

Risk perception, psychiatric morbidity, and electro-magnetic hypersensitivity

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Introduction

Risk perception (RP) is an important risk factor in environmental illness. Unexplained physical symptoms may occur due to concerns for electro-magnetic field (EMF) sources. Our previous study has demonstrated that people with psychiatric morbidity are associated with a higher risk of reporting electro-magnetic hypersensitivity (EHS)¹. In this study, we aim to examine the determinants of RP on EMF sources and investigate further regarding the role of RP in the relationship of psychiatric morbidity and sensitivity to EMFs.

Methods

People with self-reported EHS ($n = 170$) were identified among a nation-wide representative sample of Taiwan ($n = 1197$) in a telephone survey¹. The interview contents consisted of questions regarding demography, presence of catastrophic illness, self-reported health conditions, impairment of functioning, medical utilization, and RP of 13 kinds of environmental agents. People with psychiatric morbidity were identified by a screening questionnaire, the Brief Symptom Rating Scale-5 (BSRS-5) with a cutoff score at 6.

Results

Survey population showed concerns about the effects of most environmental agents on human health (**Figure 1**). Female gender, higher educational levels, and young and middle aged people were significant correlates of perceived risks of base station (**Table 1**). Psychiatric morbidity, together with age, a very poor health condition and inability to work, remained significantly associated with self-reported EHS after adding 'RP of base stations' in the model (**Table 2**). We incorporated the interaction term between RP of base stations and psychiatric morbidity in further analyses and found that it had no statistical significance, indicating that RP had no differential effect on the relationship between psychiatric morbidity and EHS.

Conclusions

RP had neither confounding nor modifying effect on the relationship of psychiatric morbidity and self-reported EHS. This study implies that both concerns for EMFs and psychiatric morbidity have independent roles in the development and maintenance of unexplained somatic symptoms in individuals with EHS.

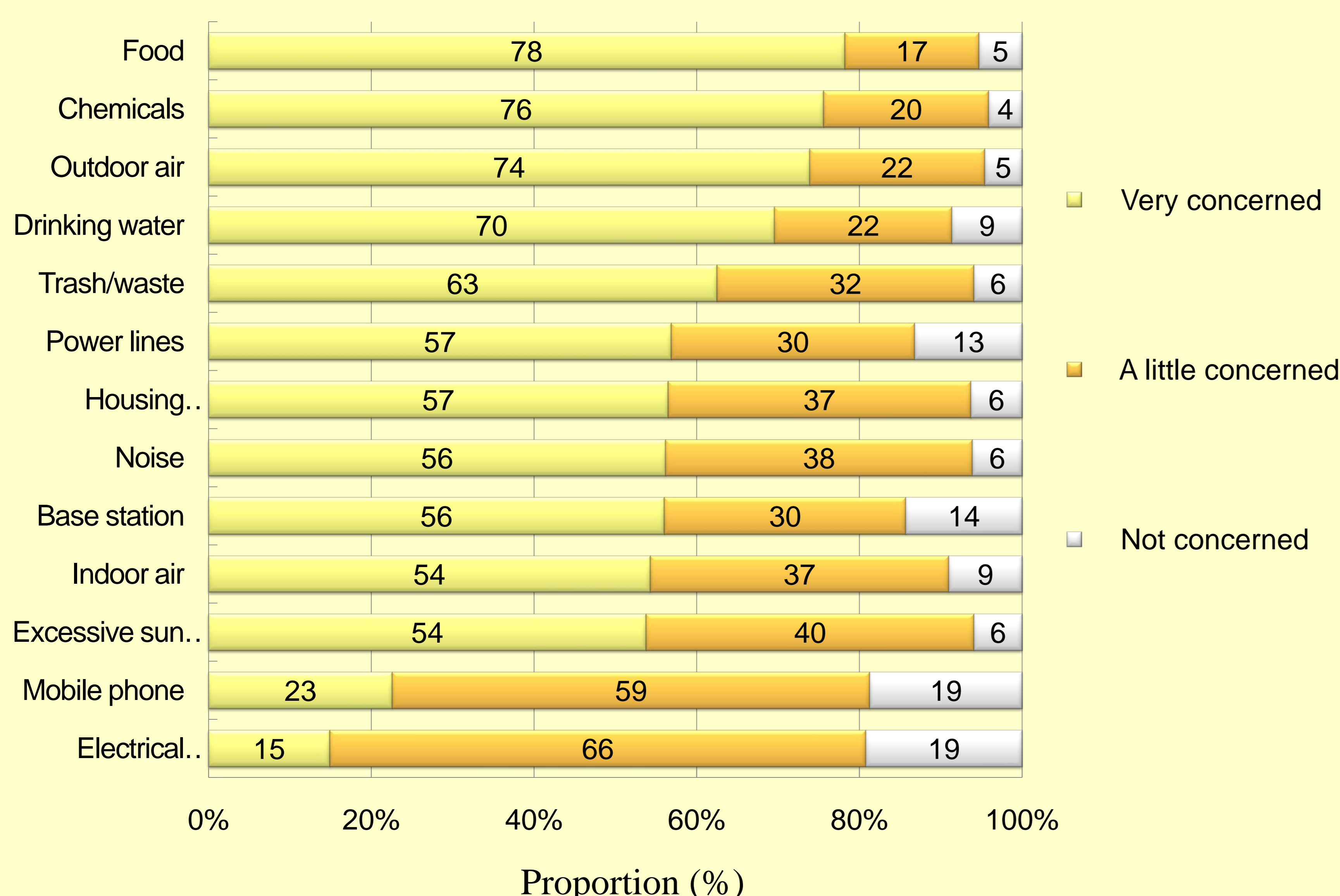


Fig.1 Risk perception of different environmental agents on health in all survey population

Table 1 Logistic regression analysis for people who concerned the effects of base station on health

Variables	Univariate analysis	Multivariate analysis
Gender		
Female	1.53 (1.10-2.12)*	1.49 (1.06-2.11)
Male	1.00	1.00
Age group, y		
18-34	5.15 (2.99-8.88)***	3.07 (1.61-5.86)**
35-49	4.04 (2.47-6.62)***	2.55 (1.41-4.60)**
50-64	2.25 (1.37-3.67)**	1.79 (1.03-3.01)*
≥ 65	1.00	1.00
Education ^a		
Middle school and below	1.00	1.00
High school	2.40 (1.56-3.69)***	1.62 (1.01-2.61)*
College and above	2.63 (1.80-3.85)***	1.75 (1.13-2.71)*
Catastrophic illness		
No	1.00	1.00
Yes	1.34 (0.47-3.85)	1.75 (0.57-5.33)
Perceived health		
Excellence	1.00	1.00
Good	1.36 (0.88-2.10)	1.34 (0.86-2.09)
Fair	0.79 (0.51-1.22)	0.80 (0.51-1.26)
Poor	0.99 (0.55-1.77)	1.03 (0.54-1.95)
Very poor	1.30 (0.29-5.90)	1.86 (0.37-9.33)
Employment status		
Employed	1.00	1.00
Out of work/not working	0.45 (0.29-0.69)***	0.74 (0.43-1.27)
Unable to work	1.18 (0.64-2.16)	1.09 (0.55-2.16)
Impairment in daily activity		
No	1.00	1.00
Yes	1.35 (0.84-2.12)	1.30 (0.75-2.25)
Psychiatric morbidity		
No	1.00	1.00
Yes	1.71 (1.02-2.87)	1.48 (0.86-2.54)

*: $P < 0.05$, **: $P < 0.01$, ***: $P < 0.001$

a: Data missing for 2 persons among all survey population

Table 2 Weighted multiple logistic regression analysis for self-reported EHS

Variables	Univariate analysis	Multivariate analysis
Gender		
Female	1.00	1.00
Male	1.15 (0.81-1.64)	0.99 (0.70-1.41)
Age group, y		
18-34	1.00	1.00
35-49	1.25 (0.82-1.93)	1.17 (0.77-1.78)
50-64	1.05 (0.65-1.68)	1.09 (0.66-1.80)
≥ 65	0.41 (0.17-1.00) ⁺	0.37 (0.14-0.98)*
Education		
Middle school and below	1.00	1.00
High school	1.25 (0.77-2.03)	1.06 (0.63-1.79)
College and above	1.20 (0.77-1.86)	1.07 (0.65-1.77)
Catastrophic illness		
No	1.00	1.00
Yes	2.13 (0.92-4.93)	1.40 (0.59-3.13)
Perceived health		
Excellent	1.00	1.00
Good	0.92 (0.58-1.47)	0.90 (0.58-1.39)
Fair	0.80 (0.47-1.35)	0.72 (0.44-1.20)
Poor	1.12 (0.60-2.09)	0.82 (0.43-1.56)
Very poor	7.88 (2.67-23.26)	4.90 (1.58-15.19)**
Employment status		
Employed	1.00	1.00
Out of work/not working	1.06 (0.59-1.90)	1.57 (0.83-2.97)
Unable to work	2.71 (1.65-4.46)***	1.84 (1.05-3.22)*
Impairment in daily activities		
No	1.00	1.00
Yes	1.83 (1.20-2.77)**	1.27 (0.79-2.05)
Risk perception		
No	1.00	1.00
Yes	4.43 (2.04-9.60)**	3.76 (1.70-8.29)**
Psychiatric morbidity		
No	1.00	1.00
Yes	3.04 (2.02-4.57)***	2.08 (1.38-3.13)***

⁺: $P = 0.05$, *: $P < 0.05$, **: $P < 0.01$, ***: $P < 0.001$.

References

1. Tseng M-CM, Lin Y-P, & Cheng T-J. Prevalence and psychiatric co-morbidity of self-reported electric and magnetic field sensitivity in Taiwan: A population-based study. *Epidemiology* 2008; 19: S108-S109.