

**UNIVERSITI TEKNOLOGI MARA**

**THE VALIDITY OF RESONANT  
FIELD IMAGING (RFI) FREQUENCY  
COUNTER IN MEASURING  
PSYCHOLOGICAL STRESS LEVELS  
IN COMPARISON WITH CLINICAL  
AND BIOLOGICAL STRESS  
MARKERS**

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Thesis submitted in fulfillment  
of the requirements for the degree of  
**Master of Science**

**Faculty of Medicine**

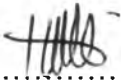
August 2015

## AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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Frequency Counter in Measuring Psychological Stress  
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## ABSTRACT

Traditionally, self-administered questionnaires and measurement of cortisol have been widely used in the evaluation of psychological stress. Nevertheless, these approaches are rather time consuming, need full individuals' cooperation and raise a stigma issue. As bioenergy field of the human body has been claimed as an important parameter of mental health, this study attempted to validate the Resonant Field Imaging (RFI) frequency counter in measuring psychological stress levels via the measurement of bioenergy frequency. A cross-sectional randomized study was therefore conducted on 141 healthcare workers in Faculty of Medicine, Universiti Teknologi MARA (UiTM) Sungai Buloh Campus. The bioenergy frequency of subjects was measured at the frontal area using RFI frequency counter, followed by the measurement of salivary cortisol levels and the evaluation of psychological stress, anxiety and depression symptoms via General Health Questionnaire-12 (GHQ-12), Kessler Psychological Distress Scale (K10) and Hospital Anxiety and Depression Scale (HADS). The prevalence of psychological stress determined by GHQ-12, K10 and HADS scores were found to be 38.3%, 48.2%, 47.5% and 20.6%, respectively. Both bioenergy frequencies and salivary cortisol were revealed to be significantly different among gender and educational levels ( $p < 0.05$ ). Psychological stress measured via GHQ-12, K10 and HADS was significantly associated with factors such as gender, age, educational levels and marital status ( $p < 0.05$ ). Further analysis revealed that the main risk factors for stress were being a female, single and working in the clinical field. A significant difference in bioenergy frequencies was also found between the groups of stressed and non-stressed subjects ( $p < 0.05$ ). There were weak correlations reported between bioenergy frequency and K10 and HADS-Anxiety subscale. The RFI frequency counter has moderate sensitivity and specificity with moderate Positive Predictive Value (PPV) and Negative Predictive Value (NPV). In conclusion, the RFI frequency counter could serve as a potential screening tool in detecting individual with stress.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 BACKGROUND OF STUDY**

Malaysia is now more than halfway through the journey of becoming one of the fully developed countries in the world by the year 2020 as stated in the Vision 2020. This vision that had been proudly announced by the third Prime Minister, Tun Dr Mahathir Mohamad during the presentation of the Sixth Malaysian Plan in February 1991 is aimed to attain a successful developed nation which encompasses all aspects of life, from economic prosperity, social well-being, educational world class, political stability, as well as psychologically balance. Impressively, the goal embedded in the Malaysian government's plan was within reach since there were tremendous progressions on the economic growth, education and other factors for the past few years (Sittamparam, 2012). Despite of all these grandly achievements, several studies and surveys among Malaysians had revealed a gradual decline in the society's health as a result of the hectic daily life they encountered these days in fulfilling the increasing demands.

For instance, mental health issues in Malaysia are now getting a serious attention since the number of people who struggle with mental illnesses such as depression, anxiety disorders, emotional distress or post-traumatic stress is increasing each year. According to the fourth National Health and Morbidity Survey conducted in 2011, 12% of Malaysians aged between 18 and 60 were suffering from some forms of psychiatric morbidities, which demonstrated an increment of 0.8% from the same survey held in 2006. Furthermore, the increasing of the rate was also quite alarming among children and teenagers whereby as of 2011, 20% of the children and teenagers were suspected to experience or prone to any mental disorders (Ministry of Health Malaysia, n.d.; World Health Organization Western Pacific Region, n.d.). These situations are extremely worrying since it will create a lot of problems not only to the individual well-being but also to the society and nation if the issues are being neglected for too long.