What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

Bachelor thesis Psychology and Health

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Abstract

Introduction: In prostate cancer (PC), no treatment has been recognized as the most appropriate treatment, which results in a different role of the patient in the treatment decision-making process. Patients have to consider a lot of aspects in choosing a treatment, like side effects, prognosis and influence on the quality of life (QoL). What are the factors that determine the choice for the treatment of PC? Is this choice influenced by clinical, demographic and psychosocial factors?

Methods: The search engine PubMed was used to carry out a computerized search of the literature. After careful review, 18 articles fulfilled the selection criteria and were included in this review.

Results: It appeared that a lot of different factors influence the treatment decision-making process in PC. Stage, comorbidity, spirituality, race, culture, age, socioeconomic status, education, influence of the health-care provider, coping, partner, social support and personality influence the treatment decision-making process in their own way.

Discussion: Regarding to the aspects stage, race, age, partner and social support definitive conclusions can be made. Especially the aspects comorbidity, spirituality, culture, socioeconomic status, education, influence of the health-care provider, coping and personality need special attention in future research. Conclusions regarding these aspects have to be treated with caution because of the low quality assessed quality of the studies in the methodological quality assessment. Future research should give further indications of how these aspects can be implemented in the decision-making process.
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Introduction

In The Netherlands, more than 6000 men are diagnosed with prostate cancer (PC) every year. The percentage of patients with PC that are alive after five years is 83%. After ten years, this percentage decreased to 69% (Van Bohemen, 2007). Due to an improved survival rate the number of PC survivors is growing (Mols, 2007).

The prostate is a gland below the bladder, which produces sperm fluid and prostate fluid. After the age of 50, men often develop prostate problems, like infections or an enlarged prostate. In case of a malicious prostate deviation, one or more tumors can be found in the prostate. This deviation is called PC. In most cases small, concealed cancer cells can be found in the prostate, which will never grow out to a problematic form of cancer. In case of a problematic form of cancer, cancer cells spread into the surrounding tissues, through which the cells can spread to the blood or lymphatic vessels into the rest of the body (Van Bohemen, 2007).

PC can be treated in different ways, like watchful waiting, prostatectomy, hormone therapy, radiotherapy and brachytherapy. In other types of cancer, like thyroid cancer or bowel cancer, some treatments are inferior to other treatments. In case of one superior treatment, choosing the most appropriate treatment is more a choice of the health-care provider than the patient’s choice. In PC, no treatment has been recognized as the most appropriate treatment, which results in a different role of the patient in the treatment decision-making process. Patients have to consider a lot of aspects in choosing a treatment, like side effects, prognosis, influence on the quality of life (QoL) etcetera. Men often have to choose between a shortened but relative healthy life, with a relative high QoL, or a prolonged life expectancy because the cancer is stopped from further development by the treatment. However, because of the possible side effects of treatments, like erectile problems, mood changes, development of breast tissue, impotence and incontinence (Van Bohemen, 2007), the QoL decreases.
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Choosing a treatment is a difficult decision for the patient and his environment (Aerijts Averink, 2008). Therefore it is important that the health-care provider provides the right information.

The last couple of years, men newly diagnosed with PC are becoming more involved in their healthcare decisions at the time of diagnosis. In 1993, Davison et al. reported that 60% of men had a preference for a passive role in medical decision making. This number decreased to 32% in 1996.

Patients who are more involved in treatment decision making report a better QoL following treatment (Deadman et al., 2001). In a study of Fisher et al. (2006) 78% (n=98) of PC patients indicated that their health-care provider had informed them about more than one treatment option before a treatment decision was made. Three types of decision making are usually distinguished in studies related to treatment decision-making. The first type is active or autonomous decision-making; the patient is solely responsible for the decision and the health-care providers’ preferences are not prominent, because his/her role is that of a counselor. The second type of treatment decision-making is the type in which the patient has a collaborative or shared decision-making role. In this type, both patient and health-care provider share responsibility for the decision-making (Davison et al., 1997 & Wong et al, 2000). It has been demonstrated that involvement in treatment decision-making is preferred by patients who feel well informed (Davison et al., 1997). Finally, a passive decision-making style can be distinguished. In this decision-making style, the patients’ healthcare provider makes the treatment choice. A study of Wong et al. reported that in 2000, 25% preferred to play a passive role in treatment decision making. This may be caused by age and education, which will be further discussed in the results section.

A study of Degner et al. (1997) demonstrated that preferred and assumed roles in treatment decision making of men with PC match in approximately 35-65% of the cases. Because of this, assumed roles are not reliable to indicate the patients’ level of participation. Sixty percent (n=75) of the participants stated they made a treatment decision in collaboration with their health-care provider. A minority of 18% indicated that they made the treatment choice autonomously. Twenty-two percent of the
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Patients was not involved in treatment decision making, so the health-care provider made the treatment choice for them.

Satisfaction rates did not differ significantly between patients who had decided autonomously and those who had a passive or collaborative decision making style. According to Davison et al. (2002), PC patients prefer to play an active or collaborative role in treatment decision making. Men who prefer either an active or a collaborative role in medical decision making want significantly more information relating to prognosis, stage of disease and treatment options and are therefore more active in seeking treatment information (Blanchard et al., 2002).

What are the factors that determine the choice for the treatment of PC? Is this choice influenced by clinical, demographic and psychosocial factors? Which aspects determine the preferred role in treatment decision-making? These questions will be answered in this review. The target of this review is to clarify the factors that influence the choice for a treatment, so health-care providers and patients can take this into account while making a choice for treatment of PC.
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Methods

Search strategy

The search engine PubMed was used to carry out a computerized search of the literature on 1 February 2012. The search strategy consisted of the terms ‘prostate cancer’ and ‘treatment decision’ combined with other key terms related to clinical, demographic and psychosocial aspects that determine treatment decision making.

For demographic aspects, the terms ‘religion’, ‘race’, ‘culture’, ‘age’, ‘SES’ and ‘education’ were used. To search more information about clinical aspects, the terms ‘stage’ and ‘comorbidity’ were included. The terms ‘coping’, ‘partner’, ‘social support’ and ‘personality’ have been included to find more literature about psychosocial aspects.

There were no restrictions with regard to the years of publication. The search yielded 1852 hits.

Also the view of the patients’ partner was included in the selection of literature, because factors like the mental state of the partner, the quality of the relationship may also influence the treatment decision-making process.

Selection criteria

Studies were included for the following reasons:

1. If they evaluated the relation between PC, treatment decision and demographic, clinical or psychosocial aspects;
2. If the publication was an original article (no poster abstract, letter to the editor etc.);
3. If the article was published as a full report in English and
4. If the publication was published in a peer-reviewed journal.

Studies that met the following criteria were excluded:
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1. If the article was an individual case report or review;

2. If the study was focused on end-stage cancer patients, because this patient group is dealing with specific end-of-life issues;

3. If the study did not provide new information.

The described inclusion and exclusion criteria were applied to our initial 1852 hits. Based on their titles and abstracts, 36 hard copies were obtained and reviewed. After careful review, 18 articles fulfilled the selection criteria and were included in this review. The flow chart of this selection procedure is shown in Figure 1.

Quality assessment

The methodological quality of each of the selected articles was independently assessed based on established criteria for systematic reviews (Table 1).

Table 1. List of criteria for assessing the methodological quality of studies on demographic, clinical and psychosocial aspects of treatment decision making.

<table>
<thead>
<tr>
<th>Positive if with respect to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study population</td>
</tr>
<tr>
<td>A description is included of at least two sociodemographic variables (e.g. age, employment status, educational status)</td>
</tr>
<tr>
<td>A description is included of at least two clinical variables of the described patient population (e.g. tumor stage at diagnosis, treatment)</td>
</tr>
<tr>
<td>Inclusion and/or exclusion criteria are described</td>
</tr>
<tr>
<td>Participation and response rates for patient groups have to be described and have to be &gt;75%</td>
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<table>
<thead>
<tr>
<th>Study design</th>
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<tr>
<td>The study size is consisting of at least 50 patients (arbitrarily chosen)</td>
</tr>
<tr>
<td>The process of data collection is described (interview or self-report, etc.)</td>
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<table>
<thead>
<tr>
<th>Results</th>
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<tbody>
<tr>
<td>The results are compared between two groups or more (e.g. healthy population, groups with different treatment or age) and/or results are compared between at least two time points (e.g. pre- versus post-treatment)</td>
</tr>
<tr>
<td>Mean, median, standard deviations or percentages are reported for the most important outcome measures</td>
</tr>
<tr>
<td>Statistical proof for the findings is reported</td>
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</table>
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Each item of a selected study, that matched our criteria, was assigned 1 point. If an item did not meet the criteria or was described insufficiently or not at all, 0 points were assigned. The highest overall possible score is 9. Studies scoring 8 points or more were arbitrarily considered to be of ‘high quality’. Between 5 and 7 point, studies were labeled as ‘adequate quality’. ‘Low Quality’ is the label used for studies scoring <5 points. The quality scores of the selected articles ranged between 1 and 9 points. An overview of the selected articles and their quality score is summarized in table 4.

Figure 1. Flow diagram of papers accepted and rejected during selection procedure. *The selection criteria are described in the methods section.
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Results

In this systematic review, Gleason scores, PSA grades and different types of treatments are mentioned. More information about treatment types in PC (enclosure 1) and PC staging (enclosure 2) is provided in the enclosures.

Study characteristics

In total, 18 studies were included, all published between 2000 and 2012. The main findings and the quality scores are summarized in Table 2.

Table 2. Overview of all included studies sorted on subject

<table>
<thead>
<tr>
<th>Aspect</th>
<th>First author, country, year</th>
<th>Study population</th>
<th>Results</th>
<th>Quality score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical aspects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>Neulander, USA, 2000</td>
<td>54 old patients, mean age 76.4 years</td>
<td>Treatment of PC should not be deferred in patients aged &gt; 75 years with a good performance status when the biopsy has a Gleason score &gt; 6 and the serum PSA level is &gt; 10 mL.</td>
<td>5</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>Chamie, USA, 2011</td>
<td>1031 patients with localized PC</td>
<td>Compared with subjects without any comorbid conditions, only men with moderate-severe chronic obstructive pulmonary disease were less likely to receive definitive treatment for their PC. Men with all other individual comorbidities were equally likely as men without comorbidity to receive definitive treatment. Compared with men without any comorbidities, a higher hazard rate for non-PC mortality was identified among men with diabetes without end-organ damage, peripheral vascular disease, moderate-severe chronic obstructive pulmonary disease, diabetes with end-organ damage, those in need of a mobility device and men with history of alcoholism.</td>
<td>8</td>
</tr>
<tr>
<td><strong>Demographic aspects (religion, race, culture, age, SES)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spirituality</td>
<td>White, Canada, 2006</td>
<td>29 PC patients</td>
<td>Spirituality appeared to influence all aspects of the cancer experience. Most participants intensified their use of spiritual practice after a diagnosis of PC.</td>
<td>1</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Race</th>
<th>Steenland, USA, 2011</th>
<th>314 PC patients, younger than 75 years old, from 33 different countries</th>
<th>Poor communication with their health-care provider was reported more among African Americans than whites. White men with PC had prostatectomy more frequently than African Americans, although data suggest this may be caused more by income differences than race.</th>
<th>7</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Wagner, USA, 2011</td>
<td>435 PC patients</td>
<td>Black men who chose prostatectomy were 5 times more likely to make independent decisions. White men who chose prostatectomy were twice as likely to be influenced by the desire for cure and less likely to consider the side effects of impotence and incontinence. An opposite effect was found in black men, whose decision regarding prostatectomy tended to be more strongly influenced by these side effects.</td>
<td>7</td>
</tr>
<tr>
<td>Culture</td>
<td>Feldman-Stewart, Canada, 2011</td>
<td>659 PC patients from Canada, Italy, England, Germany, Poland, Portugal, Netherlands, Spain and Turkey.</td>
<td>Almost all participants from these countries want to participate in their treatment decisions. Although there were country-specific differences in the amount of information required, wide variation within each country suggests that information that patients feel is essential or desired for decision making should be addressed on an individual basis in all countries.</td>
<td>8</td>
</tr>
<tr>
<td>Age</td>
<td>Fisher, The Netherlands, 2006</td>
<td>126 PC patients</td>
<td>Most patients felt they had participated in treatment decision making. Older patients and those with advanced disease more frequently reported not having been involved in decision making. Satisfaction with treatment decision making was related to age and role in decision making but not to stage of disease or treatment modality. Younger men were least content when they had not been involved in decision making.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Sidana, USA, 2012</td>
<td>488 men &lt; 50 years, diagnosed with Gleason score 6 between 2001 and 2005</td>
<td>Young PC patients with college education or a high annual income, were more likely to consult three or more doctors. Doctors recommendation was the most influential information source. Internet was the second most frequent information source in young patients. Patients with higher education and higher income considered sexual function more important than urinary function in treatment decision making.</td>
<td>9</td>
</tr>
</tbody>
</table>
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| SES | Rayford, USA, 2006 | - | As a consequence of lower educational levels and economic circumstances, diagnosis and treatment of PC in men of low socioeconomic status are generally later. Improving outcomes required careful post-treatment follow-up. Education and well-informed advice will result in improved detection of PC, improved dialogue with the health-care provider so patient participation in treatment decision making is enhanced and improved detection and management of post treatment complications. | X |

**Psychosocial aspects**

| Coping | Christie, USA, 2008 | 57 PC patients | Discussing treatment options with others, prior to beginning treatment for PC, significantly contributed to improvements in affect 1 and 6 months following treatment. Discussing treatment options with patient’s social networks predicted a decrease in negative affect 1 and 6 months following treatment, while discussions with health-care providers predicted an increase in positive affect 1 month following treatment. | 8 |

| Partner | Davison, Canada, 2002 | 80 couples; PC patient and partner | Men had a preference to play either an active or a collaborative role in decision making with health-care provider. Majority of partners wanted to play a collaborative role in decision making. Prognosis, stage disease, treatment options and side effects are top 4 information preferences. | 7 |

|  | Boehmer, USA, 2001 | 7 couples; PC patient (metastasized PC) and partner | Many men did not share their prostate-related health problems with their wives and some men choose their treatment without much spousal consideration. | 3 |

<p>|  | Zeliadt, USA, 2010 | 166 couples; PC patient and partner | Partners often attended clinic visits and are very involved in discussions about treatment options with PC patient and providers. Provider encouragement of participation by partners greatly facilitated shared decision making between patients and partners. | 8 |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Sample Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street, Australia, 2009</td>
<td>50 couples; PC patient and partner</td>
<td>Difference in reactions regarding to psychosocial adaptation of female partners living with men with a diagnosis of localized or metastatic PC. Some women scored high on anxiety and depression measures which led to reduced coping skills and poorer adaptation. The non-distressed group reported emotional adaptation. The majority of women displayed a high level of resilience.</td>
<td></td>
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<tr>
<td>Kazer, USA, 2010</td>
<td>17 unpartnered men with PC</td>
<td>Unpartnered PC patients appeared to be very self-reliant both in managing the emotional responses associated with PC and managing the day to day tasks associated with disease management and self-care. The influence of the healthcare team may be higher than in partnered men. Unpartnered men reported positive attitudes and confidence in healthcare team as the main coping mechanisms.</td>
<td></td>
</tr>
<tr>
<td>Chamie, USA, 2011</td>
<td>418 low-income PC patients</td>
<td>Married men with fewer that two members in their social network were more likely to have undergone prostatectomy, although marital status is often used as a proxy for social support and partner may impact treatment type more that the extent of the social matrix.</td>
<td></td>
</tr>
<tr>
<td>Orom, USA, 2008</td>
<td>125 PC patients</td>
<td>Optimism and treatment decision-making self-efficacy were associated with less difficulty and greater satisfaction with the treatment decision-making process. Effects of optimism on difficulty and satisfaction were partially mediated by self-efficacy for making the treatment decision. Men with PC and who are low in optimism may be at greater risk for treatment decision-making difficulty and lack of treatment decision-making satisfaction, in part, because they have lower confidence in their ability to make the decision compared with those who are more optimistic.</td>
<td></td>
</tr>
<tr>
<td>Davison, Canada, 2011</td>
<td>150 PC patients newly diagnosed with PC</td>
<td>At the time of diagnosis, the majority of men wanted to be involved in treatment decision making and have access to information. Our findings suggest that the type and amount of information men want to access are dependent on health information-seeking behavior.</td>
<td></td>
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</table>
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Clinical aspects

Stage

According to a study of Fisher et al. (2006) older patients with advanced disease, report less preference for playing an active role in treatment decision making. The relation between stage of disease and participation in the treatment choice may be caused by the fact that fewer treatment options remain when metastases are discovered. The frequency of passive decision making in patients treated with hormone therapy, which is most frequently used in advanced PC, was higher than found in lower stage PC. This results in a treatment decision making process in which PC patients are less often involved compared to their health-care provider. However, patients with advanced disease prefer not to participate in the treatment choice once the PC has become incurable, because patients with a higher stage disease are not less satisfied with their treatment decision making process (Benbassat et al., 2006). Some patients with advanced PC might have a preference to ignore the disease. A study of Cassileth et al. (1989) found most men with advanced PC (70%) discussed treatment choice with someone at home, but 30% of the PC patients either have nobody to talk to or do not want to discuss the issue. Men with a curable, lower stage disease reported lower satisfaction when they had gone through passive decision making compared with those who used the collaborative decision-making style.

In summary, higher staged PC patients are often less involved in the process of decision-making. Even though these patients may be less involved, this is not directly related to the level of satisfaction with the treatment process.

Comorbidity

Treatment deferral is more common when the PC patient is older aged and has multiple comorbidities (Desh et al., 1996 & Kane et al, 2003). According to Chamie et al. (2011) comorbidity is poorly integrated into PC decision-making. The benefits of treatments concerning survival are
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realized ten years after treatment (Bill-Axelson et al., 2005). If the patient is not expected to live longer than ten years, it has to be considered if the patient has to undergo a treatment. In elderly or those with significant comorbidities treatment does not automatically prolongs the survival but after treatment, patients do suffer post-treatment side effects (Hu, Gold, Pashos, Mehta & Litwin, 2003). According to Chamie et al. (2010) specific comorbidities that influence the survival are poorly integrated in treatment decision-making in PC. PC patients with connective tissue disease, moderate-severe COPD and prior malignancy (P=0.003), mobility device (P=0.001) and advancing age (P<0.001) are less likely to undergo definitive treatment. A history of alcoholism (P=0.01) and current smoking (P=0.001) predicts a higher chance of undergoing definitive treatment. Obese PC patients have a higher incidence of definitive treatment compared to patients with normal weight (P=0.06). In table 3, the five-year and ten-year survival rate for different comorbidities are summarized.

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>5-year survival rate (%)</th>
<th>10-year survival rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC patients without comorbidities</td>
<td>88</td>
<td>75</td>
</tr>
<tr>
<td>PC patients with COPD</td>
<td>50</td>
<td>12</td>
</tr>
<tr>
<td>PC patients with diabetes with end-organ damage</td>
<td>57</td>
<td>36</td>
</tr>
<tr>
<td>PC patients in need of a mobility device</td>
<td>57</td>
<td>17</td>
</tr>
<tr>
<td>PC patients aged &gt; 75</td>
<td>64</td>
<td>43</td>
</tr>
</tbody>
</table>

Compared with men without comorbidities, only men with a diagnosis of moderate-severe COPD had a lower risk of undergoing definitive treatment, which can be explained by a lower rate of prostatectomy among PC patients with COPD. Moderate-severe COPD patients had a similar rate of undergoing radiotherapy as men without comorbidities. A lower rate of definitive treatment or prostatectomy was found among PC patients with higher age, compared to younger men or patients with a lower-risk disease. Patients with a mild liver disease and those with a history of alcoholism had a higher probability of undergoing definitive treatment compared to men without comorbidities and no history of alcoholism. Patients with the comorbidities COPD, diabetes with or without end-organ
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damage and pulmonary vascular disease (PVD) had a higher risk of mortality than men without any comorbid conditions. A higher non-PC mortality risk was found in patients with a mobility device, those with a history of alcoholism and of advancing disease.

In summary, comorbidity is poorly integrated into PC decision-making. A mismatch between comorbidity-associated overall survival and treatment often occur. The benefits of treatments concerning survival are realized ten years after treatment, so if the patient is not expected to live longer than ten years, it has to be considered if the patient has to undergo a treatment.

Demographic aspects

Spirituality

The last couple of years, the popularity and use of complementary and alternative medicine by PC patients has increased. Those complementary and alternative medicines may consist of religious ceremonies and rituals like prayer, as well as mind-body and energy therapies. Twenty-five percent of men with PC use those spiritual or mind-body practices (Salmenpera, 2002).

After a diagnosis of PC, a lot of patients intensify their spiritual practices, which influence all aspects of the cancer experience (White et al., 2006). According to Stefanek et al. (2005), an improvement in psychosocial well-being can be accomplished by spiritual support, expressing spiritual connectedness, receiving support from a spiritual community and the reframing of stressful events. A study of Krupski et al. (2006) reported a higher health-related QoL in PC who used spiritual practices. The effect of spirituality may be accomplished by reframing the diagnosis of PC in a more positive light so patients can draw meaning from the cancer experience.

In a study of White et al. (2006), several PC patients had problems with the underlying philosophy of Western medicine, which is focused on treatment of the tumor rather than the whole person and thereby ignores spiritual aspects of the illness experience. Therefore, some patients tended to focus on healing instead of curing and search for treatment options that focus on healing. The need of
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some PC patients to explore the meaning of the cancer diagnosis and treatment conflicted with their health-care providers, who want them to make a treatment decision. Nine percent of the participants of a study of Eng et al. (2003), who were using complementary and alternative medicine, delayed some or all recommended treatments, while four percent declined some or all recommended treatments. The conventional cancer treatment is used as a backup by some patients, which can be used when the alternative approach has no effect.

This indicates that spiritual beliefs and practices play an important role in the formation of treatment choices for some patients. Health-care providers need to be aware of the concerns of patients about how conventional treatment may conflict with their spiritual beliefs and practices and need to be able to address those concerns. Because spirituality is associated with an improved QoL in PC patients, health-care providers need to acknowledge and support the spiritual resources these men bring to the cancer practice (White et al., 2006). According to Kurpski et al. (2006) PC patients need to be encouraged to embrace their spirituality so a better coping can be accomplished.

In summary, PC patients with a strong spiritual orientation may have different beliefs and perceptions about the process of curing the PC. Because of their focus on healing in the context of the mind-body and spirit, their treatment goals may be broader than those of their health-care providers. Therefore, some men may need space to explore the meaning of the PC diagnosis and treatment.

Race

According to Steenland et al. (2011) treatment decision making in PC varies by ethnicity. For example, prostatectomy is a less common treatment among African-American men, compared with non-Hispanic whites. Latinos were more likely to choose prostatectomy. A study of Wagner et al. (2011) showed that the autonomous treatment decision-making style is five times more likely among black PC patients who chose prostatectomy. When choosing prostatectomy as a treatment, the
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Influence of family and friends was stronger among black men than among white men, which may be associated with an higher probability of shared decision-making. This study also showed that black men who chose prostatectomy as a treatment for PC tended to consider cure, impotence and incontinence and not consider pain as important in their treatment choice, compared to black men who chose radiation. The relationship between a concern for impotence/incontinence and choosing radiation was only found among white PC patients. In black men the opposite effect was found; their decision regarding prostatectomy tended to be more strongly influenced by these side effects.

The desire for cure was twice as likely to influence prostatectomy as a treatment choice in white PC patients, while the side effects impotence and incontinence had less influence on the treatment decision. Prostatectomy was more likely to be chosen by white PC patients, but income may be a more important predictor for prostatectomy than race.

Hofmann et al. (2003) suggested that the information provision for black men by health-care providers may differ from white PC patients, either because health-care providers assume that black patients will be less receptive to prostatectomy or because they think these men will have a low adherence to the health-care providers’ advice. In a study of Kilbridge et al. (2009) poor communication with their health-care provider was four times more likely among African American PC patients than whites, after adjustment for income, age, education and comorbidity. Poor communication was associated with choosing no treatment at all. Sidana et al. (2012) found that health-care providers were more frequently cited as an information source in treatment decision making by younger, white PC patients compared to younger non-white patients.

In a study of Orom et al. (2008) black PC patients reported less satisfaction with the decision-making process and also reported greater treatment decision-making difficulty. However, being a black PC patient was also associated with a higher score on optimism. In this study, race emerged as a predictor of perceptions only when controlled for patients’ optimism.
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Because black men have been found to have significantly higher rates of PC incidence and mortality than other racial or ethnic groups, more research in this area is needed (Altruske et al., 2009).

In summary, treatment choices and aspects that influence the final decision differ between races, so it is important to consider the influence race during the process of treatment-decision making.

Culture

A study of Feldman-Stewart et al. (2011) showed that almost all participants from Canada, England, Germany, Italy, The Netherlands, Poland, Portugal, Spain and Turkey wanted to participate in the treatment decision-making. The amount of information required by patients differed between countries, but also a wide variation of this information needs within the countries was found. The vast majority of PC patients reported taking an active role in the decision making process and, for all countries except Italy and Turkey, this percentage increased when the participants reported their preferred role if they were to make their decision on that day. No differences were found in the active-passive proportion among countries. Participants in this study ranked different questions regarding PC decision making. Only 50% of patients in five countries (Canada, Germany, Italy, Poland and Spain) had any questions rated either essential or desired. These results are summarized in table 4.

Table 4. The most frequently rated questions essential for decision making in each country. Retrieved from Feldman-Stewart et al. (2011).

<table>
<thead>
<tr>
<th>Overall rank</th>
<th>Question</th>
<th>Most frequent</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How long can I safely take to make up my mind?</td>
<td>Spain</td>
<td>43</td>
</tr>
<tr>
<td>2</td>
<td>If the PC is not treated will I die from it?</td>
<td>Italy</td>
<td>43</td>
</tr>
<tr>
<td>3</td>
<td>If the PC is not treated how fast will it spread?</td>
<td>Canada, England, Germany,</td>
<td>45, 48, 45, 34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Netherlands</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>What do we do if the cancer comes back?</td>
<td>Portugal</td>
<td>26</td>
</tr>
<tr>
<td>20</td>
<td>Where do I go for treatment?</td>
<td>Poland, Turkey</td>
<td>34</td>
</tr>
</tbody>
</table>

In summary, variation in information need was wider within countries than between countries.

Age
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The number of men living with PC is increasing, because PC is typically a disease of older men. On the other hand, the outcome of treatment is improving and therefore our population continues to age (Kazer et al., 2010). According to Neulander et al. (2000) because of PSA testing, PC is being diagnosed at an earlier stage and age and more attention is paid on curative treatment. Careful monitoring, which is also known as watchful waiting, is still advocated by many health care providers as the most appropriate initial management for elderly PC patients. According to Neulander et al. (2000) it is better for PC patients with moderately differentiated clinically localized PC and a life expectancy of less than 10 years to be safely monitored and to defer treatment until progression. However, treatment should not be deferred in patients aged 75 years that have a good performance status and a Gleason score > 6 and the PSA level is > 10 mL.

According to a study of Cassileth et al. (1989) half of patients > 60 years preferred a passive decision making style, and thereby leave the treatment choice to their health care providers. A passive role is preferred by older men and men who are married and have a poor health status (Benbassat et al., 1998).

Younger PC patients have to face the dilemma of treatment choices which prolong the life expectancy against the chance of treatment morbidity that impacts the QoL. This dilemma is relatively greater for younger PC patients, because their life after a cured PC lasts longer so the impact of comorbidities, like impotence and incontinence, is greater. Younger PC patients report ‘health-care providers’ recommendation’ as the most influential factor in treatment decision making. Sources like articles and internet were more commonly used by younger men selecting watchful waiting. Not surprisingly, internet was more frequently used as an information source by younger PC patients than by older PC patients (Steninga et al., 2002). These younger patients also consulted multiple health-care providers before they made a final treatment decision. Only two percent of younger men preferred a passive role in decision making, while 52% preferred shared decision making and 46% reported informed decision making by the patient himself as the most proper way
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of decision making. In a study of Sidana et al. (2012) the majority of young men with PC chose prostatectomy as treatment for PC, because this treatment was recommended by health-care providers because of the long life expectancy and this treatment is expected to provide the best chance of long-term cure. For younger PC patients, there was less support from health-care providers to treat PC with radiation therapy. By younger PC patients, radiation was often seen as a less aggressive therapy than prostatectomy. This group of patients also perceived the difficulty of treating PC if the tumor recurred after radiation, as an advantage of prostatectomy over radiation. Another perceived advantage of prostatectomy was a feeling of relieve PC patients reported when the prostate was removed from the body, which was found in younger and older PC patients. Younger men often choose radiation therapy because this therapy is less invasive, similar to what has been reported in older PC patients (Holmboe et al, 2000). According to Sidana et al. (2012), costs of treatment were not important in treatment decision-making in younger men, which was also reported in older men (Feldman-Stewart et al., 2004).

In summary, besides differences in treatment decision making styles and information sources, also a lot of similarities between younger and older PC patients have been found. The feeling of relieve after prostatectomy, factors that determine radiation therapy as a treatment choice and the importance of costs in treatment-decision making do not differ between younger and older PC patients. Differences were found regarding to information sources and finally treatments chosen.

Socioeconomic status

PC patients with a low socioeconomic status (SES) are a challenge to healthcare professionals. Specific educational programs are needed to improve treatment outcomes for these men, so a better understanding of PC including careful post-treatment follow-up can be accomplished (Rayford, 2006).

Health-care providers were cited as an information source by 80% of younger patients with annual incomes <$50,000, compared to 97% of those an annual income ≥ $50,000 (P=0.029). Younger
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Patients with an annual income >$100,000 often consulted three or more health-care providers during the treatment decision making process (P=0.003). For this group, sexual function was more influential in the treatment choice than incontinence (P=0.002) (Sidana et al., 2012).

Education

In a study of Sidana et al. (2012) the frequency health-care providers were cited as an information source during decision making increased with educational level. Younger PC patients who went to college were more likely to consult three or more health-care providers during the process of treatment decision making (P=0.003). Sexual functioning was more influential than incontinence in decision making for younger PC patients with a college or higher education level (P=0.0003).

The autonomous, active treatment decision making style was more preferred than shared decision making by PC patients with higher educational levels (P=0.011). PC patients with an university degree were more likely to prefer intense health information-seeking behavior instead of complementary, minimal or guarded health information seeking behavior (Davison et al., 2011).

Psychosocial aspects

Influence of health-care providers

Health-care providers inform patients about their diagnosis, prognosis and different treatment options. The influence of the health-care providers differs between patients groups. As seen in the previous sections, age, partner and education influence the role of the health-care provider in the process of treatment decision making.

A study of Krol et al. (2000) shows that men with PC especially want to be informed about medical-technical aspects of treatments. According to Mols et al. (2007) patients are often not well informed about the negative side effects of treatments. A systematic review shows that 6-93% of the cancer patients report adequate information provision as an unmet need throughout their cancer
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experience (Harrison, 2009). A study of Pieterse et al. (2011) showed that health-care providers informed patients infrequently about the choice they have for various treatments. Ten out of 25 patients were not informed about different treatment options. Health-care providers often explained the treatment they prefer to support a treatment instead of informing the patients about positive and negative effects of other possible treatments.

In a study of Diefenbach et al. (2002), brachytherapy plus external radiation was chosen because the health-care provider recommended this treatment. A PC patient who received no treatment within 6 months after diagnosis, was more likely to have had that course recommended by a friend, to have had poor communication with their health-care provider and have not followed the health-care providers’ recommended treatment. As seen before, the reported QoL of PC patients is better if they were involved in the treatment decision making.

In summary, a lot of PC patients experience a lack of information about the possible treatments in PC. Because health-care providers have a big influence in treatment decision-making, it is important for health-care providers to pay attention to all information needs of PC patients.

Coping

Coping, also described as the way how an individual handles a threatening situation, also influence the decision making process. According to Byrne (1964) there are two basic modes on how an individual copes with a threatening situation; repression or cognitive avoidance (which is defined as an orientation away from the threatening situation) and sensitization or vigilance (defined as an orientation toward the threat). According to the Transactional Model of Stress and Coping, seeking information is the most frequently used method to cope with a stressful event about which limited information is available. Information is a form of cognitive control that allows people to interpret an event and take action so the threat can be lessened (Blanchard et al., 2002). Davison et al. (2011) conceptualized information seeking as a form of cognitive control because it helps the individual to
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interpret the aversive event so the threat can be lessened and a sense of personal control is perceived. The preferred role in the treatment decision making process and the desired amount of detailed information are dependent on the individuals’ perception and evaluation of the situation, personal and situational factors (Lazarus, 1984).

Partner

Being diagnosed with PC is a deeply disturbing experience for men. A PC diagnosis threatens patients’ survival, while treatment brings along distressing complications, which threaten their self-image and masculinity. But the diagnosis PC is not only disturbing for patients; it is also disturbing for their wives. The partners of PC patients are faced with possible widowhood and changes in the quality of the life they shared with their husbands. Sexual dysfunction is an example of a treatment comorbidity that has an impact on the relationship (Boehmer et al., 2001). In a study of Boehmer et al. (2001), single men showed more interest in information about self-care compared to married men, perhaps because married men expect their wives to attend to those issues. Moreover, female partners mostly carry the responsibility for health maintenance and care for their husbands (Verbrugge et al, 1985). Therefore, oncologists and urologists often advise PC patients to discuss their diagnosis and treatment issues with their partners. Partners generally preferred a collaborative role in treatment decision making.

Boehmer et al. (2001) divides this triadic interaction process into three types, with differences in degree of involvement of the spouse and the type of coalitions that are formed between the patient, health-care provider and spouse. The first type of triadic interaction consists of a coalition between the health-care provider and patient. Men focus completely on the health-care provider, while their partners are almost excluded from the decision making process. In this type of interaction process, men’s descriptions of the treatment choice and their health problems prior to the diagnosis both lack a mention of their wife. These men tend to be focused on the health-care provider and therefore also do not mention discussions with their partners about treatment choices, because they desire
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more guidance from their health-care provider than their partners. Some partners even report that they have been excluded from their husbands health-care provider visits, which results in a poorly informed partner about discussions concerning the treatment decision. Some of these men do talk to their partners about their treatment choice, but their partners still report they were not able to question the treating health-care provider or could participate in the final treatment decision.

In the second type of decision making partners participate in the treatment decision making process, but not because men involved their partners, but because health-care providers initiated the participation of the partners into this process. There are no differences in attitudes and values of men compared to the first type of decision making, because men made no efforts to involve their partners during decision making. In some cases, communication with the patient was difficult so health-care providers initiated the participation of the patients’ partners to stimulate the communication. If the PC patient is frail, the health-care provider might also include the partner, so the partner can serve as an negotiator or interpreter which may result in an improvement in the quality of the communication between the health-care provider and patient.

Finally, in the third type of interaction process a coalition is formed between the partner and patient, while the health-care provider is the third party who interacts with the spousal coalition. In this type, PC becomes a joint affair for the couple. In contrast to the preceding types of interaction, participation of the partner in medical appointments is initiated by the patient and not by the health-care provider. The communication pattern and decision making style of the couple were not changed by the PC diagnosis. This type of decision making is often preceded by a relationship in which health problems were already shared prior to the diagnosis of PC.

Patients and partners identify prognosis, stage of disease, treatment options and side effects as most important information within the first 6 months after diagnosis (Davison et al., 1995). Sexuality was ranked as more important by men compared to their partners, whereas information on home self-care was higher ranked by partners.
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During initial treatment planning, at time of tumor recurrence and when the terminal stage is confirmed, partners of PC patients were more likely to be present (Davison and Degner, in press) to provide emotional support, serve as an advocate if necessary, facilitate transportation to the appointment, assisting in decision making, help patient verbalize questions and concerns, provide additional information to the health-care provider and interpret information the health-care provider provided (Blanchard et al., 2002).

Patient and partner may both be part of the treatment decision making process, however they may differ in the assessment of the risks and benefits of certain treatment options. A study of O’Rourke (1999) showed differences in the willingness of patients and partners to accept treatment ‘at any cost’; partners are concerned about the longevity of their husbands, while PC patients tended to focus on side effects of treatments.

According to Adelman et al. (1987) during clinical encounters, especially if it concerns an older patient, spouses and caregivers are frequently involved. Charles et al. (1997) formulated different roles for persons that participate in treatment decision making, which are shown in table 5.

Table 5. Different roles during treatment decision making (Charles et al., 1997)

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information gatherer, recorder or interpreter</td>
<td>Helps the patient to collect and remember information</td>
</tr>
<tr>
<td>Coach</td>
<td>Prompts the patient to ask the health-care provider more questions</td>
</tr>
<tr>
<td>Advisor</td>
<td>Advises the patient during the selection of a treatment</td>
</tr>
<tr>
<td>Negotiator</td>
<td>Arranges the time and/or place of the treatment</td>
</tr>
<tr>
<td>Caretaker</td>
<td>Supports the patients’ treatment decision.</td>
</tr>
</tbody>
</table>

Despite the benefits of a third person in health-care appointments, patients raise fewer topics, are less assertive and there is less joint decision making compared to appointments without this third person (Greene et al., 1994).
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Older female partners, assume a more active role during medical appointments and therefore also ask more questions (Beisecker et al., 1994). In a study of Blanchard et al. (2002), preferred roles in treatment decision making were studied. As previously noted, an active or collaborative role in decision making is preferred by the majority of PC patients and a passive role was not frequently mentioned. As described in table 6, collaborative and active roles were almost equally mentioned by men as most preferred roles in treatment decision making. Similarly, partners reported preferences to play a collaborative role (55%) or passive role (42%). A minority of 4% of the partners preferred an active role in treatment decision making.

Table 6. Preferred roles in treatment decision making, retrieved from Davison et al. (2002)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Active (%)</th>
<th>Collaborative (%)</th>
<th>Passive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With health-care provider</td>
<td>50</td>
<td>42,5</td>
<td>7,5</td>
</tr>
<tr>
<td>With partner</td>
<td>48,8</td>
<td>51,2</td>
<td>-</td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With patient</td>
<td>3,7</td>
<td>55</td>
<td>41,3</td>
</tr>
</tbody>
</table>

As mentioned in the coping section, seeking information is a way to cope with a stressful situation. Information sources used since diagnosis vary between patients and partners. In a study of Davison et al. (2002) men reported talking to a friend or relative (60%), talking to someone with PC (54%) and reading pamphlets from health-care providers’ office (54%), talking to health-care providers (46%) and reading newspaper articles (21%) as information sources. Partners reported another ranking in those information sources; talking to a friend or relative (59%), using the Internet (51%), talking to someone previously diagnosed with PC (43%) and reading pamphlets from health-care providers’ office (43%) and talking to health-care providers (29%). These results are summarized in table 7.

Table 7. Information sources used since diagnosis

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Patient (%)</th>
<th>Partner (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Talking to a friend or relative (60)</td>
<td>Talking to a friend or relative (58,8)</td>
</tr>
<tr>
<td>2.</td>
<td>Talking to someone with PC (53,8)/reading pamphlets from health-care providers’ office (53,8)</td>
<td>Internet (51,1)</td>
</tr>
<tr>
<td>3.</td>
<td>Talking to health-care</td>
<td>Talking to someone previously diagnosed</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>providers/Internet (46,3)</th>
<th>with PC (42,5)/reading pamphlets from the health-care providers’ office (42,5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Reading newspaper articles (21,3)</td>
<td>Talking to health-care providers (28,8)</td>
</tr>
</tbody>
</table>

In a study of Zeliadt et al. (2011) about half of the partners (49%) was with the patient at the clinic visit when PC was diagnosed and 48% of the partners was told the same day. The other 3% of the partners did not hear this news the same day. Most partners and patients (91%) discussed treatment options very frequently. In this study partners perceived a high level of involvement in the decision making process; 98% of the partners indicated providing emotional support as their role, 81% described their role as helping to weigh the pros and cons of treatments and 69% of the partners described their role as helping to make a treatment decision. Eighty percent of the partners felt encouraged of the health-care provider to participate in the decision process. A total of 67% of partners was highly satisfied with their patients’ health-care providers, which was significantly influenced by the health-care providers’ encouragement to the partner to ask questions and express opinions. Better patient health scores on the questionnaire Short Form Survey 12 (SF-12) were obtained if the partner reported higher levels of satisfaction with the treatment decision making process.

Because a PC diagnosis is distressing for patients and their partners and has physical and psychosocial influences on relationships, PC can be described as a relational disease (Sanders et al., 2006). The influence of PC on the partners’ lives may differ between older and younger partners, with older partners may have difficulties with adaptation to a partner with physical and/or psychological problems, while younger women, often raising children, may have to struggle with the effects of PC at the family and have to face a possible premature death of the partner. Not surprisingly, PC has an impact on the psychosocial state of partners. This is important, because partners’ play an important role in treatment decision making and in maintaining men’s quality of life by providing emotional support and physical care.
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A study of Soloway et al. (2005) showed that older partners defined their role as supporting their partners’ decision, while younger partners assumed a more active role in joint decision making. Most of the women in this study coped adaptively and showed a transition from initial personal distress to a state of acceptance that was relational and normalizing. For some women talking about their own distress concerning their husbands’ disease, started a process of negotiating and supporting their partners to cope with the effect of PC. The interpretation of PC differed between partners; some women felt the new situation put extra pressure on an existing fragile relationship, while other women feared a possible widow ship which led them to distance themselves.

In the preceded section, the needs of married men and their partners were discussed. However, not every PC patient is married. According to Kazer et al. (2010) little is known about the needs of unmarried PC patients. Kongrad et al. (1996) showed that married PC patients have a significantly longer survival than their unmarried counterparts, after controlling for age, race, stage and treatment.

In a study of Sidana et al. (2012), PC patients more frequently chose prostatectomy or radiation than active surveillance. Unpartnered men reported a higher difficulty during the treatment decision making process and were more worried about their decision. Denberg et al. (2005) demonstrated that curative treatments were more often undergone by married patients with localized PC compared to other study participants. Younger age and higher tumor grade were the strongest predictors of treatment, while the influence of marriage on treatment choice was at least as strong as race/ethnicity.

Unmarried men in a study of Kazer et al. (2010) were very self-reliant in managing the emotional part of PC and the day to day tasks associated with this disease. In this study, the role of the patients’ healthcare provider varied. Some unmarried patients did not mention their health-care provider, while the majority of this group accentuated the role of the healthcare team during the treatment decision making process. Unmarried patients reported books, internet and family and friends as
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information resources during decision making. According to Wallace and Storms (2007) unpartnered PC patients were highly influenced by family members during their treatment choice. Two main coping mechanisms were reported by unpartnered men. At first these patients often use positive attitudes; positive thoughts in getting through the PC experience. Confidence in the healthcare team was for other patients a critical factor in their successful coping with PC.

Unique to unpartnered men may be the substantial role of the healthcare providers during the process of treatment decision making, because these men do not have a partner to discuss the treatment options with. Side effects of treatments have another impact at unpartnered men, because they can form a barrier while pursuing new intimate relationships. Unpartnered men, especially men who lack social support may be at the highest risk for an ineffective coping style and its morbidity. In this study, some experiences concerning PC are similar to partnered men, but some findings emphasize the unique needs of unpartnered men during the disease.

In summary, because the importance of the partner in treatment decision making partners of PC patients’ should be involved in the process of decision making, if possible. Further, unpartnered men may require other needs than partnered men which highlights again the importance to adjust care to individual needs.

Social Support

A study of Gray et al. (2000) demonstrated that the fear of being stigmatized is the most important reason to limit the number of people with whom the patient talks about PC. Patients feared that people will behave differently after sharing their PC experience. According to Helgason et al. (2001) a lot of PC patients do not experience social support. Often the partner is the only source of support. QoL, coping and survival are related to the amount of social support. According to the findings of a Dutch study (De Kok, 2004), 61% to 78% of the PC patients have problems with social contacts due to PC.
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The amount of social support also influences the treatment decision-making process. According to Chamie et al. (2011) the perceived amount of social support is more important than the amount or size of the support. According to Chamie et al. (2011) marital status is not the best indicator of social support, because the quality of support and partner may impact the treatment type more than the extent of the social support system. In this study, partnered men with fewer than two social support members were more likely to undergo prostatectomy, while unpartnered PC patients who were morbidly obese, high school graduated or had a high-risk disease were less likely to choose prostatectomy as a treatment. Unexpectedly, this study also found that partnered men with two or more support members are less likely to undergo prostatectomy compared to partnered men with less than two supporting members. Radiation therapy was also not more common for unpartnered PC patients with two or more social members compared to partnered men with two or more social members. Partnered men with fewer than two support members might choose prostatectomy more often because the support system might provide the required care after prostatectomy. This is in line with the previous reported notion that in treatment decision-making, wives pay more attention to cure while men are more focused on treatment-related toxities. Another explanation of these special outcomes for partnered men with less social support, is that patients who have children are more likely to undergo an aggressive treatment. Men with a partner and more supporting members may also have a more passive role in the treatment decision-making process; they may ask fewer questions and might be less assertive. Patients with lower levels of support may choose a minimally invasive radical prostatectomy because this treatment may have less side effects.

PC patients in a study of Christie et al. (2008) spent significantly more time discussing treatment options with their social network than with the healthcare team. This emphasizes the important role of the social support network of men with PC. The conversations with health-care providers and family and friends in the treatment decision making process are also a way to make a treatment choice also social interactions. In these discussions new perspectives and another view on present
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Information can be obtained, which may lead to approach-oriented coping, such as planning and positive reframing.

Different types of emotional adjustment are associated with different personal characteristics. Discussions with the social support network, prior to the beginning of the treatment, significantly contributes to a decrease in negative affect 1 and 6 months after treatment. Discussing treatment with health-care providers facilitated positive affect 1 month following treatment. A greater discussion with the social support network was most often reported by patients who engaged in more pre-treatment social support and emotional expression.

Besides family and friends, also PC support groups have been cited as valuable sources of information and emotional support before and after treatment (Davison et al., 2009). PC patients in a study of Christie et al. (2008) showed better coping with the PC diagnosis if they spent greater time talking to family and friends about their options. According to the cognitive processing theory, sharing a stressful situation leads to integration of the stressor into peoples’ lives, which decreases the impact of the stressor. Research often relies on intrusive thoughts as indicator of cognitive processing, because cognitive processing is difficult to observe (Creamer et al., 1992). Improved emotional adjustment and a decrease in intrusive thoughts are expected if cognitive processing occurs. Higher levels of distress were reported by men who had difficulty discussing their PC with their partners. It appears that talking freely about cancer plays an important role in the adjustment of the patient.

Besides differences between individual patients in social support, there were also differences found between groups of patients who chose a particular treatment. In a study of Wagner et al. (2011) men who chose prostatectomy were more likely to emphasize the influence of the social support network. As reported in the social support section, friends and family also are one of the most frequently reported information sources during treatment decision making (Berry et al., 2006).

In summary, a lot of PC patients do not experience social support, while this plays an important role in treatment decision-making. A lot of PC patients with fewer social support members choose less
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Invasive treatments. Besides the influence of social support on the type of treatment, also the role during treatment decision-making is influenced.

**Personality**

In a study of Gwede et al. (2005) almost half of all PC patients experienced difficulty (49%) and/or distress (45%) during treatment decision making. In research with breast cancer patients indications were found that decisional regret and worse mental health in survivorship were caused by difficulties and low satisfaction with the treatment decision (Griggs et al., 2007). Difficulty and dissatisfaction are part of the overall burden of PC. Personality may be one of the factors that determines how much difficulty a patient experiences during decision making. According to Cervone (2004) enduring beliefs and their influence on appraisals and the ability of a person to cope with potential threats are activated by personality patterns. One example of a set of enduring beliefs about one’s relationship with the world are dispositional optimism/pessimism, which can be described as a generalized tendency to expect positive of negative outcomes (Scheier & Carver, 1987).

The well-being, distress and engagement in physical and psychosocial health behavior of patients are influenced by these optimistic or pessimistic attitudes (Deimling et al., 2006). Coping with the treatment decision making process is also predicted by optimism. Wong et al. (2000) reported that greater optimism among PC patients was associated with a desire for more PC-related information. Steginga et al. (2009) reported that PC patients who reported higher rates of optimism had less decisional and general PC uncertainty prior to the treatment and 2-12 months post-treatment, in part, due to a less threatening interpretation of the effect of their cancer on different aspects of their lives.

Optimism and pessimism influence coping with adverse events through multiple pathways. One pathway that leads to a better adjustment to adversity by optimistic patients, is the more active and effective engagement in the coping process. More optimistic coping responses led to lower levels of distress, compared to the coping responses of pessimistic patients (Scheier & Carver, 1987).
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According to Bandura (1977) optimistic patients report a higher self-efficacy, defined as confidence in their ability to succeed at the challenges the disease brings along, which leads to less anxiety, more adaptation of challenging goals, a more thoroughly and systematic salvation of problems and a longer persistence in the face of failure in times of challenging tasks. On the other hand, a loss of confidence in one’s ability, also defined as a low self-efficacy, leads to a less efficient use of analytic strategies, setting lower decisional goals and a lower performance (Wood & Bandura, 1989). In a study of Orom et al. (2008) treatment decision-making satisfaction and difficulty were predicted by dispositional optimism and treatment decision-making self-efficacy, which partially mediated the effects of optimism on the two outcomes. Another finding of this study was that the engagement in the process of decision making and treatment decisional uncertainty were influenced by the patients’ level of optimism. On the other hand, self-efficacy partially mediated the effects of optimism on treatment-decision making, which provides evidence of the relative importance of optimism and self-efficacy on the satisfaction and difficulty of the treatment choice. Optimism may act as a protective factor during stressful circumstances, because it is related with a higher self-efficacy and therefore leads to a higher satisfaction and less difficulty associated with the treatment choice.

In summary, treatment decision satisfaction and difficulty are predicted by optimism and pessimism, which are parts of personality. Optimism, pessimism and self-efficacy influence the whole treatment decision-making process.
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Discussion

This systematic review evaluated and summarized the influence of clinical, demographic and psychosocial aspects on the treatment decision-making process in PC. In the section below, for each reviewed aspect a short summary, the quality of the articles and implications for future research will be discussed.

Clinical aspects

Stage

Higher staged PC patients are often less involved in the process of decision-making (Fisher et al., 2006). This may be caused by the fact that fewer treatment options remain when metastases are discovered. Even though these patients may be less involved, this is not directly related to the level of satisfaction about the treatment process (Benbassat et al., 2006).

The selected study regarding to stage is certified as a ‘low quality’ study, which implicates that the impact of the study in this systematic review is limited. The ‘low quality’ is caused by no inclusion of sociodemographic variables and insufficient report regarding to inclusion and exclusion criteria, participation rates and statistical proof. Because no other studies regarding to stage were included, the conclusions of this area need to be treated with caution.

In future research, more attention should be paid on the impact of a high-stage PC on the preferred involvement in treatment decision-making. A lot of PC patients with high-stage PC are less involved in the decision-making process, but what kind of role do they want to fulfill in the process? It is important for health-care providers to keep this in mind. Also further research is needed regarding to the differences between the stages I, II and III in PC and the preferred role in decision-making.

Comorbidity

Comorbidity is poorly integrated into PC decision-making. A mismatch between comorbidity-associated overall survival and treatment often occur. The benefits of treatments concerning survival are realized ten years after treatment, so if the patient is not expected to live longer than ten years, it has to be considered if the patient has to undergo a treatment. Chamie et al. (2010) suggest that it
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is possible that patients and their health-care providers are given a false sense of prolonged life expectancy by single comorbid conditions. This is why patients and health-care providers need a physical cue to associate single comorbidity with death, like the oxygen tank in COPD highlights the seriousness of this disease. If the benchmark for treatment should be a ten-year mortality rate, PC patients of 65 years and older with COPD, diabetes with end-organ damage or PVD may not benefit from treatment. According to this study, a mismatch between comorbidity-associated overall survival and treatment often occur. This can be attributed to:

1. Patients and health-care providers are unable to predict the long-term survival by means of comorbidities and therefore misplace comorbidities in the treatment decision-making process.

2. QoL considerations, treatment availability and the preferences of the patient drive the decision to pursue treatment.

According to Chamie et al. (2010) PC patients with significant comorbidities should be triaged to radiotherapy, to prevent the perioperative risk of prostatectomy. A lot of studies highlighted the negative relation between worsening comorbidities and treatment rate. In addition to those studies, Chamie et al. (2010) report that a single comorbid condition at the time of the PC diagnosis may not seem overly concerning for a dismal prognosis.

The quality of the included study regarding to comorbidity is described as ‘adequate quality’, because this study did not report sufficient information regarding to participation rates or the process of data collection.

More information is needed about how comorbidity can be integrated into treatment decision-making and how comorbidities are related to age, preferred roles in decision-making. Also more research is needed regarding to the influence of different types of comorbidities on treatment decision-making in PC. Because comorbidities are poorly integrated into decision-making, more research is needed on how to implement comorbidities into this process.
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Demographic aspects

Spirituality

PC patients with a strong spiritual orientation may have different beliefs and perceptions about the process of curing the PC. Because of their focus on healing in the context of the mind-body and spirit, their treatment goals may be broader than those of their health-care providers. Therefore, some men may need space to explore the meaning of the PC diagnosis and treatment so the impact on their spiritual and emotional well-being can be explored and a better QoL can be obtained (White et al., 2006).

The included study regarding to spirituality is assessed as ‘low quality’. The only criteria which was criticized as sufficient was the aspect data collection, which means that the conclusions concerning this aspect have to be cautious interpreted. The researchers that accomplished this study, should keep those criteria in mind during research, so the quality of the studies can be guaranteed.

Future research should focus on the role of spirituality in treatment. How can the knowledge about spirituality be implemented into decision-making and treatment?

Race

Aspects that influence treatment choices differ between races, therefore it is important to consider the influence of race during the process of treatment-decision making. One of the differences between races is the influence of family and friends, which is for example stronger in black than in white PC patients. Also the decision regarding to prostatectomy was more influenced by side effects in black PC patients (Wagner et al., 2011).

The selected studies in the area regarding to race are assessed as ‘high quality’ and ‘adequate quality’ studies, because only a lack of the report of statistical proof was found in the ‘high quality’ study and the ‘adequate quality’ study did not fulfill the criteria regarding to inclusion and exclusion criteria and participation rates.
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Because black men have been found to have significantly higher rates of PC incidence and mortality than other racial or ethnic groups, more research in this area is needed (Altruske et al., 2009).

Culture

It appears that it is most important to address at individual basis which information is most important during PC treatment decision making. Variation in information needs was wider within countries than between countries (Feldman-Stewart et al., 2011).

The study concerning culture is assessed as a ‘adequate quality’ study, because the report of inclusion and exclusion criteria and participation rates were criticized as insufficient.

No studies that focused on the differences between cultures in treatment decision-making in PC were found. The only study, which was also included in this review, focused on information-seeking behavior. Therefore, future research should focus on the differences between cultures regarding to final treatment and preferred roles in decision-making. Future research should also take into account Asian countries and compare the influence of individual versus collectivistic cultures.

Age

Regarding to age, differences in treatment decision making styles and information sources were found, however also a lot of similarities between younger and older PC patients have been found.

The feeling of relieve after prostatectomy (Sidana et al., 2012), factors that determine radiation therapy as a treatment choice (Holmboe et al., 2000) and the importance of costs in treatment-decision making (Sidana et al., 2012) do not differ between younger and older PC patients.

Differences were found regarding to information sources and finally chosen treatments.

The two studies concerning age are of ‘high quality’ (lack of participation rates) and ‘adequate quality’, because of the insufficient report of inclusion and exclusion criteria and participation rates.

Studies that focus on PC patients who are younger than 60 years old are less common. Future research should also take into account this group of patients. Studies should take into account that results regarding to differences in age, may also be related to comorbidities.

Socioeconomic status
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

Low-SES PC patients may need specific educational programs to improve treatment outcomes for these men, so a better understanding of PC including careful post-treatment follow-up can be accomplished (Rayford, 2006). This group also cited health-care providers less frequently than high-SES PC patients. Therefore, low-SES PC patients might need another working method from health-care providers than high-SES PC patients. The study related to this aspect has no quality score, because this study is a review. This review does not take the quality of the included studies into account. Future reviews therefore should always try to take the quality of the included studies into account, so the quality of the review can be assessed.

There are only a few studies which focus on SES available, while this is an important influencing factor in treatment decision-making. Future research should focus on a way to include low SES patients, because this group of patients often have difficulties understanding of the whole decision-making and treatment process.

**Education**

Higher educated PC patients cite health-care providers more frequently as information sources during treatment decision-making. This group of PC patients preferred the autonomous decision-making style.

For the education section, no specific study was selected and therefore no quality analysis can be provided. The information in this section is provided by studies mainly concerning other topics. Like in SES, few studies about low-educated PC patients were available. More research in this area is needed.

**Psychosocial aspects**

**Influence health-care provider**

A lot of PC patients experience a lack of information about the possible treatments in PC (Mols et al., 2007). Due to the big influence of health-care providers in treatment decision-making, it is important for health-care providers to pay attention to all information needs of PC patients.
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

For the section concerning the influence of the health-care provider, no specific study was selected. Reason for this is that a lot of studies focus on the influence of the health-care provider focus on information provision. Inclusion of those studies would make this review too broad. Information reported in other included studies is discussed in this section.

Future research should focus on communicative aspects of treatment decision-making so the role of the health-care provider during decision-making will be clearer. For example what is the influence of empathy on treatment decision-making?

Coping

Seeking information is the most frequently used method to cope with a stressful event about which limited information is available. The preferred role in the treatment decision making process and the desired amount of detailed information are dependent on the individuals’ perception and evaluation of the situation, personal and situational factors (Lazarus, 1984).

The study regarding coping is assessed as a ‘high quality’ study; the only aspect which was rated as insufficient was the inclusion of sociodemographic variables.

If a PC patient knows how he copes in stressful situations, does this one beforehand influence treatment decision-making? Unfortunately this answer is still unanswered, because only studies about coping related to seeking information could be found. Therefore, future research should focus on the role of different coping styles in decision-making.

Partner

Because of the importance of the partner in treatment decision making partners of PC patients’ should be involved in the process of decision making, if possible. Further, unpartnered men may require other needs than partnered men which highlights again the importance to adjust care to individual needs. Because strong associations were found between partners’ perceptions of involvement and encouragement by health-care providers, reported satisfaction with the treatment process and more frequent conversations about treatment with patients, it is important for health-care providers to involve the patients’ partner during treatment decision making.
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

The selected studies regarding the partner section are assessed as ‘low quality’ (2), ‘average quality’ (2) and ‘high quality’ (2). Participation rates and the report of statistics for the most important outcomes are the weakest points of those studies. Specific scores for each included study are summarized in table 10.

More research is needed regarding to unpartnered men and their experiences with decision-making and the role health-care system can fulfill for this group of PC patients. Another aspect that did not receive enough attention is the influence of the family of the patient. Which role do children of PC patients play in decision making?

Social support

A lot of PC patients do not experience social support, while this plays an important role in treatment decision-making (Helgason et al., 2001). A lot of PC patients with fewer social support members choose less invasive treatments (Chamie et al., 2011). Besides the influence of social support on the type of treatment, also the role during treatment decision-making is influenced. It appears that talking freely about cancer plays an important role in the adjustment of the patient.

For the social support section, no specific study was selected. A lot of studies regarding the partner section also reported information about social support, which was used in the social support section. Future research should focus on the differences between different types of social support members, like children, parents, friends et cetera.

Personality

Treatment decision satisfaction and difficulty are predicted by optimism and pessimism, which are influenced by personality (Deimling et al., 2006). Optimism, pessimism and self-efficacy influence the whole treatment decision-making process. The study regarding personality is assessed as a ‘high quality’ study. The only criteria that was rated as insufficient was the criteria regarding the inclusion of clinical variables. Future research could focus on different personality types and the most preferred role in treatment decision-making, because only studies related to optimism, pessimism
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

and self-efficacy were available. More studies regarding to personality aspects and breast cancer patients were available, which can be used in personality research in PC.

General review included studies

Selected studies are of ‘adequate quality’ on average. No information about ‘participation rates’ and ‘inclusion and exclusion criteria’ are the general shortcomings of the included articles. The lack of those aspects makes it difficult to replicate the study and therefore the reliability of the study declines. Future studies therefore should always try to collect data of non-respondents, so a clearer view on the group of participants can be provided. For the transparency of the study it is also important to report the inclusion and exclusion criteria. A limitation of this systematic review is that some important factors in treatment-decision making are not discussed or are only shortly mentioned.

This systematic review also has some strengths that should be mentioned. First of all, this review covers a lot of aspects that influence treatment decision-making in PC. This review combines a lot of studies that focus on some aspects but do not link those aspects into one overview, which makes this review innovative. Further, this review included a lot of studies with a high number of patients (14 out of 18 studies more than 50 patients), which leads to a higher reliability of the results of those studies. Another strength of this review is that all included studies are published between 2001 and 2012, which means that these studies and therefore this review report recent results.

Clinical implications

In this review, a lot of areas of attention during treatment decision-making are discussed. The most important implication of this study is that during treatment decision-making, the patient as an individual is the most important. Which aspects are important in the patients’ life and therefore should be implemented in this process? Health-care providers should focus on the individual and consider with this individual which factors are important to implement during the treatment
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decision-making. Aspects that should be considered are for example the social support system and spiritual orientation of the patient. Because spirituality is associated with an improved QoL in PC patients, health-care providers need to acknowledge and support the spiritual resources these men bring to the cancer practice (White et al., 2006). According to Kurpski et al. (2006) PC patients need to be encouraged to embrace their spirituality so a better coping can be accomplished. The influence of the clinical aspects stage and comorbidities are often included in treatment decision-making. This systematic review showed that demographic and psychosocial aspects also are important predictors in treatment decision-making.

Conclusion

It appears that a lot of different factors influence the treatment decision-making process in PC. Stage, comorbidity, spirituality, race, culture, age, socioeconomic status, education, influence health-care provider, partner, coping, social support and personality influence the treatment decision-making process in their own way. Regarding to the aspects stage, race, age, partner and social support definitive conclusions can be made. Especially the aspects comorbidity, spirituality, culture, socioeconomic status, education, influence health-care provider, coping and personality need special attention in future research. Future research should give further indications of how these aspects can be implemented in the decision-making process.
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

References


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Helgason et al. (2001) retrieved from oncoline.com, 27 April 2012.


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Enclosures

Enclosure 1 – Information about treatment types in PC


<table>
<thead>
<tr>
<th>Treatment</th>
<th>Description</th>
<th>Patient profile</th>
<th>Side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watchful waiting</td>
<td>Careful observation and monitoring of the patient via 6-month PSA tests and annual transrectal ultrasound-guided biopsy.</td>
<td>Watchful waiting is often advised to men older than 65 years, men who have a life expectancy of less than ten years (Aeilts Averink, 2008), patients who do not report symptoms and of whom the tumor is expected to grow slowly (Rayford, 2006).</td>
<td>Cancer commonly progress slowly but inexorably during long-term follow-up. In 50% of the cases, active treatment may be needed within five years of diagnosis.</td>
</tr>
<tr>
<td>Prostatectomy</td>
<td>Surgical removal of the prostate (plus some surrounding tissue) which takes a hospitalization of 2-10 days*. A nerve sparing procedure may be feasible to help preserve erectile function.</td>
<td>According to Diefenbach et al. (2002) prostatectomy is more often chosen by PC patients who strongly believe that this treatment presents the best chance of cure and therefore is the best treatment choice for their longevity. For some patients, this treatment is more attractive than other treatments, because the tumor is completely removed (O’Rourke, 2001). This treatment is used in localized PC (Rayford, 2006).</td>
<td>Incontinence (5-10%) Erectile dysfunction (14-90%) Surgical complications (bleeding, blood clots, stroke, infection)</td>
</tr>
<tr>
<td>External-beam radiation therapy</td>
<td>Focused, high-energy rays or particles administered in fractionated doses to kill cancer cells. This therapy takes 7-8 weeks. Survival-rate after five years is 75% and 60% after ten years*.</td>
<td>Recommended if PC is localized in prostate or have only spread to nearby tissue. PC patients often chose radiotherapy because of the belief that this therapy is less invasive, less painful and has fewer and less severe side effects.</td>
<td>Urinary dysfunction (10%) Incontinence (&lt;2%) Erectile dysfunction (45-85%) Diarrhea Rectal leakage Irritated colon Blood in urine Fatigue</td>
</tr>
<tr>
<td>Brachytherapy</td>
<td>Implantation of small radioactive pellets (‘seeds’) into the prostate guided by imaging procedures. The pallets give off low</td>
<td>Like external-beam radiation therapy, this treatment is recommended in case of a localized or minimal externalized PC.</td>
<td>Urinary dysfunction (10%) Erectile dysfunction (10-70%)</td>
</tr>
</tbody>
</table>
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

doses of radiation for weeks or months. For this therapy, patients are hospitalized for 1 or 2 days. Survival-rate after five years is 83% and 75% after 7 years*. (Kupelian, 2004, 176)

| Hormonal therapy | Ongoing administration of LHRH agonists, with or without anti-androgens, to deprive PC cells of androgens and inhibit their regulatory effect on cancer growth. | This therapy is recommended for patients who are not qualified for prostatectomy or radiation therapy or if those therapies did not succeed. Not recommended for patients with low stage PC and a low risk of metastasizes*. | Hot flashes
Breast tenderness
Osteoporosis
Loss of muscle mass
Decreased mental acuity
Weight gain
Fatigue
Loss of libido |
|---|---|---|---|
| Chemotherapy | Administration of chemotherapeutic agents such as doxorubicin, estramustine, etoposide, mitoxantrone, vinblastine, paclitaxel, docetaxel, carboplatin (often in combinations of two or more drugs ± prednisone) to kill cancer cells. | Recommended if the cancer was not controlled by hormonal therapy. | Nausea
Vomiting
Hair loss
Mouth ulcers
Loss of appetite
Low red/white blood cell counts
Fatigue
Increased risk of infections
(Depending on the drug, dosage, duration of treatment) |

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**Enclosure 2 – The staging of PC**

One of the most influencing factors in treatment decision-making is the stage of the disease, which reflects the intensity of PC. The Gleason score and PSA level play an important role in diagnosis, prognosis and therefore in treatment decision making. The Gleason score is used to grade the prostate carcinoma by taking a biopsy of the prostate tissue, after which the health-care provider assigns a grade to the tumor pattern. The Gleason score distinguishes five different growth patterns of the prostate tissue. The two most common found tissues together determine the final Gleason score. A score of 1 is associated with tissue that is slightly different from normal prostate tissue. The worst prognosis is related to a Gleason score five (Retrieved from: http://oncoline.nl/prostaatcarcinoom, 17 April 2012).

Prostate Cancer Antigen (PSA) is present in small quantities in healthy men and is produced for the ejaculation so the sperm can swim freely. In men with PC, PSA quantities are much higher (Retrieved from: http://en.wikipedia.org/wiki/Prostate-specific_antigen, 17 April 2012).

To standardize the way of describing how far the cancer has spread, a staging system is used. Worlds’ most widely used staging system in PC is the American Joint Committee on Cancer (AJCC) TNM system. This system judges five aspects of the disease:

1. The extent of the tumor (T tumor)
2. Whether the cancer has spread to nearby lymph nodes (N tumor)
3. Absence or presence of metastasis (M tumor); like other cancers, PC can spread to other parts of the body. The most common side of metastasis in PC are to the bones and to distant lymph nodes, although it can also spread to other organs like the lungs and liver.
4. PSA level at time of diagnosis
5. Gleason Score

Each aspect is separated into categories, which also have subcategories. An overview of these aspects and their categories is given in table 9.
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?


<table>
<thead>
<tr>
<th>T CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1: Your doctor can’t feel the tumor or see it with imaging such as transrectal ultrasound.</td>
</tr>
<tr>
<td></td>
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<tr>
<td>T2: Your doctor can feel the cancer with a digital rectal exam (DRE) or see it with imaging such as transrectal ultrasound, but it still appears to be confined to the prostate gland.</td>
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<tr>
<td>T3: The cancer has begun to grow and spread outside your prostate and may have spread into the seminal vesicles.</td>
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<tr>
<td>T4: The cancer has grown into tissues next to your prostate (other than the seminal vesicles), such as the urethral sphincter (muscle that helps control urination), the rectum, the bladder, and/or the wall of the pelvis.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>NX: Nearby lymph nodes were not assessed.</td>
</tr>
<tr>
<td>N0: The cancer has not spread to any nearby lymph nodes.</td>
</tr>
<tr>
<td>N1: The cancer has spread to one or more nearby lymph nodes in the pelvis.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>M0: The cancer has not spread past nearby lymph nodes.</td>
</tr>
<tr>
<td>M1: The cancer has spread beyond the nearby lymph nodes.</td>
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<td></td>
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</tbody>
</table>

PC can be staged in a clinical way, in which the healthcare-provider judges the staging on basis of the physical exam. Pathological staging is another way of determining the stage. In this case, the stage is judged during prostatectomy and by examination of the removed tissue.
What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

**Enclosure 3 - Table 10. Overview of assigned quality scores for the included articles.**

<table>
<thead>
<tr>
<th>Aspect</th>
<th>First author, country, year</th>
<th>SD</th>
<th>CV</th>
<th>IE</th>
<th>PR</th>
<th>SS</th>
<th>DC</th>
<th>CR</th>
<th>Cijfers</th>
<th>SP</th>
<th>Quality score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical aspects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Comorbidity</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td><strong>Demographic aspects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spirituality</td>
<td>White, Canada, 2006</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
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<tr>
<td>Partner</td>
<td>Davison, Canada, 2002</td>
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<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Boehmer, USA, 2001</td>
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<td>0</td>
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<td>1</td>
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<td>0</td>
<td>0</td>
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<td>3</td>
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<tr>
<td></td>
<td>Zeliadt, USA, 2010</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Street, Australia, 2009</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
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<td>7</td>
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<tr>
<td></td>
<td>Kazer, USA, 2010 = partner</td>
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<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Chamie, USA, 2011</td>
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<td>1</td>
<td>1</td>
<td>0</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Age</td>
<td>Fisher, The Netherlands, 2006</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Sidana, USA, 2012</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Race</td>
<td>Steenland, USA, 2011</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>7</td>
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<tr>
<td></td>
<td>Wagner, USA, 2011</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Culture</td>
<td>Feldman-Stewart, Canada, 2011</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>SES</td>
<td>Rayford, USA, 2006</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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What is the role of clinical, demographic and psychosocial aspects in treatment decision making by patients with prostate cancer?

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