

Po-Chang Huang, BPH
How-Ran Guo, MD, MPH, ScD

Graduate Institute of Environmental
and Occupational Health, Medical
College, National Cheng Kung
University

Health Effects of Mobile Phone Base Stations and the Use of Mobile Phones

Key Words

Mobile phone
Electromagnetic field
Base station
Traffic accident
Pacemaker
Neoplasm

ABSTRACT

Health effects of ionizing radiation are well documented, but the evidence for those of non-ionizing radiation is less consistent. As the use of mobile phones becomes increasingly popular, concerns over the possible health effects of the radiation emitted from mobile phones and mobile phone base stations have grown. In particular, some *in vitro* studies have shown that radio frequencies near the ranges used by mobile phone communication might influence expressions of some genes. We conducted a review of the literature on epidemiological studies of the health effects to address this issue. The results suggest that the use of mobile phones should be prohibited within hospitals and in patients with pacemakers. There is strong evidence for an association between the usage of mobile phones during driving and traffic accidents. However, the use of mobile phones or living near a mobile phone base station has not yet been shown to be related to an increased risk of cancer or other long-term health effects.

(N. Taipei J. Med. 2002;4:8-16)

INTRODUCTION

Radiation is one way of energy transmission. According to the frequency, it can be categorized as ionizing radiation and non-ionizing radiation. Ionizing radiation is above 10^6 GHz,¹ and its adverse health effects on humans have been well documented.²⁻⁴ Nowadays, many people worry about non-ionizing radiation not only due to projection of the fear of ionizing radiation, but also because of the existence of some scientific evidence. Wertheimer and Leeper⁵ reported

an association between exposures to electromagnetic fields (EMFs) around electric cables and cancers among children back in 1970. However, studies on mobile phones and their base stations are still relatively limited. The frequencies of radiation from home electrical apparatus (50 to 60 Hz) differ from those from mobile phones (around 1 to 2 GHz), and therefore results of studies on home electrical apparatus do not necessarily apply to mobile phones and their base stations. Nonetheless, they are helpful in terms of understanding the possible health effects. To summarize

Received: May 11, 2001
Accepted: November 22, 2001

Correspondence: Dr. How-Ran Guo, Graduate Institute of Environmental and Occupational Health, Medical College, National Cheng Kung University, 138 Sheng-Li Road, Tainan 704-28, Taiwan, R.O.C.
Tel: 886-6-235-3535 ext. 5802; Fax: 886-6-275-2484;
E-mail: hrguo@mail.ncku.edu.tw