Electromagnetic wave may hurt the human body

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There is a report that said that mobile phones bring civilization but may incur physical and mental health risks, which is published at (Qi-Xin, 2017). This report's initial claim is that the electromagnetic waves that cell phones produce and use increase the chance of a person developing cancer in their body. We found two premises support this initial claim. First, it is a report that cites World Health Organization (WHO) disease list. It mentions a disease, which is called "Electromagnetic Hypersensitivity", which may affect the human central nervous system, immune system, cardiovascular, reproductive system, visual system (Chen, 2019) . Also, there is a report was published by National Ilan University. The participant who uses a mobile phone for a long time will experience more symptoms of physical discomfort, including dizziness, weariness, and headache (Yan, 2010) . Second, Israeli scientists pointed out that people who use mobile phones every day for long hours have a 50% higher chance of developing parotid gland cancer than people who don't use mobile phones (Sadetzki et al., 2007). And according to a book called "Electromagnetic Waves and Human Health", it mentioned there is an association between electromagnetic waves and childhood leukemia which is a cancer of the body's blood-forming tissues (Feyyaz & Aysegl, 2011) . It can be concluded from this information that cell phones' electromagnetic waves might harm people's health.

There is another report that belief electromagnetic wave from calling phone won't hurt the human body non increase any risk of disease (LIN, 2021) . The counterclaim of this article is electromagnetic waves that cell phones produce and use do not increase the chance of a person developing cancer in their body. One premise of the counterclaim is that the radiation of electromagnetic waves is weak and not enough to affect the human body. Evidence that supports this premise is the visible spectrum is 10^5 or higher energy than cell phones electromagnetic waves (LIN, 2021) . Also, Einstein, a famous physicist, mentioned a formula that is $E = h\nu$ which can calculate the strength of the electromagnetic wave of a cell phone that is very weak and can't hurt the human body (Einstein, 1905) . Another premise that supports the counterclaim is the relationship between electromagnetic waves of cell phones and cancer has never been established. Dr. Wu, who works in the Department of Hematology and Oncology in Taipei United Hospital, the risk of cell phone cancer are very low, and its harm cannot even be compared with smoking and obesity (WU, 2017) . And According to the report of WHO, this potentially harmful scientific evidence is weak that even at high frequencies (above 1800MHz) electromagnetic fields will not increase the risk of cancer, non-even low-frequency cell phone electromagnetic waves (HE, 2013) . It can be concluded that the radiation of electromagnetic waves that cell phones produce is weaker than the sunlight and cancer is not necessarily related to cell phone electromagnetic waves.

We posit that the information presented in the initial claim is questionable because the clinic doesn't have any experts in electromagnetic waves or cancer. Ching-Shun clinic is a physical examination center, but they don't have an oncologist that all their expertise and certification are only about health check service, so we believe the people who forward this initial claim have enough academically knowledgeable or are experientially qualified. However, (Sadetzki et al., 2007) published the report "The Cellular Phone Use and Risk of Benign and Malignant Parotid Gland Tumors" in which

that information supports the initial claim. There appears to be no malicious intent in the initial claim about the main purpose of the report because it reminds people to pay more attention to the electromagnetic waves coming from their mobile phones.

In the counterclaim, it is more credible that the author is a well-known expert in the medical field. (LIN, 2021) who is the author of the counterclaim, is a medical professor in UCSF and he published over 200 papers of medical researches. This could also be supported by Einstein theory that the information about cell phone electromagnetic waves can't hurt the human body (Einstein, 1905) . This counterclaim does not have an underlying intention because it just wants to reduce people's misunderstandings about the electromagnetic waves of mobile phones.

In conclusion, it appears that the initial claim is mis-information. One reason why we believe that this information is mis-information is the main purpose of the initial claim is positive and there is no malicious intent. Another reason why we believe that this information is mis-information is that there are not enough experimental results to support it have the relationship between electromagnetic waves of cell phones and cancer.

REFERENCES

Chen, Y.-Y. (2019). https://heho.com.tw/archives/36069

Einstein, A. (1905). https://www.zbp.univie.ac.at/dokumente/einstein3.pdf

Feyyaz,., & Aysegl, K. (2011). https://www.intechopen.com/chapters/16094

HE, J.-Q. (2013). http://nehrc.nhri.org.tw/toxic/ref/%E9%9B%BB%E7%A3%81%E6%B3%A2%E5%81%A5%E5%BA%B7%E6%95%88%E6%87%89%E4%B9%8B%E8%A9%95%E4%BC%B0%E5%A0%B1%E5%91%8A.pdf

LIN, Q.-S. (2021). https://professorlin.com/2021/08/22/%e9%9b%bb%e7%a3%81%e6%b3%a2%e5%a5%bd%e5%8f%af%e6%80%95%ef%bc%9f%e5%9f%ba%e5%9c%b0%e5%8f%b0%e6%96%b7%e8%a8%8a%ef%bc%8c%e5%8e%9f%e5%a7%8b%e4%ba%ba%e9%a2%a8%e6%b3%a2/

Qi-Xin, C. (2017). https://www.ch.com.tw/index.aspx?sv=ch_epaper&chapter=AIA970701

Sadetzki, S., Chetrit, A., Jarus-Hakak, A., Cardis, E., Deutch, Y., Duvdevani, S., Zultan, A., Novikov, I., Freedman, L., & Wolf, M. (2007). Cellular Phone Use and Risk of Benign and Malignant Parotid Gland Tumors—A Nationwide Case-Control Study. *American Journal of Epidemiology*, *167*(4), https://academic.oup.com/aje/article-pdf/167/4/457/634208/kwm325.pdf, 457–467. https://doi.org/10.1093/aje/kwm325

WU, H.-B. (2017). https://tpech.gov.taipei/mp109151/News_Content.aspx?n=0496F430C1411365&s=7F93FDC3BB396BCE

Yan, H.-N. (2010). https://ir.niu.edu.tw/bitstream/392340000/713/1/%E9%A1%8F%E6%B5%A9%E5%B9%B4R9631008.pdf