Original Article

The Status of Health Related Discomfort and Hazards Experienced by the Mobile Phone Users

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Abstract:

A descriptive type of cross sectional study was conducted among the adult coastal population residing at Ramu Upazila, under Cox's Bazar District during the period of February 2016 to March 2016 to know the health related discomforts and hazards experienced by the mobile phone users. Data were collected from 258 adult male and female selected by convenient method on socio-demographic characteristics, mobile phone use, and self-reported health problems. A combination of structured questionnaires and check list after pre-testing were used to collect data directly under the supervision of the researchers. The obtained data were analyzed by SPSS in line of objectives of the study. The majority of respondents (85.7%) reported to have a cell phone, 29.8% complain of feeling disturbances, 38.0% headache and 60.9% sleeping disturbances, while recent episodes of mood change or anxiety or depression by 29.1% and 16.3% complained about social disturbances. Awareness about the possible health hazards from cell phone use is low among the inhabitants of Ramu Upazila. A number of respondents mentioned recent health effects but the association with cell phone use could not be established.

Key words: Health hazards, Mobile phone users

Introduction:

Mobile phone has dramatically changed people's social and communicational behavior of telephone users. The land telephone line restricted the user's accessibility to phone and also abilities to move around while talking and telephones were usually located in areas away from and more or less isolated from other activities. After the introduction of Cell Phone in Bangladesh in 1993, today, we see people use mobile phone in all kinds of situations, to public places such as in the streets, on the bus, shops, restaurants, public theaters, offices, at work as well as leisure, while attending seminars, alone as well as together with others. There are over six nation-wide independently owned cell phone companies competing for business. As on March 2016 the teledensity of our country is 81.65%; number of mobile phone users 130.8 million and internet users 61.20 million in Bangladesh[1]. Expansion of cell phone has an impact on our behavior. Mobile phone users often perform cell phone conversations in combination with multiple other activities and simultaneously with other social interactions. This study was undertaken with the objective to understand the status of health related discomforts and hazards experienced by the mobile phone users.

The effect of mobile phone radiation on human health is a subject of interest and study worldwide, as a result of the enormous increase in mobile phone usage throughout the world. As of 2016, there were 7.4 billion subscriptions worldwide; but some have more than two, so 4,230 million users in 2014 gives better picture with them about 97 phones per 100 citizens[2]. Mobile phones use electro-magnetic radiation in the microwave range 450–2100 MHz. Other digital wireless systems, such as data communication networks, produce similar radiation.

In 2011, International Agency for Research on Cancer (IARC) classified mobile phone radiation as Group 2B – possibly carcinogenic (not Group 2A – probably carcinogenic – nor the dangerous Group 1). That means that there "could be some risk" of carcinogenicity, so additional research into the long-term, use of mobile phones needs to be conducted[3]. The WHO added in June 2011 that "to date, no adverse health effects have been established as being caused by mobile phone use", a point they repeated in October 2014 [4,5]. Some national radiation advisory authorities have recommended measures to minimize exposure to their citizens as a precautionary approach[6].

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In order to protect the population living around base stations and users of mobile handsets, governments and regulatory bodies adopt safety standards, which translate to limits on exposure levels below a certain value. There are many proposed national and international standards, but that of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) is the most respected one, and has been adopted so far by more than 80 countries. For radio stations, ICNIRP proposes two safety levels: one for occupational exposure, another one for the general population. Currently there are efforts underway to harmonize the different standards in existence[7].

Scientists have reported other health effects of using mobile phones including changes in brain activity, reaction times, and sleep patterns. These effects are minor and have no apparent health significance. More studies are underway to try to confirm these findings. When mobile phones are used very close to some medical devices (including pacemakers, implantable defibrillators, and certain hearing aids) there is the possibility of causing interference with their operation. The risk is much reduced for 3G phones and newer equipment.

Methods:

Type of study: Descriptive type of cross sectional study. Study population(s): Adult coastal population residing at Ramu Upazila under Cox's Bazar District. Study period: February 2016 to March 2016. Study place: Ramu Upazila, District: Cox's Bazar. Sampling Method Non Probability Convenient type. Sample size: 258 adult male and female. Research instruments: A combination of interview schedule and structured questionnaire was used for data collection. Data Collection: Data were collected by face-to-face interview. The questionnaire was pretested in the fields and after necessary omission, addition, and language editing, used for data collection. Data were collected from the residence of the participants by the 3rd year MBBS students under supervision of the researchers. Each participant was asked in local language if they noticed any recent changes of the following symptoms: sleeping pattern/habits, episodes of headaches/dizziness, changes in anxiety/depression, and any other health changes over the past one year. Participants were informed regarding the objective of the study and that participating in the study is voluntary and that they could stop at any time they wished. Also, confidentiality of the information provided was ensured that data collected will only be used for the study purpose and will not be shared with anyone else except the investigators. Due concent were taken prior to data collection.

Results:

Table I: Socio-demographic characteristics of the respondents (n = 258)

Variables	Sub-variables	Number	Percentage
Sex	Male	101	39.1
	Female	157	60.9
Age Group	<18 years	6	2.3
	18-24 years	42	16.3
	25-34 years	50	19.4
	35-44 years	93	36.0
	45-59years	36	14.0
	>60 years	31	12.0
Religion	Islam	43	16.7
	Hindu	26	10.1
	Buddha	189	73.3
Marital status	Unmarried	39	15.1
	Married	194	75.2
	Widow	25	9.7
Education	Illiterate	66	25.6
	Primary level	55	21.3
	SSC level	76	29.5
	HSC level	29	11.2
	> HSC level	32	12.4
Occupation	Agric. works	16	6.2
	House Wife	128	49.6
	Business	39	15.1
	Service	23	8.9
	Student	32	12.4
	Others	20	7.8

Table II: Status of awareness about health hazards from mobile phone use.

Variables	Sub-Variables	Number	Percentage
Have cell phone?	Yes	214	82.9
	No	44	17.1
Duration of cell phone use	< 5 years	156	60.5
	6 to 10 years	55	21.3
	> 10 years	47	18.2
Feeling disturbances from cell phone?	Yes	77	29.8
	No	178	69.0
	Not Know	3	1.2
Feeling headache?	Yes	98	38.0
	No	145	56.2
	Not Know	15	5.8
Sleeping disturbances?	Yes	157	60.9
	No	88	34.1
	Not Know	13	5.0
Mental /mood disorders?	Yes	75	29.1
	No	168	65.1
	Not Know	15	5.8
Palpitation?	Yes	84	32.6
	No	167	64.7
	Not Know	7	2.7
Social disturbances	Yes	42	16.3
	No	204	79.1
	Not Know	12	4.7

Table III: Cross tabulation between Marital Status and experiences of Social Disturbances from Cell Phone use.

Marital Status of the respondents	Experiences of Social Disturbances			Total
	Yes	No	Not Known	
Unmarried	6 14.3%	32 15.7%	1 8.3%	39 15.1%
Married	30 71.4%	158 77.5%	6 50.0%	194 75.2%
Widow	6 14.3%	14 6.9%	5 41.7%	25 9.7%
Total	42 100.0%	204 100.0%	12 100.0%	258 100.0%

The collected data were checked, edited, and verified to exclude any error or inconsistency. Data was coded and entered into a statistical software SPSS (Version 16, SPSS Corporation IBM, Chicago, USA). After analysis the result was presented in tables with frequency and percentage; and figures to demonstrate the findings.

Discussion:

The results of present study showed that awareness of disturbances from cell phone use is low among most of the respondents. Almost half of the respondents replied they feel no disturbance, 77 (29.07%) complain of mood disorder, 98 (38%) replied that they feel Headache/ Dizziness due to Cell Phone use, 75 (29.1%) replied as they have feel Complain of Mental Health problems like Mood Disorders, 84 (32.6%) stated that they have feel CVD (cardio vascular diseases) problems like Palpitation, Tachycardia, 42 (16.3%) mentioned that they have experiences of Social Disturbances from Cell Phone use. A survey report from European Union showed that about one-fourth of Europeans (23%) know that power lines, mobile communication masts, mobile

phones, computers, radar equipment, household appliances, wireless computer networks, induction heaters, and antitheft devices are sources for EMW which is harmful to our health[8]. In our study, the rates of awareness of the harmful effects of cell phone use were almost similar.

The report published in May 2000 on "Mobile Phones and Health" by the "Independent Expert Group on Mobile Phones (IEGMP)" under the direction of Sir William Stewart describes under paragraph 3.5 various symptoms which were most commonly attributed were sleep disorders, fatigue, anxiety, stress, epileptic fits, burning sensations and shaking[9].

In Austria there have also been various reports from the population attributing different disturbances of health and well-being to exposure to BTS radiation[10]. The symptoms reported corresponded to a large extent to those listed in the IEGMP report. In addition, cardiac dysrhythmia, high blood pressure, forgetfulness, hearing difficulties, burning of the eyes, and susceptibility to infections were reported, which generally improved or disappeared when residents moved.

Although several risk factors have been investigated, most studies on exposure from BTS and mobile phone could not find a direct association between RF-EMF and health complaints but several studies found health complaints associated with concern about (visible) RF-BTS. In addition, standardized blinded experimental studies were not able to confirm associations between EMF exposure and the physical complaints of the respondents. All studies have some methodological deficiencies: 1. too short duration of mobile phone use not to be helpful in risk assessment, 2. exposure was not strictly determined, and 3. there is a possibility of recall and response bias in some studies[8]. The major limitation of epidemiological studies addressing the health effects of mobile phone use is related to exposure assessment. These limitations are inherent in case-control studies. Quality of evidence can be improved by conducting prospective cohort studies[9]. Some studies collected data from the 1990s, when most of the handsets were analog. These have been replaced by digital technology, where microwave emissions have a lower output power at higher frequencies[10].

Limitation of the study:

The study have several limitations including:

1. The place of study were selected conveniently.
2. Data were collected by non-probability method.
3. Sample size were not supported by any approved statistical formula for detecting representative sample size.
4. Health related complaints were not verified; taken as stated by the participants.

Conclusion:

Currently, much remain unknown about the health effects of mobile phones, no biological data exist to give a reason for concern about the health effects of magnetic field pulses from mobile phones. Only a small number of studies were done on the effects of these frequencies of radiation have investigated cancer as an end point. At present, evidence for a causal relationship between mobile phone use and cancer relies predominantly on epidemiology, in particular on the large studies. Nevertheless, an increased risk of mobile phone use and brain tumor, restricted to heavy mobile phone use, to very early life exposure, or to rare subtypes of brain tumors may be compatible with stable incidence trends at this time and thus further monitoring of brain tumor, especially during childhood, incidence rate time trends is warranted. Weak evidence in favor of a causal relationship is provided by some animal and in vitro studies, but overall, genotoxicity assays, both in vivo and in vitro, are inconclusive up to date.

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