

This Week's Citation Classic

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Burkitt D P. Epidemiology of cancer of the colon and rectum. *Cancer* 28:3-13, 1971.

Cancer of the large intestine is the commonest cause of cancer death in North America. It is always uncommon amongst people who still live in a traditional manner in Third World communities. Evidence points to it being primarily the result of environmental factors and consequently it must be considered potentially preventable. [The **SCI**[®] indicates that this paper has been cited over 345 times since 1971.]

Denis P. Burkitt
Unit of Geographical Pathology
Saint Thomas's Hospital
London SE1 7E7
England

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"The paper cited was an attempt to show not only that large bowel cancer was more closely associated with the life-style characteristic of modern western culture than is any other form of cancer, but also, that its geographical and socioeconomic distribution is very closely related to that of other characteristically Western diseases.

"These observations indicate that large bowel tumours must be potentially preventable, could causative factors be identified and reduced or eradicated, and in addition that clues to their causation might be provided by studying other diseases that flourish in the same environment and might therefore share common causative factors.

"Bowel cancer and its related diseases are uncommon throughout the Third World and both there and in some Western countries have higher prevalences in urban than in rural communities.

"The pattern of geographical distribution of bowel cancer is closely similar to that of diverticular disease of the colon. In fact, the latter has never been observed to be other than rare until after a rise in incidence of largebowel cancer had occurred. On the other hand, the low incidence rates for these tumours routinely found in economically poor countries have never been shown to rise until after appendicitis, another disease of Western culture, becomes relatively common.

"It is now generally accepted that the major factor causative of diverticular disease is a deficiency of fibre in the diet, and my colleagues and I¹ have argued that this may also contribute to the causation of appendicitis. Both diseases are related to the consistency and volume of intestinal content, both of which are governed by the fibre content of the diet.

"Bowel behaviour was examined in communities with low, high, and intermediate frequency of colorectal cancer, and it was found that where faecal output was 300-500 g/day and mouth to anus transit times around 30 hours, cancer and its associated diseases were rare, but where, as in North America and Western Europe output was only 80-120 g/day, and transit times exceeded three days, these illnesses were common

"Hypotheses were postulated to endeavour to explain how dietary fibre could be protective against large bowel cancer. It seemed obvious for instance, that any car-cinogens concentrated in a small faecal volume and retained a long period in the gut might be more dangerous than those diluted in a large faecal volume, moved along more quickly, and excreted more often.

"At the time this paper appeared nearly all the emphasis was placed on the dangers of fat-rich diets when considering possible causes of large bowel cancer. It is now, however, generally accepted that while fat-rich diets are likely to promote the circumstances responsible for causing bowel tumours, dietary fibre and the fibre of starch staple foods in particular probably exert a protective influence.

"The reason for the frequent citation of this paper is the renewed interest in the role of fibre in human nutrition and its postulated protective role in bowel cancer in particular.

"I was introduced to the enormously important role of refined carbohydrate foods in the causation of some characteristically Western diseases by T.L. Cleave,² but it was Alec Walker of the South African Institute for Medical Research in Johannesburg who drew my attention to the possible role of fibre in the causation of colon cancer. The credit which has often been attributed to me for originating the fibre hypothesis for this disease, should by right go to him."

1. Burkitt D P, Walker A R P & Painter N S. Dietary fiber and disease. *J. Amer. Med. Assn.* 229:1068-74, 1974.
2. Cleave T L. The neglect of natural principles in current medical practice. *J. Roy. Nav. Med. Serv.* 42:55-83, 1956.