


## Comment to Mobile Cellular Data and Wi-Fi Use Are Not Associated with Adverse Health Effects by Rabiei et al., Journal of Biomedical Physics and Engineering

Enrique Arribas (PhD)<sup>1,2\*</sup>, Isabel Escobar (PhD)<sup>1,2</sup>, Raquel Ramirez-Vazquez (PhD)<sup>1,2</sup>

**I**n this article, a study has been conducted with 2796 employees of Shiraz University of Medical Sciences (SUMS), located in Shiraz, Iran [1]. The study aims to evaluate the potential link between mobile cellular data and Wi-Fi use and adverse health effects.

The research is of significant interest; nevertheless, we would like to make the following comments:

1) There are considerable gaps in the references. Recent studies have not been cited such as:

a) Large-area mobile measurement of outdoor exposure to radio frequencies [2].

b) Measurement studies of personal exposure to radiofrequency electromagnetic fields: A systematic review [3].

c) Personal exposure from free Wi-Fi hotspots in downtown Mexico City [4].

d) Comparison of personal exposure to Radiofrequency Electromagnetic Fields from Wi-Fi in a Spanish university over three years [5].

2) Note that citation number 13 pertains to magnetic fields generated by power lines, it is not about radiofrequency. We believe the authors should not have cited that reference.

3) On page II, there is a writing error in the line that states “The global proportion of the people who connect to the Internet has been increased from 6.5% in 2000 to 43% in 2015 (700% growth)”. The % sign should be separated from the figure. On the other hand, there is a 6.6-fold increase, then the increase is 560 %, not 700 %.

4) In Table 1 [1], the mean age should be written as  $43 \pm 7$  instead of  $42.54 \pm 6.99$ .

5) To write absolute errors, follow this rule: It is a routine occurrence for scientific papers to inadequately express measured quantities together with their corresponding absolute errors. When dealing with various measured quantities presented in a paper, the authors should be meticulous when choosing the correct number of significant figures. Magnitude’s absolute error must be rounded off to one or two significant figures. If the leading figure in the uncertainty is 1 or 2, we use two significant figures, otherwise we use only one significant figure. Then the measured quantity should be rounded to match. If the result is in scientific notation, the uncertainty must also be written in scientific notation, with the same power of ten. The International System of Units and ISO 31-0 standard prescribe a space between the number and percent sign: 55 %.

6) In the second column of page III, the data appears as follows:  $118.93 \pm$

<sup>1</sup>Department of Applied Physics, Faculty of Computer Science Engineering, University of Castilla-La Mancha, Avda. de España s/n, University Campus, Albacete, Spain  
<sup>2</sup>MORFEO Research Group, University of Castilla-La Mancha, Spain

\*Corresponding author:  
Enrique Arribas  
Department of Applied Physics, Faculty of Computer Science Engineering, University of Castilla-La Mancha, Avda. de España s/n, University Campus, 02071 Albacete, Spain  
E-mail:  
enrique.arribas@uclm.es

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127.78 min per day,  $76.0 \pm 98.74$ , and  $42.89 \pm 81.18$  minutes per day. Following the previous rule, the correct way to write them is:  $120 \pm 130$ ,  $80 \pm 100$ ,  $40 \pm 80$ . It is surprising, although not impossible, that in all three cases the absolute error (SD) is greater than the quantity measured.

7) The values in the first column of page IV should be  $120 \pm 130$  rather than  $118.93 \pm 127.78$ .

8) Participants provide information about their medical history and report their history of diabetes, hypertension, cardiac ischemia, myocardial infarction, renal failure, fatty liver, hepatitis, chronic lung disease, thyroid disease, kidney stone, gall bladder stone, rheumatoid disease, epilepsy, and chronic headache, in face-to-face interviews. But it doesn't seem that the diseases were tracked, it seems that only the disease each person had, their smartphone usage and the time and mode of connecting to the internet (mobile data and Wi-Fi) were noted. In other words, the illnesses could have occurred before they had been using the smartphone and the internet connection.

9) It would have been intriguing to track this participant cohort over multiple years to investigate any potential correlation between disease fluctuation and their smartphone and internet use.

10) The study did not seem to take into consideration individuals' exposure to Radiofrequency (RF) electromagnetic fields, as other similar studies have [2-5]. It is crucial to determine whether the Wi-Fi connection that the participants used adhered to the reference limits of ICNIRP [6] and IEEE [7]. This information is significant in decision-making.

We concur with the authors in the following statement: "Considering the limitations of our study, further large-scale studies are warranted", due to the substantial expansion of wireless communications in the last 25 years. Moreover, the rollout of the fifth generation (5G) of telecommunication infrastructures is underway and requires thorough examination to ensure that it does not pose any risks to human health, particularly for the most susceptible populations such as children and the elderly. Thus, it is crucial to conduct comprehensive research and risk assessments before implementing this new technology.

## Authors' Contribution

All authors contributed equally to this work.

## Conflict of Interest

None

## References

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