

# Olle Johansson: Fuck your telephone?

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Olle Johansson, KI – Foto: NASMS, A. McDowell

*By Olle Johansson, associate professor, retired from The Karolinska Institute Medical University, Stockholm, Sweden.*

**In an [article](#) in the Guardian, of February 26, 2021, it is reported that falling sperm counts and changes to sexual development are “threatening human survival” and leading to a fertility crisis, according to Shanna Swan, an environmental and reproductive epidemiologist at Icahn School of Medicine at Mount Sinai in New York, who warns that the impending fertility crisis poses a global threat comparable to that of the climate crisis.**

*“The current state of reproductive affairs can’t continue much longer without threatening human survival,” she writes. It comes after a study she co-authored in*

2017 found that sperm counts in the west had plummeted by 59% between 1973 and 2011, making headlines globally. Now, Swan says, following current projections, sperm counts are set to reach zero in 2045. “That’s a little concerning, to say the least”.

She points to lifestyle and chemical exposures that are changing and threatening human sexual development and fertility. Such is the gravity of the threats they pose, she argues, that humans could become an endangered species.

Swan blames “everywhere chemicals”, found in plastics, cosmetics and pesticides, that affect endocrines such as phthalates and bisphenol-A. She also said factors such as tobacco smoking, marijuana and growing obesity play a role.

*However, one culprit is not mentioned at all, namely artificial electromagnetic fields from cell phone systems, WiFi routers, wireless smart meters, and wireless baby alarms!* Cell phone and WiFi signals exposed sperms have been seen with more head defects, decreased sperm count, lowered motility, decreased viability, and other malfunctions as well as DNA damage, and severe effects on fertility have been found. Wireless signals can, in addition, increase oxidative stress in cells and lead to increase of proinflammatory cytokines and lower capacity to repair genotoxic DNA single- and double-strand breaks. Cognitive impairments in learning and memory have also been shown, something perhaps not making it easier to produce babies.

Some of the first observations on human sperm cells were done by Agarwal et al (2008) who showed that the use of cell phones decrease the semen quality in men by decreasing the sperm count, motility, viability, and normal morphology. The decrease in sperm parameters was dependent on the duration of daily exposure to cell phones and independent of the initial semen quality.

Among the most recent scientific papers, several ought to attract strong attention, such as the one by Parsanezhad et al (2017) where the health effects of mobile phone jammers – preventing the mobile phones from receiving signals from base stations by interfering with authorized mobile carriers’ services – were studied. In spite of the fact that mobile jammer use most often is illegal, they are occasionally used in offices, shrines, conference rooms and cinemas. The purpose of this study was to investigate the biological effects of short-term exposure of human sperm to radiofrequency radiation emitted from a commercial mobile phone jammer.

Fresh semen samples were obtained by masturbation from 50 healthy donors who had been referred with their wives to the Infertility Treatment Center at the Mother and Child Hospital, Shiraz University of Medical Sciences, in Iran. Female problems

were diagnosed as the reason for infertility in these couples. The semen sample of each participant was divided into 4 aliquots. The first aliquot was subjected to swim-up and exposed to jammer radiation. The second aliquot was not subjected to swim-up but was exposed to jammer radiation. The third and fourth aliquots were not exposed to jammer radiation but only the 3rd aliquot was subjected to swim-up.

The results revealed that the semen samples exposed to radiofrequency radiation showed a significant decrease in sperm motility and increase in DNA fragmentation, which lead to the authors' conclusion that electromagnetic radiation in the radiofrequency range emitted from mobile phone jammers may lead to decreased motility and increased DNA fragmentation in human semen. It can, thus, be concluded that – in addition to previous investigations using mobile phones only – also mobile phone jamming might exert adverse reproductive health effects.

Furthermore, Solek et al (2017) have investigated the effects of pulsed and continuous electromagnetic fields (PEMFs/CEMFs) on mouse spermatogenic cell lines (GC-1 spg and GC-2 spd) in terms of cellular and biochemical features in vitro. The authors evaluated the effect of EMFs on mitochondrial metabolism, morphology, proliferation rate, viability, cell cycle progression, oxidative stress balance and regulatory proteins. Their results strongly suggest that EMFs induce oxidative and nitrosative stress-mediated DNA damage, resulting in p53/p21-dependent cell cycle arrest and apoptosis.

Therefore, spermatogenic cells, due to the lack of antioxidant enzymes, undergo oxidative and nitrosative stress-mediated cytotoxic and genotoxic events, which contribute to infertility by reduction in healthy sperm cells pool. In conclusion, electromagnetic field present in surrounding environment impairs male fertility by inducing p53/ p21-mediated cell cycle arrest and apoptosis.

Naturally, one should not forget other life-style factors which may affect us, and maybe in concert with EMFs. For instance Radwan et al (2016) found evidence for a relationship between sperm DNA damage parameters and everyday life factors. High and medium level of occupational stress and age increase DNA fragmentation index ( $p=0.03$ ,  $p=0.004$  and  $p=0.03$ , respectively). Other lifestyle factors that were positively associated with percentage of immature sperms (high DNA stainability index) included: obesity and cell phone use for more than 10 years ( $p=0.02$  and  $p=0.04$ , respectively). Thus, data from the present study showed a significant effect of age, obesity, mobile phone use and occupational stress on sperm DNA damage. As DNA fragmentation represents an extremely important parameter indicative of infertility and potential outcome of assisted reproduction treatment, and most of the lifestyle factors are easily modifiable, the information about factors that may affect

DNA damage are important, and should be reflected in precautionary societal advice to the general public.

Perhaps I was not wrong when I called for safety measures already back in the early 1980ies; maybe it was morally-ethically 100% right to sound the alarm? Along these lines I could not help smiling when I read, in June 2018, in Dagens Nyheter, one of the largest daily newspapers in Sweden, that a Karolinska Institute-based colleague of mine now indicated that human sperm reduction might be due to several factors, including cell phone and computer radiation ([https://www. dn.se/insidan/halvering-av-mannens-spermier-oroar/](https://www.dn.se/insidan/halvering-av-mannens-spermier-oroar/)). This very same professor refused to collaborate around this issue 20-25 years ago when I approached him with the very same hypothesis. So, as usual, time changes our perspectives.

With all the above at hand, it is not difficult to do the math. It is, actually, fucking easy.

*By Olle Johansson*

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