Sexual dysfunction after treatment for testicular cancer: a systematic review
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Authors' objectives
To assess the level of sexual dysfunction reported by patients treated for testicular cancer.

Searching
MEDLINE from 1966 to 1999, and the Cochrane Library, were searched using the exploded MeSH terms: 'testicular neoplasm', 'libido', 'sex behavior', 'sexual satisfaction', 'ejaculation', 'impotence', 'erection', 'penile erection' and 'orgasm'. In addition, the bibliographies of the retrieved articles and previous review articles were manually searched. Studies reported in any language were considered. The reviewers contacted authors for information on unpublished research.

Study selection
Study designs of evaluations included in the review
The study designs included in the analysis were controlled studies and uncontrolled before-and-after studies.

Specific interventions included in the review
The treatments included retroperitoneal lymph node dissection and/or radiotherapy, chemotherapy, orchidectomy, and laprotnomy.

Participants included in the review
Participants with testicular cancer, aged from 17 to 72 years. The control groups were healthy men, although one study included control patients with Hodgkin's disease.

Outcomes assessed in the review
The outcome was sexual dysfunction, in terms of the reduction in sexual desire and frequency of sexual intercourse, erectile dysfunction, ejaculatory function, and reduced or absent orgasm.

How were decisions on the relevance of primary studies made?
Two authors independently assessed the papers for inclusion.

Assessment of study quality
The studies were categorised according to levels of evidence, based on study design (see Other Publications of Related Interest no.1). The authors did not, however, report a method for assessing the quality of the individual studies. The authors do not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment.

Data extraction
Two authors independently extracted the data from the studies. Data were extracted for the following categories: researchers' names; year of study; the number and age of the patients; treatment; duration of follow-up; type of outcome assessed; the instruments used to measure outcome; and effect sizes. Depending on the type of outcome measured, odds ratios (ORs), the difference between mean values, or proportional changes, were calculated for each study, along with the 95% confidence intervals (CIs).

Methods of synthesis
How were the studies combined?
A descriptive synthesis of the studies was undertaken. A meta-analysis was also conducted for the controlled studies.
only, using the random-effects model of DerSimonian and Laird (see Other Publications of Related Interest no.2) and the Mantel-Haenszel fixed-effect model (see Other Publications of Related Interest no.3).

How were differences between studies investigated?
The authors did not conduct a formal statistical test of heterogeneity, but discussed clinical and study design heterogeneity.

Results of the review
Thirteen studies with 1,589 participants were included in the review: 6 controlled studies (1,252 participants) and 7 uncontrolled before- and-after studies (337 participants).

Controlled studies.
Erectile dysfunction, ejaculatory disorders and orgasmic dysfunction were the most common problems associated with receiving treatment for testicular cancer. A meta-analysis of the controlled studies using a random-effects model indicated a significantly reduced or absent orgasm (OR 4.62, 95% CI: 2.47, 8.63), erectile dysfunction (OR 2.47, 95% CI: 1.54, 3.96), and ejaculatory dysfunction (OR 28.57, 95% CI: 1.76, 464.78). However, there was no loss of libido and sex drive (OR 1.75, 95% CI: 0.7, 4.35).

Before-and-after studies.
Ejaculatory dysfunction was the most common problem associated with receiving treatment.

Authors’ conclusions
The controlled studies indicated that sexual dysfunction persists for up to two years after treatment. However, better evidence is needed from studies that control for the impact of testicular cancer, the treatment modality, and psychological reactions to both.

CRD commentary
The review question was clearly stated, although information on the inclusion and exclusion criteria was lacking. There was evidence of a substantial effort to search for all relevant research literature, although additional databases could have been searched. The authors categorised the studies by level of evidence (which they refer to as the quality of evidence), but they did not assess the quality of the individual studies, which can be variable regardless of their level of evidence. However, in the discussion, the authors stated that ‘no study reported whether outcome data were collected blinded to treatment group’, suggesting that some form of validity assessment may have been conducted. Sufficient details of the individual studies were presented. The authors appropriately summarised the data as a descriptive synthesis. However, they also conducted a meta-analysis of the controlled studies, which may not have been appropriate given that there appears to be heterogeneity between the controlled studies. The authors are, however, cautious about the results from the meta-analysis.

The authors’ conclusions do not appear to be substantiated by the literature. The reasons for this are: (1) the quality of the studies is unknown; (2) there may be problems with summarising the literature due to clinical and study design heterogeneity; and (3) it appears that the results were also heterogeneous, suggesting that broad conclusions cannot be made. In particular, the statement that sexual dysfunction persists for up to two years after treatment is misleading, given that the authors did not specifically examine or analyse follow-up data that could allow them to make this conclusion. There were some minor editorial problems with the paper: the references presented in the tables did not match those in the bibliography.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors state that higher level evidence is needed from studies that control for the impact of testicular
cancer, the treatment modality, and psychological reactions to both. They also state that adequate representative samples of patients must be recruited using standardised instruments, and that measures of sexual function must be taken both before and after treatment.

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**Other publications of related interest**

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**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.