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Physician, Patient and Contextual Factors Affecting Treatment Decisions in Older Adults with Cancer: A Literature Review

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Abstract

Purpose/Objectives—To review physician, patient, and contextual factors that affect treatment decision-making in older adults diagnosed with cancer and relate these factors to theoretical models of decision-making.

Data Sources—PubMed (1966-April 2010), PsycINFO (1967-April 2010) and CINAHL (1982-April 2010) databases were searched to access relevant medical, psychological and nursing literature.

Data Synthesis—Physician factors in treatment decisions include physician personal beliefs and values, expertise, practice type, perception of lowered life expectancy, medical factors, power, and communication style. Patient factors include personal beliefs and values, ethnicity, decisional control preferences, previous health-related experience, perception of the decision-making process, and personal factors. Contextual factors include availability of caregiver, lack of insurance, poor financial status, and geographical barrier. The interplay of physician, patient, and contextual factors are not well understood. Existing models of decision-making are not sufficient to explicate TDM process in older adults diagnosed with cancer.

Conclusions—Clinical studies in older adult patient population using a longitudinal and prospective design are needed to examine real-time interplay of patient, physician, and contextual factors and to better understand how these divergent factors influenced actual treatment decisions.

Implications for Nursing—Oncology nurses can advocate for a patient's autonomy during TDM by coaching them to seek evidence-based discussion of various treatment options, benefits and risks assessments, and truthful discussion of the probability of success for each treatment option from their physicians. Oncology nurses must promote an informed treatment decisions that are consistent with a patient's personal preference and values within the limits of the patient's personal contexts.

Keywords

Decision making; Geriatric oncology; Ethics; Patient education

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Introduction

Decision-making has been defined as the cognitive process of reaching a decision (Princeton University, 2006). Often, it involves balancing the benefits and risks among multiple options. In geriatric oncology, balancing risks and benefits is generally difficult due to the lack of data on survival and quality of life (Bennahum, Forman, Vellas, & Albarede, 1997; Repetto, Comandini, & Mammoliti, 2001). Additionally, older cancer patients have among the lowest health literacy and numeracy rates and often suffer from poor physician-patient communication. These deficiencies could lead to poor understanding and judgment concerning treatment risk and benefit (Amalraj, Starkweather, Nguyen, & Naeim, 2009). The knowledge level of the decision maker, quality of the available options, and the potential consequences of a decision also affect the process of treatment decision-making.

Yates (1990), a cognitive psychologist has defined decision as a commitment to a course of action that is intended to produce a satisfying state of affairs (Yates, Veinott, & Patalano, 2003). For the purpose of this paper, treatment decision-making in older adults with cancer refers to a complex, multidimensional cognitive process of making a decision regarding cancer treatment options.

The treatment decision-making process in older adults with cancer is not clearly understood. This is due in part to the limited studies which systematically examine the internal (patient-related) and external (physician or system) factors that influence the decision-making process. The under-representation of older adults in common cancer clinical trials may also contribute to our limited understanding of treatment decision-making process in this patient population (Di Maio & Perrone, 2003). Furthermore, elderly patients present with unique gerontological issues such as multiple comorbidities, frailty and polypharmacy that can further complicate treatment decision-making (Tabloski, 2006).

The purpose of this article is three-fold. First, the different theoretical models or frameworks of decision-making will be discussed. Second, physician, patient, and contextual factors that affect treatment decision-making will be reviewed in relation to the different theoretical models of decision-making. Lastly, nursing practice implications related to cancer treatment decision-making will be described.

Method

A systematic review of the research literature was performed to identify studies which examined patient, physician, and contextual factors influencing treatment decisions in older adults with cancer. PubMed (1966-April 2010), PsycINFO (1967-April 2010) and CINAHL (1982-April 2010) databases were searched to access relevant medical, psychological and nursing literature. The medical subject heading (MeSH) terms that were used during the search were *decision making, shared decision making, patient participation, geriatrics, hematology,* and *medical oncology*. The searches were limited to articles concerning older adults 65 years old or older and English language only. Two hundred thirteen articles were initially retrieved, and related abstracts were individually reviewed for any report of patient, physician, and contextual factors affecting cancer treatment decisions in older adults. If one of these factors was reported, full-text copies of the articles were then retrieved and completely reviewed. Of these 213 articles, 80 full-text articles were completely retrieved and included in this literature review.

Theoretical Models or Frameworks of Decision-Making

Treatment decision-making typically happens within the context of the provider-patient relationship. Because of this nature, several models of decision-making have been proposed based on the various rights and roles of both parties in information gathering and exchange, and ultimately in making the treatment decision. Below are some of the models or frameworks of decision-making that are commonly cited in the medical and nursing literature.

Paternalistic Model

“The doctor knows best” is the mantra of the Paternalistic model. The patient is in a passive, dependent role and the physician is the expert. Patient involvement is limited to providing consent to the treatment advocated by the physician (McKinstry, 1992; Wilson, 1986). In this model, physicians exert control over information and treatment decision making and the patient simply complies with what the doctor orders. This model is widely used by physicians during emergency conditions. This approach has long been criticized by medical ethicists who espouse the patient's autonomy as a fundamental ethical right of an individual (Wilson, 1986) and by clinicians who emphasize that even the irrational choices of a competent patient must be respected, if the patient cannot be persuaded to change them (Brock & Wartman, 1990).

Informative Model

In the Informative model, the patient is in an active, autonomous role; the physician's treatment preferences for the patient do not enter into the decision-making process. However, the physicians still provide the patient all relevant information to select an option (Emanuel & Emanuel, 1992). An important premise of this model is the assumption that information is an enabling strategy, "empowering" the patient to become a more autonomous decision maker (Charles, Gafni, & Whelan, 1997).

Doctor-as-agent Model

The Doctor-as-agent model describes the physician as an agent helping the patient in choosing a treatment option that the patient would have chosen, had the patient been as well informed as the professional (Charles, et al., 1997; Charles, Gafni, & Whelan, 1999; McKinstry, 1992). Charles and colleagues described this model as a flip side of the informative model of treatment decision-making (Charles, et al., 1999). Ultimately, the physician makes the treatment decision for the patient with the assumption that he knows the patient preferences after eliciting them from the patient.

Shared Decision-Making Model

The shared decision-making (SDM) model involves a two-way exchange not only of information but also of treatment preferences. Charles, Gafni, and Whelan (Charles, et al., 1997, 1999) have identified key criteria of SDM which include:

- Two participants—physician and patient-- are involved in the treatment decision making
- Physician and patient take steps to participate in the process of treatment decision making by expressing treatment preferences
- Information exchange between the provider and patient
- Both parties agree on the treatment to implement

This model evolved largely due to a number of forces within and outside the medical profession that have challenged the paternalistic approach during the past several decades (Brock & Wartman, 1990). One important force in particular has been the increasing number of treatment options for one particular disease with different types of tradeoffs between benefits and risks, as seen in patients with cancer (Charles, et al., 1999; Gilbar & Gilbar, 2009).

Several modifications of SDM have been proposed. These include the Integrative model of shared decision-making and the Communication model of SDM. The Integrative model of SDM combines the essential elements, ideal elements, and general qualities of SDM that were derived from extant literature (Makoul & Clayman, 2006), while the Communication model of SDM highlights the role of the communication climate during provider-patient interaction (Siminoff & Step, 2005). One of the major limitations of these two relatively new models is the lack of empirical data that support their hypotheses. For instance, the role of the communication climate during shared decision-making and how it impacts a patient's level of participation has not been systematically studied. Additionally, valid and reliable instruments to measure the constructs of these two models have not been developed and tested.

Family Centered Model

This model is born out of a concept of incorporating the family as a surrogate in decision-making at the patient's acceptance (Hyun, 2003). The main tenet of this model describes physicians asking patients if they wish to receive information and participate in decision-making or if they prefer their families handle such matters. Family-centered decisions are made when patients select the latter (Back & Huak, 2005; Freedman, 1993; Schafer, et al., 2006).

Degner and Beaton's Patterns of Decision Making

Degner and Beaton (1987) have identified four patterns of decision-making, which include physician-controlled, patient-controlled, jointly-controlled and family-controlled decision-making. This framework of decisional role patterns was developed based on a 4-year qualitative study of patients' decision making roles in life-threatening situations such as cancer. A *physician-controlled* decision-making pattern emerges when patients refuse to become involved in selecting their own treatment, even when urged to do so by the physician, essentially saying, "It's up to you, Doctor; you're the expert." On the other hand, a *patient-controlled* decision-making pattern occurs when patients make it clear that their lives and their bodies are at stake and they will make their own treatment choices. When patients indicate a need to discuss the available options with their physician and ask for an opportunity to go away and think about the discussion prior to making the final treatment decision with the physician on the next visit, it is described as a *jointly-controlled* decision-making pattern. When patients are incapacitated to make the treatment decision and the family makes all treatment decisions, a *family-controlled* decision-making pattern emerges (Degner & Beaton, 1987). The patterns of decision making described by Degner and Beaton overlap with Paternalistic, Shared, and Informed models of decision-making described earlier.

Decision Support Framework

O'Connor et al. (1998) has developed the decision support framework (DSF) based on expectancy value, decisional conflict, and social support theories. It is a framework that can serve as a guide for the development of decision support interventions. The first stage of this framework is the assessment of patient and physician's determinants of decisions, which include socio-demographic and clinical characteristics, perceptions of the decisions and significant others regarding the decision, and the resources to make the decision. Once the first stage is completed, decision support interventions (second stage) can be delivered that address the determinants of decisions. This second stage also includes the preparation of patient and physician for decision making with a structured follow-up interaction. The third stage involves evaluation of the decision support and its success in improving the quality of decision-making process, decisions, and outcomes of decision (O'Connor, et al., 1998).

Decisional Model of Stress and Coping

This model postulates that decision conflict occurs when a choice of options is personal, transactional, and relational in nature. Examples include those decisions that are influenced by values, beliefs, goals, commitments and environmental variables (Balneaves & Long, 1999). This model is based on the conflict-theory model of decision-making (Janis & Mann, 1977) and transactional framework of stress and coping (Lazarus & Folkman, 1984).

Decision-Making Models from Other Disciplines

Several other fields including psychology, sociology, and economics have examined how people make decisions about risks, benefits, and probabilities. There are many of them, but some are quite notable and will be included in the discussion below.

Conflict-theory Model of Decision-Making

This model was developed by Janis and Mann (1977). It is a descriptive theory from psychology that depicts decision-making as a stressful process and describes how people cope with vital decisions. The premise of this model includes five basic patterns of decision-making: unconflicted adherence, unconflicted change, defensive avoidance, hypervigilance, and vigilance. Unconflicted adherence occurs when the decision maker ignores the need to make a decision and continues with current course of action. When a decision maker accepts a choice from a set of choices without serious deliberation, an unconflicted change pattern emerges. Defensive avoidance happens when the decision maker avoids making a decision by delaying it or by shifting the responsibility to others. Hypervigilance occurs when the decision maker searches for a decision and acts hastily without full deliberation. In contrast to hypervigilance, a vigilance pattern appears when the decision maker evaluates choices before making a decision (Janis & Mann, 1977).

Normative Theory of Decision-Making

The Normative theory of decision-making is one of the major approaches to decision-making by health care providers. Often, it is referred as classical decision-making theory. This theory is concerned about how decisions should be made and ascribes to the pre-requisites of rational decision-making (Hansson, 2005). It is rooted in expected utility theory from economics that expects a rational decision maker to choose the option that offers the highest expected utility. According to this theory, decisions are made relative to a clearly recognized probability of benefits and consequences from all possible options. This theory is highly prescriptive; hence one of its major critiques is that it often fails to mirror decision-making in the real world, especially in accounting for patients’ preferences (Siminoff & Step, 2005).

Behavioral Decision-Making Model

This model describes the deviation of decision makers from the Normative model. It posits that the decision frame, which refers to the decision maker’s conception of the acts, outcomes, and contingencies associated with a particular choice, has a significant effect on the behavior of a rational decision maker (Tversky & Kahneman, 1981). This landmark work of Tversky and Kahneman (1981) from the psychology discipline demonstrated that rational decision makers deviate from the principles of Normative model due in part to some cognitive bias individuals weighed on these contingencies and outcomes (Tversky & Kahneman, 1981).

Probability Theory as Psychological Theory of Decision-Making

The development of an adequate theory of human likelihood judgment has been the goal of judgment psychology (Yates, 1990). Psychologists have taken probability theory as a starting point in their quest for a simple but sufficient theory that explains how people make judgments. A major interest in the field of judgment psychology is the study of coherent likelihood judgments. Coherent likelihood judgments are deeply embedded in the principles of coherence which are tightly linked to the principles of Probability Theory. Coherent likelihood judgments are said to be made when decision makers did not violate the principles of Probability Theory. These principles include unity summation, generalized disjunction principle, extension principle, conjunction rule (joint and marginal probabilities), general product rule, independence product rule, and Baye's rule (Yates, 1990). When an individual's judgment is *not* coherent, it implies that some aspects of judgment are bound to be inaccurate, with possible severe repercussions.

Naturalistic Decision-Making Model

The Naturalistic model from cognitive psychology posits that decisions are made in an uncertain and constantly changing environment based on different personal and situational factors (Zsambok, 1997). This model emphasizes three important factors of decision-making, which include the decision maker's knowledge and experience, the level of complexity of a decision problem, and the environmental variables. The Naturalistic model is highly descriptive rather than prescriptive and therefore rooted in descriptive decision theory, which is a theory about how decisions are actually made (Hansson, 2005).

Heuristic-Systematic Processing Decision-Making Model

The Heuristic-Systematic Processing model of decision-making (Steginga & Occhipinti, 2004) allows the examination of patient decision making from both systematic and non-systematic (heuristic) decision processes. The principle of this model includes two broad information processing strategies: heuristic processing and systematic processing. Heuristic processing is a relatively effortless way of processing information that relies on schemas, stereotypes, prior knowledge, or expectancies, while systematic processing involves a more analytic and purposeful gathering of information and examination of thoughts and feeling to arrive at a decision (Chaiken, 1980). Additional work on this model reveals that heuristic processing can bias systematic processing when evidence is ambiguous (Chaiken & Maheswaran, 1994).

Several other models of decision-making are mentioned in the literature including Prospect Theory and Social Decision Theory. The Prospect theory (Kahneman & Tversky, 1979) from the field of psychology involves regular evaluation, where the decision-maker (patient or physician) assesses gains and losses relative to a movable reference point depending on the perspective of the decision-maker. Social Decision Theory (SDT) from sociology is largely applicable to group decisions such as voting, bargaining, and other methods of combining individual choices into collective decisions (Hansson, 2005). SDT has very limited applicability in cancer treatment decision-making.

A summary of the different models or frameworks of decision making and their applications in health care is outlined in Table 1.

Physician-centered Factors that Relate to Cancer Treatment Decision-Making

Physician-centered factors are conceptually defined as those aspects of the physicians' lives and contexts, both personal and professional that influence how they make treatment recommendations and/or decisions. These factors include:

- Physician's beliefs and values
- Medical expertise and practice type
- Physician's perception of older adult's life expectancy
- Medical factors
- Power

Physician's Beliefs and Values

The physician's personal belief that he or she should have the dominant role in decision making can have a significant impact on patient-provider interaction during the decision making process and can also influence its outcome (Beisecker, 1994). This personal belief can be traced from the Paternalistic model of decision making, which gives the patient only a minimal role in making treatment decisions. One systematic review has found that this factor played an important role in under-treatment of older women with breast and ovarian cancers (Bouchardy, Rapiti, Blagojevic, Vlastos, & Vlastos, 2007). Researchers of this study evaluated the importance of substandard treatments and their effect on outcomes in older women above the age of 65. It included 32 studies in women with breast cancer, 18 studies in women with ovarian cancer, 4 studies in women with endometrial cancer, 7 studies in women with cervical cancer, and 4 studies in women with vulvar cancer. Some studies had a small number of study participants below 100 but some had over 20,000 participants. Despite the observational nature of the available studies for review and retrospective nature of the review, researchers concluded that older women were undertreated because physicians believed that they have lower life expectancy. These undertreated older women with breast and ovarian cancers have significantly decreased prognosis. Overall, this systematic review provided a strong basis for concern that older women with breast and ovarian cancers were undertreated based on the physicians' belief that they have lowered life expectancy due to older age and comorbidities. This study must be interpreted with caution as a trend towards shared decision making has been seen lately in clinical practice, evidenced by agreement of all physician participants that cancer treatment decisions should be the outcome of a shared process (Pieterse, Baas-Thijssen, Marijnen, & Stiggelbout, 2008).

In an ethnographic study conducted in two years involving 25 women with breast cancer, Freedman (2002) uncovered that physician's values and choice to determine what is told to the patient and what is withheld is a powerful determinant in the medical decision-making process among women with breast cancer. Although this finding was supported by only two illustrative cases mentioned in the study, it underscored the importance of full disclosure so patient can make a truly informed decision.

Normative values among physicians are also integral to the decision-making process and outcomes. For example, three studies have found that physicians rank comorbidities and the medical literature as important factors in treatment decision-making (Klepin & Hurd, 2006; Kutner, Vu, Prindiville, & Byers, 2000; Muss, Biganzoli, Sargent, & Aapro, 2007). These studies involved older men and women with breast, colon, multiple myeloma, and non-small cell lung cancer (NSCLC) whose treatment choices by their physicians were influenced by their co-existing morbidities. Specifically, Kutner et al. (2000) surveyed both patients and physicians to examine patient and physician factors influencing decision to use adjuvant chemotherapy for stage III colon cancer in elderly patients. They found that co-morbid conditions and the medical literature were important physician-related factors in treatment decisions.

One of the limitations of this study included participant bias because only patients whose physicians gave permissions were contacted, which resulted in the omission of 57% of the potentially eligible patients. One study reported that oncologists value any improvements in survival compared to their patients who value quality of life. Ravdin, Siminoff and Harvey (1998) surveyed members of the National Alliance of Breast Cancer Organizations (NABCO) and five hundred sixty-two individual members responded. Of these, 318 women (response rate 56.5%) with a median age of 49, 94% White, and 88% with some college education, and received adjuvant chemotherapy were included in the final analysis. Participants were asked what degree of absolute benefit they would have found acceptable.

Researchers found that the median acceptable extension of life expectancy was 3 to 6 months. The researchers noted that there was a considerable variation in this area, with 27% of women not accepting less than 1 year and 26% not accepting a less than 5% reduction in recurrence risk. When compared to the normative physicians' value, patients tend to value QOL over quantity of life (Ravdin, et al., 1998). The major limitations of this study included recall problem and limited generalization due to the characteristics of sample comprising mostly of Caucasian women who were active in breast cancer organizations and were younger and better educated compared to the average woman with breast cancer.

A recent study showed that oncologists have various perspectives on how involved the primary care physicians (PCPs) should be in terms of treatment and procedure-related decisions in older adults with cancer. For decisions about treatments or procedures, 14% of the oncologists believe that PCPs should be more involved with decisions. Additionally, researchers found that oncologists reported a range of frequencies of communication with the PCPs of their patients with advanced cancer about goals or treatment decision-making, indicating that they have very different preferences for PCPs' participation in treatment or procedure-related decision-making (O'Toole, Step, Engelhardt, Lewis, & Rose, 2009).

Medical Expertise and Practice Type

Experience and practice type may in part explain variation in treatment choice. In a survey of physicians, Hodgkin disease experts are more likely to tailor therapy according to individual patient factors, while decisions of non-expert physicians were influenced by high Hodgkin disease case load. Moreover, academic physicians are more likely to choose combine modality therapy (CMT) over radiation therapy or chemotherapy alone (Ng, et al., 2004). These findings were based on survey responses from 81 Hodgkin's disease experts and 73 randomly selected physicians from ASTRO and ASCO membership lists. The overall survey response rate was 50% (58% among Hodgkin disease experts and 43% for randomly selected oncologists). It is important to note that 92% of the Hodgkin disease experts were in academic practice setting, which typically follows established treatment guidelines for Hodgkin disease such as CMT. The major limitations of this study include the limited amount of treatment choices provided to the respondents and poor account of the individual patient's context that could have influenced the physicians' treatment choices.

A national survey findings published in 2000, documented that urologists tend to favor surgery, while radiation oncologists tend to favor radiation therapy over surgery in managing patients with localized prostate cancer (Fowler, et al., 2000). In an international survey, gastroenterologists tend to favor surgery, while hematologists and oncologists are more inclined to favor conservative therapy for the management of gastric lymphoma (de Jong, Aleman, Taal, & Boot, 1999). The Doctor-as-agent model provides a useful framework to explicate some of the treatment choices that are influenced by the physician's expertise.

Physician's Perception of Older Adult's Life Expectancy

In the absence of cure such as the case in many diagnoses of cancer, life expectancy and quality of life are two major factors in treatment decision making (Repetto, et al., 2001). Unfortunately, the physician's perception on elderly patients' short natural life expectancy has led to decreased adjuvant chemotherapy use among older adults diagnosed with stage III colon, breast and non-small-cell lung cancers (Muss, et al., 2007; Schrag, Cramer, Bach, & Begg, 2001). In a retrospective cohort study using the Surveillance, Epidemiology, and End Results/Medicare-linked database, researchers found that physicians use implicit judgments about age and utilization of adjuvant chemotherapy after surgery for stage III colon cancer (Schrag, et al., 2001) and breast cancer (Hurria, et al., 2003). Schrag et al. (2001) reviewed the record of 6262 Medicare beneficiaries diagnosed with stage III colon cancer from 1991 through 1996. Study subjects included 84% White, 7% Black, and 9% other races, aged 65–90 (mean age not reported), and 24% at the bottom quartile of the median income in the census track of residence. Researchers found that the use of adjuvant chemotherapy after surgery declined dramatically with chronologic age after adjustment for potential confounders such as comorbidities. The use of adjuvant chemotherapy was 80% for patients aged 65–69 years, 64% for 75–79 years, and 13% for 85–89 years in 3391 patients with no co-morbidities. These findings are supported by a prospective study which revealed that a smaller proportion of patients above the age of 75 received surgery with chemotherapy for colorectal cancer compared to those patients younger than 75 (Bailey, et al., 2003). Researchers of this study suggest that these groups of older patients should have received adjuvant therapy because of the fact that patients in their 70s and 80s continue to have a reasonable life expectancy (Bailey, et al., 2003). Because of the retrospective nature of Schrag et al. study, it was hard to account for non-medical barriers such as financial and caregiver issues. Nonetheless, this study demonstrated that the physicians' beliefs and attitudes may explain the low utilization of adjuvant chemotherapy among the elderly with colon cancer.

A retrospective study examining the factors that influenced treatment decisions in older breast cancer patients at a single center found similar under-utilization of treatments for patients with breast cancer. Hurria et al. (2003) reviewed records of 216 patients stratified into two age groups: age ≥75 (range 75–79, mean age 76.9) and age ≥80 (range 80–96, mean age 84.5) at Memorial Sloan-Kettering Cancer Center. Researchers found systemic treatment pattern differences in women with breast cancer aged 75–79 compared to patients aged ≥80. Patients whose age was ≥80 were less likely to receive an axillary lymph node dissection and radiation therapy. The major limitation of this study was the inability of the researchers to assess for non-medical factors that might influence a patient's preference for not receiving therapy. Additionally, the number of subjects included in this review was modest. Because of the geographic location of MSKCC in the East Coast, the generalizability of study findings is limited. The differences in the treatment patterns of older cancer patients may be even greater in other geographic locations.

The Behavioral Model of Decision-Making demonstrates that people don't always decide rationally but put more emphasis on risks than benefits and that cognitive biases play a role in choice selection. This model provides some useful insights as to why some physicians did not offer adjuvant therapy to older patients with cancer.

Medical Factors

Tumor types, cytogenetics profile, age-related physiologic decline, and other illnesses influence treatment decisions (Klepin & Hurd, 2006; Kutner, et al., 2000). Specifically, chemotherapy is of greatest value in older adults with node-positive, estrogen receptor-negative, and progesterone receptor negative breast cancer (Giordano, Duan, Kuo, Hortobagyi, & Goodwin, 2006; Muss, et al., 2007). It is common knowledge that chemotherapy decisions among older cancer patients involve adjustment of the dose to renal function, prophylactic use of growth factors, maintenance of hemoglobin levels around 12 g/dL, and proper drug selection based on age-related pharmacokinetic changes (Balducci, 2006). The Normative and Coherent Likelihood Judgment models provide a reasonable framework when physicians' treatment choices are made based on rationality, such as putting medical factors into the treatment decision equation.

Power

This factor has a significant impact on treatment choice. The framing of a decision problem and the individual who frames the decision problem can have a significant influence on how the information is processed and used by the decision maker (Tversky & Kahneman, 1981). Unequal power relation in treatment decision-making is well documented in qualitative studies of men and women with cancer. For example, women with ovarian cancer have perceived that the interaction during the encounter is directed largely by the physician, and a few women have perceived that there are no treatment choices offered to them except the choice between one treatment versus no treatment (Elit, et al., 2003). These findings were derived from a qualitative study that involved 21 women with ovarian cancer, aged 47–77 (mean age, 60.6 years), and 50% were married and employed. The strength of this study included pilot testing of the semi-structured interview schedule with patients diagnosed with ovarian cancer that were not part of the final study. Pilot testing of the interview schedule improved the clarity of the questions and helped establish the validity of the findings.

Men with newly diagnosed localized prostate cancer have also reported that the decision-making process is provider-led, with themselves as passive recipients. Cohen and Britten (2003) interviewed 19 men with LPC between the age of 58 and 88 (mean age 74.4) using semi-structured interview schedule and found that patients perceived the treatment plans were mostly decided by their clinicians. The major limitation of this study included lack of diversity of the sample (18 were White and only 1 Black) from a single center site in United Kingdom where the health care system is very different compared to the USA. This phenomenon can be largely explicated by Behavioral and Paternalistic models of decision-making.

Communication style

A recent study showed that oncologists were significantly more fluent and more direct with older than middle-aged patients and trended toward expressing their own treatment preferences more with older patients with early stage breast cancer (Step, Siminoff, & Rose, 2009). According to the researchers, older adults considering adjuvant therapy felt that their decision making involvement may have been challenged by the oncologists' perception of deficiencies in their cognition or communication. Researchers warned oncologists that they should carefully assess patient decision-making preferences and be mindful of accommodating their speech based on their biases of older adult cognition (Step, Siminoff, & Rose, 2009). The paternalistic and communication models of decision making relate well with the findings of this study.

Patient-centered Factors that Affect Cancer Treatment Decision-Making

Patient centered factors include the aspects of older adult's lives and personal context that influence their decisions. Based on the extant literature, these factors include:

- Patient's beliefs and values
- Ethnicity
- Decisional control preferences
- Health related experience
- Patient's perception of the decision-making process
- Personal factors

Patient's Beliefs and Values

While physicians rank co-morbid conditions and the medical literature as important factors in treatment decision-making, patients rank family preference, family burden, and physician's opinion as important factors in making treatment decisions (Kutner, et al., 2000). These findings are corroborated by another study, which found older adults with cancer have chosen their treatment decisions depending on the burden of the treatment, possible outcomes, and likelihood of adverse functional and cognitive outcomes. Fried et al., (2002) interviewed two-hundred individuals who were 60 years of age or older (mean age 72.8) and had limited life expectancy due to cancer, congestive heart failure, or chronic obstructive disease. Among these 200 subjects, 79 patients had cancer (mean age 71.7) and were interviewed at home using a questionnaire that assessed treatment preferences according to three components of therapy: the burden it imposed, the possible outcomes and the likelihood of these outcomes. Researchers found that when the outcome was survival with severe functional impairment or cognitive impairment, respondents no longer wanted the therapy. This study showed that the older adult patients' preferences change in response to changes in the burden of the treatment, its outcome, and the likelihood of the outcomes. The main limitation of this study was the lack of ability to capture real life alternative approaches such as palliative therapies in patients with serious illness such as cancer. Additionally, respondents were forced to choose a treatment or an outcome specified in the questionnaire.

Another important value that older adults have ranked consistently on top of their priorities is quality of life (Martin & Roberto, 2006). Among older adults with acute myeloid leukemia or advanced myelodysplastic syndrome, quality of life rather than length of life has been reported as an important factor for their therapy choice (Sekeres, et al., 2004). During decision interviews, 97% of patients agreed with the statement that QOL was more important than length of life regardless of their choice of therapy. This study only included 43 patients with age range of 60–85 (mean age, 71) at a single center; thus, the generalizability of the findings is limited. The strength of this study was its prospective, longitudinal design which allowed actual examination of issues related to the treatment decision-making and QOL in this group of older adults with leukemia. The Informative and Shared models provide a useful framework in incorporating patients' values and beliefs into the treatment equation in order to ultimately arrive at a decision that respect a patient's wishes.

Ethnicity

Korean Americans and Mexican Americans are more likely to believe that the family should make decisions about the use of life support and are therefore likely to hold a Family-centered Model of decision-making (Blackhall, Murphy, Frank, Michel, & Azen, 1995). Caucasians value individualistic beliefs (self-reliance, self-responsibility, and control) and are therefore likely to hold an Informative or a Shared model of decision-making (Blackhall, et al., 1995), while Hispanics and African American patients value collectivism and are therefore likely to hold a Family-centered or Paternalistic model of decision-making (Friedman, Bowden, & Jones, 2003). These generalizations should be interpreted with caution since they are based on information derived from some small studies and subjects were from a specific geographical location such as urban Southern California (Blackhall, et al., 1995), which may differ significantly from other geographic regions. Nonetheless, the findings from these studies point out the importance of the patient's preference of involvement with decision-making and therefore, should be elicited during medical encounters, especially among patients with different ethnic background. It is also important to raise the sensitivity of the physicians on this issue when dealing with patients from a specific ethnic population.

Decisional Control (Role) Preferences

Older adults express a desire for shared decision-making, but variation in desire for participation in decision-making is substantial (Elkin, Kim, Casper, Kissane, & Schrag, 2007; Gaston & Mitchell, 2005; Nease & Brooks, 1995; Robinson & Thomson, 2001). One recent study among 73 patients age 70 to 89 years (mean age, 76) diagnosed with metastatic colorectal cancer reported that 23% of these older adult patients preferred a collaborative role, 25% favored an active role and 52% favored a passive role (Elkin, et al., 2007). One major limitation of this study was the small sample size and its characteristics that was nearly all White, non-Hispanic, fairly educated patient population. The sample characteristics could possibly explain the reason why 52% preferred a passive role, where in previous studies it has been found to be higher (Deber, Kraetschmer, Urowitz, & Sharpe, 2007; Elkin, et al., 2007). Other studies revealed that age, gender and educational level have an impact on patient’s preferred level of participation in decision-making. Older and less educated individuals were most likely to prefer passive roles (Deber, et al., 2007; Elkin, et al., 2007) while younger, more educated women were most likely to prefer participatory decision-making (Bruera, Sweeney, Calder, Palmer, & Benisch-Tolley, 2001; Degner, et al., 1997; Gaston & Mitchell, 2005; Ryan & Sysko, 2007). A study in Britain conducted in 2003 among older men (58–88 years old, mean 74) diagnosed with prostate cancer found that these men took a passive role during a treatment discussion, but later had desires to revisit the decision-making process (Cohen & Britten, 2003). Role preferences also change with time. One study uncovered this dynamic nature of role preferences among cancer patients as patients’ preference for involvement declined when they become sicker (Butow, Maclean, Dunn, Tattersall, & Boyer, 1997). Because patients’ preferences for participation in decision-making vary significantly and are not stable, there is a need to ascertain their preferences over time rather than make an assumption of their preferred role. Degner and Beaton’s Patterns of Decision-Making, Informed, and Shared models of decision-making offer powerful views for understanding the different role preferences patients want to play during a serious illness like cancer.

A recent study of breast cancer patients showed that greater patient involvement in decision making was associated with receipt of mastectomy for all racial and ethnic groups (Hawley, et al., 2009). Furthermore, patient attitudes about surgery and the opinions of family and friends have also contributed to surgical choices made by women with breast cancer. The sample included 23.9% Latina (12.0% low acculturated, 11.9% high acculturated), 27.1% African American, and 48.9% white, and 17.2% received a mastectomy initially. For each racial or ethnic group, more women who reported a patient-based decision received mastectomy than those who reported a shared or surgeon-based decision ($P = .022$ for low-acculturated Latinas, $P < .001$ for other groups). This is an excellent study clearly demonstrating how patients’ decisional control preferences influence actual treatment choice. The shared decision-making model provides an excellent framework for this study.

Health-Related Experience

Previous health-related experiences or familiarity with treatment options can influence treatment choice (Kelly-Powell, 1997; Mazur & Merz, 1996). Using Grounded Theory methodology, Berry and colleagues uncovered a set of related, meaningful factors among men with localized prostate cancer (stage I or II), which included past experience with cancer (Berry, et al., 2003). This study involved subjects who were 84.1% White, 13.6% Black, and 2.3% Asian American/Pacific Islander who were fairly educated (89% had at least 2 year college or better). Generalizability of the findings was limited due to the exploratory nature of the study and the sample characteristics from a single medical center in the Pacific Northwest. The Heuristic-Systematic model provides some explanation on this influencing factor since it involves the basic principle of knowledge activation for heuristic processing. According to the principle of this model, heuristics are stored in memory and are retrieved from memory when they are relevant to the decisions that need to be made.

Patient’s Perception of Decision-Making Process

Using hermeneutic approach, researchers have learned that patients participate in health care when they are being informed based on their individual needs, when they received the knowledge they needed, and when the decisions are made based on their knowledge and needs (Eldh, Ekman, & Ehnfors, 2006). These conclusions were drawn from a questionnaire that was specifically developed for exploring conditions for participation and non-participation in decision-making, distributed to 300 inpatient and 600 to outpatient clients in a medium-sized medical center in Sweden. The study had only 40% response rate, which could be a source of non-response bias. The age range of the respondents was 29 to >80 years of age (mean age, not reported), with majority of the patients having a symptom or disease for at least 1 month or more. Researchers also encountered non-relevant responses which the investigators hypothesized might have been due to the recent annual survey conducted by the same institution where this research study was conducted. Unfortunately, no follow-up on these non-relevant responses was done by the researchers. The major strength of the study was the pilot testing of the questionnaire to 20 outpatient clients, which resulted to better clarity of questions that had helped in improving the validity of the questionnaire.

Older women diagnosed with breast cancer also reported higher participation in decision-making when they had ample time to exchange information and when their family members were included in the decision-making process. Kreling et al. (2006) conducted a focus group interview with 34 women from different ethnic backgrounds (29% Black, 53% White, and 18% Latina) to explore the barriers and promoters of chemotherapy use in older women with breast cancer. Researchers noted that there was less physician communication, particularly among women of color, which acted as barriers to chemotherapy. Major limitations of this study included study subjects in a single area who volunteered to join the focus group and were mobile enough to attend the session, which limits generalizability of the findings. However, these findings provide rich descriptive data that underscore the importance of shifting the model of care from the traditional Paternalistic model to an Informative or Shared model of decision-making, which is consistent with the growing body of literature that an Informed or Shared model of provider-patient relationship is more desirable (Charles, et al., 1999; Ryan & Sysko, 2007). Mutual respect, confidence, and trust between the provider and the patient are important considerations in increasing patient participation in health care (Eldh, et al., 2006).

Personal Factors

Among men with localized prostate cancer (LPC), personal factors can influence treatment decision making. Personal factors include self-description, potential treatment outcomes, past experience with cancer and influential others such as the physician whom they visited or other men with whom they shared a belief, perspective or characteristics (Berry, et al., 2003). Berry and colleagues were the first to include a systemic description of “who I am and what I do” and “making the best choice for me” as influential aspects of decision making among men with LPC. These descriptive data were obtained from focus groups and individual interviews of 44 men (age mean, 64.8) who were within 6 months of diagnosis. Strategies to maintain validity and reliability included an audit trail, inter-rater reliability, and participant evaluation of results through member checks. The inter-rater reliability (80% agreement) was adequate for coding of variables. The exploratory nature of this study and sample characteristics (84% White and only 13.6% Black, 2.3% Asian American) limited the generalizability of the findings. Denberg and colleagues have also found that emotions, misconception, and anecdotes influence treatment preferences in patients with LPC (Denberg, Melhado, & Steiner, 2006). Using semi-structured interviews, Denberg et al. explored personal beliefs and attitudes of 20 men, age range 55–80 years (mean age, 65 years) with clinically-localized prostate cancer following their first consultation with urologists and before treatments were initiated. Using Grounded Theory methodology, researchers analyzed the patients' personal views about prostate cancer and treatment options, emotional reactions to the diagnosis, treatment preferences, information sources, and perceptions of interactions and concluded that patients' personal factors influenced treatment choice in men with LPC. Major strength of this study was the rigorous process researchers employed to ensure validity of findings. This process included comparative findings, discussing divergent coding, resolving differences in interpretation, and iterative process to develop synopses of recurrent themes applicable to the entire sample. The main limitation of this study was the small sample size in a single Veteran Affairs Medical Center, which does not mirror the general health and socio-economic resources of the general population. Since personal factors were found to be influential in treatment decision-making among men with LPC, it is important that an Informed or Shared model of decision making is promoted during the medical encounter, especially when desired by patients.

Contextual Factors Affecting Cancer Treatment Decision-Making

Patient's Context

Availability of a caregiver or a family member influences treatment decisions (Kreling, et al., 2006) and to some extent could lead to disagreement among family members (Schafer, et al., 2006; Zhang & Siminoff, 2003). In a cross-sectional survey, sixty seven patients with colorectal cancer (64% survey response rate) age 65–92 (mean age, 75.8) rank family preference, family burden and traveling for treatment as important factors influencing their treatment decisions (Kutner, et al., 2000). One major limitation of this study was 90% of the respondents were White, causing a response bias limiting the generalizability of the findings.

When differences in opinions between patient and families arise, a Family-centered Decision Model may be required in order to integrate family members who are influential in treatment decision. Lack of insurance, poor financial status, and geographical barriers are important contextual factors that can also influence treatment choice (Bailey, et al., 2003; Mandelblatt, Yabroff, & Kerner, 1999; Schrag, et al., 2001). The Naturalistic model offers a useful framework in understanding the role of patient's context in treatment decision-making.

Discussions

Models of Decision-Making

This review shows that several models of decision-making have emerged from a wide range of decision theories and physician-patient relationships. However, very few models have simultaneously examined physician and patient factors on treatment decision-making process and its outcomes. Current models of decision-making including the Shared model often fail to measure the impact of patient and provider factors on treatment decision-making. Valid and reliable tools that can quantitatively measure personal and physician factors as predictor variables of decision-making outcomes are lacking. Kaplan and Frosch (2005) suggested that studies focusing on measurement and outcomes of shared decision-making are needed. Exploring the interplay between physician and patient factors may provide new insights into our understanding of the treatment decision-making process in older adults with cancer.

The classical and modern models of decision-making discussed in this review do not explicate all observed treatment decisions. The chances of developing a model that is capable of explicating all observed treatment decisions are slim due to the increasing complexities of cancer treatment decisions and the vast array of emotional, personal, and social contexts influencing treatment decisions. Although the Shared decision-making model is promising, it is challenging to adhere to or advocate this particular model of decision-making due to the dynamic nature of cancer treatment decision-making. Pierce and Hicks (2001) have acknowledged that our understanding of how various health- related contexts influence decision behavior is limited due to a lack of appropriate clinical studies designed to capture these dynamic influences (Pierce & Hicks, 2001).

The researcher's knowledge on the limitations of existing models of decision- making can serve as a starting point when looking for new ways of examining treatment decision-making process. Yates (1990) has been advocating that the aims in studying decision behavior should include understanding how people make decisions, improving the quality of decisions, and enhancing decision-making behavior. Decision researchers should continue to improve current understanding of patient's behavior and the motives for such behavior to strengthen existing models of decision-making. Research findings should continue to inform the development of decision interventions to maximize decision outcomes.

Physician and Patient Factors

The process of treatment decision-making in older adults with cancer is complex and multidimensional. There are varieties of physician and patient factors that come into play during treatment decision-making. Arguably, at the intersection of these two factors lie the true concerns of the physician to make the best possible decision for the patient. However, a physician's true concerns for patients may be overshadowed by his or her own personal self-interest or values. This claim is supported by research findings included in this review, which suggest that personal preferences are pervasive influencing factors not only for patients but also for the providers. Unfortunately, physician preference rather than patient need has been previously reported to play an important role in health care usage and expense of medical care (Kaplan & Frosch, 2005).

Each physician or patient brings his or her own personal values and beliefs to the decision-making process. This underscores the importance of providing patients with a communication climate that allows them to express their personal views. Unfortunately, cancer patients continue to have unmet communication needs (Hack, Degner, & Parker 2005). Physicians and other clinicians should establish an open communication during medical encounters to ensure that patients' concerns and wishes are elicited. Systems support must also be in place such as the use of technologies that provide critical information to patients and enable patients to communicate their issues, concerns, and priorities to their provider (Sepucha, Ozanne, & Mulley, 2006).

Contextual Factors

We have limited understanding on how social and cultural factors influence treatment decision-making in older adults with cancer. More research is needed to elaborate the role of social and cultural context on decisions in this patient population. The multidimensionality of social and cultural factors will certainly make it difficult to investigate. However, it is important to face the challenges of actual complexity of treatment decision research in order to advance our knowledge on this topic. Decision researchers have recommended that one must avoid becoming paralyzed by the complexity and the uncertainty of decision-making but instead build research capacity effectively while respecting the individual differences and diversity among groups of patients (Kaplan & Frosch, 2005).

As the population continues to grow older, more and more older patients with cancer will face challenging treatment decisions. This trend makes it even more critical to develop interventions that can improve the decision-making process and its outcome, especially in older patients with various social and cultural backgrounds and medical conditions. Oncology nurses need to encourage older adults to participate in cancer clinical trials, and increase efforts in recruiting patients from minority populations.

Nursing Practice Implications

The interplay of physician, patient, and contextual factors influencing treatment decision-making is not well-studied. Given the complexities of cancer treatment decision, it is challenging for oncology nurses to assist patients with treatment decisions. However, oncology nurses must strive to advocate for autonomous (patient-driven) treatment decisions. Patient-driven treatment decisions require the provision of adequate risks and benefits information to patients. Patients must receive adequate medical information in order to truly make an informed decision, therefore respecting their autonomy. At times, nurses are at odds with physicians when patients continue to receive complex chemotherapeutic regimens with no established efficacy. Oncology nurses are well-prepared to discuss patient and family goals, examine patient and family's expectations, and maintain reasonable hopefulness. Oncology nurses can advocate for patients by coaching them to seek evidence-based discussion of various treatment options, benefits and risks assessments, and truthful discussion of the probability of success for each treatment option from their physicians. Moreover, nurses must be cognizant that some decision-making tools (computer or online format) may not be user-friendly or easily understandable except to those with some level of education above 8th grade, thereby requiring reinforcement from a health care team member. Lastly, advanced practice nurses can help patients and families navigate through the decision-making process by supplementing patient education in regard to treatment options.

Conclusion

This review provides relevant insights on the various models of treatment decision-making and how these models relate to the physician, patient, and contextual factors that influence treatment decisions. Some gaps in our understanding of treatment decision-making have also been identified such as the need for additional research to understand patient's behavior and how it can influence treatment decision-making. More studies are also needed to guide the development of interventions geared toward improving patient's communication of treatment preferences and personal values to their clinicians. Moreover, it is important to conduct clinical studies specifically in older adult patient population using a longitudinal and prospective design to examine real-time interplay of patient, physician, and contextual factors and to better understand how these divergent factors influenced actual treatment decisions. Since oncology nurses are often asked to assist patients with their decision-making, oncology nurses are in an excellent position to promote informed treatment decisions that are consistent with the patients' personal preference and values within the limits of patients' personal contexts.

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Table 1

Summary of Decision-Making Models/Frameworks

Decision Making Model	**Main Tenet**	**Primary Reference**	**Applications in Health Care**
Paternalistic	Physician selects information and decides treatments	- (Emanuel & Emanuel, 1992) - (McKinstry, 1992)	- Highly applicable in medical emergency situations. - Criticized by bioethicists due to lack of respect for patient autonomy. - Still pervasive in some countries, particularly in Asian and in some European countries.
Informative	Physician provides complete information to help a patient discerns what's best for him/her	(Emanuel & Emanuel, 1992)	Applicable during patient participation in randomized clinical trials. Best demonstrated when a patient signs an informed consent before receiving any treatment (i.e. stem cell transplantation).
Doctor-as-agent	Physician provides complete information, elicits a patient's preference, and makes decision based on a patient's preference.	(McKinstry, 1992)	Applicable in situations when a patient expresses his/her desires, wants, and values, but leaves the final decision making to his/her clinician.
Shared decision making (SDM)	Involves two-way information exchange, deliberation between physician and patient, and joint decision making on treatment to implement with emphasis on respecting individual differences in patient preferences.	(Charles, et al., 1997, 1999)	Highly applicable in situations when there is clinical uncertainty. Examples include treatment decision making in patients with newly diagnosed prostate cancer where treatment options have different risks and associated uncertainty. - In a qualitative study sampling both patients with prostate cancer and their physicians, Berry and colleagues (2003) documented four distinct physician roles during treatment decision making. These roles included expert, educator, navigator, and partner, which are reflective of the principles of the SDM model.
Communication model of SDM	Explicitly identifies the communication process as a vehicle for decision making in cancer treatment.	(Siminoff & Step, 2005)	- Applicable in all types of treatment decision making in patients diagnosed with cancer. - Needs empirical testing of the model in actual clinical encounters.
Integrative model of SDM	Combines the essential elements, ideal elements, and general qualities of SDM. Essential elements: Define/explain problem Present options Discuss benefits/risks/costs Patient values/preferences Discuss patient ability Doctor knowledge Check understanding Make or explicitly defer decision Arrange follow-up Ideal elements: Unbiased information Define desire for involvement Present evidence Mutual agreement General qualities: Deliberation/negotiation Individualized approach Information exchange Involves at least two people Middle ground	(Makoul & Clayman, 2006)	Highly applicable in all types medical decision making. However, empirical testing of this model has not been reported.

Decision Making Model	Main Tenet	Primary Reference	Applications in Health Care
	Mutual respect Partnership Patient education Patient participation Process/stages		
Family-centered	A patient prefers that his/her families handle medical decision matters.	(Hyun, 2003)and (Schafer, et al., 2006)	This framework of decision making is commonly seen in Asian American and Latino patient populations.
Degner and Beaton's patterns of decision making	This framework includes four major patterns of decision making: provider- controlled, patient-controlled, jointly- controlled and family-controlled patterns of decision making	(Degner & Beaton, 1987)	Highly applicable in cancer patient populations where huge variations in patient's level of participation in decision making are well-documented.
Decision support framework (DSF)	Involves three stages: I. Assessment of patient and provider's determinants of decisions. II. Delivery of decision support interventions that address the determinants of decisions and preparation of patient and provider for decision making through a structured follow-up interaction. III. Evaluation of the decision support and its success in improving the quality of decision making process, decisions, and outcomes of decision.	(O'Connor, et al., 1998)	Highly applicable in decision making conditions where there is ample time to deliberate on choices and involves the use of decisional aids. The DSF is less useful for decisions with no immediate stimulus for deliberation, when the decision's key challenge is implementing and maintaining the decisions, and when decisions are rapid, repetitive, automatic, impulsive or deferential to authority.
Decisional model of stress and coping	Decision conflict occurs when a choice of options is personal, transactional, and relational in nature.	(Balneaves & Long, 1999); (Janis & Mann, 1977); (Lazarus & Folkman, 1984)	This model has been empirically tested in women with breast cancer diagnosis.
Conflict-theory model of decision making	Posits decisional conflicts as sources of stress and describes five basic coping patterns of decision making: unconflicted adherence, unconflicted change, defensive avoidance, hypervigilance, and vigilance	(Janis & Mann, 1977)	Highly applicable to all consequential decision making processes, especially during emergency conditions.
Normative theory	Decisions are made relative to a clearly recognized probability of benefits and consequences from all possible options.	(Hansson, 2005)	Increasing applicability in oncology treatment decisions as reflected by the rising number of cost-effectiveness analysis comparing one cancer treatment option to others. This is largely driven by the limited resources in health care.
Behavioral decision making	Variations in the decision frames and vagaries in the values individuals place on different choices can cause predictable shifts of preference that are not rational.	(Tversky & Kahneman, 1981)	The way physicians frame a decision problem to a patient could affect the patient preference. This is clearly demonstrated when the benefits of a treatment are overtly emphasized and the risks are downplayed.
Coherent likelihood judgments	Adheres to principles of Probability Theory which include unity summation, generalized disjunction principle, extension principle, conjunction rule (joint and marginal probabilities), general product rule, independence product rule, and Baye's rule	(Yates, 1990)	This theory is best demonstrated when two cancer therapies are compared in a randomized controlled trial and a treatment is chosen based on the superior outcome of one therapy over the other in terms of survival benefit or improvement in quality of life.
Naturalistic	Decisions are made in an uncertain and constantly changing environment based on different personal and situational factors.	(Zsambok, 1997)	Highly applicable in patients with newly diagnosed prostate or breast cancer where personal factors were found to be influential in the treatment decision process.

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Heuristic-Systematic processing model	Involves heuristic processing and systematic processing in arriving to a decision.	(Chaiken, 1980); (Chaiken & Maheswaran, 1994)	Applicable in prostate cancer patients who were found to use expert opinion heuristic due to decisional uncertainty and systematic information processing to deal with the diagnosis.
Prospect theory	Two main tenets: - Describes how individuals regularly assess potential losses and gains. - The way the outcomes are framed influences the preferences of the decision maker.	(Kahneman & Tversky, 1979)	It has a controversial applicability in cancer treatment decision making, especially when monetary gains or losses are in consideration because of the argument that no one should decide about cancer treatments based on monetary values. Putting a monetary value on someone’s life poses a major ethical debate.
Social Decision Theory	Combining individual choices into collective decisions.	(Hansson, 2005)	- Very limited applicability in individual health care decision making except at the policy level involving a specific patient population. - In countries with national health insurance, social decision theory guides the policy maker’s decision on what treatment to cover or deny and at what cost.