

FOREWORD

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CARDIOVASCULAR DEATHS AND OCCUPATIONAL EXPOSURE TO MAGNETIC FIELDS IN THE NATIONAL MORTALITY FOLLOWBACK SURVEY. G. Mezei¹, D. Cher², M. Kelsh², P. Chapman², R. Kavet¹. ¹Electric Power Research Institute, Palo Alto, California 94304, USA, ²Exponent Health Group, Menlo Park, California 94025, USA.

INTRODUCTION: A previous epidemiologic study showed an increased risk of death from acute myocardial infarction (AMI), but not from chronic coronary heart disease (CCHD), in relation to magnetic field (MF) exposure in the workplace [1]. These results support the hypothesis, which links MF exposure – through altered heart rate variability – to acute cardiac deaths. A second, follow up epidemiologic study, however, did not confirm these results [2].

OBJECTIVES: We examined the relationship between occupational exposure to MF and mortality from cardiovascular causes, and evaluated whether this relationship could be confounded by smoking.

METHODS: We analyzed a publicly available data set from the National Mortality Followback Survey (NMFS). The NMFS data set contains information abstracted from death certificates and from interviews with proxy respondents on a systematic sample of deaths in the United States in 1986 and 1993. Occupational exposure to MF was determined based on job titles (longest held job during the decedent's lifetime as reported by the proxy respondents) and published occupational MF survey measurements [3], and was categorized as low, medium or high exposure (with cut-points at 0.15 and 0.2 μ T). We included the following causes of death as outcomes: arrhythmia-related deaths (ICD-9 codes 426-427), AMI (ICD-9 code 410), CCHD (ICD-9 codes 411-414), and atherosclerosis-related deaths (ICD-9 code 440). We used proportional hazards modeling. For each outcome of interest, we evaluated two primary models. In the reduced models, we adjusted for race, sex, working status (active or retired), level of education and year of death. In the full models, in addition to the above variables, we also adjusted for the number of cigarettes smoked per day and the number of years smoked regularly.

RESULTS: Table shows adjusted rate ratio (RR) estimates and 95% confidence intervals from our full models. No consistent dose-response relationship was observed between MF exposure and cardiovascular disease-specific mortality. Adjustment for smoking resulted in a moderate decrease in the exposure related effect estimates.

MF Exposure	Arrhythmia	AMI	CCHD	Atherosclerosis
Low	1.00	1.00	1.00	1.00
Medium	1.24 (0.84,1.84)	1.39 (1.17,1.66)	1.26 (1.05,1.51)	1.11 (0.68,1.82)
High	1.09 (0.67,1.79)	1.10 (0.89,1.36)	1.22 (0.97,1.54)	0.98 (0.44,2.19)

CONCLUSIONS: Our results do not provide evidence for an association between occupational MF exposure and cardiovascular mortality. Lack of proper adjustment for lifestyle related confounding variables, such as smoking, may have contributed to a perceived increase in relative risk estimates in previous analyses.

References.

[1] Savitz et al. Am J Epidemiol 1999;149:135-42.

[2] Sahl et al. Am J Epidemiol 2002; 156:913-8.

[3] Floderus et al. Int J Occup Environ Health 1996;2:226-38.