

# A randomised controlled trial of a couples-based sexuality intervention for men with localised prostate cancer and their female partners

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## Abstract

**Objective:** The diagnosis and treatment of prostate cancer is followed by substantive sexual morbidity. The optimal approach for intervening remains unclear.

**Methods/design:** A three-arm randomised control trial was undertaken with 189 heterosexual couples where the man had been diagnosed with prostate cancer and treated surgically. The efficacy of peer-delivered telephone support versus nurse-delivered telephone counselling versus usual care in improving both men's and women's sexual adjustment was investigated. Assessments were undertaken at baseline (pre-test) with follow-up at 3, 6 and 12 months.

**Results:** At 12 months, men in the peer ( $p = 0.016$ ) and nurse intervention ( $p = 0.008$ ) were more likely to use medical treatments for erectile dysfunction (ED) than men in the usual care arm. Men in the nurse intervention more frequently used oral medication for ED than men in usual care ( $p = 0.002$ ). No significant effects were found for sexual function, sexuality needs, sexual self-confidence, masculine self-esteem, marital satisfaction or intimacy.

**Conclusion:** Although peer and nurse couples-based interventions can increase use of medical treatments for ED, this may not translate into better sexual or relationship outcomes. More research is needed into the optimal timing of interventions to improve sexual outcomes for men with prostate cancer and to identify the subpopulations that will benefit from them.

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## Introduction

Prostate cancer is the most common cancer among men globally [1]. For many men, the most distressing, long-term side effect of prostate cancer treatment is sexual dysfunction. Current treatments for prostate cancer commonly result in erectile dysfunction (ED), as well as loss of desire and difficulty reaching orgasm [2]. Long-term prevalence rates for ED of 80–84% have been reported in men with prostate cancer randomised to watchful waiting or radical prostatectomy, compared with 46% in matched non-cancer peers [3]. Many men are reluctant to seek medical help for ED even when they are bothered by this, with satisfaction and adherence to treatments poor [2,4]. Unmet sexuality needs are highly prevalent in these patients [5,6].

In the first 12 months after treatment for localised prostate cancer, masculine self-esteem is strongly related to mental well-being in patients [7]. By contrast, mental health for female partners is strongly associated with the man's psychological distress and his sexual bother. The quality of couple communication and their relationship are linked to adjustment [8,9]. However, few prognostic factors are available to guide the delivery of effective and acceptable couples-based interventions for these couples [10].

Couples interventions in prostate cancer have typically focussed on communication and intimacy skills, often with equivocal or disappointing results. McCorkle *et al.* [11] found no benefits for post-operative counselling by nursing compared with usual care for 107 men and their partners. Campbell [12] compared a telephone-delivered

coping skills intervention to usual care with 45 heterosexual couples. Attrition in the intervention was close to 50%. For couples who completed the intervention, men reported moderate to large improvements in quality of life and women reported less caregiver strain and better psychological outcomes. Manne *et al.* [13] assessed the efficacy of a couple communication and intimacy enhancing intervention with 71 prostate cancer survivors and their partners. The recruitment rate was 21% and with 22% dropping out pre-treatment. At 8-week follow-up, no significant improvements were found on primary or secondary outcomes for couples in the intervention compared with usual care. Badger *et al.* [14] compared couples-focused interpersonal counselling to a health education attention control with 70 prostate cancer survivors and their partners. Couples in the health education arm reported better psychological outcomes than those who received counselling. None of these interventions demonstrated improved sexual functioning.

Two intervention studies focussed directly on improving sexual function and satisfaction in couples. Canada *et al.* [15] randomised 84 couples, in which the men were 3-month to 5-year prostate cancer survivors, to four sessions of sexual counselling attended by the couple or patient only. Although both groups improved on sexual function post-treatment, by 6 months, outcomes were no better than baseline and attrition was 46%. Schover *et al.* [16] compared traditional three session face-to-face sexual counselling with an Internet-based format using a wait list control. The wait list control group experienced 9% attrition, with 33% and 25% attrition, respectively, for face-to-face and the Internet intervention, leaving 40 to 41 couples per arm for analysis for efficacy. Male sexual functioning improved over time for men in the active treatment groups. However, effect sizes were modest (Cohen's  $d=0.35$ ).

Men are less likely than women to discuss their psychosocial concerns [17] and perhaps reflecting masculine norms about being self-reliant and emotionally restrained [18]. One model of support that has emerged from the prostate cancer survivor community is peer support, where survivors help each other through shared mutual experience. In this approach, the therapeutic relationship is derived from the connection of shared experience, aiming to reduce feelings of isolation and stigma and to convey support and communicate hope and optimism about the future [19]. Lepore *et al.* [20] found that men recently treated for prostate cancer, who received group education plus peer support, were less bothered by sexual problems than were men who received only group education or standard care. To date, researchers have utilised nurses, social workers, psychologists and sexual counsellors as support sources for couples facing prostate cancer. What is not yet known is the extent to which peer support may be an acceptable model of psychosexual support compared with

professional care models and how effective such an approach might be.

The present study compared the efficacy of a couples-based peer-delivered telephone support versus couples-based nurse-delivered telephone counselling versus usual care in improving both men's and women's sexual and psychosocial adjustment after the diagnosis and treatment of prostate cancer. It was hypothesised that compared with couples in usual care, men and women who received either the peer-delivered or nurse-delivered intervention would have higher uptake of medical treatments for ED, better sexual function and satisfaction, lower unmet sexuality support needs, higher masculine self-esteem, and higher marital satisfaction.

## Method

### Participants

Eligible participants were men who were scheduled for or undergone surgery for prostate cancer within the last 12 months and their female partners. In all, 747 patients were referred from 16 urologists in private clinics and public/private hospitals in Queensland, Australia; 35 patients were referred through public service announcements. Study inclusion criteria were as follows: (a) newly diagnosed with localised prostate cancer and having radical prostatectomy OR less than 12 months post-surgery; (b) in a heterosexual cohabiting couple relationship; (c) able to read and speak English; (d) no previous history of head injury, dementia or psychiatric illness; and (e) no other concurrent cancer.

### Intervention

For the two intervention arms, the phone support/counselling was telephone-delivered in six (post-surgery recruitment) or eight sessions (pre-surgery recruitment) by nurse counsellors or peer support volunteers. Both intervention arms included skills training in couple communication and conjoint coping with content and material relevant to the early treatment phase. An audio-visual DVD with tip sheets enhanced the psycho-education and sexuality education components. Support call timing corresponded with the challenges of preparing for and recovering from radical prostatectomy. For couples recruited pre-surgery, the first two calls occurred prior to surgery, followed by four fortnightly calls beginning 2 weeks after surgery, and a further two calls 16 and 22 weeks post-surgery. For post-surgery couples, the first session took place within 2 weeks of recruitment, with three calls scheduled up to 10 weeks post-recruitment, and two more calls 16 and 22 weeks post-recruitment. Both members of the couple were required to attend all call sessions with the intervention administered over speakerphone.

Intervention calls were audiotaped for supervision and review to ensure protocol adherence. A multi-user web-

based data management tool provided an online session guide and monitored call timing and delivery.

#### **Nurse counselling intervention**

The nurse counselling followed principles of cognitive-behavioural sex and couples therapy with an adult learning approach where couples self-selected goals [16,21]. Content included education about prostate cancer, menopause and sexuality; behavioural homework including increasing expression of affection and non-demanding sexual touch; challenging negative beliefs about prostate cancer, ageing and sexuality; and helping the couple choose a medical treatment for ED and integrating this into their sexual relationship. Additional components targeting the challenges of the early treatment phase (e.g. urinary incontinence, pain and sleep disturbance) were selected if relevant.

The intervention was delivered by two experienced prostate cancer nurse counsellors, who received additional training. This included a 1 day workshop on communicating with couples and 7 hours of training with an experienced clinical psychologist covering problem solving, decision support, working with couples, communication and research protocols.

#### **Peer support intervention**

The peer support intervention was couples-based and oriented to empathic mutual support and education. This approach is consistent with peer support frameworks where support is based on shared personal experience rather than a professionally defined support role [22]. Components included psycho-education about prostate cancer diagnosis; common experiences with surgery and recovery; managing side effects; improving communication between the couple and with health professionals; maintaining intimacy in relationships; sexual problems and recovery; ED management; managing and reviewing goals; and moving forward.

Peer Support Volunteers (Peers) were 15 prostate cancer survivors  $\geq 12$  months post-treatment ( $M=64.5$  years of age,  $SD=6.5$ ) who had previously undergone prostatectomy. Peers received 12 hours of training that covered communication skills, adjustment to cancer, managing treatment effects, sexuality and research procedures. Training included lectures, workshops, role plays and practical demonstrations.

#### **Usual care**

Couples in usual care received standard medical management and a set of published patient education materials.

#### **Study integrity**

Ethical approval was obtained from the Griffith University Human Research Ethics Committee and the ethics

committees of seven public hospitals in Queensland. The study was guided by the CONSORT statement [23]. Randomisation was conducted following baseline assessment. Assessments were through self-report questionnaires. Randomisation occurred in blocks of 12, with each condition randomly generated four times within each block to ensure an unpredictable allocation sequence with equal numbers of couples in each group at the completion of each block. This sequence was undertaken by the project manager and concealed from investigators. Therapy was manualised. Adherence to the protocol was ensured through in-depth training and regular supervision that entailed frequent meetings with a study psychologist to discuss the calls and problem solve any specific challenges. Sessions were taped for review, and use of 10 identified standard session components was recorded through the study database. Analyses were intention to treat.

#### **Materials**

A series of previously validated and reliable self-report measures were administered by mail at baseline and 3, 6 and 12 months after recruitment.

#### **Primary outcome measures**

##### **Utilisation of erectile dysfunction treatments**

A scale developed by Schover [24] assessed whether couples have obtained medical help for ED (e.g. oral medication, penile injections and vacuum devices).

##### **Sexual function and satisfaction**

Men completed the International Index of Erectile Function [25] that assesses sexual function in five domains: erectile function ( $\alpha=0.95$  to  $0.97$ ), orgasmic function ( $\alpha=0.74$  to  $0.92$ ), sexual desire ( $\alpha=0.83$  to  $0.90$ ), intercourse satisfaction ( $\alpha=0.91$  to  $0.94$ ) and overall sexual satisfaction ( $\alpha=0.82$  to  $0.93$ ). Women completed the Female Sexual Function Index [26], which examines sexual function in six domains: sexual desire ( $\alpha=0.91$  to  $0.93$ ), arousal ( $\alpha=0.93$  to  $0.96$ ), lubrication ( $\alpha=0.72$  to  $0.83$ ), orgasm ( $\alpha=0.68$  to  $0.74$ ), satisfaction ( $\alpha=0.63$  to  $0.69$ ) and pain ( $\alpha=0.97$  to  $0.98$ ).

##### **Sexual supportive care needs**

Couples' needs related to sexual relationships were assessed using the sexuality needs subscale of the Supportive Care Needs Survey [27] ( $\alpha=0.91$  to  $0.92$ ).

##### **Sexual self-confidence**

The Psychological Impact of Erectile Dysfunction—Sexual Experience [28] assessed sexual confidence and spontaneity associated with ED ( $\alpha=0.91$  to  $0.94$ ).

### Masculine self-esteem

The Masculine Self-Esteem scale assessed men's appraisal of their masculinity [29] ( $\alpha$  0.88 to 0.93).

### Marital satisfaction

The Revised Dyadic Adjustment Scale [30] assessed marital satisfaction ( $\alpha$ =0.82 to 0.85). The Miller Social Intimacy Scale assessed the current level of intimacy in participants' relationships [31] ( $\alpha$ =0.89 to 0.91).

### Program evaluation

Participants in the interventions were asked to rate how helpful they found the telephone calls from the nurse or peer from 1, 'Not at all helpful' to 10, 'Extremely helpful'. Open-ended questions were asked about what was helpful, unhelpful or missing from the program. The quality of the bond between the peer and nurse counsellors and the couple and extent of agreement about therapy goals was assessed by the Working Alliance Inventory [32], with three domains: task ( $\alpha$ =0.86 to 0.89), bond ( $\alpha$ =0.40 to 0.90) and goal ( $\alpha$ =0.89 to 0.92).

### Statistical analyses

Study hypotheses relating to categorical variables were assessed using likelihood ratio and logistic regression analyses where the peer and nurse intervention groups served as the reference category. For continuous variables, multilevel modelling was applied. This class of procedures is the appropriate way to analyse hierarchical data sets such as the longitudinal data of the proposed research in which observations are nested within persons who in turn are nested within couples. A series of multilevel mixed model regression analyses examined trajectories of primary outcomes across the four measurement time points (baseline, 3, 6 and 12 months follow-up assessments) for male and female participants. These analyses incorporated time in months as a continuous predictor. The effects of intervention type (i.e. peer versus nurse versus usual care) were captured as a pair of dummy variables for which the usual care condition served as the reference category. For each analysis, time was centred at baseline, and models were run separately for male and female participants.

## Results

### Participants

Recruitment was between May 2009 and May 2011. Of the 405 couples eligible to take part in the study, 189 (46.7%) completed baseline assessments and were subsequently randomised into the trial (usual care group:  $n$ =64; nurse intervention group:  $n$ =62; peer intervention group:  $n$ =63) (Figure 1). Seventy-four percent of the participants

were recruited pre-surgery, and 26% were recruited post-surgery. In all, 144 (76.2%) couples completed all assessments. Retention rates were high: 84% of couples completed the 12-month follow-up assessment.

The mean age of the men was 62.70 years ( $SD$ =6.80) and 59.78 years ( $SD$ =7.38) for the women. The average length of the couples' relationship was 32.48 years ( $SD$ =11.84). Approximately 65.1% of men had completed some form of tertiary education or technical trade, compared with 47.6% of women. More men worked full-time (42.3%) compared with women (25.9%), and most couples' household income was greater than \$60 000 per year (53.4%). The mean time since diagnosis of prostate cancer was 127.57 days ( $SD$ =146.84). Men who had already received treatment were an average of 142.90 days post-surgery ( $SD$ =106.8), and those yet to receive treatment were scheduled to have surgery in an average of 33.50 days ( $SD$ =32.00). The median Gleason score was 7, and the average prostate-specific antigen (PSA) level was 6.35 ( $SD$ =3.48).

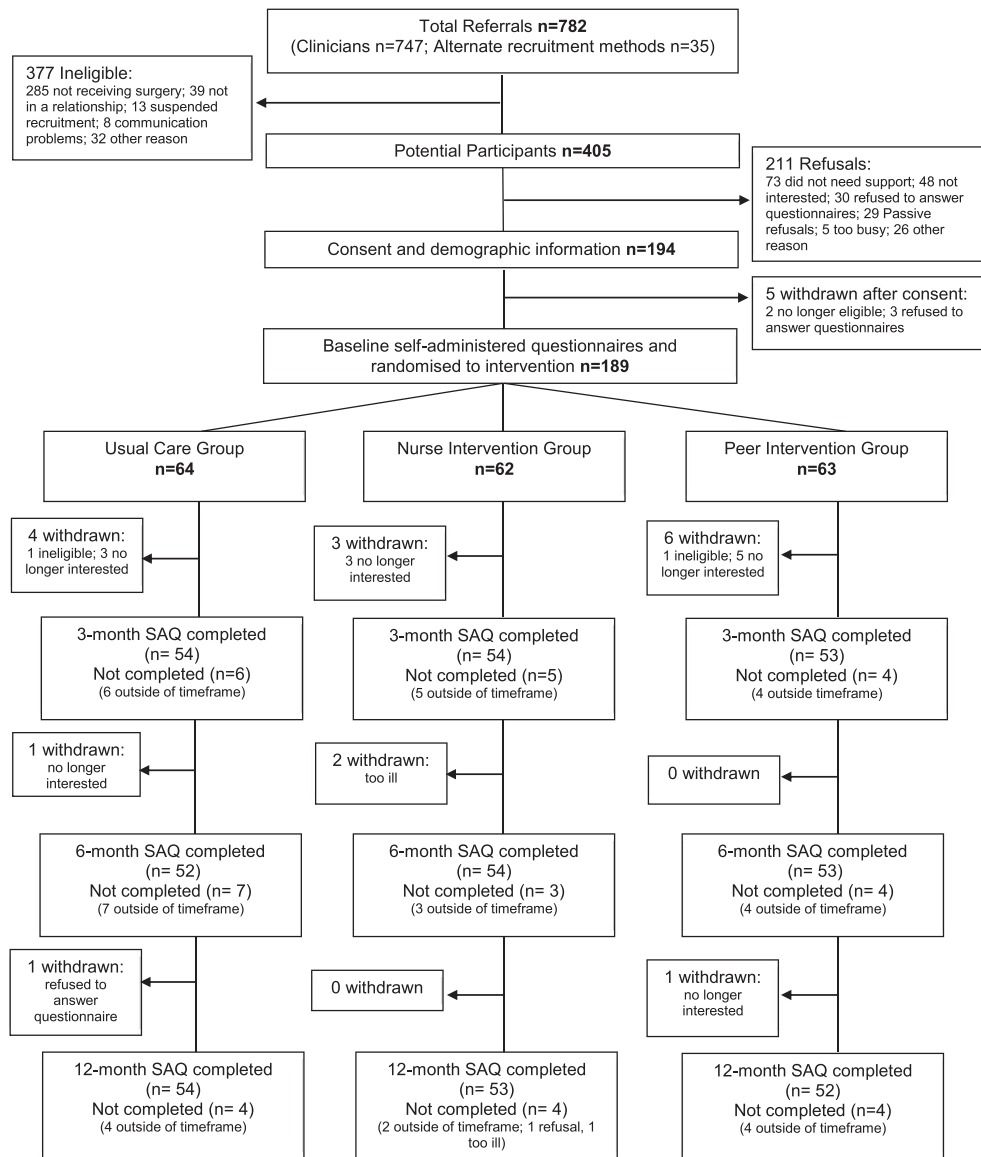
Men and women demonstrated good marital functioning at baseline with 91% of the men and 84% of the women reporting that they were satisfied with their relationship (above cut-off score of 48 for marital distress) [33]. Preliminary analyses showed no significant differences between the study groups at baseline on outcomes or socio-demographics.

### Intervention sessions

For couples pre-surgery, the median number of sessions delivered for the nurse and the peer intervention was 7 (range for nurse 3–8; peer 2–8). For couples recruited post-surgery, the median number of sessions delivered for the nurse and the peer intervention was 6 (range for nurse 4–6; peer 2–6). The mean session time for the nurse intervention was 36.46 min ( $SD$ =15.25; range 10–90; median 35); for the peer, 29.07 min ( $SD$ =15.33; range 5–120; median 25). The nurse group had significantly longer sessions compared with the peer group,  $t(806)=6.79$ ,  $p<0.001$ . The mean number of core intervention components delivered was 9 and 85% of couples covered seven or more topics.

### Primary outcomes

There were no significant differences in utilisation of medical treatments for ED at baseline (Table 1). However, at 12 months, there was a significant difference among the study groups for overall use of medical treatments for ED ( $G^2=9.77$ ,  $p=0.008$ ) (Table 1). Logistical regression analyses showed that participants in the peer intervention were 3.14 times more likely to use medical treatment for ED than those in the usual care group ( $z=2.41$ ;  $p=0.016$ ). Further, those in the nurse intervention were 3.67 times more likely to use medical treatment than those



**Figure 1.** Flowchart of recruitment, participation, data collection and attrition. Note: SAQ refers to Self-Administered Questionnaire

in the usual care group ( $z=2.64$ ;  $p=0.008$ ). There was a significant difference among the intervention groups for use of oral medication for sexual problems ( $G^2=10.91$ ,  $p=0.004$ ) (Table 1). Logistical regression analysis showed that participants in the nurse intervention group were 4.05 times more likely to use oral medication than those in the usual care group ( $z=3.15$ ;  $p=0.002$ ). No other significant effects were observed. A further analysis applying logistic regression examined the effect of surgery status (i.e. recruited pre-surgery or post-surgery) on utilisation of medical treatments for erectile function. No study group by surgery status interaction effects were found at baseline or at 12 months.

No significant effects of intervention on the primary outcomes of sexual function, sexuality needs, sexual self-confidence, masculine self-esteem, marital satisfaction

or intimacy were found for either men or women (Tables 2 and 3). Specifically, none of the interactions between time and treatment groups were significantly different for these outcomes, indicating that the trajectories were not different between groups.

Finally, in order to examine whether beginning counselling pre-surgery or post-surgery status was likely to have affected results, a series of longitudinal analyses were run for all continuous outcome variables. In these analyses, a dummy variable representing surgery status was included along with its interaction with time. No significant effects were found for any of the female partner outcomes. For men only, significant effects were found for sexual function ( $z=5.01$ ; coefficient= $-0.76$ ;  $p<0.0001$ ) and for sexual self-confidence ( $z=1.98$ ; coefficient= $-0.28$ ;  $p<0.05$ ). Accordingly, in a second

**Table 1.** Utilisation of medical treatments for erectile dysfunction at baseline and 12 months

| Medical treatment | Baseline          |             |              |             |          | 12 months         |             |              |             |          |
|-------------------|-------------------|-------------|--------------|-------------|----------|-------------------|-------------|--------------|-------------|----------|
|                   | Usual care % (64) | Peer % (63) | Nurse % (61) | Total       | $\chi^2$ | Usual care % (55) | Peer % (52) | Nurse % (52) | Total       | $\chi^2$ |
| Tablets           |                   |             |              |             |          |                   |             |              |             |          |
| Yes               | 12.50 (8)         | 19.05 (12)  | 14.75 (9)    | 15.43 (29)  | 1.06     | 50.91 (28)        | 63.46 (33)  | 80.77 (42)   | 64.78 (103) | 9.77**   |
| No                | 87.50 (56)        | 80.95 (51)  | 85.25 (52)   | 84.57 (159) |          | 49.09 (27)        | 36.54 (19)  | 19.23 (10)   | 35.22 (56)  |          |
| Injections        |                   |             |              |             |          |                   |             |              |             |          |
| Yes               | 4.69 (3)          | 6.35 (4)    | 6.56 (4)     | 5.90 (11)   | 0.25     | 30.91 (17)        | 46.15 (24)  | 36.54 (19)   | 37.74 (60)  | 2.68     |
| No                | 95.31 (61)        | 93.65 (59)  | 93.44 (57)   | 94.10 (177) |          | 69.09 (38)        | 53.85 (28)  | 63.46 (33)   | 62.26 (99)  |          |
| Vacuum            |                   |             |              |             |          |                   |             |              |             |          |
| Yes               | 0.00 (0)          | 1.59 (1)    | 1.64 (1)     | 1.10 (2)    | 1.68     | 5.45 (3)          | 7.69 (4)    | 15.38 (8)    | 9.43 (15)   | 3.22     |
| No                | 100.00 (64)       | 98.41 (62)  | 98.36 (60)   | 98.90 (186) |          | 94.55 (52)        | 92.31 (48)  | 84.62 (44)   | 90.57 (144) |          |
| No treatment      |                   |             |              |             |          |                   |             |              |             |          |
| Yes               | 84.38 (54)        | 80.95 (51)  | 81.97 (50)   | 82.50 (155) | 0.27     | 36.36 (20)        | 15.38 (8)   | 13.46 (7)    | 22.01 (35)  | 10.91**  |
| No                | 15.63 (10)        | 19.05 (12)  | 18.03 (11)   | 17.50 (33)  |          | 63.64 (35)        | 84.62 (44)  | 86.54 (45)   | 77.99 (124) |          |

\*\* $p < 0.01$ .

step, surgery status was included as a moderator in analyses including these two outcomes. No significant effects were observed.

### Therapeutic alliance

At 6 months, men in the nurse intervention reported greater therapeutic alliance on task and goal compared with men in the peer intervention ( $p=0.011$  and  $p=0.014$ , respectively) with no significant difference found for bond. The same pattern emerged for the females whereby those in the nurse intervention reported greater therapeutic alliance on task and goal compared with those in the peer intervention ( $p=0.005$  and  $p=0.009$ , respectively) and no difference between interventions for bond.

### Program evaluation questions

For helpfulness of telephone calls, the mean rating for the nurse intervention at the 6-month assessment was 8.67 ( $SD=0.23$ ) for males and 8.33 ( $SD=0.27$ ) for females; the mean rating for the peer intervention was 7.74 ( $SD=0.25$ ) for males and 7.47 ( $SD=0.32$ ) for females. Participants' free written responses about what was helpful/unhelpful or missing from the intervention were transcribed verbatim and coded by two independent coders (LZ and LN), with themes then checked by a third coder (SC) to reach a consensus view about key themes.

Helpful aspects of the peer intervention for men included the following: shared personal experience; a male support person; unique and practical coping advice; and empathy, genuine care and concern. Few negative themes were noted, however, a few men felt the intervention was structured and repetitive. Gaps included the following: timing (needing support earlier); matching (having a female peer support person as well and matching more closely to age and treatment); and mode of support (wanting face to face contact). Men who received the nurse intervention described helpful aspects as follows:

professional and specialist advice; patient education about treatment side effects; reassurance and understanding; and support for the female partner. Few unhelpful aspects were reported, but a few men felt overloaded with information. Gaps included the following: timing (earlier support); matching (wanting male support); mode of support (face to face); and additional specific advice on some treatment side effects (e.g. urinary effects).

Female partners in the peer intervention reported this as helpful for the following: shared personal experience; unique and practical coping advice; empathy, genuine care and concern; and the opportunity to discuss the cancer experience. The few negative comments related to timing (preferring earlier or more frequent support) and matching (female support). For the nurse intervention, women reported helpful aspects as follows: reassurance and understanding; and relationship and couple communication support. A few partners found discussing aspects of their personal life confronting. Gaps were as follows: mode of support (face to face); timing (preferring earlier support and more long-term support); support without the partner present; matching (support from other partners); and additional specific advice on some treatment side effects.

### Discussion

The present intervention trial is the largest to date to target the concerns of couples in the context of prostate cancer and the first to apply peer support in this approach. Twelve months after study entry, men who received the peer or nurse intervention reported higher utilisation of medical treatment for ED by comparison with men in usual care. In addition, men who received the nurse intervention reported higher use of oral medication for ED at 12 months compared with men in the peer and usual care group. This study is the first to show a sustained increase in use of, and adherence to, medical aids for ED, which may be clinically important given the current focus on

**Table 2.** Descriptive statistics for primary outcome variables for patients by intervention (*n* = number of participants who completed the Self-Administered Questionnaire assessment for each time point)

| Variable               | Usual care                   |                              |                              |                               |                | Peer                         |                              |                              |                               |                | Nurse                        |                              |                              |                               |  |
|------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|----------------|------------------------------|------------------------------|------------------------------|-------------------------------|----------------|------------------------------|------------------------------|------------------------------|-------------------------------|--|
|                        | Mean (SD)                    |                              |                              |                               |                | Mean (SD)                    |                              |                              |                               |                | Mean (SD)                    |                              |                              |                               |  |
|                        | Baseline<br>( <i>n</i> = 65) | 3 months<br>( <i>n</i> = 54) | 6 months<br>( <i>n</i> = 53) | 12 months<br>( <i>n</i> = 55) |                | Baseline<br>( <i>n</i> = 63) | 3 months<br>( <i>n</i> = 53) | 6 months<br>( <i>n</i> = 53) | 12 months<br>( <i>n</i> = 51) |                | Baseline<br>( <i>n</i> = 61) | 3 months<br>( <i>n</i> = 54) | 6 months<br>( <i>n</i> = 52) | 12 months<br>( <i>n</i> = 52) |  |
| Sexual function        | 45.63 (25.12)                | 26.83 (19.48)                | 29.58 (21.42)                | 31.36 (22.91)                 | 44.27 (22.65)  | 27.82 (15.47)                | 32.04 (17.50)                | 31.11 (16.17)                | 47.06 (24.97)                 | 27.92 (17.29)  | 33.96 (18.75)                | 36.40 (20.24)                |                              |                               |  |
| Sexuality needs        | 5.14 (3.08)                  | 6.72 (3.94)                  | 5.60 (3.36)                  | 6.53 (3.64)                   | 5.90 (3.30)    | 7.58 (3.64)                  | 7.40 (2.97)                  | 7.27 (3.78)                  | 5.36 (2.99)                   | 7.13 (2.94)    | 7.29 (3.19)                  | 6.27 (3.30)                  |                              |                               |  |
| Sexual self-confidence | 46.24 (10.08)                | 41.30 (12.23)                | 42.68 (11.52)                | 41.85 (10.83)                 | 46.94 (8.24)   | 41.09 (9.86)                 | 41.53 (10.58)                | 41.62 (10.31)                | 48.77 (8.58)                  | 43.54 (8.27)   | 44.33 (9.24)                 | 44.12 (8.73)                 |                              |                               |  |
| Masculine self-esteem  | 88.05 (15.79)                | 82.78 (21.18)                | 82.19 (19.30)                | 81.92 (17.46)                 | 88.05 (16.60)  | 82.78 (17.45)                | 82.19 (21.94)                | 81.92 (19.24)                | 92.47 (12.35)                 | 88.48 (16.34)  | 86.60 (18.18)                | 87.80 (17.43)                |                              |                               |  |
| Marital satisfaction   | 54.02 (5.38)                 | 54.21 (5.82)                 | 54.50 (5.72)                 | 54.25 (6.01)                  | 53.90 (6.53)   | 54.15 (5.52)                 | 53.62 (6.25)                 | 52.76 (8.24)                 | 54.93 (5.30)                  | 54.62 (5.37)   | 53.94 (8.13)                 | 54.06 (6.76)                 |                              |                               |  |
| Intimacy               | 146.33 (17.86)               | 144.72 (16.00)               | 145.98 (16.60)               | 143.89 (15.15)                | 143.63 (14.41) | 142.64 (15.59)               | 142.08 (18.72)               | 139.79 (20.34)               | 147.76 (13.62)                | 142.62 (16.06) | 144.71 (16.86)               | 145.98 (16.07)               |                              |                               |  |

Higher scores indicate better functioning and quality of life.

**Table 3.** Descriptive statistics for primary outcome variables for partners by intervention (*n* = number of participants who completed the Self-Administered Questionnaire assessment for each time point)

| Variable             | Usual care                   |                              |                              |                               |                | Peer                         |                              |                              |                               |                | Nurse                        |                              |                              |                               |  |
|----------------------|------------------------------|------------------------------|------------------------------|-------------------------------|----------------|------------------------------|------------------------------|------------------------------|-------------------------------|----------------|------------------------------|------------------------------|------------------------------|-------------------------------|--|
|                      | Mean (SD)                    |                              |                              |                               |                | Mean (SD)                    |                              |                              |                               |                | Mean (SD)                    |                              |                              |                               |  |
|                      | Baseline<br>( <i>n</i> = 61) | 3 months<br>( <i>n</i> = 54) | 6 months<br>( <i>n</i> = 51) | 12 months<br>( <i>n</i> = 54) |                | Baseline<br>( <i>n</i> = 56) | 3 months<br>( <i>n</i> = 50) | 6 months<br>( <i>n</i> = 51) | 12 months<br>( <i>n</i> = 47) |                | Baseline<br>( <i>n</i> = 61) | 3 months<br>( <i>n</i> = 55) | 6 months<br>( <i>n</i> = 51) | 12 months<br>( <i>n</i> = 51) |  |
| Sexual function      | 17.43 (6.38)                 | 15.20 (7.20)                 | 16.26 (6.84)                 | 14.74 (7.10)                  | 18.62 (6.03)   | 18.13 (6.10)                 | 17.27 (6.93)                 | 18.04 (7.59)                 | 18.78 (5.81)                  | 19.30 (6.06)   | 18.13 (5.99)                 | 18.34 (6.60)                 |                              |                               |  |
| Sexuality needs      | 4.69 (2.58)                  | 5.77 (3.33)                  | 5.63 (3.10)                  | 4.89 (2.65)                   | 5.14 (3.15)    | 6.90 (3.54)                  | 7.08 (3.59)                  | 6.42 (3.64)                  | 5.16 (3.06)                   | 6.33 (3.37)    | 5.48 (3.07)                  | 5.96 (3.33)                  |                              |                               |  |
| Marital satisfaction | 54.03 (6.65)                 | 52.29 (7.59)                 | 54.10 (6.65)                 | 53.77 (6.88)                  | 52.39 (7.87)   | 52.06 (7.86)                 | 51.76 (7.32)                 | 52.11 (8.15)                 | 53.33 (7.52)                  | 54.55 (5.92)   | 55.53 (6.36)                 | 53.49 (7.37)                 |                              |                               |  |
| Intimacy             | 146.67 (17.63)               | 145.71 (16.46)               | 147.86 (15.39)               | 144.60 (17.84)                | 141.80 (17.72) | 141.04 (17.66)               | 142.65 (16.53)               | 140.32 (18.63)               | 142.73 (19.07)                | 141.85 (16.02) | 144.79 (17.31)               | 142.27 (18.90)               |                              |                               |  |

Higher scores indicate better functioning and quality of life.

early and sustained penile rehabilitation as a way of improving long-term sexual function in men treated for prostate cancer [34,35]. These results suggest that psychosocial and psychosexual intervention from nurses and peers can be effective in addressing the low uptake of, and poor adherence to, such treatments.

However, despite these encouraging behavioural changes, primary outcomes related to sexual adjustment and intimacy did not differ between groups. While the reasons for this are unclear, study timing may have been too early to detect improvements in sexual outcomes. Specifically, some patients may take 2 to 4 years following surgery to recover firmer and more reliable erections [36,37]. For the men in this study who were recruited pre-surgery, assessment 12 months later may not have been sufficient to measure their eventual recovery of sexual function. For marital satisfaction and intimacy, most couples were in long-term relationships and had good dyadic adjustment, so a floor effect likely occurred. It is also possible that assessment of cancer-specific intimacy [38] rather than a general measure of intimacy would have been more sensitive to change. Given the high prevalence of sexual problems in this patient cohort coupled with, in general, good marital functioning, these findings provide indirect support for the approach of targeting high sexual distress couples and applying a stepped care approach where intervention is linked to persistence of need for sexual help [39,40].

Therapeutic alliance and helpfulness ratings were high for both the peer and nurse, suggesting both are valued sources of support for couples facing prostate cancer. For both female partners and men, the peer was seen as helpful through shared personal experience as well as unique empathy and coping advice [19]. Nurses were valued as specialist advisers, for providing education, coping and relationship support, and as gender-matched support for the female partner. Although most men and partners described positive aspects of the intervention, suggestions for improvement included earlier support and closer matching between the help provider and the participant. These findings highlight the different expertise of peers and nurses and suggest that a successful intervention might incorporate both approaches, including peer support by partners for partners. Participant comments also indicate that support early in the illness experience may be preferred by some couples.

The present study was limited by only considering heterosexual couples, and the needs of homosexual couples are likely different to our study sample [41]. Although

recruitment rates were higher than many previous studies, only 47% of couples invited to participate entered the study. This raises the possibility of bias and the concern that the couples who most needed help were not included. However, our study achieved excellent adherence to treatment sessions and low attrition with telephone-delivered services by nurses or peers highly acceptable for couples facing prostate cancer. Finally, we note that our approach of careful training and monitoring of both our peer and nurse counsellors may be difficult to replicate in some settings.

In conclusion, a manualised couples-based psychosexual intervention delivered by telephone with nurses or peers was successful in increasing men's use of medical aids for ED. Given the broad availability of peer support programs for men with prostate cancer and the increasing development of the specialist prostate cancer nurse, these supportive care approaches are likely feasible as an adjunct to current approaches to penile rehabilitation. However, this behavioural change did not translate into improved self-reports of sexual adjustment. Telephone-delivered support from a nurse or a peer support appeared equally acceptable to couples, even though participants clearly defined them as different types of help. The combination of peer and nurse support in an integrated care model may be a promising format for delivering effective psychosexual help for couples facing prostate cancer. Future research may also be needed to consider the question of whether, and in what circumstances, interventions might best target the couple as a dyad or the individual.

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### Conflicts of interest

The author(s) indicated no potential conflicts of interest.

### Trial registration

ACTRN12608000358347, Australian New Zealand Clinical Trials Registry.

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