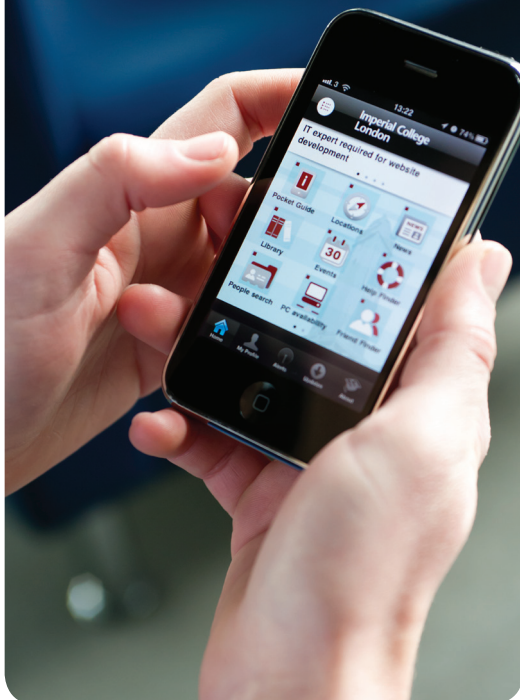


WELCOME

Another year has passed and we are pleased to be back in touch with our participants to share the exciting progress of UK COSMOS to date! COSMOS remains the largest study in the world examining mobile phone use and health, with the UK as the biggest contributor to the international cohort. Since last year's January update, the study team have been extremely busy working with the data which you provided to us. We continue to appreciate your individual contributions that enable us to investigate possible health effects from long term use of mobile phones and other wireless technologies.



STUDY PROGRESS

After finishing our participant recruitment and baseline data collection at the end of 2012, 2013 was a year of data preparation. A necessary task before analysis can officially begin. The study team have been hard at work checking, cleaning, and coding the data we collected from you via the online questionnaire. We have set up a highly secure data warehouse system that allows us to collect data from multiple sources, link records to our participants, and merge and store the information in a secure central database. We are now working on checking the quality of the data and creating reports and documentation to help our team understand the many different types of data we currently hold. We are also now setting up a new statistics server to be used for analysing the data.

Mobile phone data

As you know, for those of you who consented, we have been in touch with your mobile phone operators to receive data about the extent of your mobile phone use. In 2013, we received mobile phone traffic data for approximately 80% of our participants. We received a colossal 300 million records over a three month period, and were able to collect information on approximately 60 million calls and 127 million text messages!

Health event data

Long-term follow-up of your health is made possible, with your consent, through linkage to routine medical records from the Health and Social Care Information Centre (HSCIC). In 2013 we applied to the HSCIC for data on mortality, cancer, and hospital admissions over the lifetime of the COSMOS study for participants resident in England and Wales. During 2014 we will apply for health information from the relevant agencies for our UK COSMOS participants who live in Scotland and Northern Ireland.

What health outcomes are we interested in?

- **Symptoms:** e.g. headaches, sleep disorders, tinnitus (ringing in the ears)
- **Chronic disease:** cancers, benign tumours, neurological and cerebrovascular diseases (e.g. Alzheimer's disease, Parkinson's disease, stroke)



You and your mobile phone use

Approximately 100,000 of you filled out our online questionnaire when you joined the study, in which we asked questions about your mobile phone use. We thought you might be interested to see some of this preliminary information.

Chart 1 below shows that 21% of you have been regular mobile phone users (i.e. talking on a mobile phone at least once per week) for 20 years or more (starting in 1994 or before), and a further 37% for 15 to 20 years (starting between 1995 and 1999). This is helpful to COSMOS research because we are interested in examining possible health effects from *long-term* mobile phone use.

We also explored how much you were using your mobile phone at the time you joined the study. Almost half of you spent at least one hour per week talking on a mobile phone (chart 2), and over 70% of you sent text messages on a daily basis (chart 3).

Where do you think your usage would lie now on these charts? Do you think your use of mobile phones has changed since you joined the study? Have developments in mobile phone technology (e.g. smartphones, 4G, apps) changed the way you use your mobile phone? These are the kind of questions we will need to ask you in our follow-up questionnaire, planned for 2015. Rapid changes in mobile phone technology and patterns of use are a challenge for researchers when studying mobile phone use and health and, therefore, we need to keep track of these changes.

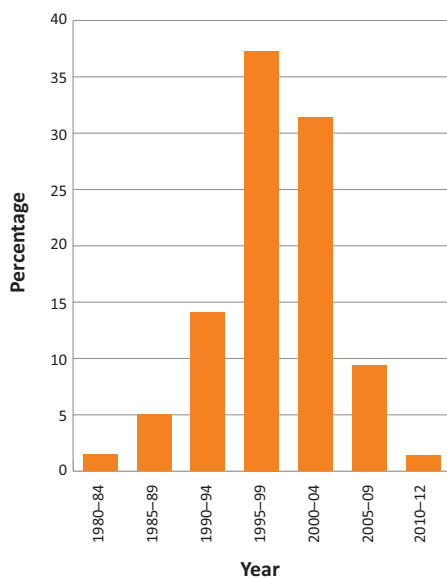


Chart 1: In which year did you start talking on your mobile phone regularly?

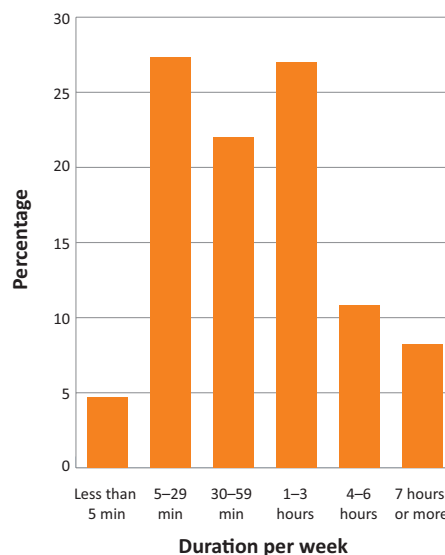


Chart 2: How much time per week do you spend talking on your mobile phone?

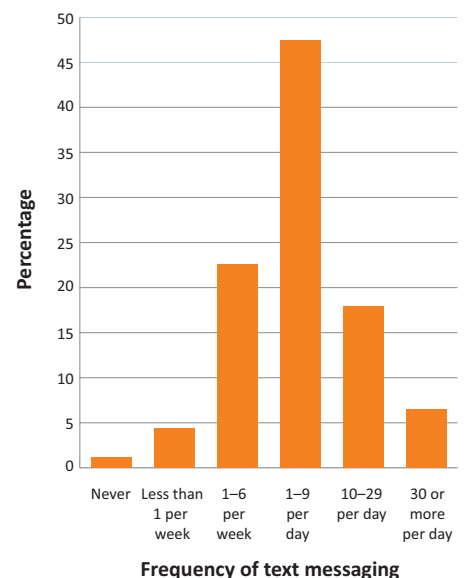


Chart 3: How often do you send text messages?

Mobile phones and electromagnetic fields – HOW MUCH DO YOU KNOW?

Mobile phones and other wireless technologies are sources of electromagnetic fields. It is exposure to these electromagnetic fields when using a mobile phone that is of scientific interest in this study. We thought you might like to know a bit more about electromagnetic fields.

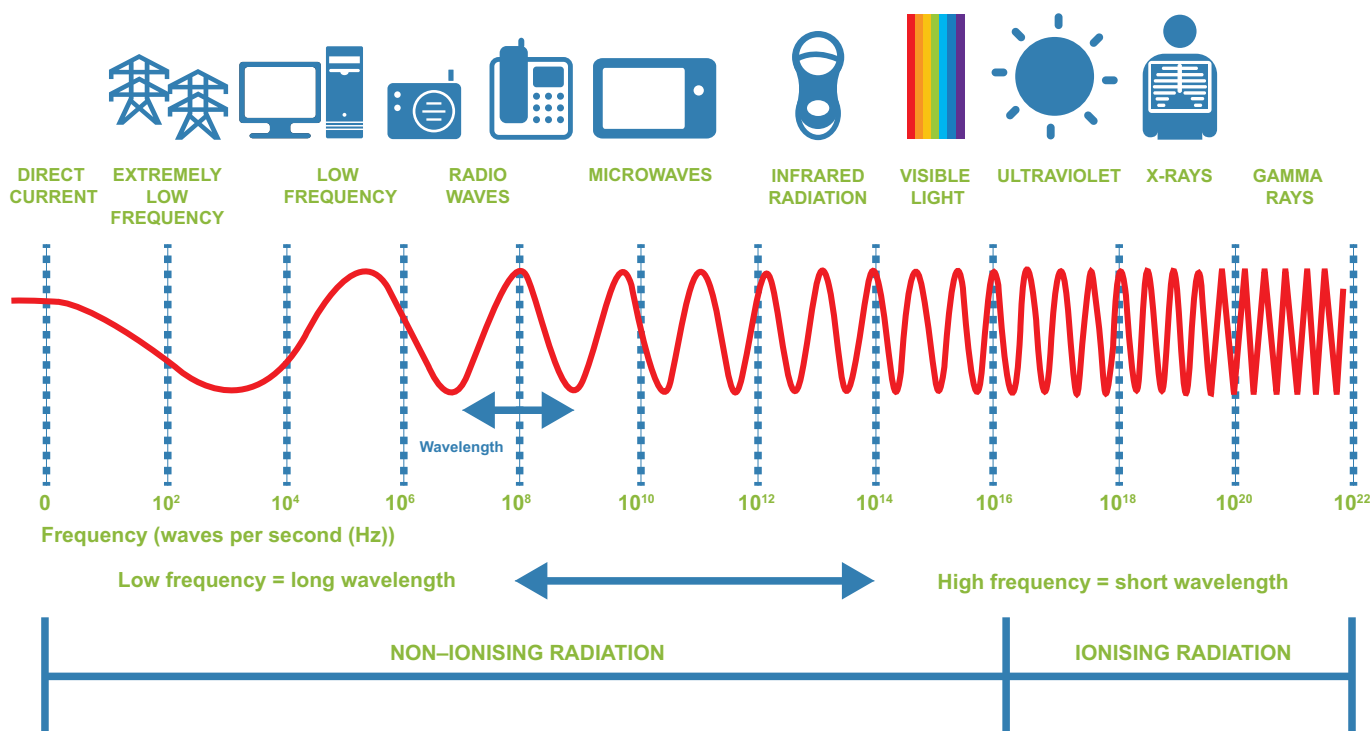
Electromagnetic fields arise from both natural and man-made sources. Key characteristics of an electromagnetic field are its frequency (measured in hertz (Hz)) and wavelength. Electromagnetic fields span a range of frequencies called the electromagnetic spectrum, which is shown in the diagram below. You will probably have heard of 'Hz' and 'frequency' before – just think of when you have tuned in a radio to an FM or AM

radio station – in doing so you will have been searching for a particular frequency on this spectrum, e.g. *BBC Radio 1* on 97.7 MHz – 99.7 MHz. The electromagnetic spectrum extends from extremely low frequencies (e.g. from overhead electricity power lines) with wavelengths that can be hundreds of metres long to very high frequencies (e.g. X-rays) where the wavelengths can be smaller than an atom.

The electromagnetic field spectrum is divided into different parts (e.g. visible light, radiowaves, microwaves, ultraviolet) according to the use that is made of various frequencies. Mobile phones belong to the radiowave part of the spectrum, which is so called because these radio-frequencies are typically used for communications, e.g. radio and TV broadcasting.

Another way to divide up the electromagnetic spectrum is into ionising and non-ionising radiation. Ionising radiation includes gamma rays, X-rays and ultraviolet rays. These rays can break chemical bonds between atoms to produce ions – which is why they are called 'ionising'. Non-ionising radiation cannot break chemical bonds, but it can cause heating. Scientific evidence is clear that exposure to ionising radiation can cause cancer, with risk to health depending on the dose of ionising radiation received. Risks from low doses are actually small, and ionising radiation is widely used in cancer therapy. However, scientists remain uncertain as to possible health effects from non-ionising radiation.

Electromagnetic spectrum





THE FUTURE 2014

This year will be an important year for the study as we continue to analyse the data you have provided.

We are currently working on two scientific papers. The first will focus on what we have learnt from establishing the UK COSMOS cohort, and how this knowledge can help other researchers setting up large scale cohort studies in the future. The second will be a profile of the whole international cohort, and we are working together with our international partners to produce this paper.

We are currently in the process of preparing a follow up questionnaire that we will ask all participants to complete in 2015. Follow-up questionnaires are essential to provide us with up to date participant information so that we can continue to accurately monitor changes in your health and mobile phone use over time.

2015

Next year will include the launch of our follow-up questionnaire.

MINI QUIZ

Test your knowledge about mobile phones and electromagnetic fields:

- 1 Which part of the electromagnetic spectrum do mobile phones use?
 - a) Microwaves
 - b) Ultraviolet
 - c) Radiowaves
- 2 Which type of radiation do mobile phones produce?
 - a) Ionising radiation
 - b) Non-ionising radiation
- 3 All of the devices below use electromagnetic fields. Do you know how many of these devices use radio-frequency fields?
 - a) Cordless baby monitors
 - b) Sun bed
 - c) Laptop with WiFi
- 4 Which part of the electromagnetic spectrum is used for TV remote controls?
 - a) Infrared
 - b) Extremely low frequency
 - c) Gamma rays
- 5 Which of the following have the lowest frequency?
 - a) Microwaves
 - b) Radiowaves
 - c) Gamma rays

Find out how well you did: check your answers on the UK COSMOS website.

NEW TEAM MEMBERS!

In 2013 we said goodbye to two of our team members (James and Joe) and welcomed Eveline and Charlotte to the UK COSMOS study team.



Eveline

“After completing my Masters in Epidemiology at the London School of Hygiene and Tropical Medicine I joined the UK COSMOS team in October

2013. I’m particularly interested in how our environment affects our health and therefore I’m excited about contributing to such an important research project like COSMOS that investigates the effect of long-term use of mobile technology on health.”



Charlotte

“I joined the UK COSMOS team in November 2013. I have a strong interest in Public Health and completed my Masters in Public Health last year.

Technology is a huge part our day to day lives and I am excited to be a part of such a large scale project that examines such an important issue and will impact the health of future generations!”



Meet the rest of the study team:
(clockwise from top-left) **Professor Paul Elliott**
and **Dr Mireille Toledano** • Principal Investigators
Dr Rachel Smith • Research Associate
Margaret Douglass • Database Architect

You can contact the study team via email ukcosmos@imperial.ac.uk, or by free phone 08000 270 270 (Mon-Fri, 10am–5.30pm). Please see our website for more information.

HOW CAN I HELP?

Perhaps you’ve moved address or changed mobile phone number? We need to know changes like these, so that we can follow your health and mobile usage over the long-term.

Your details are important to us as they will enable us to keep you informed of results and other study developments, such as ways you may be able to help further.

It is easy to update your contact details by visiting the UK COSMOS website (www.ukcosmos.org) and clicking through to the Participant Section, or calling free phone 08000 270 270.

FINALLY

In response to our email sent in May of 2013 asking participants to ‘update your details’, 19,746 of you used the website to update or confirm your contact details. The UK COSMOS team would like to thank you for your continuing participation in the UK COSMOS study.

We are grateful for the time and effort you have taken to join the study and keep us updated with all the relevant information that makes this study possible and allows us to continue with this important research.

We hope to update you with a newsletter again in early 2015. Until then, you can keep up to date with our news and find useful links on our website: www.ukcosmos.org

With best wishes,
The UK COSMOS Study Team



cohort study of mobile phone use and health

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