; one for English and one for Spanish, for respondents to ask questions or to request the written survey in Spanish [13].

Measures

The primary outcome measure is awareness of palliative care. Secondary outcome measures include trusted sources of information and palliative care beliefs. See appendix 1 for details on how the outcome measures were captured.

Sociodemographic variables of interest in this study for objective two include age, sex, rurality, race, ethnicity, education level, income, cancer status, and caregiver status. Though previous studies have assessed palliative care awareness among many of these variables, rurality, cancer status, and caregiver status are unique additions in this study. I hypothesize that people who have ever been diagnosed with cancer and people who are caregivers may have higher awareness because they may be a good candidate or be caring for someone who would be a good candidate for palliative care. Thus, they may be more likely to have personal experience with palliative care or to have heard about it from their health care provider. This study adds to the body of literature identifying gaps in palliative care awareness and may help inform communications around palliative care. See appendix 2 for independent variable details.

Statistical Analysis

I used STATA IC 15 to analyze the data. I first calculated the frequencies observed in the survey responses to obtain the prevalence of palliative care knowledge (objective one). For objective two (factors associated with palliative care awareness), I used a multivariate logistic regression model, regressing awareness of palliative care (a dichotomous measure) on a set of variables described above including age, sex, rurality, race, ethnicity, education level, income, cancer status, and caregiver status. In the third objective, I assessed frequencies for each belief respondents were asked about. All analyses were estimated using the survey weights provided by HINTS to generate nationally-representative estimates.

Results

Characteristics of the sample

Table 1 shows the characteristics of respondents who answered the knowledge of palliative care question (n=3,445) and the percent that responded they knew at least a little about palliative care. With regard to the primary variables of interest, a majority of the sample reside in a metropolitan area (n=2965, 86.28%), has never been diagnosed with cancer (n=2847, 90.58%), and were not a current caregiver (n=2876, 84.96%). A majority of this sample was female (n=2011, 51.02%), white (n=2375, 71.41%), and not of Hispanic or Latino origin (n=2679, 78.29%).

Respondents' knowledge of palliative care

Of respondents who answered the knowledge of palliative care question, 1162 (28.74%) respondents said they knew at least a little bit about palliative care. Table 1 shows the breakdown of knowledge of palliative care by key independent variables. All three of the main independent variables appear to be associated with knowledge of palliative care; knowledge was slightly higher in respondents in metropolitan areas compared to non-metropolitan, in respondents who have been diagnosed with cancer compared to those who have never been diagnosed, and respondents who are current caregivers compared to those who are not. There were also significant differences by age, sex, race, ethnicity, education level, and income. Respondents age 50-64 and 65-74 were more likely to have heard of palliative care compared to the youngest age group, 18-34. Females were more likely to have some knowledge of palliative care compared to males, as were participants who were White or Non-Hispanic. Higher education and income were also associated with knowledge of palliative care.

Table 2 shows the results of a multivariable logistic regression model, considering multiple characteristics of respondents simultaneously. Of the three main independent variables of interest, only one (caregiver status) was found to be statistically significant (odds ratio [OR]=1.64, 95% confidence interval [CI]=1.08 – 2.48) in this multivariable model. Rurality and cancer status were not found to be significant predictors of knowledge of palliative care after adjusting for the other characteristics in the model.

Age, sex, ethnicity, education, and income had some significant differences as predictors of palliative care knowledge once adjusted for other variables. Females were more likely than males to have at least some knowledge of palliative care (OR=2.26, CI=1.71 – 3.00). People age 35 and older were more likely to have some knowledge of palliative care compared to those age 18-34, with the highest odds in the age group 65-74 (OR=2.74, CI=1.82 – 4.12). Those who were of Hispanic or Latino origin were less likely to have some knowledge of palliative care compared to those who were not Hispanic or Latino (OR=0.54, CI=0.33 - 0.87). Those who had some college or other training past high school were more likely to have some knowledge of palliative care compared to those with less than a high school education (OR=3.19, CI=1.25 – 7.53), and those with a college degree or higher had even higher odds of having some knowledge (OR=6.18, CI=2.56 – 14.89). Income was found to be a significant predictor of palliative care knowledge at the ranges of $75,000 to $99,999 (OR=2.10, CI=1.09 – 4.04) and at $100,000 or above (OR=2.16, CI=1.25 – 3.72), compared to lowest income category, $0 to $19,999. In this sample, participants' race was not a significant predictor of palliative care knowledge in the multivariable logistic regression.

Palliative care goals

Participants who responded that they knew at least a little bit about palliative care were asked how much they agree or disagree with four statements about the goals of palliative care. Results are displayed in Figure 1. For three of the four statements, most respondents (84-89%) either agreed or strongly agreed. However, for the goal "give patients more time at the end of life", 54% of respondents agreed or strongly agreed, 29% disagreed or strongly disagreed, and 17% didn't know or did not answer.

Discussion

Results Interpretation and Implications

The overall knowledge of palliative care among adults in the U.S. found in this study was consistent with previous studies [6, 10], and was only 28% after data were weighted to the U.S. population. While broad public communication about palliative care could increase this percentage of awareness, this study aimed to identify which groups are systematically less likely to know about palliative care in order to inform targeted communication as well.

As hypothesized by a previous study [6], respondents who were a caregiver for someone with a serious illness were found to be more likely to have some knowledge of palliative care compared to non-caregivers. Knowledge among caregivers was still somewhat low, about 42%. While "caregiving" can take many forms and can be defined in different ways, caregivers are likely involved in making decisions about treatment options for the person they care for. They may be at doctor's appointments where they have heard about palliative care, for example.

People who have ever been diagnosed with cancer were not found to have a significant difference in palliative care knowledge when adjusted for other characteristics. This is a key population that could benefit from palliative care and thus should have some knowledge of it. It may be that this relationship was not significant once adjusted for age since most people who have ever been diagnosed with cancer are likely to be older. However, cancer can impact people of any age and palliative care can benefit younger cancer patients as well if they have the right information available to them. Evidence points to several benefits related to palliative care including patients reporting better quality of life, fewer hospitalizations and visits to the emergency department, and financial savings for patients and hospitals [11, 12]. The findings in this study have important implications for health care providers and communicators to ensure their cancer patients have access to information about palliative care. Further research on cancer patients specifically and their knowledge of palliative care could help inform these communication efforts.

Rurality was not found to be significantly associated with knowledge of palliative care once adjusted for other characteristics. Because rural residents have been identified as a population that underutilizes palliative care, more research on the barriers they face, including information access, could help improve the use of palliative care.

Consistent with previous studies, sex, age, educational attainment, and income were also associated with palliative care knowledge. People in the age range 65-74 had the highest odds of knowing about palliative care of any age group, which is likely related to their exposure to palliative care for themselves or a loved one. Higher educational attainment at the college level was significantly correlated with higher knowledge of palliative care. Higher income (starting at $75,000) was also correlated with higher knowledge of palliative care. These results may be related to education and income resulting in easier access to information generally as well as medical care. These findings also point toward troubling disparities in access to information.

These results show that people who know at least a little bit about palliative care are a small subset of the population, and are more likely to be female, non-Hispanic, highly educated, and wealthy. Palliative care and knowledge about palliative care should not be limited to this group. If this inequity in knowledge persists, disparities in quality of life, persistence of pain or discomfort, and illness-related stress will likely continue to grow. This study confirmed these knowledge gaps, and it is important for health care providers and palliative care organizations to address them. While use of palliative care is growing in terms of the proportion of hospitals with a palliative care program [1], growth in receiving care is not consistent across all groups. Two populations that have been found to underuse palliative care are African Americans and rural residents [2, 3]. However, the present study did not find a significant difference in knowledge of palliative care in these populations. Further research is needed to explain the difference in palliative care utilization for these subgroups, and it may be related to lower access to health care more broadly.

This study's secondary objective was to examine what people believe are the goals of palliative care. While the goals asked do not have a clear "right" or "wrong" answer, the vast majority agreed or strongly agreed with three of the four goals. These three goals appear to be consistent with how palliative care is described by organizations and experts [1, 3]. The fourth goal, "give patients more time at the end of life", was less commonly endorsed for respondents. 17% did not answer or responded "don't know", which was the highest uncertainty among the four goals. While a slight majority (54%) agreed or strongly agreed, this was a weaker majority compared to the other three goals. These results suggest that the general public feels less certain about whether this is a goal of palliative care or not, and may not know the difference between palliative care and hospice care, which is a specific type of palliative care at the end of one's life. This information could be useful for palliative care providers or organizations when considering their public messaging around palliative care.

Strengths and Limitations

A major strength of this study is the unique and new data used. HINTS 5 cycle 2 is the first version of the survey that has included questions about palliative care. The data allowed me to evaluate knowledge of palliative care by unique characteristics such as cancer status, caregiving status, and rurality, which have not been previously evaluated. The survey's question about the goals of palliative care was also unique. Other studies have attempted to quantify what people know about palliative care, but the HINTS question was asked differently to assess what participants believe are the goals without a clear "right" or "wrong" answer. Asking the question this way allows respondents to rate their understanding of palliative care goals on a spectrum.

It is important to acknowledge that even though this study did confirm generally low public knowledge of palliative care and where the knowledge gaps are, this data does not show whether knowledge of palliative care is correlated with pursuing palliative care. It can be inferred that someone who has never heard of palliative care is unlikely to be a user of palliative care, but the opposite relationship has yet to be seen. Preliminary research supports an association between a better understanding of palliative care and an increased receptivity for those services [4, 5], but further research may provide evidence for the relationship between knowledge and actual use of palliative care. Additionally, while the total sample was substantial, some sub-populations may have been too small to show significant differences in their survey responses. Specifically, further research could be conducted with current caregivers or cancer patients to obtain more detailed information about these individuals and their knowledge of palliative care. Another limitation of this data source is that it is a cross-sectional survey and because the questions about palliative care are new to this cycle, there are not yet multiple years of survey data to compare and confirm the results found in this study.

Conclusion

Overall, these findings emphasize the need for public education and communication efforts about palliative care, as well as more research on the association between knowledge and pursuit of palliative care. Creating messages specifically for populations that are systematically less likely to know about palliative care can help close these gaps and may ultimately increase palliative care utilization.

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Table 1: Respondent characteristics and knowledge of palliative care

Respondent characteristics	***n* (%)[1]**	**% with at least some knowledge of palliative care**	**P value from bivariate analysis[2]**
Rurality			
Metropolitan	2965 (86.28%)	29.93%	
Rural	480 (13.72%)	21.23%	.005
Cancer Status			
Never been diagnosed with cancer	2847 (90.58%)	28.22%	
Been diagnosed with cancer	585 (9.42%)	34.39%	0.041
Caregiver Status			
Current caregiver	472 (15.04%)	41.46%	
Not a current caregiver	2876 (84.96%)	26.72%	0.000
Age			
18-34	405 (23.88%)	19.44%	0.000
35-49	653 (26.82%)	29.01%	0.830
50-64	1094 (30.02%)	32.46%	0.036
65-74	719 (11.3%)	36.52%	0.001
75+	491 (7.99%)	29.05%	0.876
Sex			
Male	1380 (48.98%)	21.17%	
Female	2011 (51.02%)	36.13%	0.000
Race			
White	2375 (71.41%)	31.9%	0.000
Black or African American	533 (11.88%)	23.61%	0.103
American Indian or Alaska Native	22 (.45%)	11.56%	0.016
Asian	150 (5.23%)	23.13%	0.250
Native Hawaiian or other Pacific Islander	17 (.85%)	12.87%	0.082
Multiple Races Selected	134 (4.08%)	18.66%	0.018
Missing	214 (6.09%)	16.63%	0.004
Ethnicity			
Not of Hispanic or Latino origin	2679 (78.29%)	31.9%	0.000
Hispanic or Latino origin	453 (14.6%)	16.17%	0.000
Missing	313 (7.11%)	19.67%	0.002
Highest Education Level			
Less than high school	263 (8.71%)	8.19%	0.000
12 years or completed high school	617 (22.08%)	13.92%	0.000
Some college or other training	1022 (40.2%)	28.58%	0.979
College graduate or higher	1496 (29.02%)	45.72%	0.000
Income			
$0 to $19,999	609 (17.18%)	14.18%	0.000
$20,000 to $34,999	463 (11.86%)	25.55%	0.273
$35,000 to $49,999	429 (12.79%)	21.41%	0.004
$50,000 to $74,999	602 (17.17%)	26.88%	0.461
$75,000 to $99,999	401 (12.41%)	34.85%	0.098

$100,000 or more	833 (26.08%)	42.23%	0.000
Missing	108 (2.51%)	23%	0.304
Total		28.74%	

[1] percentages are row percentages and use survey weights.

[2] P values are derived from t-tests comparing knowledge of palliative care between subgroups for each independent variable. For variables with more than two categories, each category was compared to all other participants.

Table 2: Multivariable logistic regression of palliative care knowledge by demographic characteristics

Variable	Odds Ratio	95% CI
Rural	0.71	[.48, 1.04]
Been diagnosed with cancer	0.97	[.74, 1.27]
Current caregiver	1.64*	[1.08, 2.48]
Age *(ref. 18-34)*		
35-49	1.61*	[1.07, 2.41]
50-64	2.2***	[1.44, 3.36]
65-74	2.74***	[1.82, 4.12]
75+	2.42***	[1.54, 3.81]
Female	2.26***	[1.71, 3.00]
Race *(ref. White)*		
Black or African American	0.76	[.46, 1.24]
American Indian or Alaska Native	0.35	[.07, 1.67]
Asian	0.57	[.32, 1.03]
Native Hawaiian or other Pacific Islander	1.34	[.27, 6.63]
Multiple Races Selected	0.69	[.43, 1.1]
Missing	0.83	[.32, 2.14]
Ethnicity *(ref. not of Hispanic or Latino origin)*		
Hispanic or Latino origin	0.54*	[.33, 0.87]
Missing	0.60	[.36, 1.00]
Highest Education Level *(ref. less than high school)*		
12 years or completed high school	1.37	[.55, 3.39]
Some college or other training	3.19**	[1.25, 7.53]
College graduate or higher	6.18***	[2.56, 14.89]
Income *(ref. $0 to $19,999)*		
$20,000 to $34,999	1.65	[.96, 2.85]
$35,000 to $49,999	1.16	[.69, 1.95]
$50,000 to $74,999	1.51	[.92, 2.5]
$75,000 to $99,999	2.10*	[1.09, 4.04]
$100,000 or more	2.16**	[1.25, 3.72]
Missing	2.15	[.67, 6.84]
Total		

* p value <0.05

** p value <.01

*** p value <.001

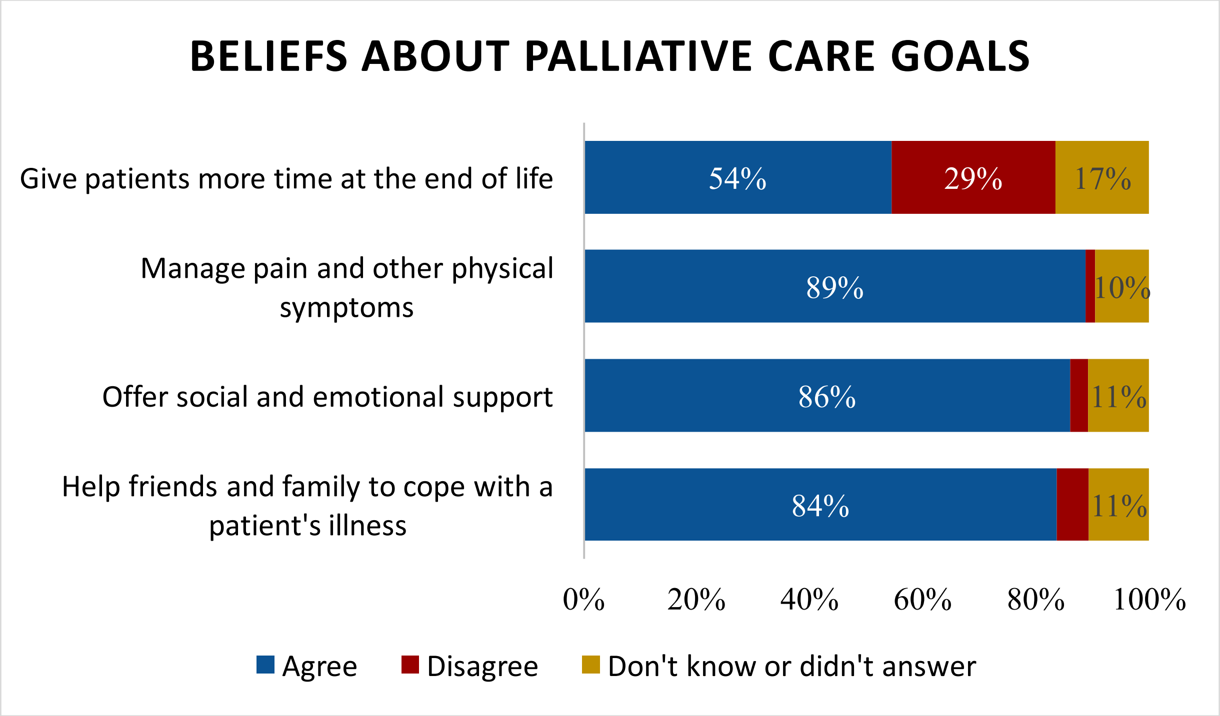

Figure 1: Beliefs about palliative care goals. Created by author using data from HINTS 5 cycle 2.

Appendix 1: Outcome variables

Variable	Survey Question	Survey response options
Awareness of palliative care	How would you describe your level of knowledge about palliative care?	(1) I’ve never heard of it (2) I know a little bit about palliative care (3) I know what palliative care is and could explain it to someone else. *This study operationalized palliative care knowledge as a dichotomous variable, collapsing (2) and (3) to mean “yes”, at least some knowledge.*
Beliefs about palliative care goals	To me, the goal of palliative care is to… (4-point Likert-type scale (strongly agree, somewhat agree, somewhat disagree, strongly disagree), and a fifth option of “don’t know”.)	(a) help friends and family to cope with a patient’s illness (b) offer social and emotional support (c) manage pain and other physical symptoms (d) give patients more time at the end of life

Appendix 2: Independent variables

Variable	**Measurement**
Age	Self-reported age in years *To simplify analysis in the logistic regression model, this study operationalized age as a categorical variable with the following age ranges: 18-34, 35-49, 50-64, 65-74, and 75+.*
Sex	(1) Male (2) Female
Rurality	NCHS Urban-Rural Classification Scheme for Counties using the following codes: Metropolitan large metro Metropolitan large fringe metro Metropolitan medium metro Metropolitan small metro Non-metropolitan micropolitan Non-metropolitan noncore *This study collapsed these categories into two: metropolitan and non-metropolitan (rural).*
Race	White Black or African American American Indian or Alaska Native Asian Indian Chinese Filipino Japanese Korean Vietnamese Other Asian Native Hawaiian Guamanian or Chamorro Samoan Other Pacific Islander *Given the low sample size from some of these racial groups, this study used a separate variable derived from these race categories to collapse into six categories: White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, Multiple Races Mentioned*
Ethnicity	Not of Hispanic, Latino/a, or Spanish origin Mexican, Mexican American, Chicano/a Puerto Rican

	Cuban Another Hispanic, Latino/a, or Spanish origin *Given the low sample sizes for some of these categories, this variable was collapsed into two categories: of Hispanic or Latino/a origin, not of Hispanic or Latino/a origin.*
Education level	less than 8 years 8 through 11 years 12 years or completed high school post high school training other than college (vocational or technical) some college college graduate postgraduate *Given the low sample size from some of these education levels, this study collapsed education level to four categories: less than high school, 12 years or completed high school, some college or other training, and college graduate or higher*
Income	$0 to $9,999 $10,000 to $14,999 $15,000 to $19,999 $20,000 to $34,999 $35,000 to $49,999 $50,000 to $74,999 $75,000 to $99,999 $100,000 to $199,999 $200,000 or more *To simplify analysis and increase sample sizes in each category, this study collapsed income to 7 categories: $0 to $19,999, $20,000 to $34,999, $35,000 to $49,999, $50,000 to $74,999, $75,000 to $99,999, $100,000 or more, and missing*
Cancer status	"Have you ever been diagnosed as having cancer?" (yes/no)
Caregiver status	"Are you currently caring for or making health care decisions for someone with a medical, behavioral, disability, or other condition?" *"Yes" responses specify the relationship of the person the respondent cares for (child/children, spouse/partner, parent/parents, another family member, or a friend or other non-relative) as well as a*

	"no" option. Respondents were asked to mark all that apply if they are caregivers for multiple people. The analysis for this study collapsed responses to be a yes/no variable.