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Cancer clinical trial participants' assessment of risk and benefit

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Abstract

Background—The purpose of this article is to examine the extent to which cancer clinical trial participants assess the benefits and risks of research participation before enrollment.

Methods—One hundred and ten oncology research participants enrolled in cancer clinical research in a large Northeastern cancer center responded to a self-administered questionnaire on perceptions about cancer clinical trials.

Results—Of the participants, 51.6% reported they did not directly assess the benefits or risks. Educational level, age, employment, treatment options, insurance, and spiritual–religious beliefs were significantly associated with whether participants assessed risk and benefits. Those who felt well informed were more likely to have assessed the benefits and risks at enrollment than those who did not feel well informed (odds ratio [OR] = 3.92, $p = .014$); of those who did not assess the risks and benefits, 21% did not feel well informed at enrollment ($p = .001$). Those who agreed that the clinical trial helped pay the costs of the care had nearly three times the odds of not assessing risks and benefits compared to those who disagreed.

Conclusion—Our findings have important implications for understanding the role of assessing risks and benefits in the research participation decisions of patients with cancer and call for further

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understanding of why participants are not assessing information believed to be essential for autonomous informed decisions.

Keywords

cancer; clinical trials; informed consent; risks and benefits

Informed consent is considered an essential component of most ethical research, a quintessential aspect of interactions with human research participants, and an important means of protecting their interests (Beauchamp and Childress 2008; Emanuel, Wendler, and Grady 2000; Faden and Beauchamp 1986; National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research 1979). A common understanding of informed consent in research is that study information is disclosed to the prospective participant, who then considers the risks and benefits in making a voluntary decision about whether or not to enroll in the research.

Unfortunately, informed consent is often not realized in practice in the way it is intended in theory. It is unclear how much individuals actually rely on information about risks and benefits provided in the informed consent process to make research enrollment and retention decisions. Critics complain about the inordinate length and poor readability of written consent documents, as well as their limited decisional utility for participants (Agre et al. 2003; Flory and Emanuel 2004; Paasche-Orlow, Taylor, and Brancati 2003). Some evidence suggests that individuals decide about research participation prior to receiving formal information in the consent process (Sachs et al. 2003). Several authors describe the importance and impact of physician recommendations on the likelihood of research participation and cancer screening behaviors (Blocker et al. 2006; Kinney et al. 1998).

It is widely accepted that researchers and institutional review boards (IRBs) have a responsibility to minimize risks and burdens and maximize the benefits of research and to obtain participants' informed consent (Grady 2010; Levine 1988; National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research 1979). Research on informed consent in research has focused on an individual's ability to comprehend relevant research information provided in the process of informed consent (Agre et al. 2003; Sachs et al. 2003; Joffe et al. 2001: Mandava et al. 2012). Empirical research on informed consent for cancer clinical trial participation, especially early trials, has consistently shown that participants have higher expectations of benefit than are usually warranted (Daugherty et al. 1995; Daugherty et al. 2000; Joffe et al. 2001;Weinfurt et al. 2012). This has primarily been attributed to a “therapeutic misconception” (Appelbaum, Lidz, and Grisso 2004) or “therapeutic error” (Jansen 2014) on the part of the participant.

Very few studies, however, specifically measure whether or not the participant engaged in a risk—benefit assessment. This article presents a subanalysis of risk—benefit assessment from a larger study focused on participants' perceptions of research benefits and burdens and their retention in clinical trials. The purpose of the current analysis is to describe the degree to which cancer patients report assessing benefits and risks when making research participation decisions and to identify important patient and psychological characteristics associated with assessing the risks and benefits of cancer trial participation.

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Methods

Study sample

The goal of the parent study was to provide a better understanding of what burdens patient-participants would accept in relation to perceived benefits, why certain burdens would or would not be acceptable, and how perceptions of benefit and burden and other factors influence retention in cancer clinical trials. The goal of the current analysis is to describe the degree to which cancer participants report assessing risks and benefits when deciding on research participation, with associated characteristics of these patients.

A convenience sample enrolled 110 cancer clinical trial participants at a large Northeastern cancer center in the United States. Eligible patients were 18 years of age or greater; had a cancer diagnosis from any diagnostic category; were English-speaking, able to provide informed consent, and enrolled in a Phase I, II, or III treatment trial or other type of clinical treatment trial; and had participated in their study for at least 60 days, whether or not they ultimately completed the study. This time frame allowed participants to reflect upon their experiences and address the positives and negatives of being enrolled in a trial.

Participants were recruited with administrative support at the designated cancer center, providing monthly patient accrual information. Sample size for the study was based on detecting associations between scale scores and the primary dichotomous outcome of planned retention by the subject in their enrolled clinical trial. Assuming a 70% retention rate, alpha = .05, and 80% power, 109 subjects were required to find a difference of 0.6 standard deviation units under a two-sided *t*-test in the primary outcome.

A total of 163 potentially eligible respondents were contacted to participate in the study. Of these, 149 consented and were sent a survey. Subsequently three respondents were found to be ineligible, another two died and one was hospitalized, giving a revised survey sample of 143 responders. A total of 110 surveys were returned, resulting in a response rate of 74% (revised 77%). Participants received $20 for their time and effort, and follow-up calls were made as necessary (Dickert and Grady 1999).

Questionnaire

Survey questionnaire development started with 32 semistructured interviews with cancer trial patient-subjects to understand their thoughts on research participation and perceived benefits and burdens. In these interviews (Ulrich et al. 2012), we asked a broad array of questions about benefits and burdens of research participation and factors associated with participation and retention, including, but not limited to, symptom distress, social support, understanding about cancer clinical trials and the informed consent process, trust in research, and psychological burden.

Items developed from these interviews and the literature were integrated with other established measures (Bigorra and Biggs 1990; Cegala, Coleman, and Turner 1998; Corbie-Smith. Thomas, and St. George 2002; McNair, Lorr, and Droppleman 1971; Zimet et al. 1990) to form the survey instrument. Content validity was assessed with eight cognitive interviews (Willis 2006; Willis, Royston, and Bercini 1991) with cancer clinical trial

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participants to clarify items, wording, and content for newly developed measures. Cognitive interviews are increasingly used by survey researchers as a means to validate questionnaire items; participants were asked how they interpret or understand specific items and questions that are posed to them (Jobe and Mingay 1991; Knafl et al. 2007; Wallen et al. 2011; Willis 2006; Willis, Royston, and Bercini 1991).

The instrument also solicited participants' age, gender, race, and ethnicity, prior cancer treatments and research participation, and other demographic information.

Measures

This subanalysis of cancer patient-participants' responses about assessing the risks and benefits of trial participation was part of a larger study on respondent perceptions of benefit and burden and retention in cancer clinical trials. Seven Likert questions (5-point scale) measured the extent of agreement with the following statements:

1. "The benefits seemed high so I was willing to take any risk to help my disease.
2. "The benefits appeared to be reasonable compared to the burdens/risks.
3. "The risks seemed high, but I was willing to accept them to help my disease.
4. "The risks appeared to be reasonable compared to the benefits.
5. "I had no other option than to participate in the research."

Two additional items asked participants to agree or disagree with the statements: "I did not assess the benefits directly because I trusted my physician to know what was best for me" and "I did not assess the risks/burdens directly because I trusted my physician to know what was best for me." We did not define assessment of risks and burdens for the participants, and the results reflect what they said about directly assessing risks and benefits. These two Likert-type questions were regrouped into three categories: (1) agreed (agree or strongly agree) with the statement that he or she did not assess benefits (or burdens); (2) neutral; and (3) disagreed (disagree or strongly disagree) with the statement that he or she did not assess benefits (or burdens).

Patient-participants who agreed with both items were classified as "no, did not directly assess benefits and risks/burdens." Those who disagreed with both were classified as "yes, directly assessed." Patient-participants who were neutral on one question but agreed or disagreed with another question were classified according to the question with which they agreed or disagreed. For instance, if one participant agreed that he or she did not assess benefits, but was neutral on burdens, the participant was classified into "no, did not directly assess benefits and risks/burdens." Participants who agreed with one question but disagreed with the other were excluded in data analysis, as were those who were neutral in their response to both questions or did not answer either question.

We then compared sociodemographic and other key variables, including questions about hope, trust, being informed, and costs of care for patient-participants who directly assessed benefits and risks with those who did not.

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Statistical analysis

Data were analyzed with Stata MP 12.1 and SPSS 20. Study population characteristics were summarized using standard descriptive statistics. Subjects were classified into two groups based on whether they assessed the benefits and risks of cancer clinical trial participation or not. These two groups were compared using Mann—Whitney *U*, chi-squared, or Fisher's exact tests as appropriate. Logistic regression was used to evaluate the relative importance of variables on the odds of assessing benefits and risks.

Human subjects protection

IRB approval was received from the University of Pennsylvania. We also received approval from the cancer center in which the research took place.

We provided flexible options for our patient-participants to participate in the survey. Depending on patients' preferences, we used an oral script for telephone consent or spoke to patients face-to-face at the cancer center (approved by our IRB and cancer center). All patients gave oral consent prior to dissemination of the survey. We also included an information sheet with the questionnaire-survey packet that contained all elements of informed consent.

Results

Respondent characteristics

The sample (n = 110) was predominantly Caucasian (90.7%) with similar proportion by gender (52.3% male and 47.7% female) (Table 1). The mean age was 58.7 years; 82.6% were married, and two-thirds (66.0%) had at least some college to postgraduate work. Slightly more than one-third worked full-or part-time (36.1%), and 35.2% were retired.

The majority were enrolled in Phase II or III clinical trials. Nearly a quarter of patient-subjects (23.1%) reported previous research participation; 46.6% said they understood their treatment options to be limited, and 12.6% reported having no treatment options. In fact, 14.9% noted they had no other option than to participate in the research. Most participants were privately insured and/or paid out of pocket (68.5%); about one-third (30.8%) received some form of government assistance (Medicare, Medicaid, Veterans Administration [VA] benefits).

Disease and trial information are displayed in Table 2. The majority were enrolled in Phase II trials (56.2%), presenting with a broad variety of cancer diagnoses. Prior to clinical trial participation, most participants (86.8%) received at least one type of cancer treatment, including chemotherapy, radiation, surgery, and immunotherapy. Finally, 34.6% said they perceived the risks of research to be high but accepted them to help their disease; 65.7% agreed that the perceived potential benefits seemed high so they were willing to take the risk of trial participation.

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Hope, trust, and costs

Participants identified several benefits of participating in research, including hope, trust, and costs of care. Interestingly, 87.2% agreed or strongly agreed that participating in the research gave them a sense of hope about their disease, with more than three-quarters hoping for a cure (78.9%). Respondents (43.1%) reported that research participation helped pay for costs of care that they otherwise could not afford, and 71.3% reported that participating in a clinical trial provided access to drugs and tests they might not otherwise receive.

Overall, participants trusted that their physician-researchers knew what was best for them (73.2%), perceived their physicians as being open and honest (95.3%), and felt their physicians fully informed them about the research (92.7%). Most participants (91.7%) did not believe that they might be used in research without their consent, although a small percentage (5.5%) did not know. Additionally, most (84.4%) agreed that their “doctor protects them from unnecessary risks when deciding what treatments they will get,” and three-quarters (76.1%) agreed that their doctors would not ask them to participate in research if it were going to harm them, although 13.8% disagreed.

Factors associated with risk — benefit assessment

Several sociodemographic factors were associated with patient-participants' risk—benefit assessments (Table 1). First, younger participants were more likely to directly assess risks and benefits of research participation (mean = 56.1 vs. 60.4 years, $p = .04$). Second, college-educated participants were more likely to assess risks and benefits versus those with a high school degree or less ($p = 0.02$), as were those working full or part time (55.5%) compared to those not employed (22.7%) or retired (22.7%) ($p < .01$). Third, among those who made risk—benefit assessments, 86.4% were privately insured, compared to those who were insured through the government (13.6%) ($p = .01$). Fourth, 65% of patient-participants who did not directly assess the risks—benefits rated their spirituality as important to very important ($p = .04$).

Other study variables were also important. First, 20.8% of those who did not make an assessment did not feel well informed or were unsure at study enrollment ($p = .001$) (Table 3). The odds of assessing the risks and benefits were nearly four times greater for those who felt well informed about study changes compared to those who did not or were unsure (odds ratio [OR] = 3.92, 95% confidence interval [CI] CI = [1.29, 11.91], $p = .014$,). Second, patient-participants who perceived they had no or few to limited treatment options had nearly three times the odds of not assessing study benefits and risks (OR = 2.68, 95% CI = [1.11, 6.43], $p = .03$) compared to those with moderate or multiple options (Table 3).

Third, patient-participants who agreed with the following statements were about three times as likely to not have directly assessed risks and benefits compared to those who disagreed:

1. They trusted their researcher to know what was best for them (OR = 3.15, 95% CI = [1.19, 8.33], $p = .021$).
2. They were hoping for a cure, although this was not statistically significant (OR = 2.78, 95% CI = [0.97, 8.06], $p = .059$) (Altman 1991; Lang and Secic 2006).

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3. Clinical trials helped pay costs of care (i.e., drugs and other medications or tests) (OR = 2.53, 95% CI = [1.08, 5.93], p = .031).

Finally, patient-subjects with government insurance had 4.5 times lower odds of assessing the risks and benefits than those with only private insurance (OR = 4.52, 95% CI = [1.60, 12.73], p = .004).

Discussion

These data raise questions about the role of direct assessment of study risks and benefits in the research participation decisions of patient-participants enrolling in cancer clinical trials. In theory, participants provide informed consent when they voluntarily choose to enroll, after assessing and deliberating about anticipated risks, benefits, and other aspects of the research.

Our data show that patients with cancer often decide to enroll in a research study without carefully assessing the risks and benefits. The majority of our cohort (66%) said they thought the benefits of participating made taking the risks worth it, but half of the cohort said they didn't assess the risks and benefits. Other responses suggest that they relied on their physicians' recommendations (and other factors) to come to the conclusion that the benefits of participating were worth the risks.

We reported on factors associated with reporting that patients directly assessed risks and benefits. The goals of the project were to find out more about these individuals and what other factors might correlate with reporting a direct assessment of risks and benefits, and to challenge the normative assumption that direct assessment of risks and benefits by participants is ethically required. These data urge deeper reflection on why participants are not assessing information believed to be basic to enabling them to make informed autonomous decisions when considering participation in a clinical trial.

First, participants who perceived few to limited or no treatment options or felt their only option was research participation were much less likely to make risk—benefit assessments. It may be understandable that one who perceives limited treatment choices will accept a recommendation from a trusted physician without directly assessing risk and benefits. As mentioned earlier, studies have shown that cancer patients in Phase I studies expect therapeutic benefit from participation, even when the chances are small (Daugherty et al. 2000; Daugherty et al. 1995). For example, Daugherty and colleagues (2000) reported that a majority of Phase I cancer participants in their study believed they would receive psychological (73%) and medical benefit (90%) from participating.

More than one-third of participants in our cohort were willing to accept risks perceived to be high in order to help their disease, and two-thirds said the perceived benefits were worth the risk. Whether or not they had an accurate understanding of the chances of benefit and risk, these individuals felt that the prospect of benefit was worth it. More research is needed to understand the risk/benefit trade-offs that people with serious illness are willing to make and how those might vary according to available options. Additionally, those who have an advanced stage of disease might have differing views on the degree of risk that they are

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willing to tolerate; risk perception might also differ based on trial phase (Phase I vs. II vs. III).

Cost may be one factor that is crucial to clinical trial participation decisions and one that is burdensome for many cancer patients. The expected costs of treatment could contribute to patients' perceptions of limited treatment options. We found that the more patient-subjects perceived defraying costs as a benefit of trial participation, the less likely they were to assess the benefits and risks. Clinical trial participation, especially if covered in part through Medicare, may be an appealing and affordable option for patient-subjects who have struggled with the costs of cancer over time through traditional means and have few other options for treatment interventions.

Second, it appears that risk—benefit assessments for our respondents were partially displaced or referred through trust in the physician. The basic ethical premise of informed consent is that autonomous agents freely make decisions about research participation after considering the study purpose, risks, benefits, and available alternatives, and how the study may impact them (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research 1979). Patients ill with conditions such as cancer, however, may rely on external support and the recommendations of their physicians and others when making decisions about treatment and research participation.

Some of our cohort appeared to make enrollment decisions based on a general sense that the benefits were worth the risks, bolstered by a trusted physician's recommendation, rather than on specific assessment of the detailed risks and benefits. It is possible that they had already decided to follow the advice of their physician.

Citing psychological research, Jansen (2014) notes that individuals who have already chosen a course of action are in an implementation mind set and are therefore less likely to deliberate about the risks and benefits of a particular choice. Although more data would help us understand this, patients who have already been through treatment for their cancer, sometimes even a previous clinical trial, may be inclined to make a general appraisal of this nature. It may also be the case that patients making weighty decisions related to their disease do not engage in deliberation but rather follow the advice of those they consider more knowledgeable, such as their physicians (Joffe and Mack 2014).

Cancer patients might also suffer from decision fatigue (Levy 2012). Cancer patients have to make a series of health care decisions, often including the use of chemotherapy, radiation, surgery, immunological therapy, or even research participation. It is not unusual for cancer patients to be tired; their cognitive load is great, potentially altering their willingness to engage in relevant research-related decision making (Levy 2012). Additional research would help determine what degree of influence understanding study details has on ill patient-subjects' decisions compared to other factors, how much control patient-subjects want over research decision making, and how important these factors are to informed consent.

Trust in the physician represents a specific trust (i.e., trust in an individual agent) (Siegrist, Gutscher, and Earle 2005), and it would also be useful to know more about the trust reported by patient-participants in cancer clinical trials. Perhaps there is a personality type more

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willing to trust their physicians and assume the uncertainty about risks and benefits associated with clinical trial participation; such individuals may be less likely to pay attention to details. Second, trust might serve as an important moderating or mediating variable that influences research participation decisions. Tauber (2003) argues that “Patients cannot avoid delegating authority, entrusting themselves to others, and then fretfully hoping that their best interests will be protected” (4). Many participants were hopeful that trial participation would keep their cancer at bay or potentially be curative. Hope is a powerful yet elusive concept, often evoked in times of personal need or strife. For cancer patients, hope seems central to their emotional care and well-being. However, hope also seems to play an important role in their decision-making processes, as we found suggestive evidence that the more strongly patient-participants were hoping for a cure, the less likely they were to assess the risks and benefits. Feudtner (2009) notes the dearth of empirical evidence on the role of hope in our lives and how it shapes our behavior.

Cancer patient-participants may understandably hope for the best given their medical condition, but this sense of hope or optimism could contribute to misunderstanding or misestimating the benefits and risks associated with research participation, and thus hinder informed consent (Horng and Grady 2003; Jansen 2011). We do not know the extent to which our participants misunderstood or misestimated the risks of participation, only that they did not directly assess them. In fact, Weinfurt et al. (2003) differentiate between patients' reports of beliefs and factual probabilities. Participants' confidence in good personal outcomes (belief type) is often different from their factual understanding of the number of patients that might receive benefit, particularly in Phase I trials. Further research is needed to determine whether patients like those in our cohort who think the benefits of participating make taking the risks worth it are reporting similar “belief-type” expectations.

Our findings also support the work of Jansen and colleagues, who call for further conceptual and empirical work on the role of optimism in clinical trials and its impact on informed consent (Jansen 2011; Jansen et al. 2011). We also need further philosophical thought pertaining to the role of hope in institutional review board deliberations. It is not clear whether or how hope should be considered in IRB discussions and in their risk—benefit assessments pertaining to clinical trial participation in general.

Perhaps not surprisingly, those who did not assess the risks and benefits of participation felt less well informed at study entry and about study changes. There remains some debate about the details of what patient-participants should be informed about and what they should understand consistent with valid informed consent. Wendler and Grady (2008) argue that research participants do not need to understand all aspects of research, but that core elements of understanding should be sought for valid consent. Many agree, for example, that understanding possible research risks is more salient than being able to identify the specific type of medication or the trial phase. We need more understanding of the range of factors that patient-participants feel are crucial to their research decisions, and what they feel unsure about in their assessment, as well as more consensus on what is necessary for valid consent.

These data push us to reconsider the theoretical ideal of valid informed consent as rational deliberation about risks and benefits leading to a voluntary decision. Half of our cohort did

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not deliberate in this theoretical way about risks and benefits. Yet they often reported that they thought the benefits were worth the risks as they made their research participation decision. Is this valid informed consent even if the decision was informed by trust in their physician or a perception of limited alternatives, rather than rational deliberation about the study details? We think it is. In the future, we plan to empirically assess whether there is a relationship between risk—benefit assessment (or lack thereof), and lack of understanding and/or inaccuracy, as well as other emerging issues surrounding participants' informed consent and decision-making experiences in different participant populations.

Finally, our findings lend tangential support to the role of IRBs in protecting human participants, especially if patient-subjects are not assessing the risks and benefits of research participation for themselves. Despite criticism for variability in practices as well as their degree of efficiency and effectiveness (Grady 2010), IRBs represent a first line of defense in deciphering acceptable risks and benefits and are a mainstay of human subjects protection.

Limitations

Our work has several limitations. Our study enrolled cancer patients at a single institution. It would be important to determine whether there are institutional and geographical differences in cancer care and how often and how well individuals diagnosed with other diseases or healthy volunteers assess study risks and benefits before enrolling. Second, although there are limitations to “using data from individuals with an implementation mindset to make inferences about the decision making process” during deliberation (Joffe and Mack 2014, 34), half of our cohort implicitly told us that they did not directly assess risks and benefits in the process of deciding about trial enrollment. This is an important finding. However, the way that we asked the key questions about directly assessing risks and benefits based on physician trust could potentially confound the results; these concepts need to be more fully delineated in future studies. Nevertheless, the data provide meaningful insights in how patients assess risks and benefits and related factors.

Conclusions

Our study is the first to measure patient-participants' risk—benefit assessments in cancer clinical trials, developed from qualitative work with patient-participants. However, future work is now needed to clarify what this means from a normative perspective. In fact, Dawson (2009) argues that “where we have empirical evidence that a moral requirement is impossible to attain, we are obligated to revise our moral commitments” (99). The foundational bioethical principle of autonomy has guided our understanding of informed consent for decades, but other values may be equally important (Dawson 2010). We need to better understand how being a “cancer participant” influences the values one finds most important and how this affects informed consent in research.

Our analyses indicate some of the factors that correlate with patient-participants' risk—benefit assessments, including being informed and having trust in the researcher. However, quantitative analyses have both strengths and limitations. Indeed, it is quantitatively important to know that slightly more than half of our participants did not directly assess risks or benefits, but in-depth follow-up interviews would give us a more nuanced

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understanding of how patient-participants evaluated the risks and benefits of participation and the factors important to them in making a decision.

Finally, we did not include questions about who actually provided information to patient-participants. However, our earlier qualitative data suggest the importance of the research nurse in communicating information to the patient (Ulrich et al. 2012). In future research, it would be important to examine the characteristics of the individual presenting information to patients participating in clinical trials and how that might influence risk—benefit assessments.

Our research sheds light and raises questions about the role of autonomous decision making and trust in research enrollment decisions, informed consent and hope in decision making, and the assumption that informed consent always requires an assessment of risks and benefits.

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Table 1

Characteristics of the sample (n = 110) and the bivariate association with the direct assessments of benefits and burdens/risks at enrollment (n = 93).

		Assessed benefits and burdens/risks		
	Sample[1] (n = 110)	**Yes (n = 45)**	**No (n = 48)**	***p* Value**
Gender				.21[a]
Male	57 (52.29)	19 (42.22%)	27 (56.25%)	
Female	52 (47.71)	26 (57.78%)	21 (43.75%)	
Age in years: mean (SD)[2]	58.73 (12.00)	56.08 (12.60)[3]	60.38 (11.84)[4]	.04[b]
Race				.74[a]
White/Caucasian	98 (90.74)	40 (90.91%)	41 (87.23%)	
Non-white	10 (9.26)	4 (9.09%)	6 (12.77%)	
Marital Status				1.00[a]
Married	90 (82.57)	36 (81.82%)	40 (83.33%)	
Widowed/separated/divorced/never married	19 (17.43)	8 (18.18%)	8 (16.67%)	
Education				.02
≤High school	37 (33.94)	11 (25.00%)	21 (43.75%)	
Some college	22 (20.18)	5 (11.36%)	11 (22.92%)	
College and postgraduate	50 (45.87)	28 (63.64%)	16 (33.33%)	
Employment				<.01
Not employed	31 (28.70)	10 (22.73%)	15 (31.91%)	
Employed full- or part-time	39 (36.11)	24 (54.55%)	10 (21.28%)	
Retired	38 (35.19)	10 (22.73%)	22 (46.81%)	
Spiritual/religious beliefs				.04[a]
Not important	17 (15.60)	6 (13.64%)	9 (18.75%)	
Little or somewhat important	29 (26.61)	18 (40.91%)	8 (16.67%)	
Important or very important	63 (57.80)	20 (45.45%)	31 (64.58%)	
Insurance*				.01[a]
Private insurance/self-pay (out of pocket)	76 (69.72)	38 (86.36%)	28 (58.33%)	
Government insurance (Medicare/Medicaid/VA benefits)	33 (30.28)	6 (13.64%)	20 (41.67%)	
Previous experience with research participation				1.00[a]
No	83 (76.85)	33 (76.74%)	36 (75.00%)	
Yes	25 (23.15)	10 (23.26%)	12 (25.00%)	

[1] Frequency (%) or mean (standard deviation [SD]). Some column percentages may be less than 100% due to missing data.

[2] n = 102.

[3] n = 40.

[4] n = 47.

[a] Fisher's exact test.

[b] Mann—Whitney U-test.

*Some subjects receiving Medicare/Medicaid also had private insurance, but they are classified as receiving government insurance. Subjects receiving only other insurance are classified as private/out of pocket.

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Table 2

Disease- and trial-related factors.

Cancer type[1]	Frequency (%)	
Hematologic	24 (26.67)	
Multiple myeloma	15 (16.67)	
Melanoma	12 (13.33)	
Breast/ovarian/gynecologic	14 (15.56)	
Prostate/urology/urothelial/perineal	11 (12.21)	
Lung/digestive/liver	7 (7.78)	
Other	7 (7.78)	
Trial phase[1]		
<II	19 (21.35)	
Phase II	50 (56.18)	
Phase III	20 (22.47)	
ECOG level[1]		
Fully active, able to carry on all predisease performance without restriction	44 (50.00)	
Restricted or not able to carry out physical activity	44 (50.00)	
Prior cancer treatment	**Yes**	**No**
Surgery	45 (48.39)	48 (51.61)
Chemotherapy	81 (78.64)	22 (21.36)
Radiation	37 (39.36)	57 (60.64)
Immunotherapy (vaccine, IL2, interferon)	14 (17.95)	64 (82.05)
Other	18 (16.36)	92 (83.64)
Any prior treatment	92 (86.79)	14 (13.21)
Current cancer treatment[&]	95 (86.36)	15 (13.64)

[1] n = 20, 21, 22; missing data, valid percentages used.

[*] Prior other treatment includes stem cell or other types of transplant, cyberknife, and other targeted therapies (e.g., Herceptin, Mituximab, monoclonal antibodies).

[&] Current cancer treatment includes surgery, chemotherapy, or radiation therapy, either related or not related to the cancer clinical trial study.

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Table 3

Bivariate association between assessing benefits and burdens/risks and study variables.

	Assessed benefits and burdens/risks			
Outcome variables	**Yes**	**No**	***p* Value[a]**	**OR (95% CI)**
I had no other option than to participate in the research			.236	
Disagree	38 (84.44%)	34 (70.83%)		
Neutral	3 (6.67%)	4 (8.33%)		
Agree	4 (8.89%)	10 (20.83%)		
Your understanding of the treatment option			.031	
No or few to limited options	19 (45.24%)	31 (68.89%)		2.68 (1.11, 6.43)
Moderate or multiple options	23 (54.76%)	14 (31.11%)		1.00
I am hoping for a cure			.153	
Disagree/neutral	14 (31.82%)	8 (16.67%)	[Reference]	1.00
Agree	13 (29.55%)	13 (27.08%)	[0.344]	1.75 (0.549, 5.59)
Strongly agree	17 (38.64%)	27 (56.25%)	[0.059]	2.78 (0.971, 8.06)
It helps to pay for the costs of drugs and other medications or tests			.031	
Disagree/neutral	30 (68.18%)	22 (45.83%)		1.00
Agree	14 (31.82%)	26 (54.17%)		2.53 (1.08, 5.93)
Trust my researcher knows what is best for me			.021	
Disagree/neutral	17 (38.64%)	8 (16.67%)		1.00
Agree—strongly agree	27 (61.36%)	40 (83.33%)		3.15 (1.19, 8.33)
Felt well informed when enrolled in study			.001	NA
Yes	44 (100%)	38 (79.17%)		
No/unsure	0 (0.00%)	10 (20.83%)		
Felt well informed at this point of participation			.032	NA
Yes	43 (97.73%)	40 (83.33%)		
No/unsure	1 (2.27%)	8 (16.67%)		
Felt well informed about changes in study			.014	1.003.92 (1.29, 11.91)
Yes	38 (88.37%)	31 (65.96%)		
No/unsure	5 (11.63%)	16 (34.04%)		
How difficult to understand the written information about the clinical trial			.087	
Easy	33 (54.10%)	28 (45.90%)		
Average	11 (40.74)	16 (59.26)		
Difficult	0 (0.00%)	4 (100%)		
How difficult to understand the oral information about the clinical trial			.14	
Easy	37 (52.11%)	34 (47.89%)		
Average	7 (41.18%)	10 (58.82%)		
Difficult	0 (0.00%)	4 (100%)		

Note. Logistic regression analyses were performed when the χ^2 results were significant or approaching significance. Odds of not assessing benefits/risks shown.

[a] *p* Value is for Fisher's exact test.

[*] NA due to lack of variability (empty cell or very low frequency in some cells).

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