

# EMR and Health

Report on electromagnetic radiation, health and well-being

Vol 19 No 7 Dec 2023

## Mobile phones and sperm

Swiss researchers show that a man's mobile phone use can affect his sperm

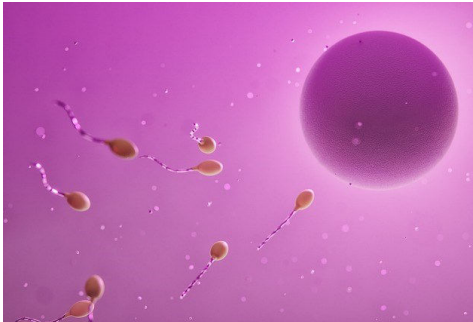
The study involved 2886 men aged 18 to 22 years who provided the researchers with information about their health and mobile phone use.

The authors found, not surprisingly, that the longer men spent using their phones, the lower their sperm concentration and numbers. 'The median sperm concentration and TSC [total sperm count] were significantly higher in the group of men who did not use their phones more than once per week ... compared with men using their phones >20 times per day', the authors wrote.

In fact, men who used their mobile phones 20 or more times a day had a 21% lower sperm concentration and a 22% lower total sperm count than the men who used their phones least.

The authors did not find an association between mobile phone use and sperm motility or morphology, however.

The results have obvious implications for infertility which is now affecting approximately in every six couples.



Another interesting finding related to the lifestyle of the frequent and infrequent mobile phone users. The study found that 'In general, a higher proportion of men who self-reported as being in excellent or good health consumed less medication before participation and had a higher educational level was observed in the group of low mobile phone users, compared with high-frequency users ... In addition, a higher proportion of frequent users smoked cigarettes and consumed alcohol.'

The researchers also found that the link between mobile phone use and lower sperm concentration reduced over time. They wrote, 'This pattern is in line with the transition to new technologies, mainly from 2G to 3G and 4G, and the corresponding decrease in the phone's output power. Furthermore, the increase in phone network coverage is expected to significantly decrease the RF-EMF output power of mobile phones in the future.' Of course, that means that ambient exposures from mobile phone base stations will increase.

(Continued on page 3)

## In This Issue

Technology in Education—a report on the risks	2
A cure for cancer?	4
Beg your pardon?	5
Babies' screen time and developmental delays	6
Where do you keep your smart phone?	7
Digital Children—Declaration	8



Publisher EMR Australia Pty Ltd

ABN 82 104 370 658

PO Box 4721,  
Sylvania Waters NSW 2224

Tel: 02 9576 1772

Web: [www.emraustralia.com.au](http://www.emraustralia.com.au)

© EMR Australia Pty Ltd, 2023.  
Information contained in this newsletter does not constitute medical advice and EMR Australia PL disclaims any liability incurred as a consequence of its use. Contents may not be reproduced without permission.

Has this newsletter been sent to you by a friend?  
Why not subscribe yourself to receive further updates [here?](#)

---

# Technology in Education—a report on the risks

---

We know that technology is transforming education. But is it improving it?

Not necessarily, according to a new Global Education Monitoring Report from UNESCO.

The report, entitled ‘Technology in Education: A tool on whose terms?’, examines the many disadvantages of technology use in schools and offers suggests for improving the situation. Here are some excerpts.

## Harmful effects on learning

- ‘Mere proximity to a mobile device was found to distract students and to have a negative impact on learning in 14 countries...’
- ‘Technology use beyond a moderate threshold was associated with diminishing academic gains in an analysis of 2018 Programme for International Student Assessment data.’
- ‘A meta-analysis of research in 2008–17 across 14 countries found a negative effect of mobile phones on academic performance.’
- ‘COVID-19 online learning adversely affected younger learners.’
- ‘Removing smartphones from schools in Belgium, Spain and the United Kingdom was found to improve learning outcomes...’
- ‘More than one in three teachers from seven countries that participated in the 2018 ICILS – and one in two teachers in Denmark – agreed that the use of ICT in classrooms distracts students from learning’.
- ‘A forthcoming UNESCO publication, An Ed-Tech Tragedy? Educational Technologies and School Closures in the Time of COVID-19, examines education during the pandemic from early 2020 through the end of 2022. It documents how technology-based solutions left a global majority of learners behind and how education was diminished even when technology was available and worked as intended’.
- ‘The use of smartphones in classrooms leads to students engaging in non-school-related activities, which affects recall and comprehension. A study found that it can take students up to 20 minutes to refocus on what they were learning after engaging in a non-academic activity. Negative effects are also reported in students from the use of personal computers for non-academic activities during class, such as internet browsing, and in their peers who are in view of the screen.’

---

*“A meta-analysis of re-search in 2008–17 across 14 countries found a negative effect of mobile phones on ac-ademic performance.”*

---

## Concerns about children’s privacy and rights

- ‘Children’s data are being exposed, yet only 16% of countries explicitly guarantee data privacy in education by law. One analysis found that 89% of 163 education technology products recommended during the pandemic could survey children. Further, 39 of 42 governments providing online education during the pandemic fostered uses that risked or infringed on children’s rights.’
- Regarding the use of AI: ‘There are risks associated with human rights (e.g. use of surveillance techniques), democracy (e.g. algorithms reproducing prejudices) and legislation (e.g. the possibility of making the use of AI compulsory in education)’

---

*‘Mere proximity to a mo-bile device was found to distract students and to have a negative impact on learning in 14 coun-tries’*

---

## Environmental impacts of digital technology

- 'Devices lead to a surplus of e-waste. Extending the lifespan of all smartphones in the European Union by a year would be equivalent to taking over 1,000,000 cars off the road in terms of carbon emissions.'

## Regulation

- 'Technology is evolving too fast to permit evaluation that could inform decisions on legislation, policy and regulation.'

## Other issues

- 'We saw children as young as nine years old requesting smartphones, and it was evident that these children were not emotionally ready to navigate the complexities of these devices and the digital world.'
- 'Every country has invested in the use of digital technology in education to some extent. Business rather than education arguments are more commonly deployed to justify countries' investments. Often investments are based on a belief that technology is a good in itself.'

## What should be done

'Governments should 'Adopt and implement legislation, standards and agreed good practices to protect learners' and teachers' human rights, well-being and online safety, taking into account screen and connection time, privacy, and data protection; to ensure that data generated in the course of digital learning and beyond are analysed only as a public good; to prevent student and teacher surveillance; to guard against commercial advertising in educational settings; and to regulate the ethical use of artificial intelligence in education.'

## Bans in schools

The report said that studies from Belgium, Spain and the United Kingdom show that banning mobile phones from schools improves academic performance, especially for low-performing students. Analysis for this report shows that, globally, almost one in four countries has introduced such bans in laws or policies.

The report doesn't mention exposure to wireless radiation, but you will find many articles about that on our website.

UNESCO. 2023. Global Education Monitoring Report 2023: Technology in education – A tool on whose terms? Paris, UNESCO; <https://unesdoc.unesco.org/ark:/48223/>



---

(Continued from page 1)

The authors believe that their study has advantages over previous research in this area. Firstly, they used a wider sample of volunteers; the questionnaire they answered included lifestyle factors; and subjects were asked to report their mobile phone use just prior to completing the questionnaire, which means that they were likely to recall this information accurately.

The authors suggested that their findings are representative of a narrow window of time. Further research is needed, they advised.

Rita Rahban, Alfred Senn, Serge Nef, and Martin Rössli, 'Association between self-reported mobile phone use and the semen quality of young men', [Andrology](#), article in press,

---

# A cure for cancer?

---

A fascinating new study suggests ways that microwave radiation can be used to cause or potentially cure cancer. And it has to do with the fact that water constitutes about 60 percent of our bodies.

In their study, scientists from Russia and Armenia exposed samples of water to different frequencies of radiofrequency (wireless) radiation for 30 minutes and what they observed will astound you.

They found that water exposed to a frequency of 1000 MHz resolved into the molecular shape of a hexagon. Interestingly, this is also the molecular shape of water found in healthy tissues.

They also found that water exposed to a frequency of 990 MHz (similar to that used by many mobile phones) developed the molecular shape of a cube. The cube is also the molecular shape of water within cancer cells.

This finding begs the question; could the frequencies of water contained within cells determine their health or pathology?

The authors suggest that it could. They propose a hypothesis 'about the possible transformation of normal cells into cancer cells as a result of modification in them of the normal hexagonal molecular structure of water to abnormal cubic structure.'

And that's not all.

The authors found that exposing an unhealthy sample of water – one with a cubic molecular structure – to a 1000 MHz frequency changed the molecular structure of the water to a healthy (hexagonal) molecular structure. And vice versa.

'Preliminary experimental studies show that acting on the water of the cubic structure with a flow of therapeutic microwaves with a frequency of 1000 MHz or 985 MHz, it is possible to change its structure to a normal hexagonal one, which corresponds to a healthy tissue. Conversely, the "pathogenic" frequency of 990 MHz really transforms the normal hexagonal molecular structure of water into an abnormal cubic modification,' they wrote.

These findings suggest a therapeutic effect of exposure to therapeutic frequencies. 'Therapeutic microwaves have a direct effect on the source of dysfunction or pathology and activate the body's own resources, stimulating the restoration of the normal functional state of the affected organs and body systems.'

The authors suggested that their findings could have implications for the treatment of cancer. 'These preliminary results open up a very interesting line of research, which is associated with the possible application of low-power microwave radiation against tumor cells.'

Vitali Kalantaryan, Radik Martirosyan, Yuri Babayan, Voldemar Petrosyan, 'Violation of molecular structure of intracellular water as a possible cause of carcinogenesis and its suppression by microwave radiation(hypothesis)', Computational and Structural Biotechnology Journal, Volume 21, 2023, Pages 3437-3442, ISSN 2001-0370, .<https://doi.org/10.1016/j.csbj.2023.06.013>

<https://www.sciencedirect.com/science/article/pii/S200103702300226X>

---

*'They propose a hypothesis about the possible transformation of normal cells into cancer cells as a result of modification in them of the normal hexagonal molecular structure of water to abnormal cubic structure.'*

---

## Beg your pardon?

Having trouble hearing?

Could electromagnetic fields (EMFs) be part of the problem?

In a study published in September, Italian scientist Valerio Magnaghi and team offered valuable insights on this possibility.

Hearing loss is one of the most common and growing disorders of the sensory system. According to the World Health Organization nearly 2.5 billion people worldwide – or 1 in 4 people – will be living with some degree of hearing loss by 2050.

Magnaghi's paper points out that electromagnetic fields can affect health. The authors say, 'a number of other environmental factors, including the exposure to electric or electromagnetic fields (EMFs) emitted by electronic devices (e.g., domestic appliances, notebooks or mobile phones), has been also suspected as potential risk factor for human health, likely including VS [Vestibular Schwannoma] onset and growth). In the last decades, scientific studies, empirical observations, and patient reports clearly indicate interactions between EMFs exposure and health problems although in the same time the general susceptibility to environmental factors, like EMFs, has been frequently neglected.'

Magnaghi's team explained that electromagnetic fields could potentially cause hearing problems via their effects on Schwann cells. Schwann cells are a common type of glial cells in the peripheral nervous system and help protect nerve axons by coating them in a layer of myelin. It is thought that changes to Schwann cells in the auditory system could be a cause of hearing loss.

The authors also explained that electromagnetic fields have been shown to affect Schwann cell integrity and function. 'SCs (Schwann Cells) exposed to the EMF showed modification in cell proliferation, migration, and differentiation,' they wrote.

In fact, EMF exposure could lead to the development of vestibular schwannomas (also known as acoustic neuromas) which are slow-growing and benign tumours that develop on the vestibular nerve in the ear (known to affect hearing and balance).

The data, the authors suggest, 'likely suggest a potential participation of the EMFs to the nerve tumorigenesis and schwannoma development.' Further, they say that 'chronic EMF exposure represents a kind of second hit, affecting the SC [Schwann cell] development in vulnerable human subjects, specifically those bearing NF2 mutations or changes in merlin expression, and predisposed to develop VS [vestibular schwannomas] and subsequent HL [hearing loss].'

They suggest further research on the issue be conducted.

Mohamed T, Melfi V, Colciago A, Magnaghi V. Hearing loss and vestibular schwannoma: new insights into Schwann cells implication. Cell Death Dis. 2023 Sep 23;14(9):629. doi: 10.1038/s41419-023-06141-z. PMID: 37741837; PMCID: PMC10517973. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10517973/>

World Health Organisation, 'WHO 1 in 4 people projected to have hearing problems by 2050' 2021, <https://www.who.int/news/item/02-03-2021-who-1-in-4-people-projected-to-have-hearing-problems-by-2050>



---

# Babies' screen time and developmental delays

---

What happens when one-year-olds spend time on screen devices?

To answer this question, researchers from Japan took a look at over 7000 babies to see how they developed over the next three years.

They recruited pregnant women and followed them up with questionnaires when their children were aged one, two and four. Questions related to the amount of time children spent watching screens (TV, DVDs, video games, internet, mobile phones, tablets or other electronic devices) and to the following five domains of development:

- communication ('babbling, vocalizing, and understanding')
- gross motor skills ('arm, body, and leg movement')
- fine motor skills ('hand and finger movement')
- problem-solving skills ('learning and playing with toys') and
- social skills ('solitary social play and playing with toys and other children').

The investigators found a link between screen time and developmental delays by age 2 in the areas of communication, fine motor skills, problem-solving and social skills. The more time the babies spent using screens, the greater the developmental delays they observed. For example, one-year-olds who spent four or more hours a day using screens had, by age 2:

- more than four and a half times the risk of delays in communication than babies who spent less than one hour a day on screens at age 1;
- more than one and a half times the risk of delays in fine motor skills than babies who spent less than one hour a day on screens at age 1;
- more than two and a half times the risk of delays in problem-solving skills than babies who spent less than one hour a day on screens at age 1;
- more than double the risk of delays in personal and social skills than babies who spent less than one hour a day on screens at age 1.

Some of these delays persisted over time. The authors said, 'We also observed an association between screen time at age 1 year and developmental delay at age 4 years in the communication ... and problem-solving ... domains.'

The study also cast light on the characteristics of mothers of the high-screen-use babies. The authors wrote, 'Mothers of children with high levels of screen time were characterized as being younger, having never given birth, and having a lower household income, lower maternal education level, and having postpartum depression.'

The authors noted that '...the World Health Organization and the American Academy of Pediatrics have issued guidelines that recommend limiting screen time for children, including a limit of 1 hour per day for children aged 2 to 5 years. However, a recent meta-analysis reported that only a minority of children meet these guidelines.'

Takahashi I, Obara T, Ishikuro M, et al. Screen Time at Age 1 Year and Communication and Problem-Solving Developmental Delay at 2 and 4 Years. *JAMA Pediatr.* 2023;177(10):1039–1046. [doi:10.1001/jamapediatrics.2023.3057](https://doi.org/10.1001/jamapediatrics.2023.3057)

---

# Where do you keep your smart phone?

---

We've all heard about the link between mobile phone radiation and brain tumours. But can mobile phone radiation cause tumours in other parts of the body?

An interesting case study from Italy suggests that it may.

The 40-year-old man sought medical help after he developed a painful lump in a thigh muscle that grew in size over a six-month period. Doctors identified a 'spindle-shaped mass' inside the tensor fasciae latae muscle that was subsequently diagnosed as an intramuscular schwannoma.

The authors explain that '[i]ntramuscular schwannomas are benign neurogenic tumors that originate from Schwann cells, which are responsible for the formation of peripheral nervous system myelin.' They are relatively rare.

On questioning the patient, the doctors learnt that the man had kept his smart mobile phone in the left pocket of his trousers for approximately eight hours a day. This location 'intriguingly aligns with the intramuscular mass's location and the phone's SIM card position,' the authors said.

Further, the man kept the WiFi function of his phone turned off while it was stored in his pocket. This means that the SIM card processed all transmissions – data, emails, messages, social media and calls.

The authors of the study were circumspect about their observations. 'While we cannot conclusively link the patient's intramuscular schwannoma to his practice of storing his smartphone in that specific location, we hypothesize that this habitual placement could potentially have served as a risk or contributing factor.'

They pointed out that the International Agency for Research on Cancer classified radiofrequency radiation, emitted by mobile phones, as a Class 2B (possible) carcinogen and referred to studies showing that mobile phone radiation has been linked with reduced sperm quality.

They say that 'it is of utmost importance to investigate smartphone carrying habits and explore potential associations with neoplasms or other health issues related to RFR'.

Where do you keep *your* smart phone?

Piercarlo Minoretti, Abdelilah Lahmar, Enzo Emanuele, 'Where is your smartphone? An unusual mass within the tensor fasciae latae muscle,' Radiology Case Reports, Volume 18, Issue 11, 2023, Pages 3984-3987, ISSN 1930-0433, <https://doi.org/10.1016/j.radcr.2023.08.079>; <https://www.sciencedirect.com/science/article/pii/S1930043323005927>;

You can read what Microwave News says about this study here. [Microwave News | Schwannoma in the Thigh](#)

Learn how to make  
your home and  
family safe with our  
online course

Your  
Electromagnetic  
-safe Home



[emraustralia.com.au](http://emraustralia.com.au)

*'this habitual placement  
could potentially have  
served as a risk or con-  
tributing factor'*

# Digital Children—Declaration

In today's world, children are vulnerable to various risks that accompany the use of digital technology. Now experts are saying it's time to do something about it.

On 1 November, doctors, lawyers and scientists released a new International Declaration calling on the United Nations to protect children's rights in the modern world.

The 'International Declaration on the Human Rights of Children in the Digital Age,' sets out three fundamental legal rights of children: the right to be free from addictive platforms and apps; the right to be free from hazardous radiation from wireless devices; and the right to be free from commercial exploitation of private information.

## Screen time addiction

The Declaration points out that social media is designed to encourage addiction, which is known to have harmful effects on children and families. Yet warnings by professional bodies to restrict screen time are being ignored.

## Screen time addiction

It says that scientific research shows that wireless radiation has harmful effects on the body, including '... headaches, dizziness, nausea, insomnia, lack of concentration, and brain fog, as well as chronic effects including DNA damage and cancer; these physical effects are negatively synergistic with screen time addiction.'

Children's exposure is increasing from growing number of wireless devices and wireless infrastructure, yet government radiation standards are not protective.

## Commercial exploitation

'Confidential and private personal information concerning children is being monetized by data harvesters', the Declaration states and child labour, 'under dehumanizing conditions', is being used to mine minerals for digital products.

'The legal duty to protect children and enforce these rights on their behalf is the obligation of all adults, particularly parents, legal guardians and others in positions of authority. This protection of children is a basic legal principle that we believe will increasingly be recognized as a part of international customary law that can be recognized and implemented by every country on Earth,' the Declaration says.

The Declaration calls on governments to implement appropriate standards, schools to create safer learning environments and doctors to educate themselves about these important issues.

The Declaration was delivered, in person, to the United Nations on World Children's Day, November 20, 2023.

You can see the full text of the Declaration [here](#).

You can sign the Declaration [here](#).

You can see the media release about the Declaration [here](#).

Now available from  
EMR Australia

World's first and only  
hand-held meter for  
measuring 5G millimetre  
waves

FM5 Freedom Monitor  
Complete



measures radiation from  
40 MHz to 10 GHz and  
24 GHz to 32 GHz

*'wireless radiation has harmful effects on the body, including '... headaches, dizziness, nausea, insomnia, lack of concentration, and brain fog, as well as chronic effects including DNA damage and cancer'*