Headline	**How not to be confused by health studies**		
Date	**26 Jan 2011**	Language	**English**
MediaTitle	**Daily Express (KK)**	Page No	**30**
Section	**Health**	Article Size	**275 cm²**
Journalist	**N/A**	Color	**Black/white**
Frequency	**Daily (EM)**	ADValue	**567**
Circ / Read	**30,557 / 97,836**	PRValue	**1,700**

How not to be confused by health studies

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FOR decades, margarine was hailed as a "healthy alternative to butter". Now the experts say we should not even look at it. And even vitamin C, touted as a disease fighter by Nobel laureate Linus Pauling and many others, was recently found to cause DNA damage!

Can vitamins prevent cancer? Do cellphones cause it? Should women take hormones after menopause? Is salt a dietary evil? How about coffee? What about sugar? And alcohol?

There is an amazing amount of health information out there and it being expanded and changed constantly. So, it is no surprise that we are bombarded with reports about conflicting health studies almost daily. Such conflicting health study findings leave many confused and wondering why the experts cannot seem to agree on what is good or bad for us. This is made worse on the Internet. Everyone can now publish. What do you believe?

Some of us change what we eat, drink, take or do based on such research – at least until the next, contradictory study comes along. The rest of us are simply fed up at the barrage of health reports, ignoring or dismissing them as the scientific equivalent of the rumours around the death of Michael Jackson.

Missing The Point.

Many studies that make headlines or lead TV reports are based on flawed or inconclusive research. Others offer only incremental advances in scientific knowledge. Still others may provide important new information on diet, fitness, lifestyle or treatment options. Some come with credible referees and some are figments of someone's imagination.

Knowing the difference can be a real challenge. Let me to try and help you wade through the maze.

Let us start with the good news - you don't need a medical degree to spot the elements of a truly significant study finding. You just need to know what to look for. The most important thing to recognise, experts say, is that the latest study finding is usually just that: merely the latest in a long-running series of findings. Scientific knowledge typically develops in incremental stages, not in great leaps in understanding or big breakthroughs.

Most studies or scientific experiments build on earlier research. And most research findings are not the final word on a subject, but simply small pieces of a larger puzzle yet to be completed. Eventually a consensus emerges when enough conclusive research is in. Some examples: the links between smoking and lung cancer, lead paint and brain damage, fluoride and dental fluorosis took decades to become clear.

You need to understand that there are different kinds of scientific studies and methods. Many factors – including flaws in methodology and a researcher's bias – can skew the results.

To evaluate the significance of a new study, experts advise weighing several important factors. Among them:

Who did the research?

Studies conducted by unbiased organisations – such as university researchers or science-based government organizations, like the National Academy of Sciences or the Atlanta-based Centers for Disease Control and Prevention – tend to be more reliable than research by organizations with vested interests, such as political operatives, advocacy groups and drug companies.

Was the research published in a peer-reviewed journal?

Countless Web sites promote miracle cures for everything from cancer to AIDS to baldness. However, the most valid treatments and findings come from controlled scientific experiments. These need be independently repeated or verified. They may need to be repeated.

Such findings are most often published in reputable, "peer-reviewed" journals. Most media health reports come from studies in such weekly publications as The Journal of the American Medical Association, The *New England Journal of Medicine*, *Science and Nature*. Before research articles appear in those journals, panels of scientific experts evaluate the work – looking for flaws, biases and strengths. The process can take many months, but it can weed out bad research.

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How was the study conducted?

Health research generally falls into three categories:

- laboratory experiments
- animal tests
- human studies

Lab experiments are done to determine the potential benefit or risk of a substance. They most often involve tests on cells or tissue samples in a test tube.

If such tests are promising, scientists may perform experiments on animals such as mice, rats or guinea pigs. Such lab studies can be carefully controlled, and researchers can test new drugs and substances, on cells, tissues and animals that they would not be able to try on humans. But such studies aren't always applicable to humans, because what happens in a test tube or animal might not apply to us.

Was it a clinical trial?

Scientists conduct several kinds of studies involving humans. "Clinical trials" are the gold standard of research. In such studies, patients are randomly assigned to two groups; one receives the treatment under study, the other receives a placebo, or inactive dummy pill. Over time, the patients are tracked to determine the effectiveness of the treatment. Neither the researchers nor the participants know which group is receiving the treatment. Trials conducted over years or decades that involve hundreds or thousands of patients have the greatest power to determine a treatment's effectiveness.

Researchers also conduct "observational studies". These track people over time looking for associations between health and lifestyle or other factors. Such studies are not as conclusive as clinical trials, but they have been able to uncover connections between strongly linked factors, such as the link between smoking and lung cancer.

Observational studies come in two varieties:

- case-control studies" which compare people with a certain disease with a comparable group without that disease cohort studies where groups of people are followed for a long time
- Sometimes, you can also get a review which looks at all past studies.

You can also look at the internet. It is a minefield but still there a good and reliable sites that are back by academia like Harvard Medical School or Mayo Clinic. You could also log on the site of the American Medical Association (AMA) or the British Nutrition Foundation.

How should the findings be applied?

With very few exceptions, no single study provides practical advice that applies to all patients. Almost always, the best person to help you determine the value of a new study and its implications on your health is your personal physician or pharmacist. He or she is in the best position to take into account your personal circumstances - your medical history, lifestyle and any genetic factors - to help you decide whether the findings of new scientific research should prompt a change in your