

Halloween Science

A critique of *Trick or Treatment?* by Simon Singh and Edzard Ernst written by William Alderson RSHom LLSCH on behalf of H:MC21 (Homeopathy: Medicine for the 21st Century); March 2009.

Abstract

APPROACH: *Trick or Treatment?* by Simon Singh and Edzard Ernst claims to “examine the various alternative therapies in a scrupulous manner” (p.3). This critique assesses the validity of this claim, both in general and specifically in respect of homeopathy, by analysing the authors’ own arguments and evidence for accuracy, consistency and reliability. Where information is lacking in *Trick or Treatment?*, the critique incorporates evidence from other primary sources (where possible) or reputable secondary sources. Some conclusions reached on the basis of Ernst and Singh’s own statements are also supported by reference to other sources. All sources are referenced.

RESULTS: We have identified nineteen major faults in the case presented by this book:

Evidence: (1) The authors frequently rely on figures, trials, events, quotations, statements, opinions and explanations which are unsupported by reference to sources. (2) This evidence is frequently misleading as a result of being presented out of context. (3) The authors use different criteria when assessing the validity of evidence, depending on whether the evidence supports their views or not.

Science: (4) The authors commit the common fallacy of confusing absence of proof with proof of absence. (5) The importance of theory is minimized or even ignored, when discussing both science in general and individual alternative therapies. (6) The authors assume that orthodox medicine is scientific, but offer no justification for this position. (7) There is evidence that the authors do not understand the principles and practice of orthodox medicine.

Definitions: (8) Alternative medicine is defined in four different ways in the course of the book. (9) Other significant terms, such as ‘science’, ‘disease’, ‘cure’, ‘effectiveness’ and ‘orthodox medicine’ are undefined. (10) This allows arguments to be built on vague preconceptions rather than on clearly defined principles. (11) The differences between orthodox medical and alternative medical definitions is not taken into account, despite their impact on the design of trials. (12) The authors fail to present the ideas of evidence-based medicine accurately. (13) The authors fail to present the nature and development of homeopathy accurately, raising doubts about their presentation of the other therapies. (14) They also call into question the principles of orthodox drug therapy, despite the fact that the tests used by this therapy underpin much of their argument.

Analytical tools: (15) The authors fail to prove that their main tool, the randomised controlled trial (RCT), is valid for testing curative interventions, while presenting evidence that there are serious problems with using it for this purpose. (16) They show that a tool derived from these trials, the meta-analysis, is prone to lack of objectivity, yet they rely on this for some of their conclusions. (17) Their conclusions are also dependent on the concept of the placebo effect, but they make it clear that this effect has no scientific basis and is so unpredictable as to have questionable scientific validity in this context. (18) They acknowledge the importance of individuality in the curative process, but deny its significance for the design of analytical tools. (19) They fail to take into account the need for analysis of evidence from clinical practice.

CONCLUSIONS: Ernst and Singh have failed to provide a secure theoretical or evidential base for their argument, and have used analytical tools inadequate (in this context) for achieving objective and reliable conclusions. The result of these weaknesses is that their argument relies heavily on preconceptions, variable definitions and opinion, a problem exacerbated by a tendency to confirmation bias on the authors’ part. As a result, *Trick or Treatment?* has no validity as a scientific examination of alternative medicine.