Surviving testicular cancer

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chapter 3 **marital and sexual satisfaction in testicular cancer survivors and their spouses**

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Supportive Care in Cancer 2005 July;13(7):540-8

Introduction

Testicular cancer (TC) mainly affects young men aged between 15 and 40 years; the highest incidence lies around 30 years. Since 1980, survival rates in TC patients have been excellent (up to 90%), owing to the availability of cisplatin-based polychemotherapy (25). Consequently, increasing numbers of these patients are going through life as TC survivors (TCSs). Having cancer and surviving it can strongly affect close relationships, especially the relationship with the spouse. Marital satisfaction of cancer patients and their spouses has been studied fairly extensively. It appears that only a small proportion of couples have difficulties adjusting to the stress of cancer after treatment is completed (18;21). However, most research concerns women with cancer and their partners. It appears that female spouses are at risk of developing psychological problems when confronted with their husband's cancer (9;21). Little research has been done into marital satisfaction of especially men with cancer and their female partners, and only two studies have addressed this issue in TCSs and their spouses. These two studies (on the same group of TCSs and spouses) showed that couples felt the relationship became more tightly bonded and stronger following the confrontation with TC (6;10). However, it should be noted that the results were based on a fairly small sample (n=34) and on a group survivors who had completed treatment an average of 4 years prior to the assessment, thus not showing insight into long-term adjustment.

Among other aspects, the sexual relationship between partners plays an important role in marriage. Studies on married couples showed that sexual satisfaction influences marital satisfaction (4;15). Schover et al. studied sexual and marital relationships in two groups of TCSs. They found that the ability to function sexually was a crucial factor in marital happiness (23) and that marital happiness was highly correlated with sexual satisfaction (22). Unfortunately, no information was collected from the spouses.

Several studies focused specifically on sexual functioning after testicular cancer, because this type of cancer involves an organ associated with sexuality and occurs in a phase of life in which sexuality is of great importance (5;14;20). TCSs reported several physical sexual problems such as erectile dysfunction, ejaculatory failure and orgasmic problems. Percentages of functional problems vary between studies. The impact of different treatment modalities, i.e. surgery, radiotherapy or chemotherapy, can be the cause of these physical sexual dysfunctions (26;27). However, psychological factors also play an important role in the sexuality of TCSs, and they are known to influence more subjective aspects such as sexual desire, sexual activity and sexual satisfaction (5;14).

If a TCS experiences problems with sexual functioning, this can not only affect his own sexual satisfaction but also that of his spouse, and it may even affect the marital satisfaction of both partners. It is important to establish whether spouses also experience changes or problems in sexuality so that good information can be given to both patient and spouse. Although attention has been paid to sexual functioning in TCSs themselves, very little research has been done into the sexual satisfaction of their partners. Two reports have been

published on sexual functioning, in the same group of 34 TCSs and spouses mentioned above (7;10). TCSs and their spouses reported a decrease in sexual frequency since the illness and treatment. In 30% of the TCSs, this meant a decrease in sexual satisfaction whereas in almost 50% of spouses, this meant an increase in sexual satisfaction. The results of this evaluation of the spouses may be the result of increased intimacy between the couple, but other factors may be involved.

In summary, TC survivors have been identified as a group at risk for sexual dysfunction. Sexual problems can also affect the spouse's evaluation of marital and sexual satisfaction. Marital satisfaction seems to be good in TCSs and their spouses, but the two studies that addressed these issues focused on a small group over a small range of time since completion of treatment.

The goal of the current study was to investigate the level of marital and sexual satisfaction in both TCSs and their spouses. The study population comprised a large group of long-term TCSs and their spouses. As testicular cancer mainly strikes young men, part of this group had not yet started a steady relationship at time of diagnosis. It may be that couples who did not share the experience of the illness together evaluate their marital and sexual relationships differently from couples who already had a steady relationship at time of diagnosis. Therefore couples who developed a relationship after treatment was completed were also included in this study (couples after TC).

The following questions formed the central theme of the study: (1) Do couples during TC differ in marital and sexual satisfaction from couples after TC? (2) Do survivors and their spouses differ in marital and sexual satisfaction from a reference group of Dutch couples and from each other? (3) Are marital and sexual satisfaction of survivors related to those of spouses? (4) Are treatment-related variables associated with marital and sexual satisfaction in survivors and spouses? (5) Do couples during TC feel that the relationship has changed due to the experience with testicular cancer? (6) Do couples after TC feel that the TCS's experience with testicular cancer has affected their relationship?

Methods

Procedure

All the men treated for testicular cancer between 1977 and 2002 at the University Medical Centre Groningen in the Netherlands were approached in writing and invited to take part in a questionnaire survey. Exclusion criteria were diagnosis within the past 6 months and age younger than 18 years. A total of 702 men received written information explaining the aim of the study and an invitation to participate. An invitation for the partner to take part was also enclosed. Female partners older than 18 years were included. Informed consent forms and a prepaid return envelope were provided. The study was approved by the Medical Ethics Committee of the University Medical Centre Groningen.

Respondents

A total of 354 men (50%) agreed to participate in the study; 299 (84%) had a steady relationship. It appeared that four partners did not meet the inclusion criterion. A total of 259 out of the 295 eligible partners (88%) agreed to participate. Thus, 259 couples, i.e. TC survivors and their spouses, participated in the study; 219 (85%) of the couples had a steady relationship during diagnosis and treatment (couples during TC) while 40 couples (15%) had started a relationship after completion of treatment (couples after TC). No information was available about the partners who did not wish to participate because they were invited anonymously. Analyses with data from the hospital database showed that nonresponding TCSs did not differ from responders in age, marital status, age at time of diagnosis or type of treatment received.

Questionnaire

TCSs and spouses filled in the same questionnaire. Data were obtained on various demographic aspects: age, duration of relationship, presence of children, employment status and education level. Employment status could be indicated as full time, part time, housekeeping, student, unemployed, unable to work, or retired. Highest education level completed was measured on a 7-point scale: primary school (1), lower vocational degree (2), lower secondary (3), middle secondary (4), high secondary (5), higher vocational (6) and university (7). Information was also obtained from the TCSs on disease and treatment aspects: date of completion of treatment, type of treatment and occurrence of tumor relapse or a second primary malignancy. Type of treatment could comprise: orchiectomy (removal of the affected testicle) alone, orchiectomy with retroperitoneal lymph node dissection (RPLND), orchiectomy and chemotherapy, orchiectomy and chemotherapy and resection of residual retroperitoneal tumor mass (RRRTM) or orchiectomy and radiotherapy.

Marital and sexual satisfaction. The Dutch version of the Maudsley Marital Questionnaire (MMQ) was used to measure marital satisfaction (1;11). The MMQ defines marital satisfaction as the subjective evaluation of the emotional connection and the sexual relationship with the partner. Two subscales of the MMQ were used: marital satisfaction (ten items) and sexual satisfaction (five items). Each item was measured on a 9-point scale (0-8). Respondents were asked to indicate which point on the scale best described their situation over the previous 2 weeks. Items in each subscale were summed. Scores on the marital satisfaction subscale could range from 0 to 80 and on the sexual satisfaction subscale from 0 to 40, with a higher score indicating less satisfaction. Mean scores on the MMQ from a random sample of 125 volunteer Dutch couples were used for comparison purposes (1). Mean age was 42.5 years (SD=11.23) and they had been married an average of 17.8 years (SD=10.2), which is comparable to the current study population. A cutoff score of $\geq$ 20 on the marital satisfaction subscale was used to identify individuals who experience marital dissatisfaction comparable

to couples referred for marital counselling, which indicated marital problems. An earlier study showed that approximately 5% of a sample of 64 married couples was experiencing marital problems that resulted in a score above the cutoff point (2;11). Previous research has shown that the MMQ is a reliable and valid instrument for the measurement of marital quality (1;3;11). Reliability of the MMQ in the present study was good. Cronbach's alpha for TCSs for marital satisfaction was 0.82 and for spouses 0.89. Cronbach's alpha for sexual satisfaction for TCSs was 0.80 and for spouses 0.76.

Self constructed questions were added to the MMQ. TCSs and spouses who had a steady relationship at time of diagnosis were asked: "Do you think that your relationship has changed due to your experience with TC?" Answers could be given on a 5-point scale, varying from " Yes, I think the relationship has improved a lot" (1) to "Yes, I think the relationship has deteriorated a lot" (5). TCSs and spouses who developed a relationship after treatment were asked a different question: " Is the fact that you/your partner had TC affecting your relationship at present?" Answers could be given on a 5-point scale, varying from "Yes, a great deal" (1) to "No" (5).

Statistical analyses

The database consisted of matched pairs of TCSs and spouses. ANCOVA (analyses of covariance) were computed to compare couples during TC to couples after TC while controlling for differences in sociodemographic characteristics between the two groups. Independent *t*-tests were performed to compare marital and sexual satisfaction of TCSs and spouses to those of men and women from the reference group. Effect sizes were calculated using Cohen's *d* to assess the clinical significance of differences found. Effect sizes smaller than .20 indicated a trivial difference, effect sizes between 0.20 and 0.50 indicate a small difference, those between 0.50 and 0.80 a moderate difference and those greater than 0.80 can be seen as clinically important differences (19). Partial correlations were computed to examine relationships between TCSs and their spouses regarding marital and sexual satisfaction, controlling for differences in sociodemographic characteristics between partners.

As data obtained from partners were not independent, paired *t*-tests were performed to analyze differences in mean scores between TCSs and spouses. The cutoffscore was used to identify TCSs and spouses who were experiencing marital problems.

To examine treatment-related variables in relation with marital and sexual satisfaction, correlation analyses (for time since completion of treatment), independent *t*-tests (type of treatment in two categories and experience of a second cancer event) and a Scheffé test (for type of treatment in five categories) were conducted.

Dichotomous variables were created for type of treatment and for a relapse, second diagnosis of TC or a second other cancer diagnosis. Type of treatment was divided into 0 = "surgical treatment" (orchiectomy and orchiectomy plus RPLND) and 1 = "combined treatment" (orchiectomy plus chemotherapy, or plus chemotherapy and RRRTM or plus radiotherapy). Occurrence of a second cancer event was divided into 0 = "no" and 1 = "yes".

Correlations were computed for both groups of couples between responses to the self-constructed questions and level of marital and sexual satisfaction.

Results

Preliminary results

The two couple groups (during and after TC) differed on several sociodemographic characteristics. TCSs and spouses of couples during TC were older (t=1.9, p<0.001 and t = 3.8, p<0.0001 respectively), their relationship was of longer duration (t =6.7, p<0.000), more of them had children (chi^2=31.7, p<0.0001) and time since completion of treatment was shorter (t =3.0,p<0.01) than in the TCSs and spouses of couples after TC. As the duration of the relationship was highly correlated with the age of TCSs and spouses (r=0.89, p<0.0001 and r=0.90, p<0.0001 respectively), age was not included as a covariate in the analyses.

Descriptives

TCSs were significantly older than spouses (t =10.3, p<0.0001). TCSs had a higher education level (t =2.7, p<0.01) and more of them had a job (chi^2=20.4, p=.0001) than spouses. In TCSs, 192 had children and 193 of the spouses had children. Three TCSs had no children of their own, but their spouse had children. Two spouses did not have children of their own, but the TCS did (Table 1).

Do couples during TC differ in marital and sexual satisfaction from couples after TC?

ANCOVA (controlling for age, time since completion of treatment and the presence of children) showed that TCSs who had a steady relationship at time of diagnosis reported more sexual satisfaction than TCSs who started a relationship after completion of treatment (F=7.4, p<0.01); there were no differences in their marital satisfaction. Effect size of the difference in sexual satisfaction was –0.08 (95% confidence interval of the difference –0.42 to –0.26) indicating that the difference was clinically marginally relevant. ANCOVA showed no differences in marital and sexual satisfaction between the spouses during TC and the spouses after TC (Table 2).

Do survivors and their spouses differ in marital and sexual satisfaction from a reference group?

Couples during TC: Independent *t*-tests showed that TCSs as well as their spouses experienced similar marital satisfaction to that reported by the reference group. TCSs who had a steady relationship during TC reported less sexual satisfaction than men in the reference group (t =2.9, p<0.01). Effect size of the difference in sexual satisfaction was 0.30 (95% confidence interval of the difference 0.07 - 0.52) indicating that the clinical relevance was small. Spouses during TC reported less sexual satisfaction than women in the reference group (t =2.9, p<0.01). Effect size was 0.30 (95% confidence interval of the difference .08 - .53) indicating a small difference.

Table 1 Descriptives

	Testicular Cancer Survivors		Spouses	
Age (yrs)				
Mean (SD)	45.3	(11.4)	43.1***	(11.5)
Range	21-78		21-75	
Education level (range 1-7)				
Mean (SD)	4.2	(1.7)	3.9**	(1.6)
Employment status				
Work	192	74%	135 ***	52%
No work	67	26%	124	48%
Duration relationship (yrs)				
Mean (SD)	18.9	(12.3)		
Range	0.5-50			
Children				
Yes, children living at home	129	50%	129	50%
Yes, children not living at home	63	24%	64	25%
No	67	26%	66	25%
Type of treatment N, %				
Orchiectomy	68	26.3%		
Orchiectomy & RPLND	20	7.7%		
Orchiectomy & chemotherapy	45	17.4%		
Orchiectomy, chemotherapy & RRRTM	77	29.7%		
Orchiectomy & radiotherapy	49	18.9%		
Time since completion treatment (yrs)				
Mean (SD)	9.3	(6.5)		
Range	0.5-23.8			
Relapse, second cancer N, %				
Tumor relapse	11	4.2%		
Second testicular cancer	8	3.1%		
Second other cancer	7	2.7%		
No	233	90%		

RPLND orchiectomy with retroperitoneal lymph node dissection, RRRTM orchiectomy and chemotherapy and resection of residual tumor mass. SD standard deviation.

** p<0.01; *** p<0.0001

Table 2 Marital and sexual satisfaction of couples during testicular cancer (TC), couples after TC and a reference group of Dutch couples

	Couples during TC n=219		**Couples after TC** n=40		**Reference group** n=125	
	M	SD	M	SD	M	SD
Marital satisfaction TCSs/ men	10.0	7.6	11.8	9.0	9.4	8.1
Sexual satisfaction TCSs/men	8.7	7.5	9.3 **	7.7	6.7 $^{oo\#}$	5.2
Marital satisfaction Spouses/women	12.2	9.9	12.2	11.1	10.9	8.9
Sexual satisfaction Spouses/women	9.4	7.6	9.2	7.9	7.3 ^{oo}	5.4

Higher scores indicate less satisfaction. *M* mean, *SD* standard deviation, *TCSs* testicular cancer survivors.
** p<0.01:Relationship during TC versus relationship after TC
^{oo} p<0.01: Relationship during TC versus reference group
$^{\#}$ p=0.05: Relationship after TC versus reference group

Couples after TC: TCSs and spouses who started a relationship after TC experienced similar marital satisfaction to that reported by the reference group. TCSs who started a relationship after TC reported less sexual satisfaction than men in the reference group (t =1.9, p=.05). Effect size of the difference in sexual satisfaction was 0.38 (95% confidence interval of the difference .15 - .60), indicating that the clinical relevance of the difference was small. The difference in sexual satisfaction between spouses who started a relationship after TC and women in the reference group was not significant (t =1.4, p=0.16) (Table 2).

Are marital and sexual satisfaction of survivors related to those of spouses?
Couples during TC: A paired *t*-test showed that spouses reported less marital satisfaction than their husbands (t =-3.2, p<0.01). No differences were found in sexual satisfaction between TCSs and spouses. Using the cutoff point, 27 (12%) TCSs and 48 (22%) spouses of couples during TC were identified as having a level of marital satisfaction indicating marital problems. A chi-square test showed that significantly more spouses than TCSs scored above the cutoff point (chi^2=26.3, p<0.0001). A partial correlational analysis (controlling for age, education level and employment status) showed a significant and positive relationship between marital satisfaction of the TCS and that of his spouse; this correlation was moderate

Table 3 Correlations between marital and sexual satisfaction of testicular cancer survivors (TCSs) and spouses in couples during testicular cancer (TC) and couples after TC

	Marital satisfaction TCS		**Sexual satisfaction TCS**		**Marital satisfaction spouse**	
	During TC	After TC	During TC	After TC	During TC	After TC
Sexual satisfaction TCS						
During TC	0.48***					
After TC		0.54***				
Marital satisfaction spouse						
During TC	0.46***		0.41***			
After TC		0.36*		0.51**		
Sexual satisfaction spouse						
During TC	0.36***		0.76***		0.54***	
After TC		0.33*		0.77***		0.60***

* p<0.05, ** p<0.01, *** p<0.001

(r=0.46). A significant and positive relationship was also found for sexual satisfaction; this correlation was very strong (r=0.76) (Table 3).

Couples after TC: A paired *t*-test showed no differences in marital or sexual satisfaction between TCSs and spouses. Nevertheless, in this group, more TCSs than spouses were identified as having a level of marital satisfaction indicating marital problems: ten (25%) of the TCSs and seven (18%) of the spouses had scores above the cutoff point. This difference was significant (chi^2=6.3, p<0.05). A partial correlation analysis (controlling for age) showed a significant and positive relationship between marital satisfaction of the TCSs and that of their spouses; this correlation was weak (r= 0.36). For sexual satisfaction a significant and positive relationship was also found; this correlation was very strong (r=0.77) (Table 3).

Treatment-related variables in relation to marital and sexual satisfaction.

Couples during TC: Treatment-related variables (time since completion of treatment, type of treatment and experience of a second cancer event) were not significantly related to the marital satisfaction of TCSs. ANCOVA, controlling for age because TCSs who suffered a second cancer event were older than TCSs without (*t*=-1.9, p<0.05), showed that the experi-

ence of a second cancer event was related to sexual functioning (F=7.4, p<0.01): TCSs who suffered a second cancer event reported less sexual satisfaction than those without. Sexual satisfaction was not related to time since completion of treatment and type of treatment. In spouses of couples during TC, treatment-related variables were not significantly related to marital satisfaction. However, spouses of men with a second cancer event reported less sexual satisfaction than spouses of TCSs without (*t* =-2.8, p<0.01). The analyses were not controlled for sociodemographic characteristics because no differences were found between spouses of TCSs who did suffer a second cancer event and spouses of TCSs who did not. *Couples after TC:* Treatment-related variables were not significantly associated with the marital satisfaction of TCSs and spouses or with their sexual satisfaction.

Changes in the existing relationship and the impact on new relationships

Couples during TC: About half of TCSs and spouses (52% and 48% respectively) reported no change in their relationship while 44% of TCSs and 47% of spouses even reported improvement. A very small percentage of TCSs (3.5%) and spouses (5.5%) during TC reported that their relationship had deteriorated. Evaluations of change by TCSs and spouses were significantly and positively correlated (r=0.41, p<0.0001). Evaluations of change were significantly and positively related to marital satisfaction of TCSs (r=.28, p<0.001) and spouses (r=.25, p<0.001), meaning that improvement was related to more marital satisfaction. Positive relationships were also found with sexual satisfaction of TCSs (r=.25, p<0.001) and spouses (r=.19, p<0.01), meaning that improvement was related to more sexual satisfaction.

Couples after TC: Testicular cancer had no impact on the relationship in 49% of TCSs and 30% of spouses whereas there was a small impact in 8% of TCSs and 24% of spouses. A large to very large impact was reported by 19% of TCSs and 13% of spouses. TCSs' evaluation of the impact on the relationship was significantly related with that of spouses (r=0.39, p<0.05) (Table 4). Evaluation of the impact was not significantly related to marital and sexual satisfaction of either TCSs or spouses.

Discussion

The aim of this study was to gain insight into the level of marital and sexual satisfaction in both TCSs and their spouses. Previous research has paid very little attention to sexual satisfaction in spouses of TCSs. Our study population also included a group that has never been investigated before, namely, TCSs and their spouses who started a relationship after diagnosis and treatment (couples after TC). It may be that differences appear in marital and sexual satisfaction between couples who shared the experience of diagnosis and treatment (couples during TC) and couples after TC. Differences were only found in the TCSs themselves. TCSs who had a steady relationship at the time of diagnosis and treatment reported more sexual satisfaction than the TCSs who started a relationship after the completion of treatment. It

Table 4 Evaluations of changes in and influence on the relationship

	TCS		Spouses	
Changes in relationship couples during TC				
Improved a lot	10	4%	11	5%
Improved	83	40%	86	42%
No changes	109	52%	99	48%
Deteriorated	7	3%	10	5%
Deteriorated a lot	1	0.5%	1	0.5%
Missing data	9		12	
Influence on relationship couples after TC				
Very large Influence	1	3%	2	5%
Large Influence	6	16%	3	8%
Moderate Influence	9	24%	12	32%
Small Influence	3	8%	9	24%
No Influence	18	49%	11	30%
Missing data	3		3	

TCS testicular cancer survivor, *couples during TC* couples who had a relationship at time of diagnosis of testicular cancer, *couples after TC* couples who developed a relationship after completion of treatment for testicular cancer

was striking that greater sexual satisfaction applied particularly to TCSs with a longer relationship and an older age, although a younger age was more highly related with better sexual functioning in TCSs (22) and greater sexual satisfaction in the general population (8). This might indicate underlying vulnerability in TCSs as a result of cancer in an area of the body that is related to sexuality and closely associated with it. In a new relationship, insecurity about sexual functioning may arise and be expressed in decreased sexual satisfaction. To gain an impression of the satisfaction of TCSs and their spouses in comparison with couples who have not been confronted by cancer, data were used from a group of 125 couples for comparison purposes. No differences were found in marital satisfaction of couples during and after TC and the comparison group suggesting that the cancer experience does not affect relationship satisfaction. These comparison data were collected twenty years ago, with the possibility that they do not entirely represent today's couples satisfaction. However, other norm data are not available in the Netherlands, and the questionnaire is still used in other current research ((17;28). Besides that, a recent study (12) showed that parents of a child

with cancer reported equal marital satisfaction as the couples of the same comparison group also, which might indicate that data are still valid. In couples during TC, both TCSs and their spouses reported less sexual satisfaction than the men and women in the reference group. Only TCSs in couples after TC reported less sexual satisfaction than their counterparts in the reference group. It appeared that testicular cancer had negative consequences on the sexual relationship for all TCSs and for spouses who experienced the period of diagnosis and treatment also. The clinical relevance of the statistically significant differences found between the study groups and the comparison group in sexual satisfaction appeared to be small to marginal.

Looking at the level of satisfaction within couples, we found a positive relationship for marital and sexual satisfaction in both groups of couples. In other words, when one partner was experiencing greater satisfaction, the other partner was experiencing the same. Although there was a positive relationship in satisfaction for couples during TC, the spouses reported less marital satisfaction than their husbands. In addition, more spouses than survivors had a level of (dis) satisfaction indicating marital problems. This was in agreement with other studies that found differences in the responses of men and women regarding their marriage. Women were generally more dissatisfied with their marriage and if there were differences in judgment about the relationship, then it was usually the woman who was most dissatisfied (24).

Despite the differences in marital satisfaction, there were no differences in sexual satisfaction between TCSs and spouses of couples during TC. Within these couples, satisfaction about the sexual relationship was more strongly related than marital satisfaction. This finding disagrees with earlier research in which a gender gap was prevalent and women experienced less sexual satisfaction than men, although this difference was fairly small (8).

It was striking that in couples after TC, more TCSs than spouses experienced a level of marital (dis) satisfaction indicating marital problems. These TCSs were not only less satisfied about their sexual relationship than men in the referencegroup and TCSs with a longer relationship, they were also experiencing marital problems more often than their spouses. It may be that the lower level of sexual satisfaction negatively affects their satisfaction with the relationship as a whole. These men may lack the buffer of increased intimacy by having endured the cancer experience together with their spouse.

Time since completion of treatment and type of treatment showed no significant relationships with marital or sexual satisfaction. The group of survivors as a whole seemed to experience less sexual satisfaction as a result of their experience with testicular cancer. However, within this group no effect was found for time since completion of treatment or for the different treatment modalities. These results may imply that psychological factors may be more important in explaining sexual functioning and sexual satisfaction rather than treatment-related biologic-organic factors.

The experience of a second cancer event had an effect on satisfaction, but only on sexual

functioning. In couples during TC, the TCSs with a relapse or a second testicular cancer or another second primary tumor reported less sexual satisfaction, irrespective of their age. The spouses of these men with a second cancer event also reported less sexual satisfaction. Perhaps this relationship was found because their satisfaction about the sexual relationship was strongly related to that of their husband. Physical as well as psychological mechanisms may explain this finding. A second treatment for cancer can deteriorate physical sexual functioning even more, resulting in less sexual satisfaction. Also, the psychological impact of yet another attack on the physical integrity by cancer can cause distrust of ones own body, also resulting in decreased satisfaction.

TCSs and their spouses were asked to report whether confrontation with TC had influenced their marriage. The couples during TC responded to the question of whether their relationship had changed as a result of cancer diagnosis and treatment. Almost half of the couples had not experienced any change in their relationship while more than 40% reported that it had even improved, which is in agreement with earlier research findings (16). Only a small percentage of TCSs (3.5%) and spouses (5.5%) felt that their marriage had deteriorated. Perceived positive changes in the relationship were also related to more marital and sexual satisfaction in this group of couples. This important strengthening influence of cancer on the relationship has been reported previously in other couples in whom one partner had cancer, but also specifically in TCSs and their spouses. In the current study, improvement in the relationship was however not visible in higher marital satisfaction scores than in the reference group. This may have been due to self-reports about satisfaction with the aid of the questionnaire. The difference between "satisfied" and "very satisfied" may not have been quite so clear. Couples after TC were asked to describe whether the fact that the husband had had TC was influencing their relationship. The majority of TCSs (57%) and spouses (54%) reported that the husband's TC had a small or no influence on the relationship.

In summary, confrontation with testicular cancer did not appear to have a negative influence on the marital satisfaction of testicular cancer survivors and spouses who had a steady relationship during diagnosis and treatment. A large proportion reported that the relationship had even improved. Contrastingly, the sexual relationship between survivors and their spouses seemed to deteriorate under the influence of testicular cancer. Owing to the fact that satisfaction in survivors and their partners was almost identical and correlations were strong, any decrease in the satisfaction of the husband will automatically mean a decrease in his spouse's satisfaction. Earlier research has shown that 67% of testicular cancer survivors appeared to have a need for information about sexuality and sexual functioning, even in the longer-term after treatment (13). As testicular cancer also affects the sexual relationship of spouses, they should be included in any discussions or information about the consequences of TC on sexuality.

In couples who developed a relationship after the completion of treatment, confrontation with testicular cancer especially seemed to have negative effects on the survivors themselves.

Their sexual satisfaction was lower than in survivors who had a steady relationship during treatment. They also more often experienced marital problems than their spouses. These men seemed to be a vulnerable group. A study on a larger group of cancer survivors who did not have a partner at the time of treatment might help to provide more insight into possible problems and issues that can affect later partner relationships.

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