

# Editorial



Andy H. Lee (above)  
and Colin W. Binns (left)

## Diet and prostate cancer: Evidence from epidemiological studies

Prostate cancer is the second most common cancer diagnosed in men, the third most common cause of male cancer deaths and the six most common cancer overall. Approximately 680,000 new cases are recorded annually which accounts for 12% of all male cancers [1]. Almost all prostate cancers are adenocarcinomas.

The incidence of prostate cancer varies considerably between countries. It has increased dramatically in the past two decades partly as a result of lifestyle changes and partly due to increased accuracy of diagnosis since the adoption of prostate specific antigen (PSA) as a screening test. However, the rate of prostate cancer was already increasing before the introduction of the PSA, and it has continued to rise in middle income countries where screening is still not widely available. Indeed, prostate cancer is a disease of the affluent West with rates in North America and parts of Europe of around 100 cases *per* hundred thousand men annually (age-adjusted incidence). The highest rates are probably found among Afro-American males in the USA, but very low rates have been reported in Asian countries. In this Special Issue, Baade, Youlenden and Krnjacki describe the incidence, mortality and survival rates of prostate cancer around the world and discuss in a balanced way the much debated question of PSA testing.

There have been some impressive advances in detailing genetic influences on prostate cancer. Although exploration of these changes may lead to new measures for prevention,

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currently health promotion activities must rely on lifestyle and dietary changes that have been demonstrated to impact through epidemiological studies. In the future, it is hoped that these will be supplanted by randomised controlled trials and genomic interventions [2]. This Issue thus focuses on epidemiological studies that could lead to practical health promotion interventions.

Moon, Kim and Lee provide insights into the history of prostate cancer epidemiology in Korea. Deaths from prostate cancer were very rare in this country prior to 1980, when the mortality rate was 0.13 *per* 100,000. A quarter of a century later, the mortality rate has increased 30-fold to 4.11 *per* 100,000. Dietary changes in Korea may be partially responsible for the dramatic increase which cannot be explained by better diagnostic methods alone.

Japan has one of the lowest rates of prostate cancer amongst economically developed nations. However, when Japanese migrate to Hawaii and the West Coast of the USA their rates of prostate cancer increased to approach those of Western countries. Mori *et al.* conclude that the traditional Japanese diet may reduce the risk of prostate cancer through a combination of increased soybean products and fish intake, with reduced red meat consumption. They recommend further well-designed nested case-control studies with nutritional analyses of blood samples to confirm such an association. Isoflavones, polyunsaturated long-chain (*n*-3) fatty acids, and saturated fatty acids should be included in future analyses of blood samples, because of their respective link to these three food groups.

Many dietary guidelines around the world include the recommendation to eat plenty of vegetables and fruits. The relationship between prostate cancer and vegetables, their bioactive com-

pounds responsible for the associations, as well as the underlying mechanisms are examined by Chan, Lok and Woo. They suggest that increased intake of lycopene, found in tomatoes and other red and orange coloured vegetables and fruits, may be protective against prostate cancer. Their argument for a plant-based diet is supported by Jian, who has critically evaluated the literature on soybean products and isoflavones in relation to prostate cancer prevention. Interestingly, the benefits of the Mediterranean diet, which is characterized by an abundance of a wide variety of plant foods and olive oil, provides further evidence to support this argument, according to the review by Itsiopoulos, Hodge and Kaimakamis.

Alcohol has been recognised as a risk factor for many cancers [1], but the evidence on prostate cancer has been equivocal. Fillmore and her colleagues have undertaken a meta-

analysis and written a comprehensive review that sheds further light on the relationship between alcohol consumption and cancer of the prostate.

While reading all of these articles we suggest you relax with a good cup of tea. Tea drinking has been the tradition of epidemiologists since the inception of science. The justification for recommending tea over coffee is given by Lee, Fraser and Binns. In addition to being a refreshing beverage, tea may well play an important role in prostate cancer prevention.

While the search for epigenetic causes of prostate cancer must continue, it is important to pause and remember that there is a large body of evidence now available which can form the basis of guidance to the public on improving their nutrition. In view of the wide disparity in the rates of prostate cancer, it is evident that advice for dietary change now has a role in prostate cancer prevention.

The Editors of this Special Issue would like to thank the authors for their contributions and those referees who gave their time to provide expert peer reviews and opinions on the scientific value of the papers. Science continues to advance and we are aware of a number of randomised controlled trials that may bring further information on specific

nutrients. Perhaps this will lead to a subsequent review in a few years time, with even more encouraging results.



Andy H. Lee  
*Curtin University of Technology, Perth*



Colin W. Binns  
*Curtin University of Technology, Perth*

## References

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