



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health

231, de Saram Place, Colombo 01000, Sri Lanka
Tele: + 94 11 2695112, Fax: +94 11 2696583, E mail: epidunit@slt.net.lk
Epidemiologist: +94 11 2681548, E mail: chepid@slt.net.lk
Web: <http://www.epid.gov.lk>

Vol. 42 No. 22

23rd – 29th May 2015

Electromagnetic fields and public health: mobile phones

Mobile or cellular phones are now an integral part of modern telecommunication. In many countries, over half the population use mobile phones and the market is growing rapidly. In 2014, there were an estimated 6.9 billion subscriptions globally. In some parts of the world, mobile phones are the most reliable or the only phones available.

Given the large number of mobile phone users, it is important to investigate, understand and monitor any potential public health impact.

Mobile phones communicate by transmitting radio waves through a network of fixed antennas called base stations. Radiofrequency waves are electromagnetic fields, and unlike ionizing radiation such as X-rays or gamma rays, can neither break chemical bonds nor cause ionization in the human body.

Exposure levels

Mobile phones are low-powered radiofrequency transmitters, operating at frequencies between 450 and 2700 MHz with peak powers in the range of 0.1 to 2 watts. The handset only transmits power when it is turned on. The power falls off rapidly with increasing distance from the handset. A person using a mobile phone 30–40 cm away from their body – for example when text messaging, accessing the Internet, or using a “hands free” device – will therefore have a much lower exposure to radiofrequency fields than someone holding the handset against their head.

In addition to using “hands-free” devices, which keep mobile phones away from the head and body during phone calls, exposure is also reduced by limiting the number and length of calls. Using the phone in areas of good reception also decreases exposure as it allows the phone to transmit at reduced power. The use of commercial devices for reducing radiofrequency field exposure has not been shown to be effective.

Mobile phones are often prohibited in hospitals and on airplanes, as the radiofrequency signals may interfere with certain electro-medical devices and navigation systems.

Are there any health effects?

A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.

Short-term effects

Tissue heating is the principal mechanism of interaction between radiofrequency energy and the human body. At the frequencies used by mobile phones, most of the energy is absorbed by the skin and other superficial tissues, resulting in negligible temperature rise in the brain or any other organs of the body.

A number of studies have investigated the effects of radiofrequency fields on brain electrical activity, cognitive function, sleep, heart rate and blood pressure in volunteers. To date, re-

WEEKLY SRI LANKA - 2015

Contents

Page

- | | |
|---|---|
| 1. <i>Leading Article – Electromagnetic Field and Public Health: mobile phones</i> | 1 |
| 2. <i>Summary of selected notifiable diseases reported - (16th – 22nd May 2015)</i> | 3 |
| 3. <i>Surveillance of vaccine preventable diseases & AFP - (16th – 22nd May 2015)</i> | 4 |

search does not suggest any consistent evidence of adverse health effects from exposure to radiofrequency fields at levels below those that cause tissue heating. Further, research has not been able to provide support for a causal relationship between exposure to electromagnetic fields and self-reported symptoms, or “electromagnetic hypersensitivity”.

Long-term effects

Epidemiological research examining potential long-term risks from radiofrequency exposure has mostly looked for an association between brain tumors and mobile phone use. However, because many cancers are not detectable until many years after the interactions that led to the tumour, and since mobile phones were not widely used until the early 1990s, epidemiological studies at present can only assess those cancers that become evident within shorter time periods. However, results of animal studies consistently show no increased cancer risk for long-term exposure to radiofrequency fields.

Several large multinational epidemiological studies have been completed or are ongoing, including case-control studies and prospective cohort studies examining a number of health endpoints in adults. The largest retrospective case-control study to date on adults, Interphone, coordinated by the International Agency for Research on Cancer (IARC), was designed to determine whether there are links between use of mobile phones and head and neck cancers in adults.

The international pooled analysis of data gathered from 13 participating countries found no increased risk of glioma or meningioma with mobile phone use of more than 10 years. There are some indications of an increased risk of glioma for those who reported the highest 10% of cumulative hours of cell phone use, although there was no consistent trend of increasing risk with greater duration of use. The researchers concluded that biases and errors limit the strength of these conclusions and prevent a causal interpretation.

Based largely on these data, IARC has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), a category used when a causal association is considered credible, but when chance, bias or confounding cannot be ruled out with reasonable confidence.

While an increased risk of brain tumours is not established, the increasing use of mobile phones and the lack of data for mobile phone use over time periods longer than 15 years warrant further research of mobile phone use and brain cancer risk. In particular, with the recent popularity of mobile phone use among younger people, and therefore a potentially longer

lifetime of exposure, WHO has promoted further research on this group. Several studies investigating potential health effects in children and adolescents are underway.

Exposure limit guidelines

Radiofrequency exposure limits for mobile phone users are given in terms of Specific Absorption Rate (SAR) – the rate of radiofrequency energy absorption per unit mass of the body. Currently, two international bodies have developed exposure guidelines for workers and for the general public, except patients undergoing medical diagnosis or treatment. These guidelines are based on a detailed assessment of the available scientific evidence.

WHO'S response

In response to public and governmental concern, WHO established the International Electromagnetic Fields (EMF) Project in 1996 to assess the scientific evidence of possible adverse health effects from electromagnetic fields. WHO will conduct a formal risk assessment of all studied health outcomes from radiofrequency fields exposure by 2016. In addition, and as noted above, the International Agency for Research on Cancer (IARC), a WHO specialized agency, has reviewed the carcinogenic potential of radiofrequency fields in May 2011.

WHO also identifies and promotes research priorities for radiofrequency fields and health to fill gaps in knowledge through its research agendas.

WHO develops public information materials and promotes dialogue among scientists, governments, industry and the public to raise the level of understanding about potential adverse health risks of mobile phones.

Sources

Electromagnetic fields and public health: mobile phones available at <http://www.who.int/mediacentre/factsheets/fs193/en/>

Using cell phones for public health available at <http://www.hsph.harvard.edu/news/features/eagle-cell-phones-public-health/>

Compiled by Dr. C U D Gunasekara of the Epidemiology Unit.

Table 1: Selected notifiable diseases reported by Medical Officers of Health 16th - 22nd May 2015 (21st Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	121	4166	3	90	0	4	2	40	4	65	6	122	1	6	0	16	0	3	13	233	1	20	0	0	88	13
Gampaha	48	1951	3	41	0	3	1	15	1	24	3	213	0	6	1	74	0	0	7	101	0	9	0	2	60	40
Kalutara	7	702	2	47	0	4	2	20	0	66	2	142	0	0	0	14	0	1	7	145	0	21	0	0	77	23
Kandy	8	621	3	54	0	5	0	16	0	25	2	40	0	32	2	80	0	0	5	110	0	8	0	2	87	13
Matale	2	308	1	27	0	0	0	6	0	4	1	29	0	5	0	19	0	0	0	13	0	4	0	3	77	23
NuwaraEliya	2	88	11	154	0	3	0	9	0	0	1	12	1	35	0	40	0	0	9	55	1	28	0	0	85	15
Galle	0	306	0	25	0	1	0	4	0	6	1	79	0	24	0	4	0	0	4	80	0	14	0	0	30	70
Hambantota	0	151	0	13	0	0	0	5	1	9	5	47	1	26	1	24	0	0	9	70	1	5	0	132	75	25
Matara	5	217	3	36	1	5	0	4	0	44	3	89	0	19	0	16	0	0	9	128	0	11	1	36	100	0
Jaffna	16	1045	5	282	0	8	2	137	0	37	1	12	2	496	0	9	0	2	6	126	1	7	0	0	100	0
Kilinochchi	0	32	1	41	0	0	0	5	0	27	0	1	0	12	0	0	0	1	0	11	0	0	0	0	25	75
Mannar	1	73	2	6	0	1	0	5	0	2	0	8	0	16	0	0	0	0	1	6	0	0	0	0	80	20
Vavuniya	3	72	0	10	0	6	4	38	0	4	0	12	0	12	0	1	0	2	0	32	0	4	0	2	100	0
Mullaitivu	1	77	0	11	0	2	0	5	0	1	0	3	1	7	0	2	0	0	1	2	0	2	0	4	80	20
Batticaloa	23	1117	4	120	0	4	0	12	0	123	4	7	0	2	0	0	0	0	3	23	0	12	0	0	71	29
Ampara	1	23	1	23	0	1	0	1	0	3	0	10	0	0	0	2	0	0	5	117	0	4	0	0	57	43
Trincomalee	14	416	2	21	0	0	0	17	0	31	0	11	1	10	1	7	0	1	1	42	0	3	0	1	83	17
Kurunegala	11	725	4	80	0	2	0	3	0	13	8	126	0	15	2	25	1	3	3	214	3	14	0	46	70	30
Puttalam	4	422	1	20	1	4	0	2	0	6	1	22	0	9	0	1	0	0	1	29	3	15	0	1	62	38
Anuradhapura	2	255	3	35	0	1	0	2	0	48	5	148	0	15	0	8	0	0	3	99	1	15	0	121	63	37
Polonnaruwa	0	119	0	25	0	2	0	7	0	3	0	42	0	1	0	3	0	0	0	71	1	13	1	48	29	71
Badulla	7	333	4	66	0	3	0	4	0	6	3	32	2	54	2	87	0	2	3	74	2	41	0	6	76	24
Monaragala	1	104	4	55	0	1	1	10	0	2	3	120	3	42	3	36	0	1	0	43	0	7	0	12	100	0
Ratnapura	11	496	13	132	0	4	0	22	0	1	2	146	1	33	0	126	0	0	3	60	1	20	0	4	78	22
Kegalle	6	275	1	36	0	7	2	42	0	5	14	155	3	29	2	55	0	0	5	113	0	29	0	0	100	0
Kalmunai	2	385	0	60	0	1	0	1	0	30	0	3	0	0	0	0	0	0	0	58	1	7	0	0	62	38
SRILANKA	296	14479	71	1510	2	72	14	432	6	585	65	1631	16	906	14	649	1	16	98	2055	16	313	2	420	74	26

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 22nd May, 2015 Total number of reporting units 337 Number of reporting units data provided for the current week: 253 C**=Completeness

Table 2: Vaccine-Preventable Diseases & AFP

16th - 22nd May 2015 (21st Week)

Disease	No. of Cases by Province									Number of cases during current week in 2015	Number of cases during same week in 2014	Total number of cases to date in 2015	Total number of cases to date in 2014	Difference between the number of cases to date in 2014 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	01	01	03	27	37	-27.0%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	%
Mumps	01	00	01	01	02	00	00	01	02	08	10	161	306	-47.3%
Measles	16	03	05	00	01	06	04	02	07	44	37	992	1751	-43.3%
Rubella	00	00	00	00	00	00	00	00	00	00	00	05	11	-54.5%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	03	-100%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	06	08	-25%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	%
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	07	17	-59.1%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	31	26	-19.2%
Tuberculosis	81	17	05	14	33	00	24	12	24	210	135	3845	3956	-3.1%

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.
 RDHS Divisions: CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matale, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS** =Congenital Rubella Syndrome

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them

PRINTING OF THIS PUBLICATION IS FUNDED BY THE WORLD HEALTH ORGANIZATION (WHO).

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to chepid@sltnet.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication

ON STATE SERVICE

Dr. P. PALIHAWADANA
 CHIEF EPIDEMIOLOGIST
 EPIDEMIOLOGY UNIT
 231, DE SARAM PLACE
 COLOMBO 10