INTRODUCTION

The cause of prostate cancer is unclear, despite it being the most common male cancer in the Western world. Prostate cancer accounts for \( \approx 13\% \) of male deaths from cancer in the UK and is the second most common cause of cancer death in men after lung cancer [1]. Various factors, e.g. dietary, hormonal, occupational, social, familial and infectious diseases, have been implicated in the causes of prostate cancer. Well-established risk factors include increasing age, race, and a family history of prostate cancer. However, the role of other factors, including hormones, dietary factors, obesity, physical inactivity, occupation, vasectomy, smoking, sexual factors, and genetic susceptibility, have not been well elucidated.

Various approaches have been used to study the role of sexual factors and sexually transmitted infections/diseases (STDs) in the causation of prostate cancer; these include epidemiological studies by both case-control and population studies, using self-constructed questionnaires, serological studies for evidence of past STDs, and examination of pathological specimens for evidence of sexually transmitted organisms.

Variation in sexual habits might determine the risk of prostate cancer by making the person vulnerable to STDs, although none of the STDs have shown a consistent positive association with prostate cancer. Sexual habits might be contributory to prostate cancer by either affecting directly or indirectly the hormonal status, or predisposing to infection of the prostate.

There is increasing evidence that low-grade infection has a role in the development of several cancers. Chronic osteomyelitis and osteogenic sarcoma [2], persistent gastric infection with Helicobacter pylori and stomach cancer [3] and human papillomavirus (HPV) infection and cervical cancer [4] are examples of this process. Although the infectious aetiology of cervical cancer is well established, a role in prostate cancer is still controversial.

Establishing such a link is vital to educating the public and focusing on the prevention of STDs, as there are recent reports from the UK that the incidence of STDs is on the increase.

Specific STDs have been associated inconsistently with prostate cancer, with positive associations being reported with syphilis, gonorrhoea and HPV infection in various studies [5–7]. Dennis and Dawson [8] found a greater relative risk (95% CI) of prostate cancer among men with a history of STDs, with both random- and fixed-effects models (1.4, 1.2–1.7; 17 studies; heterogeneity \( P = 0.14 \)), especially for syphilis (2.3, 1.3–3.9; six studies; heterogeneity \( P = 0.47 \)). These results indicate an association between prostate cancer and STDs, suggesting that infections might represent one mechanism through which prostate cancer develops. A similar meta-analysis of 29 case-control studies by Taylor et al. [9] showed a significantly high odds ratio (95% CI) for prostate cancer for any STD (1.48, 1.26–1.73), gonorrhoea (1.35, 1.05–1.83) and HPV (1.39, 1.12–2.06).

The rates of STDs in England have been increasing steadily since the mid-1990s, making them a major public health concern. In 2003, 672 718 people were diagnosed with an STD in England; about a third of those cases were diagnosed in London and the incidence has been increasing in the London area over the last 7 years [10].

In a study conducted by our institution among African gold-mining workers [11], we showed that of 27 patients with an anti-chlamydial antibody titre of \( \geq 1 \) in 64, 37% had a PSA level of \( > 0.8 \) ng/mL, while of the 201 with a titre of \( < 1 \) in 64, only 17% had a PSA level of \( > 0.8 \) ng/mL (\( P < 0.05 \)).

Based on our study of the role of circumcision and STD on the risk of prostate cancer [11], we hypothesized that sexual behaviour-related risk factors for prostate cancer damage the prostate at an early age. Although our study does not prove that infection is a cause for prostate cancer, we were the first to conduct a study on this subject in patients who were younger than in other studies.

In a recent study, we assessed the relationship between sexual activity, history of STDs and the pathophysiological variables of prostate cancer, in a prospective interview-based study at our department. During the period from 1997 to 2002, we assessed the effect of the number of sexual partners, age at first sexual experience and history of STD on the mean age at diagnosis, PSA level at diagnosis, stage and Gleason score of men with prostate cancer. The questions on sexual history were asked at a direct interview during the routine clinical follow-up. All these patients had previously been diagnosed with prostate cancer.
In 41 patients with history of STD the pathophysiological variables were not statistically significantly different from those in 183 patients with no history of STD. The 41 patients with a history of first sexual intercourse after 15 years old were diagnosed with prostate cancer, but there were too few cases to draw any conclusions about their role in causing prostate cancer.

One striking feature when reviewing published studies of sexual habits and prostate cancer is that subjects involved. As such, STD is a modifiable risk factor for prostate cancer, and more studies, especially cohort studies, are needed to ascertain the role of sexual factors in the risk of prostate cancer. We think that establishing such a link is potentially important for public health, as prostate cancer is an important cause of mortality and morbidity. Establishing such a link is vital to educating the public and focusing on preventing STDs as recent reports linking STDs and prostate cancer, and more studies, especially cohort studies, are needed to ascertain the role of sexual factors in the risk of prostate cancer.

Thus this study showed that patients with several partners and those with a history of sexual experience before 15 years old were diagnosed with prostate cancer at an earlier age, possibly suggesting a role for sexual factors in causing prostate cancer.

### CONFLICT OF INTEREST

None declared.

### REFERENCES


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Abbreviations: STD, sexually transmitted infection/disease; HPV, human papillomavirus.