

However, the 108 service provides emergency care based on the conventional guidelines laid down by the allopathic medical system, which is inadequate in treating traumatic brain injuries and its long-term effects. Existing evidence suggests great utility of homeopathic medicines in treating acute traumatic brain injury, and its complications. If a homeopathic first aid kit with well known prophylactic remedies is provided within the 108 service, by adequately training the paramedics in the methods of handling and administering these remedies, we propose that additional lives can be saved. For this purpose, we provide evidence, suggest a need, and make a case to assist that the medical fraternity in discussing the effectiveness of homeopathy in treating traumatic brain injury and appropriately implementing homeopathic first aid within the 108 services such that they are accessible to the victims within the critical recovery window.

Keywords: Traumatic Brain Injury, 108 emergency services, Homeopathy, First aid kit

How to deal with missing data in the analysis of a quality of life study in cancer patients with randomized adjunctive classical homeopathy

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The aim of this study was to evaluate whether homeopathy had an influence on global health status and subjective wellbeing when used as an adjunct to conventional cancer therapy.

In this pragmatic randomized controlled trial, 410 patients, who were treated by standard anti-neoplastic therapy, were randomized to receive or not to receive classical homeopathic adjunctive therapy in addition to standard therapy. The study took place at the Medical University Vienna, Department of Medicine I, Clinical Division of Oncology. The main outcome measures were global health status and subjective wellbeing as assessed by the patients. At each of three visits (one baseline, two follow-up visits), patients filled in two different standard questionnaires.

As expected, the study had to deal with a considerable amount of missing values for the outcome measures. After informed consent and randomization, 37 patients (16 in the homeopathy group, 21 in the control group) declined to

further participate, leaving 373 patients with baseline measures. 335 patients completed at least two scheduled visits, 282 measurements were available for the third visit. The improvement of global health status and subjective wellbeing between visit 1 and 3 was significantly stronger in the homeopathy group when compared to the control group.

In the statistical analysis missing values were taken into account by using the multiple imputation technique. This method and its underlying assumptions (missing at random) will be explained and discussed. Furthermore, sensitivity analyses under various alternative assumptions concerning the missingness mechanism (missing not at random) will be presented to evaluate the dependence of the results in the primary analysis on these assumptions. The positive results for subjective wellbeing turned out to be robust even in extreme scenarios of deterioration in homeopathy patients with missing values. This study demonstrates that modern statistical methods are able to adequately deal with missing data.

Keywords: Oncology, Classical homeopathy, Quality of life, Subjective wellbeing, Missing data

Learning technologies in homeopathic medicine education: drilling deeper into the dynamics and changing behaviours of the student body in complementary and homeopathic medicine

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Background: There are emerging trends in learner attitudes, behaviour and values in relation to technology and learning within the complementary medicine field. No longer do colleges such as Endeavour College have a simple, homogenous student body. Now significant diversities in age, demographic and psychographic are increasingly present. In the last 3 to 5 years new features have emerged, with 'wellness sector', forward looking, proactive learners arriving in the classroom.

Method: A survey is undertaken annually in which all current students at Endeavour College were invited to participate. The Student Technology Survey examined the personal and educational use of technology, confidence and fluency in working with technology as a student, and attitudes and perceptions of technology and other facilities within the college. This paper drills into this survey data and reports on the interim results of three years of the

homeopathy student voice at a large multi modality college of CAM.

Results: Responses to the survey over 3 years varied (Year 1 – n = 508; Year 2 – n = 572; Year 3 – n = 576). Rapid rise in the use of tablets (57%) in learning dominates the results and changing behaviours, and the increasing use of social media channels to facilitate student learning communities and accessing study resources. Increasingly, learners (39%) use the learning management system daily.

Discussion/Conclusion: Front and centre of this yearly collation of students attitudes and decisions is the growing use and in fact dependence on technologies, from apps, to learning management systems, on hardware such as smart phones and tablets. The data points to supporting the clear trends in the university sector world wide, but also key differences, with some resistances to the use of technologies, due to the unique values, demographics and psychographics of those who attends the college, and highlights urgent infrastructure priorities for CAM education.

Ultra-high dilutions of homeopathic remedies alter cell viability and induce apoptosis in the MCF-7 human-cancer-cell-line in an in vitro environment

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Homeopathy is a CAM therapy widely used around the world to treat diseases, cancer being one of them. This trial addresses the question if cancer cells could directly be affected by homeopathic preparations. I used an in vitro setup with automatized screening for cell viability and apoptosis for this purpose. Ultra high dilutions (C30, C200) prepared according to the homeopathic pharmacopeia and therefore called potencies of different remedies (*Phosphorus*, *Carcinosin*, *Phytolacca*, *Thuja*, *Asterias*, *Carbo animalis*, *Agaricus phalloides*, *Sabal serrulata*) had been tested on cultures from breast-cancer cell line MCF-7. HEK293 served as control for cell specificity. The potencies had been tested against demineralized water and dilutions of unpotentized saccharose. Remedies were applied in an 11 point two fold series of dilutions in duplicate. This trial showed that *Phytolacca* and *Carcinosin* altered the viability of MCF-7, whereas the HEK-cells showed only little response. There was no clear correlation between the viability test and the apoptosis test after 24 h, thus the main effects on viability occurred either due to cell cycle delay or arrest. *Phytolacca* and *Carcinosin* showed a distinct pattern of activation and inhibition over the series of dilutions that was very different from other rem-

edies and controls. Strikingly the same dilution could increase or decrease the viability. The findings suggest that ultra-high dilutions of substances have biological activity apart from placebo effects. Remedies that are used since decades to treat breast cancer and are currently used in the Banerji-Protocols showed their ability to significantly alter the behavior of cancer cells through changes in viability and induction of apoptosis.

Keywords: Cancer, In vitro, Viability, Apoptosis, MCF-7, Ultra-high dilution, Cell lines, *Phytolacca*, *Carcinosin*

Cytokine production in mice perinatal model treated by LPS and Zincum metallicum

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Background: This preliminary study developed a model of LPS-induced stress for evaluation of inflammatory process in F1 generation after mother's treatment with *Zincum metallicum* (Zm).

Object: To evaluate the cytokine production in vivo in mothers and in F1 generation with the possible effect of homeopathic dilution of *Zincum metallicum*.

Methods: Animal ethics CEUA-UNIP#156/13. 26 BALB/c parental females (Pf) were divided in 8 groups. LPS (n = 19) and no-LPS (n = 7) each with subgroups: no-Zm, Zm-200cH, Zm-30cH, Zm-5cH. LPS treatment: 9.5 day of Pf pregnancy; and all F1 24 h before euthanasia. Peritoneal washes collected after Pf weaning recovery; and F1-adulthood. The cytokines CCL2, IL-6, IL-10, TNF-alpha, IL-1-beta; IL-12 were ELISA assayed; Nitrite + nitrate by Griess reaction.

Results: In Pf LPS decreased cytokines production especially CCL2, in non-statistically significant way due to high variability and low sample size. This trend was reproduced also in F1 of the same mothers. Zm high dilutions showed a trend to counteract this effect. A marked significant difference in LPS-induced CCL2 and IL-10 production was observed between F1-males (high) and F1-females (low). Zm-200cH and Zm-30cH treatment of mothers increased the CCL2 and IL-10 production in F1-females in a non-statistically significant way. Nitrite + nitrate in Pf was affected by the Zm treatment (p < 0.01), with the maximum effect seen with the Zm-200cH, without influence from the LPS treatment. In F1 generation the Nitrite + nitrate was double in females than in males but no differences were observed between groups for Zm treatment of mothers.