

Cellular Phones, Cordless Phones, and the Risks of Glioma and Meningioma (Interphone Study Group, Germany)

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This study, similar to all Interphone studies published to date, has several serious problems.

For one, its core findings report no risk for glioma or for meningioma from "regular" cellphone use ("regular" use is defined as at least one incoming or outgoing call per week for 6 months or more). Yet, it reports a 2.2-fold risk of glioma after more than 10 years of cellphone use with a 94% confidence that this risk is not due to chance.

Also, it found a 1.96-fold risk of high-grade glioma for women from "regular" cellphone use with a 98% confidence. **Given the specific problems of the study all of which would underestimate the risk of a brain tumor these findings are ominous.**

Here is a list of the main problems in this study:

1. The definition of unexposed cases and controls included subjects exposed to cordless phones. Previous studies have shown that cordless phone use increases the risk of glioma [1] and meningioma. [2] Including exposed subjects in the unexposed group will cause an underestimation of risk.

2. The definition of a "regular" cellphone user is so minimal that almost all "regular" cellphone users would not be expected to be at risk, even if cellphone use is found to create a very high risk of glioma and meningioma.

As mentioned earlier, regular use as defined by all Interphone studies, is "at least one incoming or outgoing call per week for 6 months or more." As to longer periods of "regular" cellphone use, this study reported only 14% of the glioma cases and 6% of meningioma cases used a cellphone for 5 years or more; for 10 years or more, the percentages are 3% and 1%, respectively.

To understand that "regular" cellphone use as defined in this study is so minimal that risk ought not to be expected, even if there is a high risk of glioma and meningioma from cellphone use, consider a hypothetical study of smokers and the risk of lung cancer. Would a risk of lung cancer (which is a high risk for smokers) be expected to be found for smokers who had smoked once a week, for 6 months or more with only 12 subjects (3% smoking for 10 years or more?

3. There is a strong possibility of selection bias. Some 30.5% of controls refused to participate in the study compared to only 4.8% of glioma cases and 4.9% of meningioma cases. If a higher proportion of controls who participate (compared to controls who refused participation) used a cellphone, then any risk would be underestimated. This result (an underestimated risk) seems to be at play in this study.

Some 58% of controls who refused to participate answered a question whether or not they used a cellphone. These groups of non-participating control (one of both sexes between the ages of 40 and 59 years of age, and another of men between 30 and 39 years of age) provided confirmation that a selection bias problem indeed existed in this study. That is, these non-participating control groups used cellphones less frequently than did the participating control group.

[There were two small exceptions to this selection bias: Controls between 60 and 69 years who refused to participate, and those that did participate, reported a common amount of cellphone use and so did not

contribute, one way or the other, to selection bias. This group represents roughly 15% of the total controls. The only non-participating controls that reported higher use of cellphones compared to participating controls were females 30-39 years of age. This would have caused an overestimation of risk among a very small proportion (about 8%) of all the controls.]

4. Substantial funding of this, and all Interphone studies, comes from the cellphone industry with a resultant, but undeclared, conflict-of-interest. Though the study reports that this funding "was governed by agreements that guaranteed complete scientific independence" it seems doubtful that this "guaranteed" "scientific independence" is possible. Researchers' careers are dependent on receiving research grants. Even with isolation of funding for a specific study from the researchers themselves, the conflict-of-interest in such funding is not resolved. Because the researchers know where the funding has come from, the old adage, "Don't bite the hand that feeds you," becomes the effective psychological reality (whether conscious or unconscious).

Friedman and Richter explored this concern by reviewing the conflict-of-interest problems found in studies published in the New England Journal of Medicine and The Journal of the American Medical Association during 2001. The paper found a strong association between those studies whose authors had an economic conflict of interest and, as well, reported positive findings ($P < 0.001$, equivalent of greater than a 99.9% confidence). [3]

In the case of cellphone studies, could the findings of these industry-funded studies have a correlation with findings of no harm from cellphone use? **It is interesting to note that the Interphone studies, all receiving substantial cellphone industry funding, consistently put forth press releases highlighting the "no risk" findings from cellphone use. But the Hardell et al. studies (all independently funded) consistently are finding a greater and greater risk from cellphone use with each new study they publish.**

References:

1. Hardell et al., Case-control study of the association between the use of cellular and cordless telephones and malignant brain tumors diagnosed during 2000-2003; Environ Res. 2006 Feb;100(2):232-41.
2. Hardell et al., Pooled analysis of two case-control studies on the use of cellular and cordless telephones and the risk of benign brain tumors diagnosed during 1997-2003; International Journal of Oncology 28: 508-518, 2006.
3. Friedman and Richter, Relationship between conflicts of interest and research results; J Gen Intern Med. 2004 Jan;19(1):51-6.