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Andrew Kemp

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Food additives and hyperactivity

BMJ 2008; 336: 1144 [Full text]

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 **Psychological interventions unfairly dismissed**

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 **Food additives may increase hyperactivity but this knowledge does not help to manage ADHD**

Somnath Banerjee (26 May 2008)

 **But what about the adults?**

Youssef A Beaini (28 May 2008)

 **Eliminating the risk of hyperactivity from food dyes**

Michael Jacobson, PhD (28 May 2008)

 **View from the eye of the storm**

Shula S. Edelkind, none (29 May 2008)

 **Don't forget other problems caused by additives.**

Marise A McQueen (6 June 2008)

Psychological interventions unfairly dismissed

24 May 2008



David Coghill,
Senior Lecturer in Child and
Adolescent Psychiatry
Centre for Child Health, 19
Dudhope Terrace, Dundee,
DD3 6HH,
Sarah Seth

Send response to
journal:

Re: Psychological
interventions unfairly
dismissed

Kemp was correct to point out the potential benefits of eliminating certain colourings and preservatives from children's diets and that the BMJ's news article "Agency rejects research on food additives" (1) had not accurately represented the findings of the EFSA report on this matter (2). He has however fallen into a trap that has snared so many commentators on the treatment of children with ADHD.

It is neither necessary nor helpful to crusade for one treatment approach at the cost of all others. This rather macho competitive

approach to comparing treatments puts patients, parents and clinicians in an unnecessarily difficult position whereby they are seemingly told that they need to choose between competing rather than complimentary approaches to treatment. This is particularly relevant in the treatment of ADHD where similar arguments have been rehearsed over many years with respect to the use of medication vs. psychological treatment strategies. By attempting to rebut the claims made in the original BMJ news article Kemp has, based on an incomplete and, probably unintentional, biased sampling of the evidence, underestimated the importance and efficacy of psychological interventions as part of the treatment package for children with ADHD.

It is not the case that behavioural treatment for ADHD "has little or no scientifically based support". A recent meta-analysis conducted by the National Institute for Health and Clinical Excellence (NICE)(4) reported that across a broad range of clinically relevant outcomes the quality of the evidence was generally moderate to high and that compared with control conditions psychological interventions for children with ADHD have moderate beneficial effects on parent ratings of ADHD symptoms and conduct problems at the end of treatment. These beneficial effects appear to be sustained at follow-up 3 to 6 months after the end of treatment. Indeed when similar standards of trial quality are used the effect sizes reported by NICE for psychological intervention are either a similar or greater to those quoted by Kemp in support of the effects of additives and colourings on hyperactivity (0.210 [95% confidence interval, 0.007 to 0.414]) with a standard mean difference of -0.25 (-0.56 to 0.07) for teacher reports of ADHD symptom reduction, -0.57 (-1.00 to -0.14) for parent reports of ADHD symptom reduction and -0.54 (1.05 to -0.04) for parent reported reduction in conduct problems. An evidenced based appraisal of the evidence would therefore suggest that pharmacological, psychological and dietary interventions all have a role in the treatment of ADHD. The challenge is for us to be reach a position whereby we can accurately predict which treatment(s) will be most appropriate for which children at which point in time.

A second difficulty with Kemp's editorial concerns his conclusions regarding the generalizability of the McCann et al

study (3) to children with ADHD. It is not necessarily the case that the effects on overactivity of eliminating certain colourings and preservatives from the diet of healthy children can be generalized to those children with extreme levels of ADHD. The study would need to be replicated in this group of children in order for this implied claim to be made. As the effect size of the dietary intervention was "small" in healthy children it is entirely possible that such a small change would not result in a clinically meaningful change in symptoms in those with high levels. Indeed the relatively small effect of removing these additives from the diets could not account for the very large effects sizes of between 2 and 3 that are found with respect differences in ADHD symptoms between cases and controls. Of course it is also possible that, due to physiological differences, children with ADHD will respond to the elimination of additives in a completely different way to that seen in healthy children which may result in either a larger or smaller response. Further investigation is clearly required.

1. Watson R. European agency rejects links between hyperactivity and food additives. *BMJ* 2008;336:687. doi: 10.1136/bmj.39527.401644.DB.
2. Assessment of the results of the study by McCann et al (2007) on the effect of some colours and sodium benzoate on children's behaviour. *EFSA J* 2008;660:1-54.
3. McCann D, Barrett A, Cooper A, Crumpler D, Dalen L, Grimshaw K, et al. Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children in the community: a randomised, double-blinded, placebo-controlled trial. *Lancet* 2007;370:1560-7.
4. National Institute for Health and Clinical Excellence (NICE). Attention deficit hyperactivity disorder: Diagnosis and management of ADHD in children, young people and adults; full guideline for consultation.
<http://www.nice.org.uk/guidance/index.jsp?action=download&o=39062>

Competing interests: DC has received research support and has acted as a consultant and advisory board member for several pharmaceutical companies who market medication for treating

ADHD. SS has received research support and has acted as an advisory board member for several pharmaceutical companies who market medication for treating ADHD.

Food additives may increase hyperactivity but this knowledge does not help to manage ADHD

26 May
2008



Somnath Banerjee,
Associate Specialist in
Community Paediatrics
East Kent Hospitals NHS
Trust, School & Child
Health, Queens House,
Queen Street, Ramsgate,
Kent, CT

Send response to
journal:

Re: Food additives
may increase
hyperactivity but this
knowledge does not
help to manage ADHD

I read with great interest the editorial on food additives and hyperactivity by Kemp. The editorial mentioned the three main available treatments as drugs, behavioural therapy and dietary modifications. Having practised in this field in the UK for some years I noted for the first time a 'dietary modification' as an important treatment option in ADHD. I always knew that modification in the educational curriculum has always been the third management option with drugs and behavioural therapy.

Over the years, a great deal of media attention has focused on diets for treatment of ADHD. Some have suggested a “few foods” approach elimination diet if psychological interventions are not effective.^{1, 2} Most of these dietary manipulations involve eliminating additives (Feingold diet) and foods incriminated as increasing hyperactivity, such as sugar, chocolate and caffeine or common food allergens such as wheat, milk and eggs. Several double-blind placebo-controlled studies have failed to support beneficial effect of dietary manipulation on the behaviour, except possibly in a very small percentage of children.^{3, 4} Few studies have reported behavioural improvement with hypoallergenic diets.⁴⁻⁶ The results of these studies require further replication before dietary intervention can be considered efficacious.

A working group of the American Academy of Child and Adolescent Psychiatry has stated “Given the minimal evidence of efficacy and extreme difficulty of inducing children and adolescents to comply with restricted diet, they should not be recommended.⁷ Current evidence suggest that “diets are arduous to implement and some may be nutritionally deficient”⁸ and a restriction or elimination of diet in children with ADHD is not recommended.⁹ The available best evidence practice is that a response to food may show change in mood state (irritability) rather than ADHD symptoms per se.

General practitioners in the UK possibly have little awareness about ADHD management in children and adolescents, and this editorial wrongly gives them an impression that dietary modification is an important modality in treatment, which may help in some overactive younger children but not to those who

have a diagnosis of ADHD.

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9. Scottish Intercollegiate Guidelines Network. Attention Deficit and Hyperactive Disorders in Children and Young People A national clinical guideline 2001 SIGN Executive, Royal College of Physicians Edinburgh 2001.

Competing interests: None declared

But what about the adults?

28 May 2008



Youssef A Beaini,
Cardiology Fellow
Cardiology Dept, Bradford
Teaching Hospitals, BD9
6RJ

Send response to
journal:

Re: But what about the
adults?

We are all aware of the biopsychosocial burden of ADHD in children, but little attention seems to be paid to adults with the disorder, probably because this is an emerging field of research. However, since children have been treated for this disorder for decades, it begs the common-sense question: "What happens to them when they grow up?" (1, 2, 3). Screening tools have

improved, with a six question questionnaire now available from the World Health Organisation for use in adults (4).

And the question this article should also be asking is: "Would food additives affect adults' symptoms too?"

Obstacles cited previously to dietary interventions, such as nutritional concerns and patient concordance (5), may be less of a hindrance in adults with the disorder. Surely, given the significant socioeconomic burden of ADHD in adults (6), shouldn't a simple intervention, such as dietary advice, also be trialled in adults?

Competing interests: none

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6. Kessler RC, Lane M, Stang PE, Van Brunt DL. The prevalence and workplace costs of adult attention deficit hyperactivity disorder in a large manufacturing firm, *Psychol Med*. 2008 Apr 21:1-11. [Epub ahead of print]

Competing interests: None declared

Eliminating the risk of hyperactivity from food dyes

28 May 2008 ▲▼▲

Michael Jacobson, PhD,
Executive Director
*Center for Science in the
Public Interest,
Washington, DC, USA,
20009*

Send response to
journal:

Re: Eliminating the risk
of hyperactivity from
food dyes

Considering the numerous studies conducted over the past 30 years, Andrew Kemp is right in urging physicians to routinely encourage patients with hyperactivity to avoid food dyes.

However, considering the dyes' lack of health benefit and the risk they pose, the proper public health approach is for national governments to ban the use of all food dyes. After all, it is extremely difficult, first, for a parent to determine that a child is sensitive to dyes and, second, for parents to protect easily tempted children from tasty colorful foods that are served at parties; sold at stores, restaurants, and vending machines; and traded among friends.

The British Food Standards Agency deserves credit for encouraging manufacturers and restaurants to switch to safer, natural colorings. As a result of government pressure, Kellogg, McDonald's, Kraft, Mars, and other multi-national companies now market foods without dyes in Britain, but market the same foods with dyes in the United States. The U.S. Food and Drug Administration maintains flatly that "well-controlled studies conducted ... have produced no evidence that food additives cause hyperactivity or learning disabilities in children." (<http://www.cfsan.fda.gov/~acrobot/foodic.pdf>; accessed May 28, 2008)

Michael F. Jacobson, Ph.D.

Executive Director

mjacobson@cspinet.org

Competing interests: None declared

View from the eye of the storm

29 May 2008 ▲▼▲

Shula S. Edelkind,
Webmaster & Research
Librarian
*Feingold Association/ 554
East Main Street, #301/
Riverhead, NY 11901,
none*

Send response to
journal:

Re: View from the eye
of the storm

Sirs,

I was very pleased to see the editorial on food additives and hyperactivity by Dr. Kemp. As a person with many years experience using the low-additive Feingold diet, as well as studying the research, I offer the following points:

I was not surprised that the McCann study showed a response from the 20 - 62.4 mg of mixed food dyes given to normal children. However, a long-time

problem for both parents and researchers is that it is impossible to find out the truth about the amount of dye to which our children are actually exposed. Manufacturers do not reveal this information, and the last good survey on food dye additive use in the U.S. was done in 1977 ⁽¹⁾, where a study of 12,000 people for two weeks showed that they averaged a daily intake of food dye at up to 327.6 mg per day. Remember, this study was done in 1977, and one look around any supermarket will make you realize that the amount of food dye ingested today is much greater.

When referring to “younger children,” as though only younger children would respond to an additive-free diet, Dr. Banerjee is echoing the results of studies such as Goyette⁽²⁾ and Weiss⁽³⁾ in which only the youngest children reacted to a small dose of food dye – approximately a tenth of the 327.6 mg they may have actually been eating per day! In a similar way, if you were to study the effect of aspirin on headache, using only a baby aspirin, you would undoubtedly conclude that aspirin “works” only for small children.

When I was attending college in the 1990’s, I conducted a laboratory experiment showing that it takes 155 mg of Red #40 to match the red color in one tablespoon (Tb) of the Kroger brand of prepared cake frosting. It requires 2 to 3 Tb of frosting to frost a single cupcake; this is the equivalent of 300-450 mg of food dye. Since a child may easily ingest hundreds of milligrams of food dye in a single day, this is the amount that should be tested.

It was a disappointment not to see a mention of the following important research:

1. The Rowe & Rowe 1994 study: 75% of 200 children responded to the removal of dyes from their diet, and a dose-response effect was observed in those tested by a double-blind challenge of the single food dye tartrazine (Yellow #5).⁽⁴⁾
2. The studies ^(5,6) in which Dr. Neil Ward – as a chemist – measured the zinc excretion of children and determined that upon exposure to food dyes, ADHD children excrete zinc excessively. Deficiency of this important mineral is related to behavioral problems such as seen in ADHD. It is therefore likely that those with ADHD will be significantly more affected by food dyes than normal children – and the effect of food dyes on ADHD children is not unknown after all.
3. An old but excellent re-analysis of several early studies by Dr. Bernard Weiss, a toxicologist at the University of Rochester, concluded:⁽⁷⁾

The Feingold hypothesis postulates that many children who exhibit disturbed behavior improve on a diet devoid of certain food additives. Its validity has been examined on the basis of controlled trials. The total evidence, although not wholly consistent, nevertheless suggests that the hypothesis is, in principle, correct.
(Emphasis added)

Among other things, Dr. Weiss pointed out that almost all of the so-called "negative" studies were not negative at all when analyzed correctly.

Dr. S. Banerjee is of the opinion that keeping children on an additive-free diet is difficult. Unless he has tried using such a diet for his patients, this is simply an opinion. If he has tried offering dietary intervention to patients without the help of a parent support group, we can understand why they found it difficult. The Feingold Association teaches parents how to implement a diet free of specific additives, and has been doing so since 1976. When the diet is presented appropriately, we have found that compliance is not a big problem. We show families how they can find acceptable foods of every type, including snack foods, desserts, and even "fast food."

Dr. Banerjee suggested that such a diet might be "nutritionally deficient." This concern was addressed by two studies way back in 1978. At that time Harper⁽⁸⁾ and Dumbrell⁽⁹⁾ compared children on the Feingold diet with those on a "regular" diet. Both concluded that the Feingold-type diet is nutritionally superior, and that children on it would be more likely to achieve the RDA recommendations.

While studies using the few-foods oligoantigenic diets do have the same approximate results as studies using a Feingold-type diet, our experience for the past 32 years has been that such a restrictive diet is generally not necessary – the more liberal Feingold Program is usually enough. At its core is the removal of petroleum-based chemicals from the diet and environment; besides their effect on behavior, these additives have been shown to have other harmful "side effects" including cancer, DNA damage, respiratory problems, reproductive damage and nerve damage. Thus, there are many good reasons to eliminate unnecessary chemicals like food dyes; can anybody name one good reason why they should be deliberately fed to children? Children with ADHD need to eat anyway, so why not provide food that is nourishing, tasty, and free from petroleum? This diet should be offered to parents as a safe, healthy, and often-effective first-line treatment. Other treatments, including drugs and behavioral therapy, can always be added if needed.

Support groups:

UK: www.hacsg.org.uk

USA: www.feingold.org

Australia: www.fedupwithfoodadditives.info

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- (9) Is the Australian version of the Feingold diet safe? Dumbrell S, Woodhill JM, Mackie L, Leelarthaeapin B, Med J Aust 1978 Dec 2;2(12):548, 569-70

Competing interests: SE maintains the website and studies research on all sides of the diet-behavior controversy as the Research Librarian for the Feingold Association. The salary received for this qualifies her as a volunteer - not, therefore, a financial conflict. She is a mom with over 25 years experience using the Feingold diet for her family.

Don't forget other problems caused by additives.

6 June 2008



Marise A McQueen,
Staff Grade, anaphylaxis
service, western infirmary,
Glasgow.
G11 6NT

Send response to
journal:

Re: Don't forget other
problems caused by
additives.

ADHD is a difficult condition, which I do not see at the Anaphylaxis Clinic. I do see many patients with cutaneous (urticaria, angioedema), and cardiorespiratory problems which appear to be related to a diet high in artificial preservatives and colours. These patients improve on a diet low in additives. I sometimes call it the 'Diet Coke' syndrome, since many sufferers consume large volumes of fizzy drinks each day. In Scotland, the 'Diet Irn Bru' syndrome is also often appropriate. Next time you have a Diet Coke - check the label for preservatives.

Competing interests: None declared

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