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Salt Skip News

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Use the **academic address** when writing about **salt control**—see the panel on page 4.

Salt and fatal heart attacks

After Norman Swan's Health Report on Monday 13 March some salt skippers were very seriously worried.

Norman Swan had introduced the program literally as **Facts about Salt**.

He said a large US study 'just published' had shown that the widely held view that salt is bad for health may be wrong—not just wrong, but that a low salt diet may actually increase the risk of fatal heart attacks.

Workmates told Denise Lloyd-Kelly of Queensland that she is doing the wrong thing, and she asks what this report has done to the general public's perception.

Peter George sent this letter from Lapstone, NSW:

> I enclose a transcript of the ABC Health Report broadcast on Monday 13 March.
>
> As a sufferer of Meniere's Disease I am restricted to a low salt diet as this seems to be the only effective way of controlling the dreadful symptoms. As you can see from the contents of the transcript there appears to be some reason to be concerned about a low salt diet
>
> What do you think are the possible implications for Meniere's sufferers regarding this study?
>
> I would welcome your comments on this matter.

Norman Swan saw fit to assert that this new study was yet another example of **health professionals giving advice based on inadequate and incomplete evidence**. He delivered these strong words with all the authority of a highly respected doctor, health educator and veteran broadcaster.

He was giving us a summary of what we were about to hear from his guest Michael Alderman, Professor of Medicine and Population Health at Albert Einstein College of Medicine in New York.

Alderman sounded scientific, detached, self-critical and highly plausible. He rose to the occasion, making many a terrifying answer to Norman Swan's helpful questions.

He said that patients with the lowest salt intakes in a workplace hypertension treatment program had the most heart attacks. And a big nutrition survey of about 7000 people found the same thing.

He explained that one effect of a lower salt intake is to raise the plasma renin, and said this would increase the risk of heart attacks in patients with high blood pressure.

On 27 March the Health Report broadcast a short follow-up discussion between Michael Alderman, Norman Swan and Bruce Neal, Associate Professor of Medicine, Sydney University and Director of the Heart and Vascular Division, George Institute for International Health.

Short debates leave the impression that the issues are debatable, but Alderman had another of his lapses of memory. He told Norman Swan he had never accepted fees from the US Salt Institute, forgetting his previous admission that he had in fact been paid (Medical Journal of Australia 1999;171:162–163).

The main flaws in Alderman's 'news'

Michael Alderman said the relationship of salt to blood pressure has been known for a long time and is not a matter of debate, but he has been interested in another effect of a lower salt intake—higher blood levels of hormones called plasma renin and angiotensin-2.

He said these hormones could damage the arteries when blood pressure is high, and cause fatal heart attacks, so in theory (by causing higher hormone levels) lower salt intakes might cause more heart attacks. But why don't diuretics do that?

Diuretics and heart attacks

Diuretics force the kidneys to excrete salt faster than normal, and that raises the blood hormone levels just as much as a lower salt intake does (as would be expected). Studies with good data show that when diuretics are prescribed for hypertension they **protect patients from heart attacks** (American Journal of Cardiology 2005;95:29–35).

'***Salt free' societies have no heart attacks***

Alderman's theory is that the danger, if any, occurs only at high hormone levels in combination with high blood pressure. This fits the fact that some 'salt free' (no added salt) societies have about the highest hormone levels ever recorded, normal blood pressure and no heart attacks (page 3).

No accurate data on salt intake

Alderman said he tested his theory first with a long-term workplace hypertension treatment program, and found it confirmed that people with lower salt intakes did have more heart attacks. His next study (a large population survey with long-term follow-up) found exactly the same thing.

But for research purposes the only accurate measure of salt intake is 24-hour urinary sodium excretion. Even that varies a lot from day to day—even single urine results are rubbery—unless salt intake is under control with good dietary compliance.

The workplace hypertension program

The published paper treats a single 24-hour urine collection made BEFORE ENTRY as evidence of subsequent HABITUAL salt intake (Hypertension 1995;25:1144–52) and refers readers to an earlier paper for details (NEJM 1991;324:1098–1104).

The earlier paper discloses serious flaws. Patients were asked to CUT THEIR SALT INTAKE DOWN for 4–5 days before collecting urine. After that urine collection everybody was free to go back to their habitual salt intake—whatever that was. We don't know, because Alderman doesn't know either. After that urine collection there was no measure of habitual intake during follow-up, either by questionnaire or urine collections.

He divided the subjects into 4 groups (quartiles) of purportedly habitual salt intake and yet the only data he could produce came from a single urine sample collected after 4–5 days at a lower salt intake.

The population survey

The second study (in two stages) used data on salt intake from the first and second US National Health And Nutrition Surveys (known as NHANES-I and NHANES-II). The estimate of salt intake was very crude.

The questionnaires asked nothing about cooking or table salt or habitual intake, and recorded just one single 24-hour recall of foods eaten the previous day, as if that might predict habitual intake years later.

The research team then added up (from tables of food composition) the sodium content of every food named and estimated the size and weight of each helping from the each person's recollected guesses.

'***Inadequate and incomplete evidence'***

Norman Swan had asserted that Alderman's 'new' study provided yet another example of health professionals **giving advice based on inadequate and incomplete evidence**—but a closer look shows it is Alderman who is doing that.

To sum up

To get paradoxical findings taken seriously—let alone accepted—Alderman needs to produce good data. He has not done that yet.

He returns at intervals like Halley's comet, bringing at each visit 'new' findings worth millions of dollars to the salt industry but without bringing better data that might convince any of his scientific colleagues.

Humans before the great flood of salt

'Salt free' (no added salt) societies

Wildlife and humans living inland on every continent have evolved on no-added-salt food and lived on it for millennia, until we invented the technology for making salt about 5000 years ago. Salt as a bulk chemical food additive is even more recent than agriculture.

During the last century about 20 'salt free' (no added salt) societies have been discovered around the world. They are tribal groups—intact societies—without the modern technology for bulk manufacture of salt as a food additive. Most of them live inland.

They are a window into our past, and their robust health and freedom from hypertension and its complications (heart disease, stroke and kidney failure) is very good news and basic to the public health message.

Alderman says a low salt intake at the population level would be an experiment with unknown consequences, but the experiment with KNOWN consequences was ADDING salt. The known consequences are over a dozen salt-related health problems affecting about half of the adult population.

No less than 25% of the adult population has prehypertension (blood pressure 120/80 or more), which doubles the risk of hypertension and requires a healthier diet and lifestyle, including a low salt intake.

Do they really escape heart disease?

An Australian medical team made a special expedition to the Tukisenta tribe in the Highlands of Papua-New Guinea to answer that question. Coronary heart disease can be detected with electrocardiograph (ECG) tracings, which give an indication rather than an exact diagnosis.

A wave called the Q wave is an indication (but not proof) of coronary heart disease and they found Q waves in the age group 40–59 years in only 0.7% of 138 men and zero percent of 121 women.

Out of 779 people over the age of 15, five had some degree of heart failure, one of whom had mitral stenosis and the others had a diagnosis of heart failure due to lung disease. Angina pectoris was diagnosed in two people on the history, but neither of them had ECG changes before or after exercise. Otherwise coronary heart disease was either absent or virtually absent [1].

Average salt intake measured by 24-hour urine collections was 13.7 mmol (315 mg) in 135 women and 6.4 mmol (147 mg) in 138 men. This was enough for robust health, and the Tukisenta did better than the Royal Australian Air Force when tested with the Harvard Pack Test for physical fitness [1].

Tukisenta exposed to an industrial diet

Professor Malcolm Whyte let Trevor Beard copy some of his slides of the expedition, and told him an anecdote that is not in the journal article. The research team interviewed three Tukisenta tribesmen who had got jobs in Port Moresby about two years earlier. All three already had prehypertension.

What advice would you give them?

Today these men would have 3 choices:

1. THE BEST—control their blood pressure again with the food they had in the Highlands (fresh food with no added salt). They could buy fresh foods in Port Moresby.

2. THE WORST—increase the risk of hypertension, heart disease and stroke with salt and the Port Moresby diet (fresh and processed foods **without reading the label**).

3. A SAFE ALTERNATIVE—control the blood pressure with the Australian Dietary Guidelines—fresh foods and **selected low salt** processed foods (sodium up to 120 mg/100g)

Some fresh foods might lack flavour until their palates recovered from suppression by salt (a few weeks). But remember the taste of salt on arrival in Port Moresby had given them the same problem in reverse—every 'salt free' society including even the most salt free—the Yanomama (syn. Yanomamö)—has detested their first taste of salt [2].

References

1. Sinnett PF, Whyte HM. Epidemiological studies in a total highland population, Tukisenta, New Guinea. Journal of Chronic Disease 1973;26:265–90.
2. Chagnon NA. Yanomamö: the fierce people: Holt, Rinehart & Wilson; 1983:63.

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Salt Skip News will continue to be distributed in hard copy in The BP Monitor (QHA newsletter)

Don't be naïve about the salt industry

Alderman has damaged his credibility by leaving behind him a trail of published statements that are verifiably inconsistent, the most glaring examples being his statements on conflict of interest.

Conflict of interest

A few decades ago when the tobacco industry had become a generous source of research funds, there was a growing perception that industry-sponsored research was biased. International journals began to require authors to disclose their sources of research funds and formally declare any conflict of interest.

Some authors argue that factual findings should be immune from any such bias, nevertheless a study finding evidence that butter is harmless will attract limited attention if it has been funded by the dairy industry.

Alderman's record

He has admitted receiving consultancy fees from the US Salt Institute, an organisation representing American salt manufacturers, saying he did not believe the few thousand dollars he had been paid would affect his objectivity (Medical Journal of Australia 1999;171:162–163). But he had stated earlier with a co-author, 'We do not have any connection with or receive funds from the food and salt industries or any related commercial interests' (Medical Journal of Australia 1999;170:174–175).

Alderman contradicts himself yet again in his latest article in the American Journal of Medicine (2006;119:275.e7–275.e14):

> One author (MHA) has been an unpaid consultant to the Salt Institute, a trade organisation. Neither he nor the other authors have ever received research support, consulting fees, or speaker honoraria, from either the Salt Institute or any other commercial entity related to use of sodium.

If the few thousand dollars Alderman says he received from the Salt Institute would not affect his objectivity, why does he bother to deny receiving consulting fees, especially after admitting it in 1999?

What one teaspoonful a day would mean for big business

A level metric teaspoonful of table salt (5 mL) weighs 5.4 grams, and your pocket calculator will confirm that, if all Americans (280 million people) on average ate one teaspoonful of salt less each day, the annual demand for edible salt would drop by over 0.5 million tonnes. Salt is big business, and a democracy with free speech gives big business plenty of scope for propaganda.

'Massive relief' reported by Norman Swan after Alderman's first interview put the clock back 30 years in public health education about salt. The Romans used to ask *cui bono?*—who benefits? The obvious answer, perhaps to the tune of millions of dollars, is the multinational salt industry and large sections of the food industry that make heavy use of salt.

Alderman has called himself an 'unpaid' consultant to the Medical Advisory Board of the Salt Institute (Lancet 2001;358:665). A very effective way to help the Medical Advisory Board would be to send controversial findings to the mass media through the medical press.

The public needs to know who Alderman is writing for—colleagues interested in good data, the Salt Institute that keeps asking him for help, or the media that automatically make alarming medical reports reverberate around the world.

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